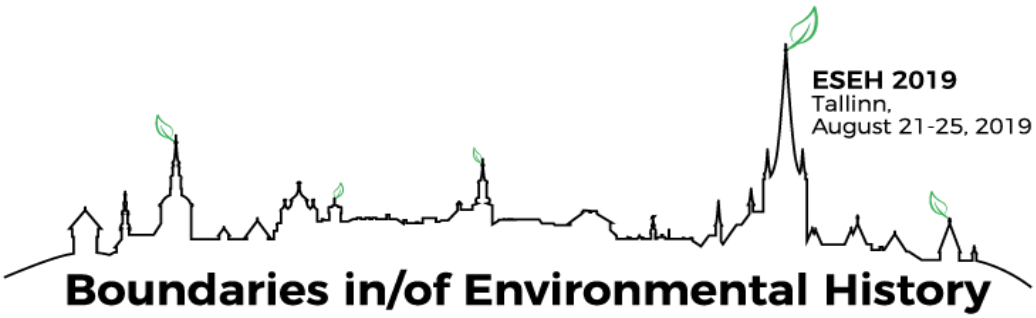

Abstracts

Tallinn
2019

QUICK GUIDE ESEH 2019 "Boundaries in/of Environmental History" Tallinn, Estonia, 21-25 August 2019

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WEDNESDAY 21 AUGUST

11:00-12:30 Parallel Session 1

Session 1A
Fluid boundaries: Imagination, appropriation and reaffirmation of wetlands in past and present

Organizer: Anna-Katharina Wöbse, Justus-Liebig Universität Gießen
Chair: Pavla Šimková, Ludwig Maximilian University of Munich / Rachel Carson Center for Environment and Society

Session abstract:
The boundaries of wetlands, such as fens, mires and marshland, tend to be fluid, meandering and inconsistent. While their material boundaries change constantly depending on seasons, tides, drought and floods, their imaginary boundaries depend on historically variable cultural perceptions and economic aspirations. In modern times, many nation-states implemented ambitious schemes to control these fluid boundaries. Channelling free running waters and draining impenetrable swamps promised to tame unreliable nature and define solid borders between modernity and backwardness, between prosperity and poverty, between civilization and wilderness. This idea underwent a profound change in the second half of the 20th century. While previously wetlands were considered "wastelands" whose economic potential had to be unlocked through human intervention, they are nowadays seen as highly valuable ecosystems that provide biodiversity and resilience in times of climate change. A central feature of this new wetland narrative is the transnational character of waterbound areas as they function as hubs for migrating fish, birds and amphibians. Those travelling creatures connect communities all over the globe. Thus, instead of being presented as isolated and peripheral spaces, wetlands are now perceived as centers of exchange and connectedness.
The papers of the panel explore how this new wetland paradigm emerged and unfolded in different social, economic and political contexts. How did international efforts to protect wetlands on the one hand and political and economic ambitions at national or regional levels on the other affect discourses around and the actual uses of wetlands? Which factors contributed to or hampered projects to conserve or restore them? The panel builds on examples of a wide geographical range to explore how the new paradigm, even though it remained highly contested, traveled and gained prominence all over the world. Including case studies from Western-Europe, Soviet Russia and China, it illustrates the importance of wetlands and the fluidity of ecological boundaries, both material and imaginary, in the environmental history of the late 20th and early 21st centuries.

Bio- or noosphere? Wetland protection in the late Soviet Union
Katja Bruisch, Trinity College Dublin

With the 1971 (Ramsar) Convention on the Protection of Wetlands of International Importance, wetlands turned into objects of transnational environmental governance. Ratified by countries from the West, the East and the South, the Ramsar Convention has since been regarded as a landmark of green diplomacy across the ideological and political divides of the Cold War. From the mid-1960s,

scientists and bureaucrats from the Soviet Union were involved in conferences and negotiations that ultimately led to Ramsar. With some delay, the Convention entered into force in the Soviet Union in 1977. Yet, even though agreement was achieved internationally, ideas of wetlands remained contested within the country itself. While the government advocated large-scale amelioration (including drainage) schemes, scientists and citizens raised concerns about the loss of wetlands. Moreover, Soviet views on wetland protection were quite disparate, ranging from the notion of wetlands as part of the biosphere to the appraisal of drained wetlands as consciously shaped human-made environments. This paper looks at the evolution of such ideas and the implementation of wetland protection efforts in the late Soviet Union in order to explore the multifaceted character of the Soviet nature discourse and how it was shaped by broader economic and political issues in the last decades of Soviet power.

"Adaptable" wetland conservation in China: A spatial history of wetlands in Chongming Island
Linjun Xie, University of Nottingham

This paper explores wetland conservation in China, looking at the case of Chongming Island in the estuary of the Yangtze River. Since the Chongming Island has been formed about 1400 years ago, the boundless reed marshes and wild mudflat by the island's coast were not only a mystery world that awed people, but also a natural treasure trove wherein various resources could be harvested to build up the local economy and culture. However, before being recognized as wetlands with multiple ecological functions, these "unutilized lands" have undergone extensive reclamation and cultivation due to the industrialization since the establishment of the PRC in 1949 and the rapid urbanization ensuing the reform and opening up in 1978. It was not until the late 1990s, that the concept of wetlands became recognized and the Chongming Dongtan Nature Reserve was established for wetlands conservation in the east end of the Island. In 2002, it has been listed as a Ramsar Site. Nevertheless, being designated as a national protection zone did not prevent the Dongtan Wetland from further human exploitation. Massive reclamations were continued and another two concrete dykes were built in 1998 and 2001, encroaching the originally confined reserve area. Tracing the spatial changes of wetlands in Chongming Island through the industrialization, urbanization and the recent ecologicalization process, this paper presents the evolving wetland discourse and governance in China. It reveals that despite gratifying progress, the contradiction and contestations between development and protection remain unsolved, which undermines the existing efforts of wetland conservation in China.

A shared experience of loss: How marshes, bogs and wadden turned into European wetlands
Anna-Katharina Wöbse, Justus-Liebig Universität Gießen

The High Fens in the North-Eastern Ardennes are a cold, wet and rather dark region. Stretching along the Belgian-German border, the area consists mainly of raised bogs, hills and moorlands. In 1966, the region was awarded the first "European Diploma" acknowledging its exceptional transnational importance for the preservation of biological, geological and landscape diversity. The very same year another two areas characterized by marshland, swamps and moors received the award: the French Camargue and the British Peak District. The certificate and sponsorship by the Council of Europe

signified the changing attitude not only towards 'wild' and economically underdeveloped regions but also towards Europe – and its wetlands. In the run of the 1950s and early 1960s conservation activists and scientists from all over the continent had started to share information about the destruction of water bound habitats. The members of the fledgling ecological networks set out to reframe Europe along watersheds, tidal coasts and routes of migrating species. The catchall term 'wetlands' signified their claim to include any type of water regime and humid environments in a future conservation scheme – whether it was an untouched lake, a quarry pond or a restored riverbank. This all-embracing concept was to play a pivotal and yet contested role in writing and implementing the Ramsar Convention in 1971. The paper explores the historical process in which the experience of loss and a new sense for European environmental solidarity started to matter.

Comment: **Liesbeth van de Grift**, Utrecht University

Session 1B
Disasters past and future

Chair: Santiago Gorostiza, ICTA – Universitat Autònoma de Barcelona

Struggling with drought in the Mediterranean during the Little Ice Age. The case of Barcelona (1603–1651)

Santiago Gorostiza, ICTA – Universitat Autònoma de Barcelona
Maria Antònia Martí Escayol, Universitat Autònoma de Barcelona

Like other Mediterranean cities, during the 17th century Barcelona went through a period of crisis, famine and war. Extreme weather events, particularly drought episodes, became more common and severe, as confirmed by reconstructions of rain rogations. During the period between 1625 and 1650, in particular, the extent of the drought episodes in the Spanish coast can be defined as a megadrought.

During these years, the efforts of Barcelona's city council to increase and improve its water supply have bequeathed to us precious archival sources. Similarly, its attempts to enforce control over urban water supply led to several conflicts that have left abundant traces in the archives. From ambitious projects to bring river waters to Barcelona to the construction of windmills to make up for the unusable watermills during drought episodes, the city council struggled to adapt to the limited amount of water available. Sometimes the city council's ambitions clashed with those of other powerful actors in the city, such as the Cathedral. Both in 1603 and 1634 these institutions engaged in serious legal disputes related to water supply.

The city's efforts culminated in 1651 with the production of the "Book of fountains" ("Llibre de les fonts"), a detailed description of its supply system, authored by Barcelona's master of fountains, Francesc Socies, in office since 1620. This unique manuscript, addressed to the "future masters to come" – in Socies' words – condensed decades of experience and codified urban water knowledge in a manual that had to remain exclusively on the grounds of the city council. Moreover, Socies wrote it during an episode of extreme drought in the city, underlining the exceptional situation of water supply at the time, even in comparison to previous drought episodes. The book was conceived as a tool, and its author explicitly encouraged his successors to annotate in its pages any modification in the water infrastructure of the city.

Overall, using the example of Barcelona, this presentation will examine how Mediterranean cities coped with drought episodes during the Little Ice Age and how the conflicts derived from these episodes contributed to new adaptation strategies.

Natural disasters and the shifts of boundaries

Muzayin Nazaruddin, University of Tartu / Universitas Islam Indonesia

This paper discusses the relationships between natural disasters and semiotic changes in two post disaster environments in Indonesia, i.e. the post-2010 eruption in the slopes of Mount Merapi and the post-2004 earthquake and tsunami in Banda Aceh. The empirical parts of this study is based on participant observations, semi-structured and open-ended interviews, informal discussions,

landscape analysis, and discourse analysis of the relevant archive materials and texts. Combining ecosemiotics and cultural semiotics approaches, this study considers that nature and culture are tied through sign relations. Thus, according to the main tenet of ecosemiotics, human relations with the environment are essentially semiosic. While, cultural semiotic point of view allows to analyze how these culture-environment relations are preserved as texts and remembered as cultural memories. This study concludes that natural disaster is a boundary in itself, also triggers the shifts of boundaries. In the disaster-prone areas, where the disaster happens periodically with high intensity, the local people usually signify natural disaster as a historical boundary, between the pre-disaster and the post-disaster periods. Natural disasters would also accompanied by many boundaries changes. The most fundamental change is the nature-culture relations. This change is closely related to the dynamics of local peoples' perceptions to the natural disasters, as well as their perceptions and relations to the local environments following the disaster. This human-environment changes are also closely related with another boundaries shifts following the disaster, such as landscape, cultural memories, and political authorities changes.

The historical spectre of calamities: Plant pests and extreme climatic events

Inês Gomes, University of Lisbon
Ana Isabel Queiroz, University of Lisbon
Inês Amorim, University of Porto, CITCEM / FLUP

Climatic events or plant pest invasions are the main causes for the crop losses which occurred, at different scales and magnitudes, in different times and places. Disaster, ravage, tragedy and calamity were, among others, words used to describe the impact of those phenomena in society. However, it is not easy to quantify damages in cultures. Accurate figures are difficult to find in the historical record. Instead, the more common descriptions are ambiguous. The agents involved used different ways and units of measurement according to their knowledge and interests and there is a lack of continuous spatial and temporal data. Moreover, an historical approach to the nature and extent of those harms must deal with the fuzzy boundary between perception and reality. In order to understand how societies shape the environment, and how they are shaped by it, research requires the integration of natural and cultural variables. These diverse variables are documented in several types of sources, which need to be studied with different tools, fading the borders between diverse disciplines.

This communication discusses how to evaluate different types of sources, according to their origin and who produce them. A few examples about pests, climate, agricultural production and cultivated area are presented - exploring past discourses, social representations of harmful events and the vulnerability of societies and economies - with the aim of clarifying their interconnections and the major problems that ought to be taken in account when analyzing such relations. Methodologically, this communication emerges from an alternative understanding of the world economy, which looks to the complexity of human-nature relationships, at different times and in multiple parts of the world. Mapping calamities, evaluating scales of intensity, losses and earnings according to the different agricultural plants helps to clarify environmental changes which have an undeniable impact on human health and wealth.

Session 1C
Science of defining the healthy environment

Organizer: Tuomas Räsänen, University of Turku
Chair: Hrvoje Petrić, University of Zagreb

Session abstract:
One of the central features in modern ideas and politics on the environment has been the scientific endeavour to define what constitutes the environment harm. Whether the principles developed have been based on the supposed worth of unspoiled nature or quantification through measurements of risks to humans, they have embodied a certain form of evaluation that could be used when drawing boundaries between, for example, clean/polluted and healthy/unhealthy.
The purpose of our session is to examine the social, material and political processes behind various attempts to define the environment and environmental harm during the twentieth century. It will be argued that despite being based on scientific reasoning, these categorisations are often arbitrarily formulated and follow the contemporary discourse on human-nature relationship. Though these practices have a much longer history, the increasing pursuit for objective scientific knowledge of the environment during the twentieth century and its close linkage to environmental and social policies makes the authority to produce this knowledge especially important.
Our session approaches the question of defining healthy environment through different themes. First, we investigate how the early 20th century European natural healing movement defined boundaries between healthy and unhealthy environments by using both ancient medical beliefs and modern scientific research. This will be followed by two examinations of challenges related to the defining of health risks of outdoor air pollution during the 1950s and 1960s. The papers scrutinise the topic both on a local, communal, and on global, World Health Organization's level. The session will close with the paper that investigates the assessments of toxic substances in food from aquatic environment.

Embodied environments: Drawing the line between healthy and unhealthy environments in the late 19th and early 20th century European natural healing movement
Suvi Rytty, University of Turku

The belief that there is a connection between individual health and environment is very old in European thought dating back to the medical theories of classical antiquity. From the 18th century onwards the notion of urban environment as harmful for individual health grew stronger. At first this notion was based mainly on the civilization critical worry about the immoral conduct encouraged by city life, but accelerating industrialization and urbanization during the 19th century added strength to it when the connection between poor health and crowded, dirty and polluted industrial towns began to show. The worry that the alienation of humankind from their supposedly original environment – the countryside – made people ill, gave rise to the European natural healing movement in the late 19th and early 20th century.
Through the ideas of the natural healing movement, this presentation examines how the modernization brought on the old civilization critique and the new scientific research to merge into a

hybrid disease theory that was used to draw boundaries between healthy and unhealthy environments. Countryside was considered as healthy environment, because unlike cities, there was plenty of sunshine, fresh air and clean water. The latest scientific research was used to explain what kind of effects sunshine, fresh air and cold water had on the micro level of human body. By bringing the beneficial influence of nature into the micro level of the body, the natural healing theory offered a solution to the problem posed by modernization: It was not necessary to abandon the cities, because by using the natural healing methods based on predisposing the body to natural elements, nature was brought to urban environment.

The quantification of harm and tackling urban air pollution in post-WWII Helsinki
Paula Schönach, University of Helsinki

Defining a condition of the human environment as harmful, hazardous, unhealthy or the like, requires tools to draw boundaries between these undesired conditions and respective alternative conditions. Scientific reasoning and quantifiable measuring have grown into a common and generally accepted basis for these definitions. The alleged objectivity of them construct the backbone of policies and case-by-case decision-making. However, the definition of an environmental condition is bound to various interpretations of these quantified parameters and as such reflect contemporary values and norms.
This paper explores the social and political aspects involved in, and the material implications of processes of quantification and interpretation of environmental harm. The question of urban air pollution in the Finnish capital Helsinki is used as a case to investigate these historically changing ways of quantifying the harmfulness of pollutants and the respective interpretation patterns for policymaking and practical actions. Since the first Finnish air protection law was enforced only in 1982, during the preceding decades of the post-war reconstruction period, a lack of a specific legal apparatus to deal with urban air pollution resulted in diverse, and to a varying degree efficient, mechanisms to quantify and eventually tackle the increasing air pollution problem. The paper shows how in order to draw a justified boundary between acceptable and unacceptable urban environmental conditions, communal authorities developed and applied inventive ways to conform with the implicit requirement to quantify environmental harm.

Measuring health and air: WHO's problem of defining safe levels for air pollution in mid-20th century
Janne Mäkiranta, University of Turku

My paper for the conference considers the discussion in World Health Organization about defining air pollution in terms of health risks. In the late 1950s air pollution had become major public health issue and WHO in its own part tried to establish standard principles and methods that could be used to evaluate and monitor this threat. Up to this point general air pollution was largely seen as nuisance rather than genuine health issue. The purpose of my paper is to examine the difficulties that experts had when they tried to create universal way to determine the threat posed by air pollutions to health. Problem was not only how to measure air pollution with unified methods, but

more importantly how to measure health. In other words, how to define the border between healthy and unhealthy environment.
I will argue that regardless of WHO's holistic view on health as general state of physical, social and psychological wellbeing, defining safe air was dictated by chemical view on air and physiological view on body. This made plausible the use threshold values for air pollution in a way that resembles what literary scholar Rob Nixon has called 'slow violence'. I will argue further, siding with environmental historian Linda Nash, that though the environment and human health are in many ways inseparably entangled, this entanglement is difficult to grasp by the methods of modern medicine and science.
My paper addresses a theme from my doctoral dissertation where I study how and why the notion of air pollution as a long-term hazard gained plausibility and established itself as a public health and environmental risk in Finland during the 1950s and 1960s.

When food kills: Assessing the limits of toxic substances in fish
Tuomas Räsänen, University of Turku

During the past fifty years, the radical changes in the human-nature relationship as well as in technological development have made the food a potential health hazard, that needs to be carefully monitored for a number of harmful substances by nutrition scientists and health administrators. This paper examines the history of health standards in food from aquatic environments in the context of northern Europe. I will demonstrate how the assessments of health risks in fish were born from the convergence of environmental and medical expertise, with the assistance of the modern technology. Particular attention will be placed on the mercury pollution in the 1960s, which was the first known dangerous chemical substance of anthropogenic origin in fish.
After the debate on mercury, which was characterised by the fierce clash of opinions between scientists from different disciplines, the monitoring of fish species was gradually extended to other chemical substances and became carried out by means of standardized procedures. This made certain fish species valuable as indicator species. Resembling Sverker Sörlin theorization about the role of environmental experts in modern societies, I will argue that the risk assessments, and the technical measurements and boundary values through which they were conducted, became the markers of the healthy environment. This was a radical shift in the history of environmental ideas. The traditional values such as the virginity of the landscapes or cultural history no longer defined the quality of the environment, nor did the diversity and abundance of flora and fauna. Instead, the environment was deemed healthy as long as the levels of chemical substances fell below certain threshold values, no matter how intensively the given environment had been otherwise modified.

Session 1D
Nuclear installations at the border. Transnational connections and international implications

Organizer: Astrid Mignon Kirchhof, Humboldt University of Berlin
Chair: Melina Buns, University of Oslo

Session abstract:
A substantial number of nuclear reactors, waste disposal sites and reprocessing plants are situated – or were to be situated – near national borders. Technical requirements, such as the need for cooling water and economic interests, notably the ambition to sell electricity to neighbouring countries were often decisive. Political motivations also played a role, as nuclear projects were promoted as instruments of regional policy, promising to bring jobs to often economically marginal border areas. This panel examines the implications of the border sites conceptualised as a "transboundary issue", defined as the problems resulting from the risks and potential external impacts of the nuclear facility on the other side of the border. Contributions focus on the international conflicts and transnational cooperation transboundary issues brought about among state, economic, and societal actors. The papers in this panel juxtapose three different examples from different parts of Europe: the Spanish-Portuguese conflicts about uranium mining, power plants, and waste disposal, the waste disposal centres Mors- and Gorleben in Germany on both sides of the Iron curtain and the Swedish/Danish case of the nuclear power plant Barsebäck.

Siting (and mining) at the border: Spain–Portugal nuclear transboundary issues
María del Mar Rubio-Varas, Institute for Advanced Research in Business and Economics (INARBE)
António Carvalho, Centro de Estudos Sociais, Universidade de Coimbra Joseba de la Torre, Economics Department, Universidad Pública de Navarra

This article is focused on nuclear transboundary issues between Portugal and Spain, two countries that share a long history of nuclear collaboration and conflict of late, where national borders played a crucial role. The issues at stake cover the full spectrum of the nuclear cycle: uranium mining, power production and waste disposal. The first stage, under two fascist dictatorships, was characterised by collaboration within a common techno-political imaginary, where nuclear energy was understood as a driver of modernity, but with the absence of the public in decision-making processes. The second stage was marked by the advent of democracy in both countries and the reconfiguration of nuclear policies: while Portugal abandoned the nuclear endeavour, Spain implemented a nuclear moratorium but kept ten reactors operative. The third phase, which started in 1986 and goes until the present time, was marked by two crucial events: joining the EEC and the Chernobyl accident. The first event allowed Brussels to become a referee on Spanish/Portuguese nuclear disputes. The second one implied that Portugal expanded its institutional vigilance on Spanish nuclear activities and led to the emergence of transboundary environmental and anti-nuclear movements against nuclear power.

East–West German transborder entanglements through the nuclear waste sites in Gorleben and Morsleben

Astrid Mignon Kirchhof, Humboldt University of Berlin

This paper examines the porosity of national borders using the examples of two nuclear facilities at Gorleben and Morsleben located at the West German municipality in the state of Lower Saxony as well as the former East German Börde district of Saxony-Anhalt. Gorleben and Morsleben became known for their final nuclear waste repositories located directly at the German-German border. Debates and protests surrounding the facilities began in the 1970s and continued after the wall came down. Since opponents had to deal with two different political systems, protests differed in their duration, effect, and methods, even though the border as such was not the problem since West Germans were allowed into the GDR. Transboundary relations were much rather limited by the dictatorial regime on the one side, by the absence of anti-nuclear groups in the GDR until the mid-1980s, and by sufficient coalition partners for West German activists in their own country. Since the disclosure of environmental data by the East German government and the Chernobyl accident a few years later, transboundary relations increased and activists interconnected in many ways. With their protest they indicated that even if the border was a fact, concerns of people in both states transcended it and that borderlands are often characterized by relationality and entanglement.

"The world's worst located nuclear power plant": Danish and Swedish cross-border perspectives on the Barsebäck nuclear power plant

Arne Kaijser, KTH Royal Institute of Technology
Jan-Henrik Meyer, University of Copenhagen / Center for Contemporary History, Potsdam

The Barsebäck power plant is located 20 km from Copenhagen and the large Swedish cities Malmö, Lund and Landskrona are also within a 30 km radius. When the power plant was planned in the mid-1960s the location seemed ideal with short distances to many consumers in both Sweden and Denmark. In the early 1970s a critical debate on nuclear power began in both Sweden and Denmark and Barsebäck became a symbol for the risks of nuclear energy, attracting large-scale annual protest-marches from 1976 with participants from both Sweden and Denmark. Once Denmark decided not to pursue nuclear power in the mid-1980s, the Danish government demanded Barsebäck's closure. Indeed, Barsebäck was the first Swedish nuclear power plant to be phased out. This article systematically examines the implications of the border location for transboundary relations involving both conflict and cooperation of those involved in promoting, building and opposing the Barsebäck nuclear power plant.

Comment: Astrid M. Eckert, Emory University

Session 1E
Traditional agricultural practices

Chair: May-Brith Ohman Nielsen, University of Agder

Desert and dynamics of camel management in Early Modern times
Nitin Goyal, University of Delhi

Camel is an icon of desert land. Unlike the two hump camel of Central Asia one hump dromedary inhabits in the Indian subcontinent. In terms of camel population after the Sudan and Somalia, India houses third highest population of camel in the world and among them 70 percent of camel lives in the Thar Desert region of Rajasthan. Due to specific physical viability camel gained a status of extended family member by inhabitants of desert. Despite being a crucial importance of camels for human settlements in the desert region there is near total absence of historical investigations pertaining to camel management in general and for the erstwhile Rajput princely state of western Rajasthan. What is more surprising is the fact that although documents available at various archival repositories, have been relied upon by historians to explore the relationship between humans and wildlife eg. tiger, lion, elephant especially among the ruling elite, camels has received only cursory mention. Camel not only served vital role in domestic life but a worthy part of army and warfare. In such what was the state and subjects attitude towards this beast? How the local and foreign rulers employed this natural resource of desert for their expansion and strengthen the regime? This paper, based on archival source, folklores and field surveys, will explore the management of camel in 18th - 19th century by princely states of western Rajasthan.

Traditional agriculture and biocultural landscapes: Disentangling the rationality of a past alley-cropping system in Les Oluges (Catalonia, Spain, 1860–1959)
Lucía Díez Sanjuán, University of Barcelona

Les Oluges is a small village from the inner part of Catalonia that has been traditionally specialized in cereal production. From the end of the 19th century until the end of the 20th century, Les Oluges experienced a great transformation from a traditional organic agroecosystem to an industrialised farm system by means of the green revolution. However, until the second half of the 20th century the agroecosystem of Les Oluges preserved some of its traditional traits, being of great importance the maintenance of its traditional alley-cropping system. In 1860 this intercropping system consisted mainly on the cultivation of cereals among the lines of vines, alternating one strip sown and one fallow. By 1959, the first tractors and mineral fertilizers were introduced, but the intercropping system was maintained adding new crops to the association, such as olives and almond trees. In a Mediterranean agroecosystem constrained by aridity, with traditionally low cropland productivity and with relative scarcity of means of fertilization and labour, which were the advantages of growing these crops in association? This paper will try to disentangle the rationality of this traditional alley cropping system by analysing it from a multidimensional perspective including ecological, social and economic aspects. The aim of this investigation is to contribute to the study of traditional biocultural

landscapes and agricultural systems, in order to improve the sustainability of modern agroecosystems.

Traditional ecological knowledge in the Brazilian production of yerba mate

Alessandra Carvalho, State University of Ponta Grossa
Robson Laverdi, State University of Ponta Grossa
Evelyn Nimmo, State University of Ponta Grossa

A major challenge in the development and establishment of sustainable activities for family agriculture is that local knowledge, traditions, and cultural activities linked to production systems are generally poorly understood or undervalued. Our study documents the knowledge and perceptions associated with native forests and the production of erva-mate (yerba mate) through interviews with small-scale family producers in the regions of Southern Paraná and Northern Santa Catarina, Brazil. These documented narratives and perceptions can initiate a process in which various perspectives (ethnicities, generations, and classes) are incorporated in the development of forest resource management models and agroforestry systems that are not only better adapted to the local realities, but also value and integrate local ecological knowledge and community participation. Based on an environmental oral history methodology, the discussions and narratives produced offer a deeper understanding of the cultural, social, and economic values associated with forests, as well as a better understanding of the economy, sociobiodiversity, and the continuation of family agriculture in these regions. We aim to recognize the voices of these producers and their families, collect and share their stories and understandings about food security, local culture, and biological heritage. The intention is to understand the ways in which these people perceive, relate, value, and/or transform their environments, that is, how they make sense of the world around them.

The decline of slash and burn cultivation in Livonia

Pille Tomson, Estonian University of Life Sciences

Rotational slash and burn cultivation in Northern Europe has been paid little attention despite its widespread utilisation in Sweden, Estonia, Finland, Russia and Latvia until the 20th century and even later. At the end of the 19th century, southern Estonia and the northern part of Latvia belonged to the Livonian governorate, where a special land category, the buschland, was designated for areas utilised for rotational slash and burn cultivation.

During the 19th century, the Agrarian Laws set limits on slash and burn cultivation in buschlands. At the end of the 19th century the Livonian land revision of 1881-1883 concluded that the share of buschlands was lowest in Tartu and Viljandi counties: for manors 2.1% and 2.3% of total land area and for all farmlands 10.0% and 8.6% respectively. In the highest position, the buschlands were in the Wenden (Cēsis) district: 9.1% of landlords' land and 34.3% of farmlands. In the surroundings of capital Riga the bushclands were still widespread, 4.2% of manors lands and 21.4% of farmlands was occupied by buschlands.

The distribution of buschlands at the end of the 19th century reflected the natural conditions: eastern parts of southern Estonia and northern Latvia are upland areas, where swidden cultivation was an efficient land use method. The distribution of buschlands was also affected by social factors:

Tartu and Viljandi were the centres of the national awakening, accompanied by agricultural modernisation.

Session 1F
Suburbanizing environmental history

Organizer: Stéphane Frioux, LARHRA-Université de Lyon
Chair: Renaud Bécot, LARHRA-Université de Lyon

Session abstract:
The twentieth century was the moment of unprecedented urban growth, which public authorities had to respond to, in order to adapt governance to urban sprawl, creating bodies to regulate the metropolitan environment. Suburbanisation was largely due to the desire to flee urban nuisances and to get closer to nature. In the same time, the process generated both new nuisances and pollution, and middle class mobilizations that have contributed to the rise of environmental themes, American historiography has already approached this phenomenon (Adam Rome, 2001; Chris Sellers, 2012), which remains largely unexplored for other spaces.
This session would like to examine these effects from the perspective of an environmental history attentive to the problems posed by the urbanization of environments close to the old urban cores, inherited from the Roman era, the Middle Ages or even the nineteenth-century industrial era. Preserving agricultural activity, maintaining "natural" spaces for the recreation of city dwellers, or building ex nihilo recreational areas were some of the issues around which the mobilization of suburban communities and planners could intervene. Older phenomena such as the “dumping-ground suburb” were reactivated by the acceleration of spatial and demographic growth of urban centres. Suburban people and non-human elements have much to tell us about the motivations and the paradoxes of new environmental policies.
In line with the general theme of the Tallinn conference, particular emphasis will be placed on the problems created by the inadequacy of environmental problems and administrative boundaries (case of Lyon and Chiswick), and on the environmental consequences of chronological turns (case of Bucharest).

When an improved metropolis meant a more hazardous suburb: A case study of London and its neighbour Chiswick, 1850–1930
Tracey Logan, Centre for Urban History, University of Leicester

For the parish of Chiswick, Joseph Bazalgette’s mid-nineteenth century metropolitan sewer system spelled environmental disaster. His iconic drains, built to protect Londoners from repeated ‘Great Stinks’ and disease, were engineered to harness the natural drainage of neighbouring districts. Ensuring sufficient drainage for London’s growing population, meant denying access to the sewer upgrades for neighbouring parishes like Chiswick. Nor could riverine Chiswick continue emptying its effluent into the Thames, since new environmental legislation banned the practice. Consequently, for decades, it filled up with filth. Half a century later, different environmental stresses were felt here. A railway-led speculative property boom, later bolstered by the advent of the motor car, made Chiswick chronically noisy, dirty and dangerous; not ‘[t]he healthiest place in the world,’ as advertised to would-be residents of the Bedford Park housing estate, built for London’s newly-commuting middle-classes. When the motor car came, Chiswick residents not only suffered from

increased dust and potholes on their ancient main road to-and-from London, but some were killed by speeding drivers. All of these effects were felt as a result of progressive changes serving the capital and its residents, not its neighbours.
The environmental history of cities is mainly told from the perspective of their centres, with little historiographical attention paid to the consequences of their progress on outlying districts. This paper reverses that perspective. My PhD research asks how London's growth affected three west London districts at the turn of the twentieth century. Chiswick's case may be singular, the timing of its environmental harms asynchronous to other places, but it was not unique in experiencing them thanks to improvements in the big city.

The paradoxes of the long-term urban environmental transition: The agglomeration of Lyon, France (1960s–1990s)

Stéphane Frioux, LARHRA-Université de Lyon

In the last third of the twentieth century, Western societies became confronted with the "environmental issue", as it was named by media, politicians and various activists and scientific experts. People discovered green taxes and were urged to change some of their behaviours inherited from the period of postwar recovery and rapid growth. By some aspects, the early environmental movement mobilized about global and foreign evidence of nature degradation, such as the endangered species, threatened in tropical and postcolonial countries. Geographically closer to middle-class urban eco-activists, urban peripheries were subject to major changes, provoked by urban sprawl fueled by the desire of thousands of urbanites to flee from the dense city. The desire to live in green areas entailed a growth in car traffic and supported the creation of motorways around cities. Local authorities were confronted to dilemmas between welcoming new population and bearing the unavoidable changes of land use and the nuisances linked to pollution.
To explore the paradoxes of this period, the paper will share the first results of a collective enquiry led about the agglomeration of Lyon, France, where an intercommunal political body was primarily created to manage environmental problems such as sewage collection and disposal (COURLY, established in 1969). Ecological challenges and non-human agency were spread across three French "départements", which complicated risk management. The role of sub-national administrative borders must be examined to understand the decisions to locate polluting structures (and their consequences), and the potential conflicts between communal management (municipalities) and metropolitan or national processes of public utility infrastructure planning (highways, waste incinerators, etc.). How the "not in my community" attitude was framed among the stakeholders ? The paper will try to underline the reasons why some local authorities managed to get some sorts of environmental and political compromises

Văcărești Natural Park: Re-drawing boundaries of socialist ruins and middle class urban nature

Calin Cotoi, University of Bucharest

In most of Central and Eastern Europe nature protected areas came into being in a dramatically changing society, economy and culture. Most of this transformation was influenced by a transnational "standardized package" combining theories, methodologies, expertise, environmental

policies, and concrete examples of what nature protected areas should look like. National parks started as projects partially funded by big international “development institutions” but articulated and existing in a changing, post-socialist milieu.

Nature is multiple, and its social-historical production is part of no single temporality or spatial configuration, as it brings together various projects, hopes, anxieties, and the landscapes they inform. By looking at the creation of an urban national park in Bucharest (Văcărești National Park) I intend to integrate urban historical geographies and ethnographic research into environmental histories. Everywhere in Europe formerly productive landscapes have been remade both materially and semiotically through practices of restoration, and attempts to revitalize ruins of past/ failed modernization projects. New sites where the social construction of nature is being pushed forward or contested have emerged in urban landscapes.

The park I am describing has been part of the socialist hydrological infrastructure of Bucharest that became half-industrial ruin, half natural wetland during the 1990s and 2000s. Around it former landowners, real estate developers, casino capitalism, displaced people, hopes, phantasies, sheep, dogs, fish, foxes, turtles, lots of birds and insects converged. Văcărești National Park developed a specific historical and social trajectory as it became, starting with the 2010s, closely related with local middle class projects and anxieties. In it socialist ruins came into direct, intimate and sensuous contact with both nature and the whole fractured history of capitalism in post-1990 Bucharest.

Session 1G

Roundtable. Environmental history and historical ecology: Boundaries and connections between the humanities and the natural sciences

Organizer: Radim Hédl, Institute of Botany of the Czech Academy of Sciences
Chair: Martin Schmid, Institute of Social Ecology, BOKU

Radim Hédl, Institute of Botany of the Czech Academy of Sciences
Gertrud Haidvogl, Institute of Hydrobiology, BOKU
Triin Reitalu, Tallinn University of Technology
Giuseppe Bazan, University of Palermo
Péter Szabó, Institute of Botany of the Czech Academy of Sciences

Since its beginnings, environmental history has had strong connections with various branches of the natural sciences, especially with ecology. Even though some parts of ecology, for example evolutionary and palaeoecology, have a natural inclination towards the past, a more pronounced 'historical turn' within ecology worldwide has occurred since the 1990s. Interest in long-term changes in landscapes and vegetation to understand current ecological patterns and processes is underlined by the recent formation of the Historical Vegetation Ecology Working Group within the International Association for Vegetation Science (IAVS) and the Historical Landscape Ecology Working group within the International Association for Landscape Ecology (IALE).
Environmental historians and vegetation and landscape ecologists obviously have much to share and their research can be in many senses complementary and synergetic. However, there are also boundaries apparent between these disciplines, and these boundaries are not stable but are constantly reformed. Rather than striving for exclusive definitions of their respective disciplines, participants of this roundtable will aim to engage in a discussion about what the humanities and natural sciences can offer to each other and whether common research agendas may exist to pursue shared goals and how these agendas can be implemented. Participants will also reflect on the often sweeping changes that have affected both the humanities and the natural sciences since the beginnings of their cooperation. In particular the emergence of environmental humanities, into which environmental history is now firmly integrated, and the turn towards statistics, models and big data in ecology will be discussed to map the future of interdisciplinary cooperation between environmental history and historical ecology.

Session 1H
Business and the environment

Chair: Airi Uuna, Tallinn University

Sustainability in concepts of the factory of the future
Nora Thorade, TU Darmstadt

Saving resources and energy as well as preventing pollution is a traditional issue of industrial innovation. Historians have shown that since pre-industrial times an increasing resource and energy efficiency was still an impetus for technological research and development. Furthermore, the energy consumption of modern societies and their technologies were topics of historical research during the last decades. By connecting history of production and environmental history I point out the perspective of industrial research and development. From this perspective, technical innovations were the most important contribution to environmental protection.
This paper shifts the view from consumption to production in researching resource and energy savings and highlights the role of sustainability in concepts of a factory of the future in the second half of the 20th century. By reconstructing the concepts of the factory of the future different understandings on efficiency, savings and sustainability are emphasized. The related question is how production and ecological statements relate to each other. Thus, I will show, the possibilities and limitations of technological fix revealed by economic, social and environmental debates.
Furthermore, this paper get at boundaries between industrial and ecological interests in the concepts of automation and digitization. Outlining arguments of resource und energy savings in promotions of new production systems aims to figure out conflicts and consensuses. For this, I look at the production engineering research and the concepts of the factory of the future in the 1980s.

Changing the pulp and paper landscape in Austria: The impact of the European Recovery Program on Austrian pulp and paper production sites
Sofie Mittas, Johannes Kepler University Linz

Between 1948 and 1952 the U.S. implemented the European Recovery Program in 16 European States, Austria among them. The ERP was a complex program with economic as well as political goals. Economically it aimed at closing the dollar gap by supporting the countries' economies financially as well as through knowledge and technology exchange. My research focuses on the investments of the ERP in forestry and the pulp and paper industry. The pulp and paper industry was depending on its environment for energy production as well as raw material supply from rivers and forests. Its production sites had very specific requirements. They were mostly situated in rural areas and had a great impact on their surroundings. They created jobs and wealth, but also depleted their environment of resources and polluted air and water. The investment activity of the pulp and paper industry affected several aspects of the production process, including energy production and access to energy, resource use and efficiency, and production capacity. Using principal component analysis, I have identified four types of pulp and paper production sites defined by their production equipment as well as investment activity within the ERP-Investment program. For my research I

choose several production sites as case studies that represent these four types of investment. In my analysis, I will conceptualize these sites as part of the wood-paper commodity chain as well as Socio Natural Sites. I will show how new technology at the production sites changed the commodity chain (e.g. through being able to process new or different materials), as well as how these changes affected the immediate environment of the production site (e.g. through new or different emissions and resource requirements). I will use Austrian archive material, newspaper articles as well as archive material from the National Archives in Washington DC/Maryland.

The use of business records for environmental history: Nineteenth century English smoke pollution
Ayuka Kasuga, Hiroshima University

Despite Christine Meisner Rosen's call for research, the diversity in behaviour of industries and businesses towards the environment remains underexplored, especially outside the US. Of course, environmental historians have demonstrated how industries and companies have polluted and harmed the environment and opposed initiatives to remedy damages, which is an important achievement. However, it is sometimes difficult to examine the earlier history of pollution (e.g. in nineteenth century England) based on business records; therefore, the examination is primarily based on official records and those of environmental campaigners.
This study explores the late nineteenth century smoke pollution in England using records of steam engine proprietors and other sources. It re-examines advancements in technological remedies and conflict over smoke abatement based on the integrated analysis of polluters as well as campaigners' views. Since the early nineteenth century, the practicability of technological remedies had been the focus of the conflict over smoke abatement. Some business interests insisted that technology had defects, while campaigners were eager to persuade them by providing proofs of the efficiency and utility of technology. The conflict between businesses and campaigners were further complicated because not only the business but also domestic fires were the sources of pollution. This fact attracted attention in the late nineteenth century. This study also examines how the notion interfered in the conflict between businesses and campaigners.

Session 1I

Industry, science and the birth of environmental legislation in Europe (1800–1950s)

Organizer: Andrei Vinogradov, Rachel Carson Center for Environment and Society
Chair: Anna Mazanik, Rachel Carson Center for Environment and Society

Session abstract:

Since the nineteenth century century, due to the rapid industrial growth and urbanization, environmental issues took an important place in the legislative agenda of European countries. Pollution microbienne, which consisted of biological compounds and was common in human settlements long before the Industrial Revolution, was supplemented with pollution industrielle - a new kind of pollution, produced by factories, that was now poisoning the environment with toxic wastes of mineral origin.

For a long time, industrial pollution remained an unusual and insufficiently studied phenomenon. Unlike pollution by household waste, it was closely connected to transnational development of capitalism, commercial profit as well as economic, military and political power of the state. Facing rapid deterioration of environmental conditions in the centers of industrial production, different social actors – central and regional state officials, experts, local communities, and manufacturers – had to set their priorities between the national wealth and public health, rapid industrial development and the right of citizens to live in a clean environment.

Numerous conflicts between local communities, state authorities and industrialists, accompanied by active public discussion, occurred because of the legal gaps and helped to fill them with new regulations, standards and legal mechanisms of sanitary control over industry. This complex and contingent process, that depended heavily on the local social contexts, political systems and legal paradigms, played a crucial role in the formation of comprehensive environmental legislation in Europe.

In the proposed session, with papers on Great Britain, France and Russia, we would like to focus on the following questions:

• What motivated the state to develop environmental law? Which factors were behind the legislative initiatives (public health, pressure from the local communities, international prestige, preservation of agriculture or wildlife)?

• Which role did industry itself play in initiating, elaborating, revising or hindering the development of environmental legislation? Which strategies were used?

• How important was the part of science in the process? To which extent was scientific expertise used in the creation and the practical application of the environmental law? Which disciplines were particularly important?

• How did the introduction of (restrictive) environmental legislative affect regional and transnational organization and (re)location of industry?

River pollution and environmental law in Imperial Russia, 1880–1917
Anna Mazanik, Rachel Carson Center for Environment and Society

The proposed paper studies how Russia's governmental authorities, scientists, engineers and industrialists engaged with the problem of factory waste and the pollution of rivers, particularly in the industrial regions of Central Russia. The paper will show that industrial pollution of rivers emerged as a subject of considerable public debate in Russia in the 1880s and the enforcement of water protection laws grew stricter towards the end of the Empire. However, the vagueness of the legislation and the lack of clear quality standards opened the way for contingency and arbitrariness in the persecution of violators. The paper will argue that this absence of the rule-of-law practices in the autocratic Russia made industrialists see the new water regulations as their only defense against arbitrary prosecution and forced them to lobby for the clear and coherent environmental legislation.

Movements against industrial pollution in the late Russian Empire (1870–1917)
Andrei Vinogradov, Rachel Carson Center for Environment and Society

This paper aims to explore the history of struggle with industrial pollution in Russia from the perspectives of interactions between state and society of Russian regions. It is widely believed that pollution of the environment and ecological activism appeared in Russia already in the Soviet time, although pollution conflicts began to arise in the Russian Empire long before the Revolution of 1917. By the late Imperial period these conflicts became quite numerous and profound. Russian environmental legislation was relatively weak at the period, but, due to the Great Reforms of Alexander II, numerous social groups, such as urban communities, industrialists, scientists, and officials, could almost freely declare their views and demands on this matter, and therefore made their contribution to developing of common sanitary rules. On example of several regional cases, we will show how different actors behaved in conflict situations caused by industrial pollution, and how regional conflicts influenced the first attempts to develop all-Russian environmental legislation.

'It takes time': Environmental monitoring and the evolution of clean air legislation in urban-industrial Britain
Stephen Mosley, Leeds Beckett University

By the turn of the twentieth century, an increasing number of scientific studies highlighted the damage that smoke pollution in Britain's urban-industrial areas was causing to people's health, green spaces, and public buildings. The 'smoke nuisance' maintained a permanent haze over manufacturing centres like Manchester, Leeds, and Sheffield, and it was strongly linked to between 50,000 and 70,000 respiratory deaths per annum. From 1912, Britain's growing air pollution monitoring network provided extensive data on both domestic and industrial emissions. However, despite a good understanding of the origins and rhythms of the 'urban smoke cycle', legislation introduced to combat this form of air pollution was both weakly drafted and poorly enforced. Not until after London's smog disaster, which killed some 12,000 people, did the British government pass the landmark 1956 Clean Air Act. Even then, it took around two decades before the skies finally cleared over Manchester and other industrial cities. As poor air quality is once again a 'public health

emergency' in urban Britain, today caused mainly by emissions from motor vehicle exhausts, are there any lessons to be learned from the long struggle against smoke?

Session 1J

Roundtable. Bounded tongues: Rethinking the environmental humanities through the challenges of translation

Organizer: Anna Antonova, Rachel Carson Center for Environment and Society
Chair: Kati Lindström, KTH Royal Institute of Technology

Daniele Valisena, KTH Royal Institute of Technology
Anna Antonova, Rachel Carson Center for Environment and Society
Sarah Yoho, University of Leeds
Jeroen Oomen, Rachel Carson Center for Environment and Society / Deutsches Museum
Roger Norum, University of Oulu

Environmental history, and the environmental humanities more broadly, have made great advances in thinking across a variety of disciplinary, material, and scalar boundaries: they bridge the social with the natural, the imaginative with the physical, the human with the nonhuman, the local with the global. Yet language remains one of the boundaries that these disciplines do not easily traverse. Despite the increased application of environmental history and the environmental humanities across a variety of academic and non-academic contexts, their philosophical roots and core terminologies remain largely grounded, and exercised, predominantly in the Anglo-phone tradition (as witnessed, incidentally, by this international conference's official language). Yet translating the disciplines and adapting discourses for different linguistic and cultural contexts inevitably entails numerous changes in a scholar's epistemic approach. As Derrida (1976) noted, "language is an iterable trace", one that has a history and that "leaves a sometimes-deceiving trail".
For example, many of the fields' terminologies and theoretical frameworks may not translate easily outside of the English language – or, for that matter, outside European or American contexts. Even foundational terms such as "environment", "landscape", or "nature" often have vastly different connotations when translated. Further, many of the historic debates supported by the fields are conceived differently in, or at times are wholly irrelevant to, non-English cultures. How, then, do environmental history and the environmental humanities change – philosophically and epistemologically – when they are translated? How might we profit, and how might we challenge our respective disciplines, if we reflect on these linguistic changes? These are some of the central questions explored by this roundtable. The session features young scholars from diverse linguistic and national backgrounds who have applied environmental humanities approaches in a number of languages and cultural contexts, among them Bulgarian, Dutch, Finnish, French, German, Italian, Polish, and Swedish.

12:30 - 14:00 Lunch

12:30 -14:00 **Social event.** Baltic Environmental Humanities and Social Sciences (BALTEHUMS) network open lunch meeting. Grab your lunch and join us in room A-354.

All people interested in the Environmental Humanities and Social Sciences of and in the Baltic region are welcome to join the BALTEHUMS lunch.
The agenda for the meeting will be first and foremost to meet old and new friends interested in the environmental humanities and social sciences of the Baltic region, but secondly, to discuss the need and timing for a next BALTEHUMS conference. Do we think that the second BALTEHUMS should take place?

14:00-15:30 Keynote

Prof. Kate Brown, Massachusetts Institute of Technology
The Great Chernobyl Acceleration

Chair: Aro Velmet, University of Southern California / University of Oxford

Keynote abstract
In April 1986, the Chernobyl Nuclear Power Plant exploded and sent upwards of 50 millioncuries into the surrounding environment. Brown argues that to call this event an "accident" is tosweep aside radioactive incidents in the region that occurred before and after the accident. In the 1960s, Soviet researchers learned that the people living in the Pripyat Marshes surrounding the Chernobyl Plant had 30 times more radioactive cesium in their bodies due to fallout from nuclear testing. In the decades after the 1986, the KGB recorded over a dozen nuclear accidents at Ukrainian nuclear power plants, while fires in the Chernobyl Zone volatized radioactivity stored in trees and the leaf litter and resurrected it. Instead of a one-off accident, Brown argues that Chernobyl was a point of acceleration on a timeline of radioactive contamination that continues to this day.

Short Bio:
Kate Brown is Professor of History in the Science, Technology and Society Department of Massachusetts Institute of Technology. She is the author of the prize-winning histories Plutopia: Nuclear Families in Atomic Cities and the Great Soviet and American Plutonium Disasters (Oxford 2013) and A Biography of No Place: From Ethnic Borderland to Soviet Heartland (Harvard 2004). Brown was a 2009 Guggenheim Fellow. Her work has also been supported by the Carnegie Foundation, the NEH, ACLS, IREX, and the American Academy of Berlin, among others. Her latest book, Manual for Survival: A Chernobyl Guide to the Future will be published by Norton (US), Penguin Lane (UK) and Czarne (Poland) in spring 2019 and by Actes Sud in France in October 2019.

15:30-16:00 Coffee break

Book launch coffee break at Researchers' Forum in Astra building.

Rachel Carson Center for Environment and Society and the Berghahn Publishers present
Environment in History series

16:00-17:30 Parallel Session 2

Session 2A
Fluid borders: Transboundary river regimes and the environment on the Rhine, the Ohio and the Elbe River in the 19th and 20th centuries

Organizer & Chair: Geneviève Massard-Guilbaud, École des hautes études en sciences sociales, Paris

Session abstract:
The proposed session addresses the ambivalent role of rivers as borders and zones of transition in environmental, social and political history. Within this general framework case studies from the Ohio, the Elbe and the Rhine rivers discuss problems of environmental justice, migration and displacement, authoritative water management and political oppression in the 19th and 20th centuries.
The Ohio River in the first half of the nineteenth century represented the border between bondage and freedom in the United States and a natural barrier for the flight of slaves. Thus, crossing the river was an act of resistance that often depended on the environmental conditions of the river such as its current, floods, ice, droughts, etc. At the same time, the Rhine River became a battleground between nation states and land owners in the context of large projects of water management while in the 20th century, problems of water pollution created upstream/downstream conflicts between nation states. The third paper looks at a river island as both a boundary and a space of passage. Wilhelmsburg, a Hamburg neighbourhood that has been devastated by the 1962 flood of the Elbe river and witnessed a substantial change in the composition of its population as a result, is an ideal case to highlight the interplay of natural variability and social change.
All papers will address the connections between the dynamics of a riverine waterscape, its cultural perception, and patterns of conflict and appropriation across legal, physical and cultural borders.

Struggles on transboundary water management and environmental justice along the Rhine (19th/20th century)
Christoph Bernhardt, Leibniz Institute for Research on Society and Space in Erkner, Berlin / Humboldt University of Berlin

Rivers which demarcate national borders have historically often been arenas of violent political confrontation and close transboundary cooperation. What is less known is the important role of problems of environmental justice and of local civil societies which often triggered and shaped the transboundary interaction of national administrations. The paper will discuss the nexus of water management, environmental justice and transboundary interaction along two outstanding historical cases drawn from the Rhine river which reflect the complexity of these struggles. The first of these two major conflicts emerged in the early 19th century on projects of water management which were launched by French and Badian water engineers in order to straighten the river in the Upper Rhine region north to Strasbourg. It will be shown that cutting meanders and re-arranging the border regimes of private property and national states caused serious environmental and economic

injustice and strong protests amongst local societies which could only be overcome by a sophisticated system of compensation. In contrast to this case which was shaped by social interactions across the river in pre-industrial times the second case reflects the classical case of an asymmetric upstream/downstream constellation along the river in the post WW II industrial period. It developed around the growing water pollution caused by French and German chemical and potash industries against which water works from the lower Rhine and the Netherlands seriously protested. Here a macro-scale antagonism in the uses of the river had to be solved by multinational agreements. The paper will try to show the interrelations between socio-spatial orders and logics of argumentation in these two basic types of fluid border regimes.

Crossing the Ohio river: Environmental perspectives of the underground railroad
Uwe Lübken, Ludwig Maximilian University of Munich

Rivers connect – rivers separate. This is especially true for the Ohio River. In the antebellum period, the 1,000 mile long waterway between Pittsburgh, Pennsylvania, and Cairo, Illinois, was both: a highway for settler imperialism and territorial expansion, and a formidable barrier for fugitive slaves on their way to freedom in the North.
In a region devoid of reliable land transportation, the Ohio River, its tributaries, and canals provided the avenue for Western expansion of the young nation-state. The river brought settlers, soldiers, merchants, tourists, and slaves to the trans-Appalachian West. It helped create a vastly increased market economy, and it was a means of control of the Western states and territories by the Federal government in Washington, DC.
At the same time, however, the Ohio was a boundary – not just between several states on its northern and southern banks; it was also the legal boundary between slavery and freedom. Thus, crossing the river was a central segment of the underground railroad that brought many slaves to the North and, ultimately, to Canada. Also, slaves flight across the Ohio is engrained in U.S. American public memory by key scenes in novels such as Harriet Beecher Stowe's Uncle Tom's Cabin and Toni Morrison's Beloved.
This presentation will focus on the environmental aspects of fugitive slaves' attempts to cross the river – including false stories about the width of the river spread by slave owners in the South, slaves' experience of and difficulties with the actual environmental conditions during the attempts to cross (the current, floods, ice, and droughts, the flora and fauna on its banks), and later recollections of this experience in slave narratives and other documents.

Wilhelmsburg in motion: River migration and mobility amidst the Elbe
Felix Mauch, Technical University Munich

Rivers move. They meander through dissected environments, separated borderlands, and conflicting lifeworlds. Constantly transgressing physical as well as political borders, rivers thereby also mobilize people, plants, animals, and fluvial materials. Both the Elbe's history and shape, mutating from a small well in the Czech mountains into a stream that reaches 1,245 km and covers a watershed of more than 148,300 km² before entering the North Sea, reflect such a diverse array of migration patterns playing out over time, across scales, and in specific geographies.

And yet, river mobilities are mostly imagined as the movement of isolated parts against a fixed background. Although the Elbe's morphology is constantly changing, the idea of static social worlds and stable cultural boundaries along its shores remains a popular topos. It could thus be that the truth lies somewhere in the middle – both geographically and conceptually.

In the long aftermath of Hamburg's "Great Deluge" in 1962, when thousands of dis-aster displacees moved in and out of Wilhelmsburg, an island located between two branches of the Elbe River, was more in flux than ever. Its "migrancy", I would like to argue however, was already inherent; not caused but only further enhanced by natural hazard. Rather, Wilhelmsburg continued to oscillate between border and passage: For one thing, a lifeworld by itself, mentally and socio-economically separated from the mainland. For another, forming a connective tissue between city and river whose common relationship had always been shaped by catastrophic flood events and technology-driven countermeasures.

By focusing on disaster-induced movements, river migrations, and social interactions that forged and dismantled Wilhelmsburg's "islandness" at the same time, this paper therefore not only discusses the eclectic environmental history of a boundary breaking river island in particular, but also aims to contribute to a better understanding of fluid borderscapes in general.

Session 2B
Roundtable. Future directions of climate history

Organizer: Katrin Kleemann, Rachel Carson Center for Environment and Society / Ludwig Maximilian University of Munich
Chair: Kathleen Pribyl, University of East Anglia

Dominik Collet, University of Oslo
Gemma Ives, University of Sheffield
Árni Daníel Júlíusson, Reykjavik Academy / University of Iceland
Katrin Kleemann, Rachel Carson Center for Environment and Society / Ludwig Maximilian University of Munich
Astrid E. J. Ogilvie, Stefansson Arctic Institute / University of Colorado at Boulder

Climate history reconstructs past climate changes, investigates how they impacted human history, and studies how they were represented in past cultures. It takes into consideration the current anthropogenic climate change our world is facing and other periods of climatic change. In the past, this change was caused by volcanic or solar forcing, positive feedback loops, and/or changes in oceanic or atmospheric currents, to name but a few. Over the course of the Common Era, periods such as the Dark Ages Cold Period/Late Antique Little Ice Age (410-775/536-660), Medieval Climate Anomaly (900-1400), or Little Ice Age (1300-1850) are characterized by a change in average weather over at least 30 years. Societies and communities around the globe struggled and sometimes thrived to adapt to an increased frequency of extreme weather, such as storms, floods, droughts, or heat waves.
Climate history is an interdisciplinary field. Natural scientists retrieve proxy data from the archives of nature, such as ice cores, tree rings, and stalagmites, and reconstruct the climate. Historians analyze the archives of society and reconstruct weather and climatic trends from historical documents such as diary entries, meteorological observations, or letters. The close collaboration of natural scientists and climate historians has produced several studies in recent years; nevertheless, climate history is a fairly young discipline.
The participants of this roundtable will discuss where climate history is at as a discipline and which directions it can and might take in the future. The chair will open the session with a short introduction, the participants will give circa 5-minute long lightning talks on where they see the most exciting areas of study in the field of climate history in the future. In these short talks, the participants will highlight areas of study that are understudied, where the boundaries of the field may lie or which areas may require reevaluation or closer collaboration with scientists. The participants will then comment on the lightning talks of the others before the floor is opened to the audience for comments, and to ask questions.

Session 2C
Scientific measurement of the environment

Chair: Otto Latva, University of Turku

From bomb to bone: Youth, radiation, and postwar ecology
Jeffrey Sanders, Washington State University

This paper examines a US government program called "Project Sunshine," an Atomic Energy Commission effort to collect and assay materials that absorbed the radioactive chemicals that nuclear testing produced in the 1950s. In this early transnational scientific effort, UK, Canadian, and American scientists exploited existing colonial influence and networks in the wake of World War II, fanning out across the globe to collect calcium rich materials—from grass and seashells, to cheese and sheep carcasses—that easily absorbed Strontium-90. Above all, however, they collected and assayed the bones of children. At the height of the postwar baby boom, they found that growing bodies, more than any other biological measure, would allow them to assay the risks that new chemicals posed for human bodies and health.
Americans reinvented childhood and reconceived their relationship to the environment once again after World War II. Youth became the dominant cultural and scientific frame through which scientists came to understand new risks at the height of the baby boom, a rhetorically and physically salient measure. First in secrecy policy makers sought control over information about human health risks and the fallout from their tests. But radioactive materials—and information—soon escaped their grasp. These early efforts to understand the stakes of nuclear testing, I argue, helped to lay the groundwork for a postwar ecology and environmentalism grounded firmly in the cultural contexts of the global Cold War and the postwar baby boom. By concentrating releases of radioisotopes in thyroids, blood, and bones, children manifested pollution and fears that could no longer be kept separate from the relative safety of domestic life. This paper explains how scientists, activists, and everyday citizens, therefore, came to understand risks at scales from the body to the transnational.

Measuring nature: The history of defining a zero
Petra J.E.M. van Dam, Vrije Universiteit Amsterdam

How does one determine the height of a body of water? What is zero meter high? What does one choose as standard reference, as zero? Many countries chose the level of the nearest sea . For the southern European countries this was the Mediterranean Sea, for the northers countries the Baltic Sea. In the Netherlands it was the North Sea, or more precisely, the sea arm called the South Sea, protruding deep into the country. This paper discusses the history of the Dutch reference for altitude (Amsterdam Ordnance Datum, in Dutch: Normaal Amstedams Peil, N.A.P.). It describes how the need for a country-wide standard for height developed, how the city of Amsterdam chose a standard in the seventeenth century, and how this standard spread and finally became the national standard in the nineteenth century. It also shows how from the end of the nineteenth century onwards, other countries based their zero on the Dutch reference, and how finally the Dutch reference became the basis of the European network for measuring altitude. In short, this paper discusses how from a

concrete need to control water in a large commercial town in a major delta of Europe, the basis of an environtechnical system focused on measuring altitude, developed.
The paper addresses three types of borders. It is positioned at the borders of environmental history and the history of science, in particular water history and the history of geodesy and surveying. The need to build up knowledge about the rivers (Rhine, Meuse), in order to prevent flooding, contributed to establishing a national reference for measuring water levels. A fascinating motif of this paper is the transgression of regional and national borders, in particular for building new infrastructure like canals and railways, a practice that also contributed to standardization and normalization. A third border is the temporal border, between the present and the future. Now that satellites and all sorts of new technology for measuring altitude are easily accessible, including G.P.S. in our mobile phones, what is the significance of a historically founded reference of altitude? How can one conceive of this as local, national or even international (water) heritage?

Setting the boundary: Humans, animals and debates over toxic substances in nineteenth-century France and Britain

Amelie Bonney, University of Oxford

During the first half of the nineteenth century, sustained development of mining led to an increasingly rapid production of polluting by-products such as arsenic and lead, which were widely used to create a range of commodities such as wallpapers or toys. In this context, cases of poisoning among workers using or producing these substances increased, leading to debates among medical practitioners, chemists, and toxicologists about poisons and the existence of occupational diseases. In an attempt to assert their expertise on toxic substances, they developed new methods to validate theories of toxicity, such as quantitative studies and experiments on live animals. As part of the new discipline of experimental physiology which developed at the turn of the century, French and British contemporaries discussed the boundaries between human and animal health, arguing that animal bodies could be used to better understand human reactions to toxic elements.
Animal experiments were thus widely used as proof to denounce or to refute the existence of occupational diseases caused by toxic substances. While poisoned animals were instrumental proof in quarrels over scientific theories of toxicity, scientific expert witnesses also used them as evidence during trials which pitted polluting industries against local populations. As such, the issue developed an overtly political character.
This paper examines how medical men, toxicologists, chemists and others either set or challenged the boundaries between human and animal health to argue for or against occupational disease, and by extension, for or against the existence of environmental hazards. Studying the history of occupational health, the history of animals and environmental history conjointly thus allows us to better understand how sanitary and environmental concerns were largely dismissed during the nineteenth century.

Who is afraid of biodiversity? Reconstructing and understanding biodiversity change in the Netherlands (1900–2015)

Thomas van Goethem, Utrecht University
Jan Luiten van Zanden, Utrecht University

There is an urgent need for studying the decline of biodiversity in the (recent) past. It is one of the biggest threats to the sustainable future of mankind, and the process is largely driven by economic and demographic changes, but it has however not received much attention by historians. Environmental historians have studied the evolution of certain species (the tiger on Java) or of certain eco-systems, but the historical evolution of biodiversity has not been studied a lot. To that end, we propose an approach to study biodiversity on the basis of historical records and data. In this paper, the approach is illustrated by focusing on the case of the Netherlands in the 20th century.

Historically, the 'state of nature' in the Netherlands has been documented by primarily focusing on the occurrence of species. Notable examples are the famous 19th century overview of Dutch birds by Nozeman and various natural history works of Temminck and Schlegel. The more informative measure of biodiversity, i.e. counting the number of individuals per species, only became prominent in the period after 1900. However, for many species detailed population data has only been collected systematically from the 70s onwards. The lack of population data before this period has been supplemented in this study by making use of a wide range of historical records and data. Based on our analysis of 58 species we were able to reconstruct the development of biodiversity and its determinants from 1900 to 2015 in the Netherlands.

The biodiversity trends shows an interesting pattern, with a long-term decline in biodiversity between 1900 and 1970 and a partial recovery since the 1980s. By analyzing specific assemblages of species, population growth, intensification of agriculture, the expansion of infrastructure and pollution, have been identified as important human drivers of biodiversity in the Netherlands.

Session 2D
Radiation does not stop at the border! International organisations and the transboundary environmental effects of nuclear power

Organizer: Jan-Henrik Meyer, Max-Planck Institute for European Legal History
Chair: Astrid Mignon Kirchhof, Humboldt University of Berlin / Deutsches Museum

Session abstract:
Since the 1950s, international organisations (IOs) have been important promoters of using nuclear fission for energy production. Initially, nuclear power was an attractive technology that suited the "sociotechnical imaginaries" (e.g. Jasanoff & Kim 2013) supported by scientific, technical and political elites of the time. Among the IOs engaging in this new field of technology in Europe, this involved transatlantic organisations, such as the OECD, which set up a nuclear energy agency (NEA). In Western Europe, the European Communities, which included Euratom as a nuclear community, was devoted to promoting European integration by developing nuclear technology. In Northern Europe, Nordic cooperation involved common efforts on nuclear issues. However, in the 1970s, when commercial nuclear power plants were built in large numbers, also as a result to the oil crises, environmental and anti-nuclear groups contested the hitherto positive view of nuclear energy. They pointed to the environmental and health risks, the long-term consequences notably of nuclear waste, the cross-border impacts of radioactive pollution, but also raised issues beyond the environmental impacts. They claimed that large-scale utilisation of nuclear power would inevitably lead to a centralisation of power and curtailment of democratic freedoms. The papers assembled in this panel address how three different international organisations (OECD, EC/EU, Nordic Council) dealt with these challenges, focusing on the objectives, chances and limitations regarding their work. Findings will contribute to global and international environmental history, with a view to the role of IOs in environmental politics and policy and IOs' ambiguous environmental record.

Passing the radioactive buck: The long-lasting legacy of a "short-term phenomenon"
Melina Buns, University of Oslo

Despite their differing policies regarding nuclear energy – with only Finland and Sweden operating nuclear power plants –, the Nordic countries share one long-lasting legacy of nuclear energy research and use: radioactive waste. Across the North since the 1950s nuclear power promised to provide a seemingly boundless energy supply. Great hopes were attached to this technology in particular after the oil price crisis: it was to safeguard the Scandinavian social democratic principle of employment for all. Moreover, nuclear power also offered a solution for the most important Scandinavian environmental policy issue of the 1970s, namely transboundary air pollution from burning fossil energy sources. The guiding principle of protecting the environment by not using fossil fuels, however, was blind to the environment impact of radioactive waste, which was initially considered to be a technical issue only. Nevertheless, in the 1970s and 1980s, the unsolved question of final disposal of radioactive waste was an important argument in public debates and fuelled anti-nuclear protesters' distrust of nuclear power. Based on primary sources from the Nordic council and Nordic national archives, this paper argues that radioactive waste management was initially put on the Nordic agenda in order to regain the public's confidence in nuclear energy through Nordic scientific regulations. Yet, the politicisation of the radioactive waste question demonstrated the

growing rift between energy and environmental policies, between governments and civil society – which cooperated across borders –, but also between the different Nordic countries. As they started to pursue different routes concerning the (non-)use of nuclear power, transnational technocratic plans for a shared Nordic final repository site in Sweden proved unrealisable.

National sovereignty vs transboundary environmental risks: How the European communities failed to make rules regarding cross-border consultation on nuclear power plants in the 1970s
Jan-Henrik Meyer, Max Planck Institute for European Legal History

In the mid-1970s, transnational anti-nuclear protest on the upper Rhine raised attention to the risks involved in the ambitious national plans for massively expanding nuclear power and notably the cross-border implications of nuclear power. In Western Europe, the European Communities (EC) – the predecessor of today's European Union - played an ambiguous role. The EC was committed by the 1957 Euratom treaty to supporting the technological development and the social acceptance of nuclear power. However, in 1973 the EC had started an environmental policy with the first Environmental Action Programme. The supranational institutions – the European Commission as the sole proposer of legislation and the European Parliament (EP), sought to be responsive to citizens' environmental concerns, in particular, when they were cross-border and thus European in scope. Notably the European Parliament, which at the time was unelected, but according to its self-understanding acted as the representative of the European citizens within the EC – responded to the anti-nuclear protests at national borders since 1975. They debated and criticised the lack of rules prescribing cross-border consultation for nuclear power plants at intra-European borders. This induced the European Commission – always in search for projects demonstrating the relevance of European integration to citizens, to propose European legislation. At the time, such rules existed in other regional frameworks such as the Nordic Council, and within the EC regarding nuclear waste. Based on primary sources from the archives of the European institutions, this paper analyses how the European Commission repeatedly sought to establish rules that would give fellow Europeans from the other side of the border a say in nuclear power plant siting. However, even after the Three Mile Island accident, such efforts fell flat in the face of member states' nuclear ambitions and insistence on national sovereignty in energy policy. Drawing on this case of failed European legislation, the paper will contribute to research on how international organisations (sought to) contribute to mitigating and resolving conflicts about transboundary environmental impacts.

Stakeholder engagement as a means of managing transboundary environmental issues: The evolving role of the OECD-NEA
Markku Lehtonen, Pompeu Fabra University

The European Nuclear Agency (ENEA), was established in 1958 as a 'Special Body' of the OECD. Like Euratom, its objective was to promote the peaceful utilisation of nuclear energy for the benefit of European reconstruction and economic development. With the Japanese membership in 1972, ENEA became NEA – OECD Nuclear Energy Agency. Today, NEA comprises 33 nuclear and non-nuclear countries, and promotes international cooperation and capacity-building in the technical, legal, and safety-related areas of nuclear energy. The NEA's role has gradually evolved from the early focus on

joint research projects, to providing a forum for policy co-ordination, and more recently to societal outreach and expansion to new countries.

This article will analyse the gradual evolution of NEA's interaction with its various stakeholder groups as a major means for the Agency to deal with the numerous transboundary issues within its remit (e.g. transboundary water pollution from ocean dumping of radioactive waste, impacts from the Chernobyl fallout, cross-country collaboration in improving radiation protection). This evolution has been driven by a succession of events and challenges in which NEA has played a key role. In the early years, the Agency paid little attention to public engagement, and focused on expert and intergovernmental collaboration in its work areas. Since then, relations with the public have gradually taken on increasing importance in NEA work, spurred by a sequence of external events and trends: the rising environmental and health concerns in the early 1970s, including strong NEA efforts to ban ocean dumping of radioactive waste since the 1960s, the growing public opposition against nuclear in the late 1970s and early 1980s, the Chernobyl catastrophe in 1986, and the setbacks in radioactive waste management policies in several member countries in the late 1980s and 1990s. The article will conclude by examining the drivers for and obstacles to increasing collaboration in the area of public engagement, and will highlight three issues in particular: the respective roles of the member countries and the NEA secretariat in driving greater public engagement (the principal-agent dilemma); the role of the NEA in the travelling of ideas and practices across national borders; and the tensions involved in collaboration between nuclear and non-nuclear countries. Thus it will demonstrate how the NEA responded and contributed to societal discourses on the environmental and transboundary impacts of nuclear power.

Comment: Liesbeth van de Grift, Utrecht University

Session 2E
Intersections of agricultural and environmental histories

Chair: Stéphane Frioux, LARHRA-Université de Lyon

Feeding factory farms: A global environmental history of livestock feed
Floor Haalboom, Rachel Carson Center for Environment and Society / Erasmus University Rotterdam / Utrecht University

Globally, livestock is silently consuming a lot more than people: up to two thirds of total grain harvests are eaten by livestock in industrial farms rather than by people. The massive trade in livestock feed also leads to problems like deforestation, nutrient deficits in the Global South and manure surpluses in the Global North. How did we end up here? Until now, livestock feed has lacked the attention it deserves. The aim of this paper is to make the global impact of livestock feed commodities visible through environmental historical research. What were the consequences of livestock feed trade flows during the twentieth century for the places where the feed came from and where it went to? And how and why did this change over time?
The paper focuses on one small country with a particularly intensive industrial livestock sector: the Netherlands; and on the period of significant expansion of industrial livestock keeping: the decades after the Second World War. Lacking the land to produce the huge amounts of feed needed for these new 'factory farms', the Netherlands imported most of it – like oil seeds from Argentina or fish meal from Peru. Dutch factory farms effectively used a lot of land elsewhere – 'ghost acres' – to feed their animals. I follow the feed commodities to the Netherlands in order to study these livestock-related ghost acres and their environmental, public health and social economic impacts.

Environmental law, authoritarianism and the expansion of the agricultural frontier in the Brazilian Amazon (1964–1985): Intersections between agrarian history, environmental history and legal history
Santiago Andrade, Federal University of Rondonia

Between the 1960s and 1980s, the military dictatorship structured Brazilian environmental policy through the development and elaboration of several legal frameworks: the Forest Code (1965), the Fisheries Law (1967), the Wildlife Protection Act (1967) , the National Environmental Policy Law (1981), among others. During the military regime, the historical articulation between authoritarianism, legislation and nature took place in a conjuncture marked by capitalist expansion for the Amazon region, by the deepening of the mechanisms of exploitation of the labor force and natural resources, and by the increase of concentration of wealth that benefited fractions of the class directly and indirectly linked to agricultural and livestock farming. The development of environmental laws during that period, despite the ambiguities and contradictions present in the normative structure of the text, was fundamental for the implementation and structuring of new forms of exploitation of natural resources and for the expansion of the frontier of agricultural products for the Amazon region, between the 60's and 80's.This paper intends to discuss the possibilities of exploring these issues through the intersection of problems, methods and questions

from three fields of historical knowledge: Environmental History, Agrarian History and Legal History. Through this approach we aim to understand, in a more complex way, the process of appropriation of nature in Amazonia carried out by the agents of the Brazilian authoritarian state and by the representatives of national and international capitalism.

Opening Pandora's box at the roof of the world: Climate, agriculture and disease at the Qinghai-Tibet Plateau

Barbara C. Canavan, Oregon State University

This research examines the interconnections of environment, technology, wildlife, and infectious disease at the Qinghai-Tibet Plateau [Qinghai], known as the Roof of the World. The paleoclimate history of this vast high-altitude permafrost landscape reveals rapid climate shifts. Today, Qinghai is warming faster than any place on Earth outside the Polar Regions. Using an environmental context, this case study examines an audacious project to build the world's highest altitude railway across the warming Qinghai plateau into Tibet, and the concurrent outbreaks of avian influenza among wild birds beginning in 2005. Subsequently, migrating birds carried the virus along their flyways to over sixty countries in Asia, Europe, and Africa threatening the health of poultry and humans. Qinghai became a natural experiment that energized a unique scientific community, stimulated an interdisciplinary and international approach, accelerated the use of technological tools to track the virus along bird migration flyways, and provided a rich resource of phylogenetic data. This case study examines broader meanings about the connections among microbial, historical, environmental, animal, and human domains. The escalation of bird flu events at Qinghai is not merely a matter of chance mutations in viruses but is the result of antecedent conditions related to human activities. As a place at the crossroads of interconnected global phenomena such as avian influenza and climate change, Qinghai provides real-world examples of the natural and human forces over the coming decades.

Session 2F
Mills and towns: Changing attitudes towards societies and their environments in Medieval Europe

Organizer: Sébastien Rossignol, Memorial University of Newfoundland
Chair: Tim Soens, University of Antwerp

Session abstract:
This session will present the results of a research project pursued at Memorial University focusing on urbanization, settlement change, and attitudes towards the environment. Two MA candidates are working under the supervision of Dr. Sébastien Rossignol as part of a one-year MA program. The project is part of a longer-term research agenda for Rossignol, examining the relationships between towns and their natural resources in Central Europe, and how extent sources reflect changing attitudes towards the natural environment in urban settings. The research of the graduate students contributes to this project by adding new perspectives on the changing attitudes towards the environment and environmental transformation in the course of the Middle Ages. The three papers have in common to study human interventions that transformed the natural world – the spreading of mills, urbanization – and on understanding the reactions and attitudes towards change of protagonists.

Molendinum and *mola* in the landscapes of Frankish sources
Corinne Graffin, Memorial University of Newfoundland

Mills played a transformative role in the economic, social, and environmental history of medieval societies. After Marc Bloch's pioneering studies, archeologists have reconstructed the evolution and diffusion of medieval mills, and a rich historiography has developed around their technical and socio-economical aspects. There are, however, few studies about which ideas, activities and environments early medieval sources associate with mills and milling. Merovingian documentation suggests the existence of milling instruments under two forms. The molendinum, which refers to the water mill, is mentioned in charters and literary sources typically as an item in lists of land donations. For instance, the noble Shiwardus gives to Fontanelle's monks a mansum where a molendinum is built. Saints' lives and chronicles regularly mention another type of milling instrument: the millstone, the mola. In these narrative sources, the use of the mola is mentioned to describe a laborious and extenuating manual activity associated with various contexts. The nurse Septimine, for example, after having taken part in a plot against the queen, is condemned to grinding with a millstone. If the molendinum is often only an item in donations, it appears in various types of landscapes: although mostly located in rural places such as in pagi, villae and monasteries, the molendinum sometimes also appears in cities such as Paris or Bourges. The mola, by contrast, is typically not precisely located but the activity it refers to in the sources suggests particular cultural and religious ideas about its use. Knowing that each source references to its reality for its own purpose, the varied contexts in which the mola and the molendinum appear, and the complexity of their representations need to be studied more closely. This paper will study the symbolic meaning of mills in Frankish societies.

***Magna fuit fames in mundo*: The Great Famine and the environment in Lübeck**
Anna Grzybowski, Memorial University of Newfoundland

From 1315 to 1317, Europe experienced one of the most devastating famines in its history. Heavy rains and cooler weather brought most of Northern Europe to a crisis point. This event marked the end of the Medieval Warm Period and the beginning of the Little Ice Age. This period was one of great social, economic, political and environmental change in Northern Europe. During the 14th century, Lübeck also became the "Queen of the Hanseatic League."

This paper addresses an understudied element of the Great Famine of the 14th century. The study of the Great Famine could profit from more local histories that add depth to the understanding of the famine. This paper looks at the environmental impacts of the Great Famine in Lübeck, specifically focusing on the changing relationship to the land, land transfers and the role of the church. Using the 2018 molecular archaeoparasitology study by the Royal Society written by Patrick G. Flammer and a team of researchers on dietary and cultural changes, the paper will integrate archaeological and documentary studies to create a more complete understanding of the Great Famine in Lübeck. Charters from the Lübeckisches Urkundenbuch will be considered, such as Charter 63 from May 26, 1316, which documents a land sale from two knights to St. Johannis-Kloster in Lübeck with a clause allowing the right of repurchase for ten years. Through charters such as this, one can study the role of the church in the famine and the changing use of land. This paper will create a microhistory that expands on the work of Richard C. Hoffmann and William C. Jordan, but focuses on Lübeck and its environs. Using this approach, the paper will examine the changes in Lübeck's environment and how these changes were influenced by the Great Famine.

Urbanization and views on the natural environment in Medieval Silesia
Sébastien Rossignol, Memorial University of Newfoundland

This paper will take a cultural-historical approach to the study of the relationships between towns and natural resources in Silesia in the 13th and 14th centuries. Silesia, in this period, was at the forefront of the profound transformations that affected the societies of Central Europe, and of which urbanization was an important element. Emerging and developing towns needed resources from the surrounding country, which included primarily pastures, woodlands, and water for fishing and the building of mills. How urban dwellers secured access to these resources, what concerns they had, and how they dealt with them is reflected in a variety of sources.

This paper will be based on extensive research with published and unpublished sources, including charters and urban law books that are little used by historians. Charters provide information on the actions of individuals and groups, but also often include statements on motivations and justifications for these actions. Urban law books served administrative purposes but also developed, through variously combined and adapted texts, a vision of the identity and self-perception of urban communities in their world. While most of these sources are of a legal or normative nature, they provide a variety of standpoints on the importance and uses of natural resources, and how these uses evolved over time. Examples will be given from a variety of towns in Silesia.

Primary attention will be given to how the discourse on these resources – mostly pastures, woodlands, and water – extent in the written record reflects changing attitudes, in urban settings,

towards connections between urban societies and their environments. Attention will be given to economic, social, religious, and cultural considerations, in the context of medieval attitudes towards the material world, with the aim of examining if specific attitudes developed in the urban societies of medieval Europe.

Session 2G

Crossing boundaries and using sources in a new manner: War, science and the use of wood between epochs and historiographies in East Central Europe

Organizer: Daniel Marc Segesser, University of Bern
Chair: Małgorzata Praczyk, Adam Mickiewicz University

Session abstract:
Despite considerable overlap in their interests and subjects the historiographies of war, environment and forestry have rather developed in isolation from each other for many decades and centuries. Stemming from a common special issue of the Hungarian Historical Review to be published by the end of 2018 this panel aims to close the gap between these historiographies and their boundaries that have so far strongly influenced the way that issues of war, science and the use of wood have been dealt with in the past. It will look at the way that the use of existing as well as new sources can be used in a new manner can help to overcome existing boundaries between historiographies, in order to get a better understanding as to how cold as well as hot wars had an impact on nature in general and the use of wood as well as forestry science in particular. In this context the three papers proposed for this session will on the hand focus on the existing historiography in their fields, discuss existing and new sources and show how they can help us gain a better understanding of the impact of cold as well as hot wars on natural resources such as wood, on its perception and scientific knowledge, overcoming existing boundaries between fields of research in military and environmental history as well as between the different epochs.

Forests in the frontier: How Ottoman–Hungarian wars affected the landscape of the Carpathian Basin
András Vadas, Central European University, Budapest

The present paper analyzes the relationship of the Ottoman wars and the loss of forests in the Carpathian Basin, an area that in the early modern area became a frontier zone between the two major powers, the Habsburgs and the Ottomans. The most important point historiography has made so far was that the Ottomans were to be blamed for the crash of the so-called “traditional” landscape of the lowlands of the Carpathian Basin. Taking into account not only the narrative sources which traditionally consider the period as a deep crisis on the land due to the Ottomans but different types of evidence the paper argues that this view needs a serious reconsideration. Using on the one hand historical maps and late medieval land estimations I will argue that the loss of woodlands in the early modern period is anything but self-evident in the Basin area. In the second half of the paper I will show the possibilities of estimating the impact of war, partly by quantifying the role military fortifications may have played in wood consumption (and therefore potentially in deforestation) and partly by considering the other main spheres of war related forest use (gunpowder production, alimentation of the armies). The area studied in details – Transdanubia – was amongst those most significantly impacted by the continuous wars in the sixteenth and seventeenth centuries. This area can arguably be indicative of processes in other lowlands and hilly

areas in the Carpathian Basin but one has to bear in mind that forest regeneration may have been fundamentally different in the territory of lowlands, the hilly areas, and the mountain ranges.

Functions of 1914–1918 war diaries from the war in alpine territory as archives on the relationship between war and the use of natural resources such as wood

Daniel Marc Segesser, University of Bern

Ever since the 1980s war diaries have begun to become an important source for a history of war from below (Wette 1992) and have ever since offered many new insights on the experience of war. So far, however, the soldier's experience of the use of natural resources such as wood has not been at the centre of historical research that is working with war diaries. On the background of a historiography that has stressed the heroic fight of man against nature in the war in alpine territory this contribution wonders to what extent war diaries can help to transcend the boundaries that still seem to exist in the interrelation between man and the use of natural resources such as wood in war. It focuses on the one hand on the description of the use of wood and the perception of the use of this natural resource in a number of diaries from the First World War on the alpine front, and wonders on the other to what extent such diaries can give us more information on the use of natural resources such as wood in war time periods.

Reviewing the place of the Cold War in understanding Nature/Culture boundaries? Biographies, forest management and landscape change in the context of Anthropocene

Róbert Balogh, Hungarian Academy of Sciences

The paper argues that attention to biographies and local contexts in forestry reveals that the Cold War era is rich in connectedness and global-local interaction that overcame many boundaries. Thus interpretations that see the clash and rift between superpowers as the main motive behind environmental changes in the post-1945 era (e.g. Josephson 2010, Olsakova 2017), a period that is called Great Acceleration (Engelke and McNeill 2016), may have to be reviewed.

First, by taking the example of life trajectories and autobiographies of Hungarian forester-economists engaged in designing forest management practices and representing Hungary in Comecon and UN events I will show how projects for changing local/regional/national landscapes emerged as the outcome of both the interaction between ideas about global economy and the political project of being part of the Socialist Block.

Second, through analysing ego-documents of Hungarian foresters involved in research and, thus, had careers closely connected to a specific vegetation of a location I will highlight how the perception of human-nonhuman interaction at the local level influenced projects of national level landscape change and modified the way Cold War chronologies impacted on communities of researchers and individuals.

Drawing on the above examples and on the works of Engelke and McNeill (2016), Pál (2017) and Brain (2011), I argue that for understanding how science that facilitated human domination of the earth unfolded in the post-1945 era, Cold War-centred arguments are not enough. One needs to consider transnational histories of knowledge circulation across the Iron Curtain, and how changing perceptions of the boundaries between nature and culture impacted anthropogenic change.

Anthropocene history, and the history of Great Acceleration within it, is as much about the course of human intervention as about the shifts of the image that contemporaries had about the reasons for and impact of intervention.

Session 2H
Trade and commodity circulation

Chair: Marco Armiero, KTH Royal Institute of Technology

The invisible hand in the forest: The idea of spontaneous order and the challenge of the long term
Julia Nordblad, Uppsala University

This paper examines how the idea of spontaneous order, often referred to as the "invisible hand", was received and challenged in France in the early 19th century, at a time of massive deforestation. Drawing on conceptual historical methodology, the paper examines both parliamentary debates on forest policy, and discussions on the emerging academic field of economics, especially the writings of the French liberal economist Jean-Baptiste Say (1767-1832). In both contexts, the forest is often presented as an exception to principles otherwise widely agreed on, such as the sanctity of private property and the benign outcomes of a self-organizing market. The paper's main argument is that it was the forest's inherent long-term temporality that was at the core of the challenge that the forest issue posed to liberal economic thought in the early 19th century. This issue was entangled with an analogous debate in political thought, namely under what conditions the selfish pursuit of private interests in effect produced the general interest. The paper moves on to argue that that the issue of temporality is a central, if somewhat underexplored, dimension of the debates around early liberal economic theory, and that this issue was spurred by the environmental crisis of deforestation in early 19th century France.

Re-evaluating the "middle ground" paradigm of cross-cultural accommodation in the Upper Mississippi river (Minnesota, USA) region, 1680–1840
Katharine Bjork, Hamline University

In the early 1990s a book by environmental historian Richard White led to a paradigm shift in our understanding of the pattern of interactions among the Amerindians of the Great Lakes region and the Europeans who entered the watery interior of North America in the late 17th Century. Focusing on the fur trade, White challenged the prevailing narratives of domination (by the Europeans) and the acquiescence, resistance or obsolescence (of the natives). Instead, he introduced the concept of a "middle ground," on which, he argued, peoples of very different cultures accommodated and adapted to one another to maintain a fragile modus vivendi.
The "middle ground" paradigm has been adopted by historians outside the core Great Lakes region, which is the geographical focus of White's path-breaking study. The aim of this paper is to reevaluate the explanatory power of the "middle ground" thesis for the far western part of the area between Lake Superior and the upper Mississippi River, roughly corresponding to the contemporary state of Minnesota. White's classic work encompasses this area, but his analysis focuses on the interactions and accommodations of people further east. This has not stopped Minnesota historians

from adopting a narrative about the fur-trade that stresses cross-cultural marriage and other aspects of diverse cultures coming together to become "co-creators of a world in the making," in White's words.

By examining the primary literature produced by and about French and métis men who sought alliances and trading relationships with native people of the region from the 1680s to the 1840s, I will assess to what extent a "middle ground" of cultural accommodation characterized this borderland region, and what the specific mechanisms of such contact were. The point is to interrogate broad generalizations, based on accounts specific to the upper Mississippi, which has not received the same level of analysis as the Great Lakes region further east, and yet is often painted with the same brush.

Environmental effects of Hansa trade in the Baltic, 1200–1650

Richard W. Unger, University of British Columbia

Growth in population, climate warming and technical change in shipping contributed to an expansion of commerce in the thirteenth century between towns in the Low Countries and north Germany with lands around the Baltic. One result of the risi in exchange was increased urbanization, a phenomenon which spread to the shores of the Baltic as Tallinn (Reval) itself demonstrates. In the fourteenth century many of the towns joined in a loose confederation, the Hanseatic League, which used both diplomacy and force to promote the commercial interests of the towns. Exports which came through those Baltic towns tended to be products which were land-intensive in production. There was a tendency over time to shift to less land- and more labour-intensive goods. Beginning with furs exporters moved to wood products of various types and then to grain adding value to what went west. The presence of an expanding market in western Europe for Baltic products, especially in the sixteenth century, led to a dramatic change in the landscape of the region as arable farmers marched eastward in the wake of the loggers who were preceded by hunters and trappers. The transformation of the environment depended on the ability to transport goods as well as on the development of markets in the west and the colonization of the Baltic region with an implied interaction between immigrants and people already living there. A summary of the long term pattern of change will illustrate the impact on the environment, outline the relevant factors shaping changes and indicate research that has been done as well as that which can be done to enhance the study of the pre-modern environmental history of the region.

Session 2I

Special session: Environmental history and the boundaries of academia

Facilitators:
Andrea Gaynor, The University of Western Australia
Cordula Scherer, Trinity College Dublin
Sverker Sörlin, KTH Royal Institute of Technology
Margaret Cook, University of Queensland

Session abstract:
This forum will provide an opportunity for sharing experiences of doing environmental history beyond the boundaries of academia, and reflecting on the nature and utility of those boundaries for environmental historians. While most, if not all, environmental histories seek to engage a wider audience, some exercises in environmental history-making are more deliberately public-facing and engaged than others. Sometimes we also bring our expertise or insights as environmental historians to membership of external committees, or to environmental activism. Several countries now have formal mechanisms for assessing academic impact and engagement, yet doubts over the motivations and validity of these exercises remain. There is, however, widespread agreement that increasing social injustice and ecological devastation have lent a new urgency to our work as environmental historians. This panel will begin with a series of short commentaries from five scholars who have taken environmental history beyond the boundaries of academia, followed by an 'open microphone' enabling others to share their experiences. We will ask: What are the risks and opportunities of environmental history beyond the boundaries of academia? Who are our key audiences beyond each other? Are there particular scales, audiences, or forms of engagement that are more receptive to environmental historical thinking and messages – or that need it more – than others? Are there trade-offs between activism and academic standing or credibility? And if we look back on environmental history within academia from beyond its boundaries, what are its most urgent and necessary tasks in an age of ecocide? The session will be recorded, and will conclude with a collective summary and agreement on a means of developing and widely circulating discussion outcomes.

Session 2J

Narrating nature: The verbal and visual representations of environment in the Early Modern and Modern Eurasia

Organizer: Alexei Kraikovski, National Research University Higher School of Economics
Chair: David Moon, Nazarbayev University

Session abstract:
The session will discuss the languages of description and representation of nature used by different actors and observers during the significant transformation of the entire system of communication between the human society and environment in the transition from Early Modern to Modern World. For the vast area of Eurasia this meant the need for the new methods of dealing with nature, including the instruments of description as an integral part of appropriation. Within the session we intend to overcome the traditional disciplinary barriers between the environmental historians and the experts in other fields of cultural history, including Fine Arts professionals.

"Special luck of Her Majesty": Descriptions and representations of the natural resources in the Early Modern and Modern Russian North
Alexei Kraikovski, National Research University Higher School of Economics
Margarita Dadykina, National Research University Higher School of Economics

The paper will discuss the rhetoric and language used for the description of nature in the sources related to the monastic salt production (17th c.) and the blubber monopolistic companies (1703 - 1768). Indeed, we argue, the actors of these commercial enterprises, be they monks or company owners, used specific instrument of representation and description of the certain natural resources (sal brine, timber, whales and walruses in the Arctic) as a base for their commerce. Analyzing the language of the sources and the images they constructed we can get a vision of the role of the nature as a sort of a partner for the humans. Communicating this partner, the actors intended to build a system of nature use that was not just economically efficient, but also ideologically and culturally acceptable.

The Trans-Siberian 'landscapes of transportation' through the lens of travel guidebooks in late Imperial Russia
Aleksandra Bekasova, National Research University Higher School of Economics
Ekaterina Kalemeneva, National Research University Higher School of Economics

The paper will present the vision of strategies used by the authors of the guidebooks in order to present the nature of Siberia to the public of the European Russia. The construction of the great Trans-Siberian railway triggered the process of appropriation of Siberia, transforming its' imaginary from the ultimate point of the frozen desert into the remote, yet still accessible and worth visiting land. The authors of the guidebooks acted as agents of Empire, while being at the same time the capitalistic entrepreneurs looking for the market revenue. Therefore, we argue, the language of

description and interpretation of nature became one of their major instruments in the struggle for the success. The paper will explore the importance of this instrument for the construction of Siberia as a destination in the eyes of the Russian society of the late 19th - early 20th c.

The Baltic Sea in the works of the Russian and Baltic painters of the 18th–19th centuries: From the victories of the Russian Navy to the comfortable resort

Aleksandra Murre, Kadriorg Art Museum

The paper will be based on the collection of the Kadriorg Arts museum. The Eastern Baltic in the Modern time became the scene for a variety of intercultural contacts and conflicts and to some extent the very vision of the sea as a natural object was shaped by these historical events and processes. I argue that in this situation the painters developed dynamic and expressive visual language of representation of the Baltic environment as an integral part of more general cultural concepts. Comparing the representations of nature as they appeared on the canvases produced by the painters of different schools and periods, we can get the vision of the ways the local community communicated the environment and used it for the construction of the own identity.

Comment: **David Moon**, Nazarbayev University

17:30-19:00 Education Fair (with a coffee break). Come and exchange teaching methods in environmental history/humanities. Venue: Mare building, Atrium, 3rd floor

The Education Fair is a new format that addresses our growing teaching needs and experiences. While Environmental History is becoming a popular subject at many universities, we still struggle with the best ways to teach it. We are split between the need to be global and local, constantly weighing between interdisciplinary and disciplinary approaches, and have to be open to new forms of teaching available at our universities.
While we have to make compromises due to the structure of our main curricula, the younger generation ask for clear, but flexible methods and visions and do this in a more and more complicated political and environmental realities.

Facing these growing needs the ESEH conference offers an Education Fair in order to

- present best, new and experimental practices and interesting projects of how to teach environmental history;
- discuss your teaching experience with colleagues and learn from them;
- present ongoing study programs on Environmental History on all levels;
- strengthen ongoing and new cooperation on how to teach Environmental History;
- inspire one another!

You can participate at the Fair as a Presenter who has prepared some materials to share or as a regular Discussant. We will create 3 Discussion Plazas around the following topics: (1) Methods for active learning; (2) Interdisciplinarity; (3) Case studies of courses, curricula or programs (see below for details). Each Presenter will have 30 min to inform people in their Plaza about your methods, interdisciplinary tricks and courses and to discuss your strategy within your booth area. After 30 minutes the Discussants will be shuffled to a new Plaza and the Presenter gets a new groups to share their ideas.
The Discussion Plazas will be talking about some of the following topics (but not only!)

1. **Methods for active learning**
    - What kind of new formats we can use in teaching environmental history?
    - How can new teaching methods help us to support deeper reflection on different levels (active learning, project-based-learning, co-teaching, outdoor courses). Examples!
    - Can students become researchers? How to involve courses, graduate works and projects in research projects? Examples!
    - how we reflect on the deeper theoretical, political and ethical implications of environmental history in our classes?

2. Interdisciplinarity as a challenge for teaching environmental history

- How do we teach interdisciplinarity, what does it mean for us?
- Environmental history relies on a variety of disciplinary methods - which of these do we teach (interdisciplinarity, trans-disciplinarity, trans-human approaches, practical history, other methods coming from close-by disciplines, natural sciences)?
- What are the best ways of collaborating with other fields / study programmes and with non-academic institutions (NGOs, museums, activists, etc.)?

3. Case studies of courses, programs and curricula etc.

- How have you managed to set up courses? What should we teach?
- How do we design our classes/programs in order to bring together local and global, past and future, large and small scale problems?
- How can we link academia with “real life” issues? What is the practical value of our courses/programs/classes? How to achieve real outcome?
- What are the readings and assessment methods that work best?
- How to fit environmental history in the rigid Intended Learning Outcomes of traditional curricula?

In addition, those who so wish are welcome to **visit Tallinn University’s beehives** that are a part of Tallinn University’s project-based learning program LIFE. Rooftop tours led by Liisa Puusepp leave the Fair **at 18.00 and 18.30** and take maximum 15 persons. The first to arrive gets to go!

18:15-19:15 Social event: **Nordic ESEH**. Nordic environmental history open mingling event in room A-346

This is an open informal meeting of all colleagues interested in the whereabouts of Nordic environmental history.
We will use the opportunity to meet new colleagues and introduce ourselves, and if you wish to use a few minutes to introduce some specific initiatives, projects etc. you are welcome to do so. We have arranged the possibility to show some ppt-slides (please keep them to 1-2 summarizing slides with links and/or contact details – no “presentations” possible!)
Feel free also to bring some new books etc for show, anything that might be of interest to our group!

19:30-20:00 Guided tours through the Seaplane Harbour Museum

20:00-23:00 Welcome reception at Lennusadam (Seaplane Harbour; Vesilennuki 6, Tallinn).

THURSDAY, 22 AUGUST

09:00-10:30 Parallel Session 3

Session 3A
Responding to water pollution across borders

Organizer: Yaël Gagnepain, Université de Lille / Université de Namur
Chair: Charles François Mathis, Université de Bordeaux

Session abstract:
This session proposal presents three original works from PhD candidate in France, Belgium and the Netherlands. Through these presentations we will depict the controversial issue that has been the pollution in the Scheldt and the Meuse valley in the three countries. These territories have been key places of the first and second industrial revolution in western Europe. As a consequence the industrial and domestic activities have left their mark on both the people and the land.
By proposing to the public a global understanding of the reality of the Scheldt an the Meuse valley we will raise questions about water and pollution management in a transnational context.
By comparing the Scheldt and the Meuse we will show how water regulation have been progressively taken in account at a supranational level and how the border has been a key in the realization of pollution as a common issue. By studying the Scheldt valley and its management from the 16th century we will depict how these countries have sometimes reach agreements and implement regulations and sometimes oppose themselves on this topic. By studying the port of Rotterdam we will show how the most recent times are still tied into a strong pollution reality. We will discuss how the European regulations have failed to embrace all the reality of the pollution that is inherited from past times and that is still fueled by a huge industrial activity.

Dirty habits across borders: Boundaries, pollution and public health in late Victorian England and Wales
Keir Waddington, Cardiff University

Notwithstanding Engels's claim that dirty habits 'do no great harm in the countryside', in the decades after 1870, newspapers and urban commentators worried about the gross indifference to environmental pollution they believed existed in villages and their impact on towns. At the same time, rural communities bemoaned the damaging effects of pollution from industry and urban sewers on the local environment. With numerous rivers flowered across the administrative boundaries of rural and urban authorities, and across the English/Welsh border, from the Wye in the south to the Dyfrdwy in the north, tensions existed between sanitary authorities over river pollution and access to clean water. Rural authorities worked with towns to extend water supplies but also came into conflict over sewers and the regulation of pollution. Rather than seeing sanitary authorities as isolated entities, this paper focuses on the late Victorian rural environment to consider the environmental problems and networks that existed across the English/Welsh border and the boundaries between rural and urban sanitary authorities and how these borders and boundaries influenced and determined responses to environmental pollution. Focusing on the dynamics of cooperation and conflict, the paper explores the myriad localized practices of bordering between

rural and urban authorities. It draws attention to the interplay between rural communities and towns and how boundaries of responsibility offered a focus for cooperation and conflict to reveal the interconnections, obstacles, and permeable boundaries that shaped responses to environmental pollution in rural communities in late Victorian England and Wales.

Transnational river and pollution issue

Yaël Gagnepain, Université de Lille / Université de Namur

The North of France and Belgium have been regions of a strong industrial activity throughout the XIXth and XXth century. All over these territories, industries – textile, metallurgy, food transformation – and mines have durably left their mark on both the land and the people. This paper intends to present an original work in progress on this area, which has been devastated by every manner of pollution. We will focus on the question of some transnational rivers – the Lys, the Scheldt, the Sambre, the Meuse – that run from France to Belgium: these rivers are revealing of the controversial issue of the industrial pollution for both the people and the states. This presentation will try to focus on the impact of the border following two main axis.

Firstly we will study the role of the border in the realization of pollution as a public issue. We will show how national belonging influences the consideration of pollution in the bordering regions. Is it easier to denounce the negative impact of pollution when it comes from abroad? Is pollution tolerance lower when this pollution comes from another country, from industries that do not provide jobs and activity in your own country?

Secondly, we will explain how pollution has been taken into account jointly by the two states. This asymmetry of the situation between the two countries (French pollution going directly to Belgium) has structured the way they consider the issue, and the institutions that have been created to tackle it. We will show how the implementation of a water policy agreed upon by both countries in the second part of the XXth century has been possible. This implies a scrutiny of economic confrontation and developmental issues.

The legal protection of the North Sea against oil pollution: A reactive process

Stephan Hauser, Delft University of Technology

The development of many port cities was closely linked to the development of the petroleum industry since the middle of the 19th century, especially in cities like Rotterdam. When the oil activity increased its influence, economies and societies evolved with it, increasing their dependency over this affordable resource without any major concern for its depletion, or its impact on the environment.

The subject of environmental protection in the legal domain has been widely developed, especially on the international level, where more than 300 treaties have been created since 1972. Some regional and international agreements predated the environmental protection movement, like the “Agreement Concerning Pollution of the North Sea by Oil” in 1969. However, the overall failure of international treaties and conventions to tackle the pollution and the destruction of natural environments attested the lack of strong and worldwide political will to apply constraining rules.

The creation of rules related to the protection of the environment had also to deal with a major issue: the need for incidents. The 1969 agreement, for instance, was probably the result of the sinking of the tanker Torrey-Canyon in 1967 in England. This reaction mechanism triggered again the creation of the three Erika packages in the European legal system. It was the European answer to the shipwreck of another tanker, the Erika, in 1999 in French Brittany. The European countries implemented new security measures in the shipping industry within the European Union, with more controls and new structures for tankers. However, as efficient as the European regulation can be described in some writings, its relation to disasters has always been close.

The lack of regulations and anticipation of the effects of pollution in seas lasted for a long time. And even recent principles have to compete with a benevolent ignorance towards industry and economy before being implemented.

Session 3B

Bordering the Little Ice Age and its human consequences: Spatial, temporal and conceptual aspects. Part I: Sources at the borders between humanities and natural sciences

Organizers: Christian Rohr, University of Bern
Heli Huhtamaa, Heidelberg University
Chantal Camenisch, University of York
Chair: Lukas Heinzmann, University of Bern

Session abstract:

This triple session provides insight to the characteristics of the Little Ice Age (LIA) in Europe and its social impacts. The LIA is the last distinctive climatic regime before the contemporary anthropogenic climate change. Therefore, it provides important analogue to study and better understand the climate-society dynamics. However, the spatial as well as the temporal borders of the LIA are still under debate: which regions were affected and when the LIA begun and terminated? As climatic regimes do not follow the national borders, defining the spatial extent of the climatic regime can be challenging. Furthermore, the typical characters of the LIA climate are still discussed, whether the period was dominated with cooler temperatures or increased variability and extremes. The uncertainty on the characteristics of the LIA largely results from source availability: as measuring meteorological parameters with instruments became more common only during the 19th century, the knowledge of past climatic fluctuations relies greatly on indirect source material. Moreover, the discussion on the characteristics of the LIA mainly focuses on temperature fluctuations, leaving other climatic phenomena, like storminess, with little attention.

The first session of the series focuses on these topics. The first paper critically reviews some common sources to detect past climatic fluctuations and examines contradicting interpretations associated with the LIA. The second paper presents the Euro-Climhist climate history database, which do not only cover the LIA period, but also the periods before and after the climatic regime. Therefore, the database provides sources to compare the LIA with relation to the earlier and later climatic regimes. The third paper focuses on storminess during the late-LIA period, and demonstrates the value of newspaper material as a climatic source.

The Little Ice Age in Europe and its influence on food systems on agricultural margins

Heli Huhtamaa, Heidelberg University

Since the publication of 'The Waning of the Little Ice Age: Climate Change in Early Modern Europe' by Morgan Kelly and Cormac Ó Gráda (2014) in the Journal of Interdisciplinary History, the nature and relevance of the LIA has gained historians' attention. Especially the sources, natural paleoclimate data and man-made written evidence alike, indicating the cooler climatic phase have been questioned. Moreover, some agricultural advances coinciding with the LIA, like the spatial expansion of the crop cultivation in the 16th–18th centuries Finland, might appear contradicting the characteristics of the LIA.

Therefore, this presentation critically reviews the advantages and limitations of the most common natural and man-made sources to explore the spatial and temporal boundaries of the European LIA. Moreover, the paper explores the impacts of the cooling climate on the northernmost food systems. The presentation shows, like with today's anthropogenic climate change where, for example, the Arctic region warms faster than the Western Europe, similarly the climatic characteristics of the LIA varied over the Europe. Furthermore, the presentation demonstrates that also the human consequences varied considerably. This is because the prevailing socio-environmental systems, which dictated how the impact of climate materialized on a societal level, varied across space and time. Therefore, the presentation raises a question whether it is even reasonable and pertinent to aim setting universal temporal, geographical and social boundaries for the LIA.

Euro-Climhist, a database project to bridge boundaries in space and research disciplines
Tamara T. Widmer, University of Bern

Identifying and studying the overall, regional and local effects and evolution of historical climatological phenomena like the Little Ice Age is limited largely by the accessibility of relevant (historic) climate data. The Euro-Climhist project strives to offer at least a part of the solution to this problem by offering a freely accessible platform to gather and evaluate historical climate data in a common system, which enables the comparison of data from different types of sources over time and geographical boundaries.
The project has been started over 40 years ago with the limited scope of gathering historical climate data for Switzerland. In the beginning, it grew only very slowly due to lack of funding, but has expanded its scope and operations continuously to include not only national but international climate data by creating a platform for researchers from different fields (as well as laymen) to collect data in a structured way in order to facilitate the evaluation of the available data. The possible sources are manifold and include, amongst other things, written and pictorial documentary evidence about weather observations, (early) instrumental measurements, as well as proxy data (e.g. tree-rings or observed stages of plant development). One of the main challenges has been creating a system to structure the collected data that is complex enough to allow a useful evaluation of the data, as well as is able to accommodate the varied types of sources, and yet still is accessible enough to be easily understood and worked with by interested parties. The first two regional modules (Switzerland and Baltic) have been released. Moreover, the Euro-Climhist team aims to enable the international scientific community to create additional regional modules in order to continuously enlarge the database and to allow for interdisciplinary climate research on a more global scale.

In search for “new” storms and strong winds in Baltics from the mid of the 19th century
Kaarel Vanamölder, Tallinn University
Krister Kruusmaa, Tallinn University

The history of the climate has been fascinated researchers at least for two generations – a vast number of sources has been worked through and published in various forms, such as monographs and databases. Some regions in Europe are remarkably well examined: it even seems like the

sources could be exhausted. Present digital approach of the humanities offers however good possibilities for expanding and comparing the sources which may not been used yet.

In our presentation, we concentrate on the weather conditions – mainly storms – around the Gulf of Riga in the mid-19th century, using navigational reports from the press of Riga, mostly from the newspaper Rigasche Zeitung. The sources are quite specific in their nature: for example, reports on the current weather conditions in Bolderaja in the mouth of river Daugava and descriptions of the weather experienced on the journeys of arriving steamships. A further accent is provided by news about navigation restrictions and shipwrecks, which provide clues about different weather extremities. Although the sources in question are specifically gathered for the Euro-Climhist database, they comprise the possibility of making wider conclusions about the climate conditions of the period.

Session 3C
Ecological thought

Chair: Leona Skelton, Northumbria University

A century of Chinese perceptions on the relationship between humans and nature
Rune Svarverud, University of Oslo

Chairman Mao Zedong's war against nature in China during the 1960s and 70s is well known to historians and its consequences well documented. (Shapiro, Judith. 2001. Mao's War Against Nature. Politics and the Environment in Revolutionary China. Cambridge: Cambridge University Press) The current environmental crisis in China, the state policy to curb and deal with pollution and environmental change, and the societal reactions to the risks of environmental degradation is currently high on the research agenda in China and beyond. (e.g. Sternfeld, Eva (ed.). 2017. Routledge's Handbook of China's Environmental Policy. London: Routledge) Many historians have also engaged with China's environmental history documenting anthropogenic environmental changes in China over centuries. (e.g. Marks, Robert B. 2012. China. Its Environment and History. Plymouth, UK: Rowman & Littlefield Publishers) We know today that one essential key to solve environmental problems is the human recognition of the intrinsic value of nature. China is a major global contributor to current environmental degradation and also one of the most important keys to future solutions. We know, however, very little about how people in China over time have recognized and interpreted the role and position of humans in nature.
This paper will address that question by scrutinizing Chinese school textbooks and how they present the Chinese state promoted view on humans in nature over the last century. School textbooks have been published under state supervision ever since the establishment of the Republic of China in 1912. These textbooks are unique sources for analyzing the changing state promoted perceptions of the relationship between humans and nature in China as part of modern education. This paper will present the main changes in these perception over the course of the period from 1912 to 2017 as part of a project on perceptions of environment and climate in China (https://www.hf.uio.no/ikos/english/research/projects/airborne-pollution-china/index.html).

Boundaries of co-evolution, exemplified by the Baltic German naturalists Karl Ernst von Baer, Max von Sivers and Jakob von Uexküll
Timo Assmuth, Finnish Environment Institute

Otherness and relation, continuity and change, and objectivity and subjectivity define boundaries in historical universe. Using a multi-perspective approach based on Kracauer, and mixing political and mentality history, I explore the thought of three exponents of the Baltic German minority in ca. 1840-1940 regarding boundaries between human ethnicities, humans and other animals, organisms and their environments, and science and society, emphasizing peaceful or adversarial co-evolution of these.
Karl v. Baer (1792-1879), founder of embryology, while critical of the theory of evolution, was devoted to studying the development of organisms and their environments, and engaged in

boundary work also in applied areas of exploration, education, museums and science administration. Max v. Sivers (1857-1919), dendrologist and forest economist, as politician fought against socialism and czarism, and for German nationalistic movements, with the Leitmotif of colonizing homelands by adaptable populations of trees and humans. Theoretical biologist and vitalist Jakob v. Uexküll (1864-1944) influenced biosemiotics, cybernetics and philosophical anthropology by clarifying relations between animals, humans and their perceived Umwelt.
These innovators highlight key aspects of boundaries, biophysical, political and intellectual, in a region and era of strong tensions and turbulent developments, and more generally. The views of all three of nature and humans were broad in stressing the connectedness and interaction of organisms and 'ecological' settings, instead of mechanistic explanation. However, they upheld concepts of race and society conducive to fixed boundaries of co-evolution. They approached transitions in socio-ecological systems in utilitarian mode which clashed with upheavals. Their forays into science-society boundaries depended on political contexts. Nazis tried to appropriate Sivers posthumously and Uexkull while alive, ending in friction. The bridging, or bridgehead, role of Baltic Germans as a leading but increasingly challenged class thus shaped their takes on inter-agent and methodological boundaries, but these takes in turn shaped their role, in historical contingency.

The water reservoirs and the Lysenkoism: The boundaries between a science, an ideology, and a practice of resource use

Alexandra Rizhinashvili, St.Petersburg Branch of S.I. Vavilov Institute for the History of Science and Technology of the RAS

In 1940 the now-forgotten productivity theory of water bodies was developed by the Soviet hydrobiologist Vladimir I. Zhadin (1896-1974). Zhadin's views on production relied on his observations of changes in the communities of the riverine faunas caused by the construction of water reservoirs. The theory is of particular interest because it tries to address to the unresolved scientific and environmental problems of that period. Some of these unsettled problems provided the foundation for the ideological debates during the dialectisation period within Soviet biology of the early 1920s to mid-1930s and were influenced by Lysenkoism. Zhadin's theory thus serves as a suitable model for identifying cognitive and ideological boundaries in science and for the analysis of the influence of ideology on science and nature protection practice. The analysis of Zhadin's works shows that the separation of ideologically imposed perceptions and the author's own scientific views presents a challenging task. This can be explained by a highly efficient behavioural pattern of "protective coloration" employed by the scientist and by the sincere acceptance by Zhadin of some Lysenkoism ideas. Furthermore, I argue that the system of Lysenkoism dogmas concerning the association between an organism and its environment are in fact entirely sensible scientific principles which were taken to an extreme. The results of the study show that the scientific content of Zhadin's theory and its development as part of so-called evolutionary hydrobiology deserve special attention from modern science. The work is supported by Russian Foundation of Basic Research (project No.17-33-01046-ОГН)

Session 3D
Special session. Open discussion forum: Translating energy history in times of transition

Facilitators:
Ute Hasenöhrl, University of Innsbruck
Odinn Melsted, University of Innsbruck
Karena Kalmbach, Eindhoven University of Technology
Patrick Kupper, University of Innsbruck
Timothy Moss, Humboldt University of Berlin
Andrew Watson, University of Saskatchewan
Verena Winiwarter, University of Natural Resources and Life Sciences (BOKU)

Session abstract:
In recent years, historians of energy have increasingly related their work to contemporary discussions about energy transition and formulated "insights from history" or "lessons from the past" for the future decarbonisation of society. While this research has vastly increased our knowledge on past processes, structures, actors, and dynamics of energy production and consumption – and at least attempted to introduce this vital information into public debate –, there has been little systematic discussion on how historians should best engage in these topical debates. How can historians go beyond academia, to inform (or even influence) experts, policymakers, education, and the general public? Is energy history even "useful" for informing contemporary transitions, and how can it be communicated? Are (energy) historians qualified to formulate practical lessons from the past, and what is the particular added value of historical research compared to, for example, transition studies from the social and natural sciences? And, last but not least, does energy history need to be useful at all – or do we risk reducing our research agendas by focusing primarily on what appears to be relevant or desirable today?
In this open discussion forum, historians of energy and practitioners from the field are invited to scrutinize the relevance of energy history in times of transition. Renowned historians of energy and the environment will give short statements, sharing and critically evaluating their experiences in relating their research to contemporary challenges, working inter- and transdisciplinary, as well as in policy informing and science to public activities. The forum will also be confronted with statements from recorded interviews with practitioners from energy politics, utilities and citizens' initiatives. In doing so, this session aims to explore both the potentials and boundaries of energy history in going beyond historiography and engaging with other disciplines, stakeholders and the general public. All ESEH delegates interested in this debate – as well as local stakeholders from Tallinn – are invited to join and contribute to the discussion.

Session 3E

Eating boundaries: Cultural practices of food between body, culture and environment

Organizer: Alwin Cubasch, University of Innsbruck
Chair: Robert Groß, University of Innsbruck / *University of Natural Resources and Life Sciences (BOKU)*

Session abstract:
The boundaries of environment, body and culture are constituted by cultural practices of demarcation and techniques of passing between those three. Cooking and eating are two techniques that allow for demarcation and passage from nature to culture and into the human body. As food traverses these boundaries, it changes from raw materials to culturally infused meals and finally to nutrition within one's body. Simultaneously, food discerns the realms of nature, organizes the cultural sphere and shapes the
cultural frame of the body. But how does food enact and link the boundaries between body, culture and the environment, while traversing them?
This session will explore the cultural techniques and semantic webs that enable food to link and discern environment, body and culture. In four studies, the session shows how cultural techniques of cooking and eating create a semantic culinary system that integrates environment, body and culture and allows for gateways or filters between these realms. Focus then lies on the effects of this cultural techniques of food: These cultural techniques can:
A: Be shaped by the elements and concepts of the natural environment as well as through the interconnected practices of belonging (Rogers).
B: Become disconnected from their original cultural placement and meaning through migration and acquire new meanings and entanglements (Geraldes).
C: Be rewritten by drastic changes in newly developed technological environments and utopian concepts of the human body (Cubasch).
D: Be a way of teaching the public about efficient food-consumption in integrated communist socio-environments (Węgiel).
In terms of disciplines, this session will renegotiate the boundaries between a culturally oriented history of food and an environmental history of food as it integrates cultural and environmental approaches by looking at cultural techniques that bridge environment, culture and the body, thus calling for an inclusive approach to their historical development.

Tales of dairy-do: Milk and the habitus of the medieval Icelandic people
Bethany Rogers, University of Iceland

The concepts of environment, the body and cultural significance have been the cause of much scholarly debate within the field of food history. Far less focus, however, has been paid to the cultural significance of dairy products to the Icelandic people in the barren landscape of early and medieval Iceland. As such, this presentation will examine spaces such as the kitchen, the physical dairy and animal husbandry sites such as the sel [mountain pasture] that are rich with value in the

habitus of the medieval Icelander. Habitus is defined by Pierre Bourdieu in his work, Outline of a Theory of Practice (1977) and expanded upon regarding the relationship between the saga literature and social reality in medieval Iceland by Torfi Tulinius (2000, 2001). Drawing on a range of evidence, including toponymic, textual, and archaeological, a model is proposed whereby despite the general difficulty in food production in the medieval period, an underlying continuity may be found in the way group culture and personal history shape the body and the mind, and as a result, shape the social actions of an individual within the community as a result of dairy production and use. It is concluded that different manifestations of the habitus – these habits, skills and dispositions that affect the medieval Icelanders' perceptions of the social world – are deeply ingrained at the heart of dairy product cultivation and production spaces on the farm.

Symbolic and multi-territorial connections of sugar: The case of fanid

Amanda Geraldes, Universidade de Évora / Universidade Federal de Minas Gerais

Sugar in Antiquity and the Middle Ages was a relevant ingredient for the composition of apothecaries' medicines and for the healing process. The Arabs were the driving force responsible for developing the techniques of sugar refinement and the expansion of this culture. Throughout the period of Arab domination in the Iberian Peninsula (711-1492), sugar was profusely disseminated across geographical, consumption and symbolic boundaries. At the height of the Caliphate of Cordoba (960) it was present in many confectionaries' recipes. The sugar, a multifunctional and multi-territorial good, occupied diverse spaces such as medicine, spice, food preservative. It carried artistic and esthetic elements and became a magical, symbolic and ritual element in religious celebrations. The ritual use of sugar transcended geographical and symbolic boundaries, and passed through different bodies, cultures and environments. One of the results of this process of expansion and refinement of sugar is fanid, a kind of confectionery that was widely used beginning in the Middle Ages and has acquired various functions and meanings beyond their original pharmacological function. During a period of extensive sugar production in Madeira (1455), fanid took on an additional aesthetic role with its sophisticated preparation in the art of confectionery. The beauty and delicacy of fanid were important symbols of social status and economic power. In the process of colonization in Latin America, fanid was incorporated into new rites. This paper will present ritualized uses of fanid in religious celebrations: Feast of the Holy Spirit (Portugal and Brazil), Day of the Dead (Mexico) and Day of the Godchildren (Colombia). Therefore, it will show that fanid transgresses boundaries spanning culture, environment, geography, science and art because of its different uses and functions, but such functions are still connected via a memory construction that is rooted in the healing powers, spirituality and festivity.

Food beyond nature: Eating in technological environments of the Space Age

Alwin Cubasch, University of Innsbruck

When the Space Age began and the mission's duration increased, feeding man beyond Earth's reach rose to importance. NASA's space program advanced the production, use and storage of foods in technological environments which were then to be reapplied to an increasingly technology-driven

life-style on earth. This paper will explore the complex relationship between food, the body and technological environments in the context of the history of space-food from the 1960s to the 1970s.
This history of space-food takes place during late high-modernity, a phase of unconditional belief in the technological observation and optimization of all areas of life down to daily nutrition. Thus, spaceships were the ideal laboratory, as they actually represented an environment that had to be created from scratch by technology. Therefore, the study of NASA's food systems demonstrates how one of the most prominent organizations of late high-modernity conceptualized environment, the body and the boundaries between them.
These boundaries shifted from the 1960s to the 1970s as NASA's space-program and American society itself changed. Environmentalism challenged the perception of the environment's role in providing human sustenance as did NASA's own Gaia-Hypothesis that conceptualized Earth and its biosphere as a symbiotic system. As early as 1960, the physicians Clynes and Kline challenged the triad of body, technical environment and inhabitable space by augmenting the human body to live outside the constraints of artificial environments. Likewise, this paper will track the reflexes of these shifts in NASA's space-food programs and match them with emerging macro-trends like the environmentalism and postmodernism of the 1970s. The paper aims to connect the environmental history of technological environments with the history of medicine and recent developments of food and drink studies.

The body and the production–expert–consumer chain in the discourse of dietary advice during high modernity in Poland.

Anna Węgiel, Polish Academy of Sciences

The food system in Poland during the Polish People's Republic (1947-1969) can be imagined as a machine. Society was perceived in mechanistic ways, and the human body was the last stage in the production-consumption-consumer chain, which was a way of social engineering through food. The aim of the industry was to produce only the amount of food necessary for people to live and work, without surplus. In the centrally planned economy, the nutrition expert's job was to send the public a consistent message about the benefits of eating a certain number of calories and nutrients. The consumer's job was to listen and perform the advice in order to make this enterprise successful. In the PPR, the human body was imagined as a machine as well, one which needed food as fuel in order to properly function. The objective in this new era was to introduce a perfect number of calories, nutrients, and other ingredients which would combine to produce a "perfect" healthy human body capable of hard work and building advanced technology for the developing socialist state. One of the ways to do this was through dietary advice produced by official state agencies and distributed through popular magazines and cookery-dietary compendia. This paper specifically explores the discourse of dietary advice in Poland 1958 – 1978, during the high-modern communist era. It deals with the contemporaneous approach to the body as a machine and food as its fuel, the belief in the infallibility of science, as well as the confidence that human inventions are superior to nature. Apart from a discourse analysis of printed sources, the research will also include analysis of qualitative interviews with Polish people dating from 1978, which showed the ineffectiveness of the state food policies in the daily lives of the Polish community.

Session 3F

Istanbul's urban history unbound: Emergent environmental approaches

Organizers: Özlem Altınkaya-Genel, Ozyegin University
Mehmet Kentel, Istanbul Research Institute
Chair: Shirine Hamadeh, Koc University

Session abstract:

In the past 20 years Istanbul, as a 'world city' situated at important cultural and geographic crossroads, has witnessed rising academic interest. Historians, sociologists, geographers, and city-planners have contributed to our understanding of the myriad ways in which the city has been continuously made and remade, with specific attention given to architectural histories and the formation of public spaces.

However, the study of Istanbul still lacks an integrated perspective that would bridge the divides between urban and environmental, city and nature. While there has been growing interest in the city's most recent expansion towards its peripheral natural zones, such an environmental critique has yet to become integral to the city's historiography. Very scant attention is devoted to interrogating how boundaries of the city and its various parts have been shaped and challenged through material as well as ideological processes. Finally, nonhuman actors still find very limited representation in Istanbul's urban history.

Our panel seeks to offer new insights on the complex layers of Istanbul's urban landscape. It brings together innovative studies in the field of environmental history that utilize transdisciplinary methods and transcend pre-determined scales, and clearly delineated boundaries between the histories of humans, nonhumans and built environment. The papers follow a chronological time-line and cover a wide span, beginning from the Ottoman Empire's Early Modern Period up to contemporary times. The panelists present a diverse set of approaches in unraveling the geographic, infrastructural, agricultural and ecological networks Istanbul established in the longue durée and across various scales. These approaches promise to move beyond or scrutinize the formation of disciplinary boundaries between fields (e.g. history, city-planning, geography, and sociology), chronological boundaries between different periods of the city's history, geographical boundaries between regions and neighborhoods, and conceptual boundaries between different physical formations (e.g. rivers and sewers).

Rivers and orchards of Kasımpaşa: Exploring Pera's excremental hinterland in Late Ottoman Istanbul

Mehmet Kentel, Istanbul Research Institute

The Pera district of Ottoman Istanbul has been treated as one of the cosmopolitan havens of the late Ottoman Empire and the Eastern Mediterranean, and received considerable attention from historians, although this attention was mostly shaped by an overwhelming feeling of nostalgia towards this idealized 'cosmopolitan' world. Its adjacent working-class neighborhood Kasımpaşa, on the other hand, has been largely overlooked. In both cases, the material and environmental histories of these localities were ignored in favor of offhand culturalist explanations.

This paper analyzes Pera's and Kasımpaşa's transformations from the second half of the nineteenth century to the early twentieth in a dialectical way. Following the vital infrastructural connection of sewers in particular between Pera and Kasımpaşa, I trace how the waste of 'cosmopolitan' Pera made the ecology of Kasımpaşa in myriad ways. Flowing through cemeteries and orchards, the sewers of Pera and rivers of Kasımpaşa created environmental interdependencies with unexpected outcomes. In particular, I juxtapose the increasing mobility of human waste from Pera to Kasımpaşa and the decreasing mobility of humans as the spatial and socio-economic borders of the two districts got solidified in the later decades of the nineteenth century, thus mapping the unequal ways in which biopolitical spaces of late Ottoman Istanbul were made.

Shifting trajectories of animal life in Istanbul
Sezai Ozan Zeybek, Forum Transregionale Studien

This paper will track three different trajectories of human-animal relations that have been transmuted by A) the shift in the geometry of power and B) the switch to new energy systems, basically to fossil fuels, in the last two centuries.
The first one, the new geometry of power, signifies the transfiguration of commodity chains that tie any productive activity in various localities to metropolitan/colonial centres. It is not just taxing local producers, but rendering them dependent on larger networks of production. For example, raising chickens now requires feed, antibiotic, machinery as well as animals coming from afar with the involvement of lawyers, marketers, advertisers, transporters and other intermediaries. The distances that are to be traversed swing the power away from farmers and chickens towards corporations, labs and states. This shift, I will argue, have had a drastic impact on animals and their caretakers, and is closely linked to colonial/national state formation.
The second aspect concerns the replacement of muscle energy by oil/coal, which brought about the removal of animals from the labour force: cows were replaced by tractors, horses by buses, dogs by trucks in garbage collection, and cats by high-energy-input chemicals. This did not eradicate, but modified humans' dependency on these animals.
These two drastic developments will provide the basis of my discussion regarding two sorts of animals who inhabit Istanbul alongside humans. The first group are those that are fed and killed for their flesh, egg, milk, or skin. Due to the aforementioned shifts in production, they have been confined in industrial complexes and increasingly subjected to life-enhancing technologies of a new power configuration. The second group consists of companion animals, which are cast-off from labour force, too. But unlike cows, they are not used as "resources", and consequently, either turned into family members or confined in shelters. I will follow up how that change has happened in Istanbul with the impetus of modernisation from the 1850s onwards.

Produce farming on Istanbul's shores in the Early Modern period
Aleksandar Shopov, Rachel Carson Center for Environment and Society

In his history of Istanbul, Eremya Çelebi (1637-1695) envisions a traveler sailing in a boat along the Marmara coast and approaching the city. From this riparian vantage point, Eremya imagines that the city's market gardens or bostans are visible. He remarks upon the large size of the cucumbers grown

in the gardens of “small Langa.” He also mentions the bostan in the Kadırga port, noting that although some of the vegetables in Istanbul are imported, many come from the market gardens seen throughout the city.

Eremya treats farming as a distinctive part of the urban experience, elevating the bostans and their produce as sights that a traveler arriving to Istanbul by water would hope to see—or taste. Moreover, he describes his native city not from the viewpoint of its gates or roads, but from its waters. Indeed, nearly all of the market gardens that emerged in Early Modern Istanbul were located close to the city’s shores. However, the relationship between these agricultural spaces and the waters that bordered them has not been examined. Arguing that the history of urban farming in Istanbul is inextricably linked to the transformation of the city’s shores into major transportation and residential sites, this paper hopes to direct the scholarship on the bostans to new questions. What were the social and political processes that led to the transformation of some of Istanbul’s coastline into agricultural spaces? What was the environmental impact of this transformation and how did it effect the relationship between Istanbuliots and the sea?

Session 3G
"Hard science" and "hard numbers" in environmental history: Interdisciplinary study of natural and human archives. Part I

Organizer: Adam Izdebski, Max Planck Institute for the Science of Human History / Jagiellonian University in Krakow
Chair: Péter Szabó, Institute of Botany, Academy of Sciences of the Czech Republic

Session abstract:
This session aims at pushing the boundaries of environmental history beyond the traditional disciplinary divides between history and the earth sciences, and between qualitative and quantitative approaches to the past. It is based on the experience of several projects that in the past few years aimed at integrating evidence coming from the human and natural archives – texts, plants, fossils and sediments – into a single narrative of the past. It shows how traditional historical information can be transformed into more quantitative datasets that "speak" to the vast amounts of numbers produced by earth scientists. At the same time, it investigates to what extent these same numbers can be embedded into the type of stories about the past that historians love to tell. Crucially, instead of focusing on how different types of evidence serve as proxies for different, potentially related phenomena (e.g., climate change and social unrest), we bring to the fore cases when different types of evidence are used to approach the same phenomena from totally different perspectives (agricultural expansion, socio-ecological processes, landscape change, economic performance, demographic change, etc.). With papers ranging across different epochs and regions, presented by natural scientists and historians, this session discusses the limitations and potentialities for the synergies between the different types of data.

The natural archives in the historical narrative: Potentialities and limits
Alessia Masi, Sapienza University
Adam Izdebski, Max Planck Institute for the Science of Human History / Jagiellonian University in Krakow

The plants significant role in both past and present human history is indisputable. The present landscape is modelled by millennia of human occupation and, at the same time, modern settlements and human activities are the direct result of the surrounding territory characteristics. The best way to reconstruct past plant assemblages, on local and regional scale, is using fossil pollen archives. Pollen is ubiquitous, durable and allows the identification of the originating plant. Assessing the kind and quantity of a certain pollen deposition, palynology permits to reconstruct the past landscape and its evolution across time. The natural and climatic phenomena alone cannot explain the landscape evolution in historical time. Many of the events recorded in pollen records have their origin or explanation in historical events. However, palaeoenvironmental disciplines seem far from historical research in terms of time scale, methodological approaches, possibilities and even limits. Some examples will be proposed to demonstrate the potentiality of a combined approach between natural and historical sciences, showing the ways of bridging the distance between the two

disciplines when it comes to language, approach and purpose. The dialogue between human and palaeoenvironmental disciplines is the key for writing a new history of man.

Regional variations in European building activity during times of crisis
Fredrik Charpentier Ljungqvist, Stockholm University

Past variations in building activity indirectly reflect historical changes in demography, economics, and social conditions. Construction rate declines are a sensitive indicator for the onset of a crisis as new constructions are dispensable in a time of hardships. However, prior to the eighteenth century variations in European building activity are poorly documented. Fortunately, large datasets of dendrochronologically dated felling dates from historical construction timbers permit the study of past construction rates in time and space. Using close to 50,000 precisely dated construction timber felling-dates, originating from archaeological investigations of buildings across much of central Europe, we recently established a new detailed history of European building activity between 1250 and 1699. This study allowed us to conclude that: (a) lower building activity coincided with periods of more plague outbreaks and/or higher grain prices, (b) the start of the Late Medieval Crisis is evident in a significant decline in construction activity at c. 1300 – thus preceding the Black Death (1346–1353) by five decades, the Great Famine (1315–1322) by two – and lasting till c. 1415, and (c) an unprecedented decline in European building activity occurred during the Thirty Years' War (1618–1648). We demonstrated how the quantitative analysis of construction timber felling dates provides both new insights into periods of crisis and prosperity and help to validate the impacts of past crises recorded in written sources. However, we left the spatial dynamics of past European construction activities to be explored in a future study. Here, we present a geographically much expanded network of felling dates as well as analyse the regional differences in the timing and duration of the Late Medieval Crisis and the regional impacts on building activity of the Thirty Years' War and other major armed conflicts.

Exploring the synergy of quantitative and environmental history: A study of the North-Western Peloponnese in the light of Ottoman taxation cadastres and sediment cores
Georgios Liakopoulos, Max Planck Institute for the Science of Human History

The paper attempts to delimit the boundaries between the study of quantitative historical data obtained from the Ottoman taxation cadastres and pollen proxies from sediment cores, obtained within the framework of the ongoing 'Byzantine Resilience' research project, carried out at the Max Planck Institute for the Science of Human History in Jena. Its geographic epicentre is the well-documented districts of Kalavryta, Patras (Achaia) and Hlemoutsi/Kastro Kyllinis (Elis) in the north-western Peloponnese, Greece, during the Early Ottoman Period (fifteenth-seventeenth centuries). The Ottomans had put remarkable effort in recording for fiscal purposes in situ the tax-units namely male-headed hearths, bachelors and widows encumbered with the per capita tax, their settlements and revenues. The revenues assigned to the members of the military or religious élite (askerî class) were collected by them directly from the inhabitants in lieu of salary. The results of these surveys were then collected in registers (tahrir defterleri). For the area under study, these are: TT10-1/14662 (1460-3), TT80 (1514/5), TT446 (1540-66), TT607 (1583) and TT712 (1613/4). Even though the exact size of crops and harvests cannot be accurately ascertained, the study of a series of consecutive

defters pertaining to a specific region casts light on general tendencies of the agricultural economy. This niche could be filled with the contribution of the pollen data acquired from coring sites in the same morphoclimatic zone namely Kotyhi, Lousoi and the Papas/Kalogria Lagoon. The paper will present the research outline and the anticipated results. The outputs will be collated and then illustrated with GIS maps in an attempt to visualise the 'spatial turn' of the interaction between the human and the natural environment.

Session 3H

Constructions of remote resource spaces: Africa, the Arctic and the quest for resource security in Europe

Chair & Organizer: Matthias Heymann, Aarhus University

Session abstract:

In recent years, natural resources have become a crucial concern and received increasing political attention. The rapid development of emerging nations has increased the global demand of and pressure on natural resources significantly. China emerged as a leading developer and consumer of global natural resources. Large corporations from many countries competed aggressively for resource development and exploitation on a global scale. Resource interests increasingly expanded to remote areas of the globe with potentially significant environmental impacts. These developments raise the fundamental question how well European countries are prepared to master the challenge of securing natural resources in times of increasing global competition and tension and confronted with additional pressures such as migration, terrorism, environmental change, rising nationalism and political conflicts in many world regions.

This session aims at investigating cases of European efforts of the construction of resource spaces in remote areas, such as the Arctic and Africa, in the postwar and post-Cold War era in order to analyze the deeper historical roots of contemporary resource perceptions and policies in Europe. History has formed lasting material conditions and intellectual traditions of resource policies; it has created path dependencies, institutional structures and ideological barriers; and it has informed contemporary problem perceptions and management. The contributions focus on perceptions and imaginaries about remote resource spaces, expectations of and concerns about resource extraction linked to them, interests of and negotiations among diverse actors involved in these resource activities and political tools dedicated to serve national or European interests. The cases included cover resource interests in Greenland (uranium and gold) and in Africa (copper and other metals). They deal with research strategies ranging from strict resource nationalism (Denmark/Greenland) to transnational cooperation in the framework of the European Community. They highlight the power of imaginaries and changing perceptions (Greenland) and the role of diplomatic tools dedicated to resource interests (the EC SYSMIN instrument).

The session will focus on two major sets of questions:

1) How were challenging regions such as the Arctic and Africa perceived as a research frontier or space in competition to other global stocks of natural resources? What made these regions profitable and interesting for resource exploration and extraction activities?

2) How were interests of local, national, transnational and global actors negotiated? To what extent predominated national interests and forms of resource nationalism? To what extent emerged forms of transnational cooperation or resource transnationalism in Europe?

More broadly, this session wants to shed light, first, on the question what is special about European resource policies and activities in the increasingly complex and competitive global arena in the postwar era by taking challenging resource frontiers as a focus. Second, this session wants to shed light on the question what is special about these resource frontiers in competition to other global resource stocks.

From euphoria to zero tolerance: The history of the Kvanefjeld uranium deposit in Greenland
Henrik Knudsen, Danish National Archive

Recent efforts by Australian mining company GME to obtain a mining license to it the Kvanefjeld-project in South Western Greenland have recently drawn intense attention to the uranium deposits in the mountain. The controversy around it has an equally dramatic past. The first efforts by American geologist to locate uranium reserves in southern Greenland took place during World War 2. Shortly after the war, Danish geologist followed in their footsteps as the cold war enshrouded Denmark in an atmosphere of insecurity and anxiety and Denmark aimed at gaining control over its colony's (since 1953 county's) resources. From 1955 to 1983 followed a series of Danish prestige projects in the Kvanefjeld conducted first in an atmosphere of optimism and nuclear enthusiasm, shaped equally by resource nationalism and techno nationalism. As a consequence of growing public resistance and protests against nuclear power and uranium extraction in Greenland, these efforts eventually grinded to a halt in the mid 1980's. The final nail in the coffin, it has been claimed, was the 1988 decision to erect an all-encompassing zero tolerance on uranium exploration and extraction in Greenland. The keeping or abolishing of this remarkably strict policy has been at the center of recent controversies about uranium mining in Greenland and Denmark. However, as our research clearly suggests, the zero tolerance of 1988 is a policy that never was fully enforced, and as such it has been an artifact of the political imagination. This contribution will revisit the development from euphoria to zero tolerance about uranium mining at the Kvanefjeld deposit and investigate the changes of local and Danish perceptions and policies.

Gold fever in Greenland: Sociotechnical imaginaries of gold resources, 1988–2013
Kristian Hvidtfelt Nielsen, Aarhus University

This paper provides a chronology of "gold fever" in Greenland from the first discovery of gold in Kangerlussuaq Fjord in 1989 to the closing of the Nalunaq gold mine in 2013. Using the notion of sociotechnical imaginaries to denote the conflation of scientific reports and political visions, the paper shows that from the very beginning politicians and mining companies nurtured great expectations to Greenland's gold resources. When the Nalunaq gold mine opened in 2004 after about twelve years of prospecting, geologists foresaw that ten new mines would open within the next 25 years, while politicians began to talk more optimistically about self-government (granted in 2009). The gold mine, however, was unable to meet the expectations and finally had to close due to the dramatic fall in gold prices in 2013. The paper concludes that gold resources, associated with positive as well as critical connotations, played an important role in sociotechnical imaginaries of Greenland in the late 20th and early 21st century.

France's neo-colonial resource entanglements in Africa: Perspectives on uranium extraction in Mali and Niger

Nkemjika Chimee Ihediwa, University of Nigeria

France is among the European countries that have had deep-rooted contact with the African continent. As one of the European colonial powers that possessed vast territories on the continent, it has continued to exert enormous influence in these territories after their independence on their international engagements and national political, economic and military policies. The neo-colonial influence of France in Africa is clearly manifested for the case of resource exploitation. Oil and solid minerals exploitation have guided France's engagement with its former colonies. To create an alternative to oil especially with the uncertainties of the oil market, France focused recalibrated its energy plans with a strong focus on nuclear power and uranium exploitation from its former African colonies. France is among the European nations whose electricity production rests to more than 75% on nuclear energy, causing a strong dependence on uranium. Thus French companies negotiated exclusive monopolies in uranium mining spanning over forty years in Niger Republic, giving them control over this remote resource space. Only recently, Mali and Niger have become restive spots in the Sahel, shaken by separatist Islamic movements who seek autonomy from the corporate states. The French have intervened in Mali to protect uranium interests as well as supported governments in Niger against local agitations and terror groups, which threatened to undermine its resource interests. In addition, the French government expanded its mining licenses to China, India, Britain, South Africa, the USA, Canada and Australia. Mali and Niger are amongst the poorest nations in the world. The French, focusing on securing control in this resource space, have done little to protect the local environment in the mining communities as well as preserve the health of the people. It is against this backdrop that the paper seeks to examine the French resource entanglements in the Sahel, looking at how mineral resources have shaped France's engagement with Africa, the impacts of uranium exploitation on the environment, human rights and health challenges and the implications on the economies and well-being of these states.

SYSMIN interventions in Southern Africa: Developing minerals and maintaining mines as development aid

Bjørn Bakke, Norwegian University of Science and Technology

This paper explores how and why the European Community (EC) implemented mineral projects in Africa by looking at two case-studies in Southern Africa: Zambia and Namibia. SYSMIN was an instrument created by the EC to intervene in member countries of the African, Caribbean and Pacific (ACP) group of states economy if they suffered a severe fall in production output from their mineral industries. SYSMIN aid was designed to expand or maintain a mineral industry in Africa. Zambia and its newly nationalized copper-industry was an important factor in making the EC formulate a mineral policy for the ACP-countries. SYSMIN's first intervention was a "rehabilitation" of the Zambian copper industry, an important exporter of copper to the world market and contributor to European supply security. Later they intervened in Namibia in 1990 aiming to diversify the countries mining industry away from uranium towards new minerals through capacity building and geophysical explorations. By examining these two interventions, I will be able to pursue the following research questions. How did the EC-ACP relationship, through SYSMIN, negotiate the differing interests of

local aid-recipients, national aid-recipients and European stakeholders, the mining companies and national states of the EC? How was the relationship with nationalized mining companies handled? Were there attempts at influencing Zambia towards re-privatization? To what extent did the EC's economic and political power subsume local and national interests to the transnational interests of European industry? How were the ACP, as a bloc and as states, able to formulate their concerns over mining practices etc. through SYSMIN and the EC-ACP relationship? How was agency distributed at different stages of the process to different actors? Were native landownership and possible environmental externalities from mining activity a concern for the European bureaucrats and the aid recipients?

Session 3I
The environmental effects of administrative boundaries and borders

Chair: Borna Fuerst-Bjeliš, University of Zagreb

Environmental heritage, resources and administrative boundaries during Modern Age
Elina Gugliuzzo, University Pegaso Naples
Giuseppe Restifo, independent scholar

Any territory has its boundaries characterised by environmental markers: the seashore, a river, the top of a mountain. An environmental heritage has place within those boundaries and it is partially seen by the human community as an economical resource: farm land, woods, mines and quarries, waters. On the same land, in the typical ways of the same community, there are established some borders, which delimit the area of competence of political authority and that relating to property. All these different boundaries – environmental, political, juridical - may coincide with current administrative boundaries, but most often they do not and are differently practiced by humans and nonhuman agents.
This phenomenon during modern age can be observed at a transnational level but, at the same time, it is possible to develop researches on boundaries at a local level, going towards an important direction for the multidisciplinary growth.
The markers of the administrative borders – boundary stones, crosses, heavy stones with particular engravings – are often the result of the design of a central authority, committed in the modern age to assert its control of the territory and its resources (not excluding taxes). However, the centralistic plan must face the conflict with the interests and traditions of the territorial communities, very attentive to the resources that are included in those boundaries and can be managed at the local level, possibly in collective forms; or to the resources that are excluded from those borders, perhaps to be awarded to competing communities or expropriated by the State.
The aim of this paper is to contribute to the general discussion on commons and to propose some case studies of Mediterranean sites to verify the pastoral and agricultural impact on environment and biocultural diversity, with the related and complex border lines, till the contemporary birth of no man's lands in the territory because of migrations and the abandonment due to the economic and cultural disinterest.

Discussing borders in an environmental perspective: Southern Mozambique in the late 19th century and present day challenges
Ana Cristina Roque, University of Lisbon

The history of Mozambique borders falls within the context of the effective occupation of the present-day territory of Mozambique, by the Portuguese, in the late 19th century. The decision on the implementation of physical borders resulted from the need to implement the resolutions of the Berlin Conference (1885) on the effective occupation of the territories claimed as historically under Portuguese influence or sovereignty.

Besides the well-known political, economic and social consequences, the process had a strong environmental impact. The construction of a colonial landscape, complying with colonial interests and reflecting the use of modern scientific technology and methods, was made at the expense of the destruction of the natural landscape and had an immediate and significant impact on the economy of the local communities, partly dependent from the seasonal use of natural resources to supplement their income or even their subsistence.

Using the documents produced either by the Portuguese Commission of Cartography (1883-1936) and the specific Commission for the Delimitation of the district of Lourenço Marques it is intended to examine how this process was implemented and its resulting impacts as well as to underline the specific contribution of these documents for a better perception of the History of South Mozambique.

By proposing to look at the borders' process in an environment perspective, it is expected to bring to discussion the importance of the recovering and analysis of the historical information when analysing any border process for a better perception on the relation history - memory – environment, and its key role on the present-day definition and redefinition of spaces and meanings. In addition, and in the specific case of Mozambique, it is intended to highlight the relevance of this information for the reconstruction of the past environmental history of Southern Africa, drawing attention to the particular situation of some resources, such as water, and current proposals to overcome the resulting problems of its use over time.

Session 3J
Extending the physical and conceptual boundaries of ghost acres

Organizer: Stephane Castonguay, Université du Québec à Trois-Rivières
Chair: Nancy Shoemaker, University of Connecticut

Session abstract:
Ghost acres entered the vocabulary of environmental historians following the publication of The Great Divergence by Kenneth Pomeranz in 2000. Initially proposed by food scientist Georg Borgstrom (1965) to designate the space needed to meet the nutritional requirements of a population, the notion of ghost acres is used by environmental historians to describe the process of extraterritorial extraction of natural resources by a country that needs to overcome the geographical boundaries and ecological limits of its immediate territory. As presented and used in the historiography, the notion of ghost hectare illustrates hypothetically the ecological footprint that a metropolis makes on the territory of its trading partners by converting the quantity of a given natural resource into the surface area required to grow and extract that commodity.
Yet, the conceptual potential of ghost acreage is far greater when set into a context of planetary relationality of human and non-human actors.
Participants in this panel wish to investigate how boundaries delimiting trading partners are being redrawn, suspended even, through the production, circulation and consumption of commodities Contributions will explore the explanatory potentials of the notion of ghost acres in global environmental history by moving beyond the spatial delimitation of natural resources. Rather than simply calculating the surface area where resources are being grown and extracted, the case studies will articulate the notion of ghost acres in a diversity of ways.. By considering the environmental and political consequences of the circulation of hazardous waste, how taking into account the toxicity of commodities leads to a constant redefinition of the territory of international trade and the global poisoning of the planet. How does the caloric content of commodities can inform our understanding of the energetic transition underlying the industrialization process occurring in different regions? How can we account for the landscape changes occurring simultaneously in metropolitan and colonial areas? How does that inform our understanding of the city-country relationships on a global scale? Case studies involving different spatio-temporal area will enrich the notion of ghost acres to further our understanding of changing boundaries of international trade.

From ghost hectares to real hectares: Exploring the spatial boundaries of forest exploitation in the Southern Baltic hinterland (1600–1850)
Jawad Daheur, *CNRS*

Informing us about the boon that extraterritorial extraction of resources can provide, the notion of ghost hectares is mostly used for evaluating the benefits that rich countries got from trade with less-developed regions. It tells us little, however, about the ways in which resources are actually extracted and what are the socio-environmental impacts of this process for the exporting countries. In the case of forest exploitation, ghost acreages are usually calculated on the basis of average yields of woodlands in m3/hectare, which hypothesizes a regular and homogeneous harvest. But in reality,

wood can be extracted in many different ways, each of them having very different consequences for the state of standing wood and forest cover. While clearing a forest provides huge amounts of wood in a short time, exploiting it in a sustainable way gives much smaller volumes over a long period. By focusing on the Polish Baltic hinterland – one of the biggest international provider forest resources in Early Modern Europe –, the paper will discuss how the calculation of hectares incorporated in trade from harbours like Danzig, Elbing and Königsberg can be analytically related to and compared with the real evolution of forests that were exploited for fulfilling the external demand. In particular, the paper will deal with the role of forest products – such as ash, potash, pitch and tar – whose production involved the carbonisation of trees and had therefore a spatial impact. To that end, I will examin statistical data on trade, cartographic material and archival evidences about forest exploitation on different geographical scales. Ultimately, the paper aims at reconstructing the boundaries of export-oriented wood extraction and thus at offering a clearer vision of the timber frontier's dynamics in the Southern Baltic hinterland.

Ghost acres, interconnected synchronicities and landscape changes in the forest and urban environments of the British Empire during the long 19th century

Jim Clifford, University of Saskatchewan
Stéphane Castonguay, Université du Québec à Trois-Rivières

This paper addresses environmental transformations of ghost acres in the North American British colonies as a product of the integration of the St. Lawrence Valley into trade networks supporting British industrialization during the long 19th century. A reconstitution of the exchange circuits of wood products, from the extraction sites of different forest areas of Canada to their final destination in the British market, enables us to identify the environmental consequences resulting from the insertion of the colonial forest economy into imperial trade networks. Aside from the impact of resource extraction on the forest cover, the environmental consequences that we discuss in this paper also comprise the changes occurring in the British urban landscapes, since one of the major markets for imported lumber was the housing industry for a nation undergoing rapid urban population growth. Furthermore, we also describe how harbour facilities and riverine infrastructures were reshaped to facilitate the transportation and transhipment of bulky commodities like lumber, in major ports of Great Britain and British North America. Following Hazareesingh (2009), we refer to these simultaneous transformations of rural and urban landscapes in Canada and in Britain as "interconnected synchronicities." The study of the "interconnected synchronicities" between urbanization in Great Britain and forest exploitation in British North America reveals how the boundaries uniting a metropolis and its hinterlands are being constantly redrawn, sometimes even partly dissolving. Accordingly, we suggest how the notion of ghost acres used to describe the ecological footprint of resource consumption from abroad can accommodate landscape transformations throughout the Empire, within and outside the metropolis, to enrich our understanding of the environmental impacts of imperial trade.

Toxic commons: Ghost acres and the global waste economy

Simone M. Müller, Rachel Carson Center for Environment and Society

Commencing in the late 1970s and in line with stricter environmental legislation, increasing amounts of problematic waste and growing shortage of appropriate disposal sites in industrial nations, the international mobility of hazardous waste vastly increased. Instead of disposing it close to the source, waste managers sold hazardous waste to other parts of the world, where disposal, reuse or recycling were cheaper. By the 1980s many countries in the global South provided the waste ghost acreage for the affluent North.

As millions of tons of hazardous waste transgressed national boundaries, the trade divided the world along the lines of a seeming "recolonization" through trash. Furthermore, the appropriation of another country's environment as one's out-of-state waste ghost acreage also created what I call toxic commons, i.e. polluted and potentially harmful as well as highly controversial spaces of a directly or implicitly complicit, transnational collective.

Using the example of the Khian Sea, a waste barge dumping US waste on Haiti, this paper illustrates how human and non-human actors on both sides of the waste transaction became locked into the discursive and material creation of such toxic commons. Politicians, activists, economists and environmentalists either strongly advocated or opposed the waste's mobility and battled over questions of ownership and responsibility, clean-up and remuneration. Meanwhile, the physical dumping of Philadelphia incinerator ash onto the beach of Haiti as well as a successful "return-to-sender" campaign connected non-human actors across vast distances and created new environments across the globe.

Since hazardous waste does not disappear, we may not understand toxic ghost acres as the simple externalization of unwanted materiality that re-draws global lines of economic and political dependency. Rather, we must acknowledge for the materials continuous presence and the validity of ethical arguments on ownership and responsibility, which re-internalizes these ghost acres and transforms them into toxic commons we all have to account for.

Session 3K

Nordic adventure landscapes: Invention and reinvention of a nature tradition and their environmental potentials

Chair & Organizer: Karen Lykke Syse, University of Oslo

Session abstract:

Explorers, scientists and adventurers instigated trekking as a recreational activity in Nordic countries such as Sweden and Norway. In the early 1800s, Norway's rugged mountains offered sublime landscapes populated by poor peasants. In the same vein, Sweden's benign and beloved nature was experienced and admired by people both within the country and by foreign visitors. Nature, both benign and sublime, represented the opposite of urban modernity and the wheels of commerce that hammered through Europe. By the early 1900-hundreds, the bourgeoisie adopted nature trekking, and today, trekking has become a Nordic past-time, and has lost most of its upper class connotations. What did these Nordic nature activities mean in the past, and how do ideals of a simple outdoor lifestyle shape practice in the present? Traditional trekking and the material culture associated with it has projected ideals of simplicity and low environmental impact, yet the mountaineer and philosopher Arne Næss's ideals of "a rich life with simple means" has a parallel movement of nature consumption, with an associated material culture based on high energy demands, fossil fuels and plastics. The papers in this panel will address the invention and reinvention of a being-in-nature tradition, and explore the two different trajectories of these ideas in the present. One of them has a lighter environmental impact than the other. Is there a potential for integrating the ideals of the latter among different social groups today?

Understanding the nature of the native: A quest for authenticity in Norwegian landscapes

Karen Lykke Syse, University of Oslo

From the mid 1700s until about 1900, several books about Norway were published by foreigners trekking through Norwegian landscapes with notebook, sketchbook, and maybe fishing rod or rifle in hand. The very first explorers, looking for business ventures, scientific advancement or natural adventures mainly came from the European colonial powers and provided an outsiders view of Norway. Norway was both geographically and culturally a periphery, and was rediscovered in the 1700s. To understand and categorise it, visitors created hierarchies of civilisations, used to delineate nature-culture, class, and gender. Some of these outsiders were on a quest for authenticity, and wished to explore their exotic, primitive and underdeveloped neighbours to try to understand themselves. Their accounts contain evaluations of Norwegian landscapes and people that have been used – at times uncritically – as a source to understand the past by even Norwegian scholars. To which degree have the stories of Norway as a wilderness and a frontier prevailed, and if it has – does it shape the present recreational use of these landscapes? Are we still hunting for the sublime in Norwegian landscapes, and is authenticity something that can be found, and understood, through the tourists gaze?

Practices of sharing economy and environmentalism within the Norwegian Trekking Association cabin system

Karina Standal, Cicero – Center for International Climate Research
Hege Westskog, Cicero – Center for International Climate Research

This paper explores use of the Norwegian Trekking Association (DNT) cabins in Norway and how it relates to aspects of environmentalism and sharing and is based on a mixed methods approach with both qualitative interviews with DNT members, a survey, participatory
observations and studies of guests' books available in the cabins. The unique DNT cabin system offer their members and others the opportunity to use cabins in the nature all over Norway for a modest fee. Built on voluntary work DNT has a high standing in Norwegian outdoor identity. As an institution, DNT produce and reproduce norms of sharing (sharing economy) and concern for the environment. The cabins are shared by whoever wishes to use them, they also are in line with a simple outdoor lifestyle as they generally are without electricity and modern facilities, but represent traditional cabin life with a low 'footprint' on nature. This is in contrast to the private cabin culture in Norway, which generally emphasizes the meeting of family generations and conserving the sanctity of the private family sphere. In addition, private cabin culture has been increasingly characterized by status competition and new ideals of interior decoration and new technology, favouring consumerism and more demarcation from the nature the cabins are placed in. The DNT system thus constitute an alternative influence (due to their high social standing) focused on a more environmentally friendly outdoor lifestyle and cabin use. However, the practices of sharing and environmentalism within the DNT cabin system are mediated through implicit norms and tacit knowledge, which are rooted in traditional Norwegian outdoor culture. As the norms are implicit it means that it is not easily accessible to outsider groups, and the potential for spreading of these sharing practices are limited and conditioned by how the DNT system manage to provide arenas for outsiders groups to feel comfortable with norms and practices at the cabins.

Making place for the future: The transformation of Viared from rural village to industrial area after 1972

Daniel Svensson, Chalmers University of Technology

In the 1970s, officials and politicians in the Swedish municipality of Borås passed a development plan that meant a total transformation of the rural village Viared. The area was framed as a perfect location for a new industrial and logistics park, motivated by arguments of urbanization, rationalization, economic growth and the need for new jobs to replace the ones lost in the wake of textile industry crisis. After passing the plan in 1972, 300 houses were destroyed and arable land was replaced by industries. Some of the 600 villagers protested, but were dismissed. Their farms were sold under threat of expropriation, and local movement heritage (Svensson, Sörlin & Wormbs 2016) such as paths and dirt roads were destroyed in the process. However, the transformation also resulted in thousands of jobs and a diversification of the local industry and labor market.
This paper analyzes the debate about the transformation, and the ideas and arguments used to motivate or resist the industrialization process, through the concept articulation of territory (Sörlin 1999). Two types of articulations of the landscape stood against each other – one focusing on rationalistic arguments and scientific knowledge, the other about heritage and personal knowledge.

The transformation of Viared shows how the need for industrial land was prioritized over arguments of historical, traditional and cultural rights to land, as they have been in other, more debated cases in Sweden and elsewhere. The Viared case further underline how large-scale technologies and production systems tend to be incompatible with traditional landscape management (Scott 1998), as well as causing massive loss of local heritage. It also highlights how boundaries between different types of landscapes are negotiated and re-interpreted over time, thereby contributing to a much larger discussion about urban expansion and its effects on environment, heritage and local practices.

10:30-11:00 Coffee break

ICEHO coffee break in room A-354. Grab your coffee and come to learn more about the tremendous work of the International Consortium of Environmental History Organizations!

11:00-12:30 Parallel Session 4

Session 4A
Water infrastructure history across borders

Organizer: Julia Obertreis, Friedrich-Alexander-Universität Erlangen-Nürnberg
Chair: Christoph Bernhardt, Leibniz Institute for Research on Society and Space

Session abstract:
The session will analyze water infrastructure history beyond borders. It is an attempt to overcome the boundaries between environmental history, infrastructure history, and general political and social history. The session will focus on water infrastructure (water supply and sewage systems, embankments, dams etc.) in cities and questions of urbanization. Two papers examine water supply systems and canalization in Berlin and St. Petersburg/Leningrad in a longue durée perspective across the twentieth century. They aim to show how the planning, erection and usage of water infrastructure transcend political caesurae, e.g. the 1917 revolutions or Cold War divisions. One paper will address more general methodological and empirical questions of infrastructure and environmental history.
A central concern of the session is the juxtaposition but also entanglement between East and West, addressed with a close-up of post-war Berlin as well as in a wider systemic comparison. We still know little about (water) infrastructure in socialist cities, although some general features of the differences and similarities of urbanization and urban history East–West have been addressed. For instance, urbanization processes have their own chronologies with a quantitative boom in Eastern Europe beginning in the 1920s/1930s. The differences between the "capitalist" city and the "socialist" city have been examined so far mostly with regard to architecture and general city planning. The differences in infrastructure provision and use have as yet to be addressed by historians.
The session will also shed light on the borders and interconnections between infrastructure history and environmental history. How did infrastructure systems solve but also create environmental problems? How did they affect urban ecology or standards of living? Which environmental activities and movements can be found that addressed aspects of water quality and water use?

Juxtaposed systems: The boundary work of infrastructure in Berlin
Timothy Moss, IRI THESys, Humboldt University of Berlin

The seminal work of Thomas Hughes on Large Technical Systems explains radical change to their configuration in terms of a "battle of the systems". In the historical trajectory of an electricity or water supply network incompatibilities between components of the dominant socio-technical system generate contestation. Where an intrusive technology or policy proves successful it can alter the trajectory of the infrastructure system. This model of socio-technical evolution, although helpful in conceptualising socio-technical change, allows little scope for the co-existence of different types of infrastructures at any one place and time. Recent research is pointing to the need for a more

nuanced understanding of infrastructure history that considers the alternative pathways that did not disappear in the wake of a dominant system. In my paper I will use the case of water infrastructures in Berlin as a deliberate counterpoint to the linear model of technological development. Focussing on the Cold War period in which Berlin was divided, I present a narrative characterised by the separation of established urban water and wastewater systems and the attempts to adapt them in the image of two competing political ideologies. The juxtaposition of two competing systems for infrastructure provision – one socialist and state-planned, the other entrepreneurial and municipally accountable – reveals intriguing differences in the way water and sanitation services were envisioned and provided, but also persistent interdependencies between West and East that compromised ideals of system autarky throughout the 40 years of political division. In this sense, the paper will investigate the boundary work of Berlin's water infrastructures, as both socio-material manifestations of the geopolitical divide and systems that resisted complete separation. It will thereby reveal the environmental implications and limitations of the infrastructural divide.

Water infrastructures in St. Petersburg/ Leningrad in the long 20th century
Olga Malinova-Tziafeta, Alexander-Friedrich-Universität Erlangen-Nürnberg

The paper examines urban water infrastructures. They have, firstly, executed their direct technical functions. Secondly, they were planned and discussed in expert circles by health professionals, engineers, specialists for financial investments, and others. Thirdly, they regularly appeared in the centre of important public, cultural, economic, ecological, and political discussions. The example of Petersburg/Leningrad is, in this respect, more telling than that of other cities in Russia. The geographic and economic conditions were so complicated that the erection and renewal of a modern sewage system and its equipment with modern purifying installations was delayed and halted again and again. As a consequence, this subject was part of the most heated political debates, first of all in the 1910s, before the October Revolution of 1917, and later during Perestroika. It was also broadly discussed during the Soviet period. These debates are an important indicator of the development of society during the modern era with its general big interest in water infrastructure. The long durée structures are especially important when studying this subject. The factual decisions taken about the provision of water infrastructures in a period of political regime change or after revolutions show very well which role ecological and infrastructure problems can play in the life of a city and of a society. Which role do they play in the formation of social groups and movements across time? How do the above mentioned discussions reflect changes in the ideas of urban space, urban ecology, health, and comfort? In which ways are the ideas about long-term infrastructure development part of expert and political discourses, and how are they made use of? In a nutshell, on the example of water infrastructures the paper discusses the role of ecology and technology in urban public life and the means of their usage in other discourses.

Urban water infrastructure in the 20th century in Europe East and West
Julia Obertreis, Alexander-Friedrich-Universität Erlangen-Nürnberg

The paper aims to provide an overview on existing research on water infrastructure in cities in Europe East and West and tries to give an outline of further research. Three main strands of research

will be addressed. First, general urbanization processes will be discussed. While there are some studies on urbanization and Soviet cities in the 1920s and 1930s (focusing mostly on Moscow and Leningrad), we still know little about the socialist city after WW II and after Stalin's death (with a certain exception concerning city planning and housing construction). This is not to say that West European urbanization and urban history post-1945 is well studied. For both East and West, questions of urban ecology and of water usage remain understudied. Second, the basic ideas and findings of infrastructure history (Infrastrukturgeschichte) will be summarized with a focus on water infrastructure. Through the erection and usage of water infrastructure, power relations and (de)legitimatory strategies can be revealed. Input from the fields of geography, urban ecology, anthropology, history of medicine, and others can be used to examine the significance of water and water infrastructure in the modern era. Last but not least, some light will be shed on environmental history, its research results and (possible) input. Research on environmentalist groups, be they part of a broad social movement like for example in the Federal Republic of Germany or rather an expert community like in the Soviet Union, is progressing, and it contributes to our understanding of public spheres. However, water quality in cities and specific urban environmental debates on the provision of fresh water and the state of sanitation have gained little attention so far. Environmental history, urban and infrastructural history need to be interrelated in order to provide a fuller picture of urban living and modern societies' dependence on and investing in infrastructure systems in both East and West.

Comment: Christoph Bernhardt, *Leibniz Institute for Research on Society and Space*

The comment will address, besides some selected questions on the individual papers, three major cross-cutting issues: It will firstly reflect and ask the paper givers to what extent the Western and the socialist system of water infrastructure and management followed the same vision of water modernity and the "bacteriological city" (M. Gandy) and which differences or variations can be identified. Secondly it will address the limits of the centralized water technologies at the urban peripheries and during the crises of urban modernity, as well as social inequalities in modern water provision and discharge and the role of alternative resp. decentralized systems. Thirdly the comment will ask for "best practices" of research and approaches which integrate the study of infrastructure history and environmental history.

Session 4B

Bordering the Little Ice Age and its human consequences: Spatial, temporal and conceptual aspects. Part II: The Baltic Sea region in a long-term perspective

Organizers: Christian Rohr, University of Bern
Heli Huhtamaa, Heidelberg University
Chantal Camenisch, University of York
Chair: Heli Huhtamaa, Heidelberg University

Session abstract:
Climate sets the initial boundary conditions for human activities, for example, what crops to cultivate or how to build houses. On the other hand, humans can adapt to and cope with even with the most hostile climatic conditions. The period of the Little Ice Age (LIA) setting these boundary conditions concerns large number of environment historians, as the climatic phase can be seen ranging, at least regionally, from the late medieval times to the early-20th century.
The second session focuses on the human consequences of and the adaptation to the deteriorating climate and sheds light on the dating when the temperatures begun to rise. The spatial focus of the session is on the temperature sensitive Baltic Sea Region. The first paper discusses the relationships between climate and crises in medieval and early modern Estonia. The second paper explores the agricultural developments in the 16th–19th centuries Sweden in relation to climatic fluctuations with diverse qualitative and quantitative evidence. The last paper demonstrates how ice break-up data from southwest Finland reveals a distinctive transitional stage between the LIA and the warming in the 20th century. All of the three papers in the session have a multi-centennial perspective on the climate-society dynamics. Such long-term knowledge can, in turn, help us to assess the possible impacts of future climate change.

Tracking climate-driven pan-regional crises on the eastern shore of the Baltic Sea region: 13th–17th centuries
Priit Raudkivi, Tallinn University

Estonian history based on written sources can be explored starting from the 13th century. Only then, the climate-driven crises documented on the European or even global scale can be studied in a comparative way. Yet the scarcity of the local sources is depressing. Probably the seeds for the LIA have been put down in the second half of the 13th century. Sudden climatic change of that time caused subsistence crisis all over Europe including Russia in the neighbourhood. Unfortunately, we cannot trace extreme weather events and its impact in Estonia before the Great Famine of the year 1315. This episode is documented in one chronicle only, but it has all the elements of classical hierarchized impact order model starting from biophysical effects, its impact on livelihood and nutrition and the social implications. The whole 14th century seems to be troubled one (temperature fluctuations, storms, the plague, social unrest, wars, population losses, deserted settlement). But throughout the Middle-Ages the manifestation of extreme weather and climate-driven crises are too fragmented for a detailed presentation.

The 17th century provides in two cases an opportunity for a comparison with the rest of the world. The impact of Huaynaputina volcano eruption in 1600 can be followed in Estonia in detail starting from weather caused biophysical effect that lead to three-year famine and brought about great variety of social implications. War and the plague made the situation even worse. In some regions, 75–80 % of farmsteads were abandoned. The famine of 1695–1697 follows the same pattern as in the beginning of the century but there was neither war nor plague. Presumably, one-fifth of the population perished. According to recent research, the population losses of 1601–1603 could have been even higher.

Hard work and technological changes defeat climate change: Agricultural development in Sweden in the face of deteriorating climate 1570–1870

Lotta Leijonhufvud, Gothenburg University

At the end of the 1560s, winter temperatures dropped significantly in Sweden, sharply marking out a beginning of the Little Ice Age – but also the start of Sweden as a superpower and the creation of a Mare Nostrum of the Baltic Sea. In the 1720s, the political power of Sweden waned – and winter temperatures increased.

How did agricultural production proceed during this time? This paper combines old databases, as well as presenting new data from the 19th century, where the expansion of agriculture is quantified for the years of 1810 and 1870. These data give us a better understanding of the agricultural revolution of the 19th century than those that has previously existed. The paper tries to combine different sources from harvest tithes, land survey maps that allow us to estimate total field areas in Sweden with climate data of both temperature (quantitative) and precipitation (qualitative).

Is it possible that the change in production mix of Swedish agriculture, where oats make great inroads at the expense of barley, from the 1590s is a consequence of the deterioration in climate? Oats suffer cold and wet summers much better than barley. The latter crop had seen its dominance decrease already in the late Middle Ages, when rye increased its share of the harvest, and continued to see its popularity fade in the course of the 17th and 18th centuries. Rye (and wheat, though wheat was grown in minuscule proportions until the mid 19th century, when it increased to a tiny proportion) sown in the autumn, favour cold – and snowy – winters and dry summers.

From the mid 18th century, Sweden set forth on an enclosure movement, further improving agricultural conditions in the country, which through different reform agendas finished in the latter half of the 19th century. So, Sweden faced the terrible conditions of the Little Ice Age, by increasing agricultural production through expansion of field areas and shifting to more resilient crops.

From the Little Ice Age to modern warming in southwest Finland

Stefan Norrgård, Åbo Akademi University

Situated in the north of Europe, the winters are dark, cold and long in Finland. Autumn and winter temperatures are low enough to let rivers and lakes freeze-up, which entails the phenomena of break-ups every spring. In this presentation, I will employ the Aura River breakup series (1749–2018) in Tuku, southwest Finland, to discuss the idea of a transition period between the Little Ice Age and the warming in the 20th century.

A statistical analysis of the Aura River breakup data showed a trend towards earlier breakups in 1880s and again in the 1920s. The change towards earlier breakup dates is pronounced after the 1920s, which is why it was suggested that the 1880–1920 period signalled a transitional stage between the LIA and the warming in the 20th century. However, the trends do not stop in the 1920s. The following threshold occurs in 1960s, and another one in the 1990s. Considering these thresholds towards earlier breakups, are similar changes present in breakup variability and extreme events, i.e. are the breakups continuously becoming earlier while dynamic breakups become rarer? Has the character, intensity and severity of ice jams changed between 1749 and 2018? Moreover, in historical climatology, there is a need for more long-term investigations that consider climate impact also after the Industrial Revolution. Hence, when considering long-term changes in the environment (the growth of the city) are ice jams in the 1700s comparable to those in the 1900s? I employ descriptions of ice breakups from Aura River in Turku to identify and discuss changes in ice breakups and to what degree they compare to the current understanding of climate variability over the last 270 years.

Session 4C

Environmental history as the politics and tools of timing: Nature-times, calendar-times and political times

Organizer: May-Brith Ohman Nielsen, University of Agder
Chair: Kristin Asdal, University of Oslo

Session abstract:
How to analyze and narrate the history and politics of the environment? Despite studying "time" and changes over time, historians hardly examine the intricate tools of timing. That is, we seldom address how the politics of nature not only happens in time, but are also carried out by way of timing-practices. This session will address how time is done in politics of nature, - in fact the point of departure for this session is that we cannot sufficiently understand how nature has been made governable without addressing the different versions of time and time-work involved. The topic of this session is to explore the ways in which nature has been managed and governed by tools such as clocks and calendars on the one side, and changing modes of knowing "nature-times"- (such as seasons of growth, breeding, migration and swarming) on the other. Moreover, as a third dimension, we must understand the impact of political time; the logics and rhythms of parliamentary sessions, elections and political procedures. This includes seizing the opportunity of the right political moment, sense of urgency as well as long- and short-time planning.
In short, we suggest writing and analyzing the history of environmental politics as a history of timing. For this session, we present papers that explore the history of the little tools of timing, such as calendars, seasons and sessions – and their intricate relations in the governing nature.

Timing predators
May-Brith Ohman Nielsen, University of Agder
Anne Mette Seines, University of Agder

This paper explores the session theme of timing based on empirical material from Norwegian predator eradication campaigns 1845–1967, with a focus on government initiates poison bait eradication of wolves, lynx, foxes, wolverines, predator birds and crows.

Timing fish
Kristin Asdal, University of Oslo

This paper explores the session theme of timing based on empirical material from the Norwegian environmental history of governing fish, and fisheries 1860–1910.

Timing bees

Anne Jorunn Frøyen, Jærmuseet

This paper explores the sessions theme of timing based on empirical material from the conflict between pesticide users and beekeepers in Norway's main agricultural region, Jaeren, 1935–1965.

Timing rats

Anne Mette Seines, University of Agder
May-Brith Ohman Nielsen, University of Agder

This paper explores the sessions theme of timing based on empirical material from the Norwegian politics on rats, on local and national level, 1845–1965.

Session 4D
Energies at home: Transgressing or reinforcing gender boundaries?

Organizer: Charles-Francois Mathis, University Bordeaux Montaigne
Chair: Timo Myllyntaus, Turku School of Economics

Session abstract:
Environmental and gender studies have roughly emerged and developed at the same time, but, despite ground-breaking works by well-known researchers (Carolyn Merchant, Vandana Shiva etc.), they too rarely intersect. This session therefore proposes to apply a gender perspective on the environmental history of energy uses. The papers will cover a period ranging from the 1890s to the 1950s, and they will deal with the United-States, Great Britain and Japan. Rebecca Wright will analyse the progressive reform movement and its moulding of American energy consumption; Charles-François Mathis will question the consequences of the gendered policy of the British Coal Utilisation Council; and Hiroki Shin will offer a gender perspective to the household energy transition in post-WWII Japan.
In all these case studies, the issue of energy comes at the foreground of the public debate: fears of coal or wood shortages, battles against pollution, housing reforms and sanitation movements, all tend to consider energy as a key element in fighting the negative effects of industrialisation. To do so, both industrial and domestic consumption had to be dealt with. We will concentrate, in this session, on the latter, as the one most polarised on gender issues. Indeed, women were early seen as the main agents in domestic fuel choices and uses, and therefore targeted as such by reformers or fuel companies. This had different consequences. It reinforced their gendered role models as wives and mothers. It questioned the kind of energy that was most likely to free women from burdensome tasks. But it also allowed the emergence of a female expertise on the question, enabling women to enter the public sphere. The same blurring of boundaries between private and public can be seen in the consequences of these domestic decisions and actions on the energy landscapes of the countries.

Progressive reform, female expertise, and the moulding of American energy consumption
Rebecca Wright, Northumbria University

Progressive reformers are best known for establishing a range of social programmes to tackle the negative effects of industrialisation on American society, between 1890 and 1920. The movement provided new gender roles for middle-class educated women to enter the public sphere and shape American society. In the process of fighting for housing reform, improved sanitation, infant welfare and better rights for workers, progressive reformers also changed the way Americans used energy. This located women at the centre of shaping domestic energy consumption and urban energy landscapes. Not only did progressive reformers establish new habits, norms and practices of domestic energy use, they also led an extensive debate about what constituted the basic needs of energy use. Beyond shaping domestic energy demand, the form and structure of female expertise cultivated through the reform movement would inform how women would participate within fuel policy debates in the decades to come, as home economy replaced political action as a gendered

sphere of expertise. By uncovering the role of the progressive reform movement in shaping American energy consumption, and female expertise within the energy sector, the paper will ask how gender roles, new epistemological models, and changing political ideologies left its mark on American energy landscapes.

Women, domesticity and the British Coal Utilisation Council in the 1930s
Charles-Francois Mathis, Bordeaux Montaigne University

Extracting coal in Great Britain was mainly a man's job; but its domestic use remained essentially in the hands of women. In the course of the 19th century and at the beginning of the 20th, they started to be seen progressively as the main actresses of domestic fuel savings, in a context of growing concerns about coal shortages: household books dealt at length on how to light a fire, which cooking devices were best suited for good and economic meals, etc. The continuous expansion of electricity in the interwar period seemed to challenge this situation: the new energy was seen as a means of emancipation for women, freed from arduous and dirty tasks induced by the use of coal. In this paper, I would like to analyse how coal companies reacted to this challenge through the creation, in 1932, of the Coal Utilisation Council. Aimed at promoting the better use of coal, it mainly attempted to improve coal sales, and to do so, clearly chose a gendered approach, targeting women in its posters, advertisements and even in a series of handbooks for courses on coal salesmanship. Coal was, in its turn, presented as answering the duties and worries of mothers and wives: saving money, bringing health and good food to the family, comfort and warmth to husband and guests. In so doing, the Coal Utilisation Council was trying to reshape the image of coal, detaching it from its negative associations to smoke and dirt. This paper will therefore propose a cultural and gendered study of coal in interwar Britain and will try to understand how such a fossil fuel can be used to strengthen gender boundaries threatened by another energy.

Forest crisis, rural energy reform and women's groups: A gender perspective to the household energy transition in post-WWII Japan
Hiroki Shin, Science Museum London / Birkbeck College

This paper examines the role of female consumers in Japan's household energy transition from the 1940s to the 1970s. Up until the early 1950s, approximately two-thirds of the country's domestic fuel came from charcoal, fuel wood and other biomass fuel. The shift away from traditional biomass fuel in the late 1950s was mediated by the semi-official 'life improvement' movement and the grassroots activity of women's groups in rural areas. Informed by the recent research in gender and technology, this paper aims to illustrate female energy users as active consumers of technology. The first part of the paper discusses the country's forest crisis after the World War II, a severe deforestation caused by the excessive harvesting of forest resources during the war. The forest crisis created a grave energy shortage and frequent natural disasters in the late 1940s, which prompted the establishment of an official policy aiming to reduce household consumers' dependence on biomass fuel, especially in rural areas. The second part of the paper looks at the activity of women's groups in the process of the energy transition away from traditional fuel. These small but numerous women's groups in rural communities led the way in transforming domestic energy use in Japan's

countryside through collective adoption of new technology and energy (especially solar water heating and kerosene). Although the energy transition was closely aligned with public discussion on gender equality and rural reform, the energy transition brought relatively little practical benefits to rural women, and the life improvement movement reinforced women's traditional gender roles in rural households. Overall, this paper foregrounds the highly gendered mode of technological diffusion in post-WWII Japan.

Session 4E
Border ecologies: Cross-border perspective on protected areas

Organizer: Csaba Mészáros, Hungarian Academy of Sciences
Chair: Jurij Fikfak, Research Centre of the Slovenian Academy of Sciences and Arts

Session abstract:
The study of state borders and ethnic boundaries has long been in the focus of ethnographic scholarship in Central- and Eastern-Europe. The history of protected areas at European border regions provide powerful examples, that history is to be understood as socio-natural history: that of two co-evolving entities, society and nature has always been entangled in a web of connections and reciprocal influences. It is particularly true to the Slovenian-Hungarian state border, where ecological diversity and the mosaic pattern of meadows, orchards and croplands is the result of relatively backward traditional methods of cultivation. Not only state modernization efforts of the last century (alongside with collectivization at the Hungarian side of the border) has changed the relationship between local farmers and borderlands but also the construction of the "Iron Curtain" which resulted in the depopulation and the relative rewilding of the border zone. As a result, weakly cultivated border areas became a retreat for various plant and animal species. After the fall of the Iron Curtain and the deconstruction of the border infrastructure, the Hungarian-Slovenian border area soon got in the focus of conservation efforts. At both sides of the border, National Parks were established, and local NGOs and GOs joined to the European Green Belt Initiative. Now, this development poses both challenges and opportunities for villagers in an area crisscrossed by state borders, ethnic boundaries, and the borders of protected and unprotected areas. Based on a joint ongoing research project Slovenian and Hungarian anthropologists share the insights of local communities on tourism, National Parks and EU policies. We aim at mapping the differences and similarities in Slovenia and Hungary and among Slovenian and Hungarian minority communities in managing external development funding and bottom-up initiatives.

How to understand Anthropocene in peripheral communities?
Csaba Mészáros, Hungarian Academy of Sciences

The term Anthropocene emphasizes human activity as a dominant influence on the environment, pointing at the ever-increasing anthropogenic pressure on natural resources. However, I argue, from the perspective of local peripheral communities at the Hungarian-Slovenian border this current era rather deters than encourages locals to step up as independent agents in their own environment, and villagers feel increasingly detached from their meadows, pastures and forests. This alienation is the result of a century-long process (the establishment of state borders, collectivization, the construction of the Iron Curtain, the emergence of state farm, and lastly the foundation of National Parks) of socio-economic transformation. Based on a three case studies (the construction of a road, the management of an ecotourism centre, and the conflicts around newly planted orchards) from the area I will point out how this sequence of changes alongside with the institutionalization of nature preservation have altered gradually local environmental perception and the attachment of locals to non-human entities in the area. I argue that the use of agricultural machinery and the

professionalization of environmental management have resulted in a certain indirectness between local smallholders and their environment, and therefore farmers no longer have the sufficient knowledge and feel confident to manage independently their land plots and forests. This result in various conflicts between local farmers, village authorities, conservationists and the management of the National Parks both in Slovenia and in Hungary.

Different preferences of conservationists and local farmers regarding protected species with conservational significance in a high nature value borderland region

Viktor Ulicsni, Hungarian Academy of Sciences
Zsolt Molnár, Hungarian Academy of Sciences
Dániel Babai, Hungarian Academy of Sciences

For the achievement of the goals of nature conservation, it is of high relevance to consider the attitudes of various stakeholder groups towards species of conservation significance. However, species that are protected by national laws are not always the same as the ones local people consider worth protecting. It makes the situation especially complicated if nature conservation is carried out on two sides of the state boundary in physically connected areas, which are differently managed by local people. Our research was conducted in Central Europe in a border region between Slovenia and Hungary, in two neighbouring protected areas. 15-15 structured interviews were made with local farmers in the two regions respectively. Species that are considered important by nature conservation and communicated to the public have been identified by making semi-structured interviews with rangers and specialists and examining their publications and pamphlets.
There is a significant overlap between species considered to be most important to protect by the locals and nature conservation, especially regarding birds on both sides of the border. The biggest difference was identified related to insects (mainly butterflies and dragonflies). Although the farmers have detailed knowledge on the local fauna (they identify ca. 300 folk taxa), some species of particular importance for nature conservation are unknown to them, primarily because of the species' elusive behaviour. Although farmers who receive territorial subsidies with the aim of species conservation are aware of those animals in favour they need to apply limitations in their farming and understand the relevance of these species, they would no longer do farming conservation-friendly in the absence of subsidies. Nature conservation should pay more attention to the perceptions of local communities, and beyond informing the farmers they should understand and (in compliance with the locals) shape the general attitude towards endangered species regardless national borders.

Wildlife: Heritage and burden of the Iron Curtain

Miha Kozorog, Research Centre of the Slovenian Academy of Sciences and Arts

This paper is based on ethnographic fieldwork in villages along the Slovenian-Hungarian border, in the area of Goričko in Slovenia. During socialism, respective sides of the border were depopulated and rewilded. Because of preserved biodiversity, however, the post-socialist Slovenia turned Goričko into a regional park. Besides, it has become part of the European Green Belt initiative, whose aim is to preserve natural heritage along the former Iron Curtain. Today, part of biodiversity in this area are big wild animals (red deer, roe deer, wild boar), which cause trouble to local farmers. The latter

regularly complain that the presence of animals on cultivated lands for them represents a burden. I will focus on farmers' narratives on wild animals, particularly on their perception that the number of these animals has enlarged after the fall of the Iron Curtain. As they explain, the previous, guarded border had protected farmlands from animals, whereas the contemporary, permissive border turned their fields into feeders. At the same time, I will focus on local narratives and historical data on the ecological management of the Iron Curtain, part of which was afforestation of the borderlands in Hungary. This specific ecology of the border had presumably led to wildlife procreation in the borderlands, which today represent both heritage and burden.

Session 4F
Urban natures

Chair: Petra J.E.M. van Dam, Vrije Universiteit Amsterdam

Spectacle: A history of Boston's urban islands
Pavla Šimková, Ludwig Maximilian University of Munich / Rachel Carson Center for Environment and Society

Spectacle Island is a curious place. The 105-acre island in Boston Harbor looks today like a picture-perfect urban park that rightfully claims the place of a crown jewel of the Boston Harbor Islands National Park Area. Yet only thirty years ago, this green paradise was an abandoned landfill, its 70-feet thick layer of garbage leaking pollutants into the harbor. Before that, the island hosted a waste-reduction plant, a quarantine hospital, and a factory rendering dead horses. For centuries, Spectacle has been used by the city of Boston as a dumping ground for things the city wanted out of the way and as resource for what it lacked. While constructing the island as essentially different and isolated, the city has over time integrated it firmly into its urban network.
Spectacle may be a strange place, but it is not unique. Despite their perceived physical separation from the city, the 34 Boston Harbor Islands have been an integral part of Boston's urban infrastructure since the colonial days, transformed by the city's changing values and catering to its current needs. Moreover, along the coasts of North America there are dozens of coastal islands close to urban areas that went through a similar development. Through focusing on the dramatic transformations of Spectacle Island, I ask what it means for a place to be an urban island, what their specific geographic situation has meant for the way these islands have historically been perceived and used and how these perceptions and uses have changed over time.

Detroit: Reconfiguring borderlands at intersections of the natural and built environment
Elena Torres Ruiz, Rachel Carson Center for Environment and Society

This paper analyzes the active bordering of the city of Detroit across three disparate, historical examples: as a point of alcohol-entry from Canada during prohibition, as a segregational container for the surburbs in the 1950s, and as a class-delineator for wealthy, surburban whites today. The basic question I ask is how have actors mediated the natural as well as built borderlands of Detroit? I use this question to investigate more theoretical interrogations of bordering practices as active processes. Drawing from Schaffner et. al., I look at the borderlands of Detroit not as a finished product but as a "triad of processes of reification – naturalization – fetishization." My main argument is that "natural" as well as socially constructed borders can be subverted, renegotiated, or even reinforced, thus contradicting the notion that borders are fixed entities imposed from above. However, the politics of who gets to break or reinforce them matter and are historically contingent. The chosen case studies highlight different power structures that shape the processes and are re-inscribed spatially, whether using nature to transgress institutionalized borders or assembling barriers to enforce separation. The take away message is that historically, Detroit has been constituted many times by what it is not, rather than by what it is. My paper shows how these

processes of othering are closely connected to the making and remaking of race through the production of more and less exclusive spaces.

From oil to hipsters: The nature of gentrification in Venice, USA

Elsa Devienne, Université Paris Nanterre / Northumbria University

In the 1930s, Venice, a neighborhood of Los Angeles, was the fourth most profitable oil field in California. The oil industry quickly drove off tourists and residents from what had once been a popular beach resort. By the 1950s, Venice was a slum, which attracted artists and "beatniks" for its cheap rents. Today, Venice is not only "the most expensive neighborhood of Los Angeles," according to a recent LA Weekly article, it is "a brand." As such, "Brand Venice" possesses many distinctive qualities: its walkability, clean air and broad beach, its quaint canal area, and its unique history as a haven for beatniks, hippies and bohemian types. Three types of explanations are usually given to explain this transformation: some scholars highlight the role of low density and "slow growth" activists in turning Venice into an exclusive enclave. Another explanation, defended by anthropologist Andrew Deener, is to highlight the role of local merchants and activists as urban actors who, in the 1980s and 1990s, shaped the neighborhood's cultural distinction as a bohemian paradise. Another possible explanation would be to frame Venice's success as the product of "artist-led urban redevelopment." Yet all these attempts at explaining the Venice miracle neglect an important actor in this story: the environment. What I mean by the environment is not just pointing out that Venice possesses attractive environmental qualities such as clean air and a clean beach, but rather how the exploitation of Venice's "natural capital" over the 20th century led to Venice being in a prime position for real estate speculation from the 1980s onwards. In this paper, I will argue that the "destruction" of Venice through oil drilling in the 1930s paradoxically allowed for its rebirth as a green, pedestrian-friendly and "authentic" neighborhood in the early 21st century. In doing so, I hope to contribute to historicizing gentrification—a phenomenon which has heretofore been studied mostly by geographers and sociologists. Moreover, by considering the materiality of gentrification, my intent is to give non-human actors their rightful place in this process, along with gentrifiers, landlords, developers, renters, municipal and state agencies, and real estate agents.

Suburban naturecultures: Inhabited and built suburban environments

Kirsi Saarikangas, University of Helsinki

"It's hard to say whether the best features of Tapiola are in fact designed by people" stated architect Arne Ervi about the planning of Tapiola in the 1950s. While Ervi was discussing the role of planners in the outcome of specific features of Tapiola, the passage also brings forth the unplanned features of housing environments and the interplay of natural and artificial, human and non-human in the formation of built environments, or suburban naturecultures, that are the focus of my paper.

I discuss the reciprocity of inhabitants, built and natural environments in the formation of lived urban spaces in the context of the Finnish post-war suburban environments as well as the multisensory and material dimensions of these interrelationships.

On the one hand, I analyze the ideals of planning and the aesthetics of built suburban landscapes. How nature was conceptualized in the planning and how the environments around buildings were

treated in the construction of suburbs. How the interplay of artificial and natural, human and non-human elements together formed suburban environments. Instead of homogeneous pristine natural settings that suburban environments were often thought to be, suburbs comprise variety of spaces with topographical differences. Suburban landscapes have been shaped by long-term human activities and in the construction their environment was treated in multiple ways from the active human design of 'natural-like' landscape to leaving nature outside the scope of all-encompassing planning as a backdrop of buildings and habitation.

On the other hand, I analyze through the oral history material, suburban lived spaces and how suburbanites lived suburban naturecultures. Narratives point out the importance of forest, wastelands, 'small' nature and other unplanned and uncontrolled elements that exist outside the official urban development. Apart from the diversity of nature, nearby nature adds aesthetic and experiential variation to the suburban space and did not signify waste lands, but adjustable available spaces.

My approach blurs dichotomies of planners as active designers of suburban space and inhabitants as its passive users or non-human elements as static material to be shaped. Instead, it points out the interplay of planned and unplanned, artificial and natural in built environments. The built and unbuilt environment, humans and non-humans all act together and shape stratified suburban space and its multi-layered meanings.

Session 4G
"Hard science" and "hard numbers" in environmental history: Interdisciplinary study of natural and human archives. Part II

Organizer: Adam Izdebski, Max Planck Institute for the Science of Human History / Jagiellonian University in Krakow
Chair: Péter Szabó, Institute of Botany, Academy of Sciences of the Czech Republic

Session abstract:
This session aims at pushing the boundaries of environmental history beyond the traditional disciplinary divides between history and the earth sciences, and between qualitative and quantitative approaches to the past. It is based on the experience of several projects that in the past few years aimed at integrating evidence coming from the human and natural archives – texts, plants, fossils and sediments – into a single narrative of the past. It shows how traditional historical information can be transformed into more quantitative datasets that "speak" to the vast amounts of numbers produced by earth scientists. At the same time, it investigates to what extent these same numbers can be embedded into the type of stories about the past that historians love to tell. Crucially, instead of focusing on how different types of evidence serve as proxies for different, potentially related phenomena (e.g., climate change and social unrest), we bring to the fore cases when different types of evidence are used to approach the same phenomena from totally different perspectives (agricultural expansion, socio-ecological processes, landscape change, economic performance, demographic change, etc.). With papers ranging across different epochs and regions, presented by natural scientists and historians, this session discusses the limitations and potentialities for the synergies between the different types of data.

Environment and demography in pre-industrial times: The case of Poland-Lithuania
Marzena Liedke, University of Białystok
Piotr Guzowski, University of Białystok
Radosław Poniat, University of Białystok
Cezary Kuklo, University of Białystok

The main aim of this paper is to compare the demographic situation of people who lived in the cities and the countryside in pre-modern times. In this way, we want to evaluate the degree to which environmental conditions characteristic for these different habitats had impact on the health and well-being of pre-modern populations. In this paper, we focus on the example of the early modern Polish-Lithuanian Commonwealth, the largest Central European political organism before the expansion of the Russian Empire in the late 18th century. Our research shows that the bad sanitary conditions of the biggest cities of the Commonwealth resulted in the negative annual growth rate of their populations. This finding will be contracted with our research on the diverse demographic regimes, of people with different social ranks, in the countryside. The currently available source material makes it possible to show the biological parameters of the inhabitants of peasant households, gentry manors and aristocratic palaces. Altogether, this "hard" data points out the relationship between biological well-being and the environmental conditions.

Between numbers and narratives: Communicating interdisciplinary environmental history to different academic audiences and the public

Rafał Szmytka, Jagiellonian University in Krakow
Adam Izdebski, Max Planck Institute for the Science of Human History / Jagiellonian University in Krakow

The final paper in this session will focus not only on the issues of the data integration, but on a more broader challenge of communicating the results of interdisciplinary projects to the academic and general public. Based on the experience of several ongoing or completed projects, which are employing different publication strategies (from article publications in specialist journals to a popular history book published in several thousand copies and available in every bookshop in Poland), this paper will discuss the advantages and disadvantages of different literary genre and publication venue choices. Quite often, environmental historians experience an initial lack of interest in their research on the part of the students and the public – unaware that the past could be studied in a way that puts aside kings and military leaders, and focus instead on the human interaction with the environment. However, once students or readers come into contact with environmental history, they realise its importance. This means that communicating complex interdisciplinary research requires a conscious and deliberate choice of a proper strategy or strategies, depending on the intended audience and aim. By the time of the ESEH conference in Tallinn, the authors will have gathered unique experience of trying several different strategies with in a Central European context, which will provide a basis for more general discussion between natural scientists and historians. The paper hopes to take the speakers and the public of this session beyond the issues of communicating between disciplines, out to the challenge of communicating with the academic and general public outside these disciplines.

Turning points in medieval and early modern Polish agriculture in the light of historical and environmental sources: The case of Greater Poland

Piotr Guzowski, University of Białystok

Studies on the economic history of medieval Poland have so far been based primarily on narrative sources (chronicles, annals, hagiographic texts), foundation documents and prescriptive sources (statute books). The earliest surviving Polish account books that make possible to study such phenomena as the yield from agricultural production, production level and prices, come from the late 14th century. Surviving primary sources from the 15th century include fragments of tax registers and a small number of inventories of great estates. The situation is somewhat better with regard to the economic primary sources from the early modern period, but even in this group it is difficult to find archival material that enables scholars to observe long-term changes in economy. However, in traditional narratives on economic changes in the Middle Ages and the early modern era, any “hard numbers” are of immense importance. This is why new important opportunities for historians studying economic development in medieval and early modern Poland, especially in agriculture, may arise from their cooperation with natural scientists. The paper will present the results of joint research by historians and environmental scientists on the turning points in Polish agricultural history and on their connection with the establishment of the Polish state at the turn of the 10th and 11th centuries, the German colonization in the 13th and 14th centuries, the Black Death, the

development of grain export economy in the 16th century, and the economic crisis of the 17th century. The paper will summarise the experience gathered by a three-year project that involved both historical and environmental research, carried out in close collaboration and regular interdisciplinary communication.

Session 4H
Roundtable. Thinking about capitalism in Mediterranean environmental history

Organizer: Mark Stoll, Texas Tech University

Roberta Biasillo, KTH Royal Institute of Technology
Mark Stoll, Texas Tech University
Manuel González de Molina, Universidad Pablo de Olavide
Stefania Barca, University of Coimbra
Marco Armiero, KTH Royal Institute of Technology

In George Perkins Marsh's conservation classic Man and Nature of 1864, centuries of environmental change in the Mediterranean provided his key evidence. Yet even though the roots of modern capitalism lie in the medieval Mediterranean, economic systems played no part in Marsh's analysis.
Today, a wave of new monographs focuses on the environmental history of capitalism, although none has looked specifically at the Mediterranean as a region. No ESEH panel seems to have directly addressed the capitalism's impact on the area.
This roundtable brings together historians from across the Mediterranean region for a discussion of the historical impact of capitalism on the Mediterranean environment. Each brings expertise in different subfields of environmental history in an effort to bring the Mediterranean out of the historiographical shadows and shine a spotlight on it.
The panel considers the subject from a variety of perspectives. How did the rise of merchant capitalism in the medieval Italian maritime republics affect the Mediterranean environment and prepare the ground for plantation and industrial capitalism? What have been the benefits and environmental impacts of the industrialization of Spanish agriculture? What environmental and social costs were paid so that nineteenth-century industrial capitalism could reach into Italian mountain watersheds to slake their growing thirst for energy? How does the Vajont dam disaster (1963, 2000 killed) suggest a historical political ecology of capitalist appropriation of mountains? How did Greece organize its energy sector on anti-capitalist principles? The panel's goal is to bring these and other questions into dynamic conversation.

Session 4I
The environment in European politics

Chair: Astrid M. Eckert, Emory University

From human–nature companionship to consumer rights: A conceptual analysis of the changing perception of human nature in Finnish and German green parties in the 1990's
Risto-Matti Matero, University of Jyväskylä

The Finnish green party Vihreä Liitto and the German Die Grüne have both undergone a significant ideological change that occurred mostly in the 1990's. Originally in the 1980's, their political thinking revolved mostly around radical ideals of recognizing human-nature companionship over economic consumer/producer rights. These ideals were presented through such political concepts as ecologically balanced economy, which demanded the rundown of marked-based environmental politics for the sake of ecological balance and a radically altered understanding of well-being. Under this ideological standpoint, the individualistic freedom of consumption and/or production ought to be more restricted and subordinated to environmental obligations. In the 1990's, however, both green parties changed their ideological position towards a more individualistic and anthropocentric position. Concept analysis reveals that by the year 2000, both parties had adopted the ideals of ecological modernism and sustainable development that combined ecological thinking with individualistic ideals, emphasizing consumer rights and green economic growth. Meanwhile, such concepts as ecologically balanced economy – and other demands for the rundown of growth-oriented politics as well – became virtually extinct.
Methodologically, comparing concept analysis with ideological development reveals the usefulness of overcoming field-specific boundaries: mental models, political concepts, political decisions, and physical environment are not studied atomistically, but as parts of a complex network of systems interacting with each other in a transnational context. Boundaries are also discussed within the ideological framework of individual (economic) rights and the needs of nature – boundaries that remain largely debated in environmental thinking even today.

From local to global: Boundaries in green political thinking
Jenni Karimäki, University of Turku

The outlook of the Green agenda and ideology has always been global. Environmental issues and problems seldom follow the borders of nation states, and thus, to resolve them international initiatives are required. However, depicting the evolution of the Finnish Green agenda and especially the advancing Western European integration during the 1990s, the geographical focus of the Green manifestoes progresses from mainly domestic concerns of the 1990 manifesto to Western European level in 1994, and finally to global scale in 1998.
This presentation focuses on how the Finnish Greens expanded the boundaries of their thinking and underwent a change of perspective from local to embracing global during the 1990s.
This change occurred also regarding European integration and European Union. Integration is on one hand rather tempting since it rises above national ambitions, and aspires to unite nations thus

reflecting Green global aims. On the other hand, as comparative research argues some of the essential Green critique is in stark contrast with the key EU principles of economic growth and free market economy.
The transition from criticism to acceptance and advocacy was not an easy process. Progressing European integration and Finnish aspiration to be part of it were a cause of a rather heated debate. Arguments used for and against integration reflected the concerns and advances described in the manifestoes. Those in favour saw national parliaments being too small to tackle the global complexities whereas those against high-lighted the un-democratic tendencies of the EU and saw it as too small an arena for globally thinking Greens. One rather Finnish aspect of the debate was national security: EU was seen either as promoting it or acting against it. EU expanding eastward was regarded as generating a counterweight towards east. However, in line with the decade-old foreign policy interpretation some saw the EU as a threat to Finnish neutrality.

Industrial pollution, technology and legislation (France, 1800–1850)
Thomas Le Roux, French National Center for Scientific Research

From the beginning of the 19th century, the industrial basins of Wallonia were affected for nearly two centuries by the environmental impacts of heavy industry. Since the end of the 1950s, the progressive decline of extractive activities and of zinc and steel industry, led to the appearance of industrial wastelands. In the heart of these new territories, in a few particular places, nature reserves have been defined. This mutation raises many questions: what are the stakes of this major change of status? What lessons can be learned from this mechanism of developing eco-preservation in polluted sites? How does pollution change status to become a favorable place for biodiversity? What about the responsibility of the industrialists ? This contribution will present several case studies focusing on the curious destiny of these sites affected by environmental impacts.

Nature as a boundary to the coal industry: The transnational management of mining accidents, European integration, and the case of Marcinelle (1950s–1970s)
Siegfried Evens, KTH Royal Institute of Technology

Probably the most recurrent type of disasters in post-war Europe were mining accidents. Coal mines in particular were dangerous environments for the miners, often from very diverse national backgrounds, who worked in them. Natural conditions of the mine coincided with extracting technologies, leading to gas explosions, fire and collapses. Therefore, it will be argued in this session that nature, in the form of risk, was a fundamental boundary to the mining industry. This is done by studying the consequent risk management of policy makers, in particular the European Community of Steel and Coal.
The role of risk in the European integration process, and conversely the transnational management of risk, has rarely been studied before. Yet, it can teach us a great deal about the transnational regulation of the interaction between technology and nature in the postwar period in Europe. Therefore, I will focus on the case of the Marcinelle mining disaster (1956). Theoretical frameworks of both research fields will be brought together and complemented with empirical archival evidence from both Belgian and European institutions archives.

The conclusion of this research is twofold. On the one hand, European incentives led to more regulation and prevention. On the other hand, the results of these initiatives remained limited and accidents continued to occur. So, one could argue that nature was a boundary to this process; not only to the mining industry itself, but also to European integration. Yet, the meaning of these initiatives is more symbolical than practical: this was the first moment that European policy makers were involved in risk management and social policy on working conditions. From a theoretical perspective, these findings demonstrate that combining risk and European integration frameworks can reveal important political developments, which also teach us more about the often-catastrophic interaction between technology and environment.

Session 4J
Negotiating the boundaries of environmental history: Ideology vs matter

Organizer: Claudio de Majo, Rachel Carson Center for Environment and Society
Chair: Monica Vasile, Rachel Carson Center for Environment and Society

Session abstract:
The aim of this session is to address some of the most relevant research approaches to environmental history that have been produced over the last years. In particular, we focus on the tensions between anthropocentric ideological constructions grounded in human epistemology and materialist theories proposing a flatter ontological model of life on earth, based upon mutual relationships between human, other-than-human animals, and things.
Our underlying idea is that, although recent studies have argued for a flat nature of our existence (flat ontology), we cannot completely ignore the ideological perspective in the construction of environmental knowledge. In this sense, researching on the topic of environmental history means to constantly re-negotiate the boundaries between nature and culture, opening up to new critical perspectives and research methodologies. At the same time, we also feel skeptical about taking one of the two main sides of the debate, and believe in the controversial complexity of both human epistemology and matter. In this sense, we consider our analysis as an attempt to bridge the gap between human archaeology of knowledge and the discrete yet tangible wisdom of the natural material world, attempting to negotiate concision and complexity. Therefore either willingly or unwillingly, environmental history as a discipline needs to constantly negotiate with these two positions, attempting to understand the complexity of reality and the current modern/non-modern tension of our times.
In this session, we explore these tensions, attempting to reconstruct the origins of these schools of thought in environmental history as well as to pave the way to new research horizons, by shaping new methodologies for research in environmental history. First, we explore the genesis of these two research matrices in environmental history, looking at methodological dissonances, ideological tensions, and meaningful conjunctions. Second, we analyze these tensions from the standpoint of ideological perspectivism, attempting to understand the perspective of environmental historians and how ecological affordances can shape their ecological sensitivity and perception. Finally, we look analytically at current debates on the Anthropocene, attempting to bridge the gap between environmental history and geological sciences.

Ideological matter or material ideologies? An introduction
Claudio de Majo, Rachel Carson Center for Environment and Society

The aim of this contribution is to indirectly introduce the main themes that this panel is going to address by producing a purview over the most important debates that have permeated environmental history over the last years. In particular, it looks at the intersections between consolidated anthropocentric ideological approaches and the emerging neo-materialist perspective. While environmental history originates in research efforts strongly grounded on human ideology (e.g., Worster 1988 and 1994; Hughes 2006) over the last few years it has been enriched by new

theoretical approaches emphasizing the creative agency of non-human actors in ecological systems (e.g., LeCain 2016 and 2017). At the same time, this has also implied a methodological shift in analyzing environmental transformations—namely, from purely anthropocentric historical and scientific assessments (e.g., McNeill 2000; Simmons 2008), to describing ecological systems as the result co-evolutionary processes (e.g., Russell 2011). Perhaps more importantly, these non-anthropocentric perspectives create meaningful connection with other disciplines, such as realist/new materialist philosophies proposing a flat ontological framework of existence opposed to human intersubjectivity (e.g., Bennet 2010; Latour 1993; 2003; 2004; 2005; Harman 2018), as well as sociobiological theories such as epigenetics (e.g., Francis 2011; Wagner 2015). Naturally, this perspective is also crucial for current debates on the Anthropocene, as it contrasts some of its core assumptions based on the centrality of human actors (e.g., McNeill & Engelke 2016; Lewis & Maslin 2018), proposing the radically different idea of human societies as the result of the creation of a powerful material environment (LeCain 2015).

The idea of a creative natural material world acting in constant co-evolution with anthropogenic factors needs therefore to constantly negotiate with human epistemology and its intrinsic anthropocentrism. Looking at these meaningful tensions is today essential in order to produce innovative historical narratives, able to continuously expand their boundaries.

Spatiotemporal perspectivism and ideological affordances: An ecumenical approach to environmental history

Jonatan Palmblad, Rachel Carson Center for Environment and Society

What is an environment and how should historians approach one? This paper argues that 1) a perspectivist and spatiotemporal meta-approach to history enables environmental historians to better understand what conditions human perceptions of the environment, and that 2) the environmental psychologist James Gibson's theory of affordances can be used to discuss the historical impact on physical as well as ideologically conceived environments upon human beings.

Within the meta-approach, both historians and the humans they study conceive of the environment through a manifold of spatiotemporally heterogeneous lenses, and, by determining which these lenses are and how they are conditioned, historians can better understand how environments are constructed—i.e., how humans "environ" (Sörlin & Warde 2009). Furthermore, the conception of the environment of both the historians and their human objects of inquiry must be understood as a culturally constructed and ideologically dependent aspect of physical landscapes. This has been theorized by Edward Said (1988) as "imaginative geographies," in which the physical environment meets culturally conditioned perceptions. This adds a dimension of complexity to the theory of affordances (Gibson 1986), an approach which explain how an organism's actions are dependent on what the environments afford them to do, as imagined aspects of a landscape can affect how humans interact with their surroundings.

After considering the impact of their own ideas of a past environment upon their pre-understanding, historians should thus consider the cognitive limitations, ideological dependencies, and environmental perceptions of historical people. Interactions between humans and environments are complex phenomena involving both physical and cognitive landscapes, and to better understand this interaction the approach of spatiotemporal perspectivism is suggested, within which insights from material philosophy, environmental psychology, post-structural theory, and history of ideas can help

us understand how environments influence and interact with historical human subjects. At the same time, imaginations of past environments do more than color our perceptions of their physical reality, as they can also be used as critical tools to conceive structure dispersed in time and space—e.g., "slow" and "objective" violence (Nixon 2011; Žižek 2008). In the end, it is proposed that this ecumenical framework can act as a common ground both within and beyond the humanities and environmental history.

The Anthropocene in its early scientific phase (2000–2009): Objects and objectives
Eugenio Luciano, Rachel Carson Center for Environment and Society

My presentation examines the development of the Anthropocene—a recently proposed geological epoch following the Holocene—as boundary object among natural sciences during its first decade of existence. The presentation is based on my current doctoral research and illustrate key findings at literature-review stage.
This time span is defined by the first implementation of the concept by Paul Crutzen and Eugene Stoermer in an article published in the IGBP Newsletter in 2000, and by the establishment in 2009 of an Anthropocene Working Group (AWG) as a research program within the Subcommission for Quaternary Stratigraphy—after which the Anthropocene saw an exponential growth in multidisciplinary research. Whereas much attention has been given to the genealogy of the term 'Anthropocene', and to its present academic polyvalence, no in-depth work documenting the evolution of the concept during the 2000–2009 decade has been conducted. This decade remains largely overshadowed by the vast landscape of multidisciplinary literature produced (and being produced) in the following decade. The literature review conducted in my research shows an early interest in the Anthropocene among oceanography, marine sciences, and eco-biology.
This preliminary research reveals how important this decade is in understanding how the Anthropocene as a concept was initially incorporated by natural sciences, how natural sciences affected (and were affected by) it in organizing, producing, and communicating knowledge, and what new epistemic tools it offered in bringing novelty into scientific scholarly. By exploring the literature (mainly journal articles, newspapers, encyclopedias entries, conferences proceedings, abstracts, and textbooks) on the Anthropocene emerged during its first decade of existence, and contextualizing it with the epistemic communities that produced this early Anthropocene studies, I provide an in-depth analysis of the historical and epistemological foundations of the Anthropocene during its earliest phase of scientific interest.

Comment: **Jeroen Oomen**, Rachel Carson Center for Environment and Society / Deutsches Museum

Session 4K
Recreation in nature

Chair: Finn Arne Jørgensen, University of Stavanger

From parks to trails: Bicycle–human–landscape ensembles since the 19th century
Ben Anderson, Keele University

In recent environmental histories of tourism, several scholars have sought to explain how tourist mobilities (such as walking, skiing or rock-climbing) come to be written onto landscape. This paper will first synthesise these ideas into a theoretical framework of interactions between the experience of the human body, technological innovation, and landscape change. It will then apply this framework to the history of the bicycle, with a focus on how mountain biking created new body experiences, technologies and landscapes in the late-twentieth century. The early history of the bike is well charted, but its integration with landscape/environmental changes (improved paving, tarmac, road-cleaning), and how these responded to the human experience of riding is less understood. The bike of the early-twentieth century was designed to provide a specific experience (smoothness, speed, endurance) on a particular surface (tarmac). In the mid-twentieth century, however, increasing numbers of people now began to take these road-designed bikes into the mountains. There, they sought to add other experiences (falling, jumping etc), and within a decade, new designs for bikes emerged that better allowed for this experience. Finally, mountain bikers sought to alter the terrain of hills and mountains to make them provide these experiences more perfectly.

“Be at Home in the Open”: Nature, norms, and nation in the British Girl Guides
Pollyanna Rhee, University of Illinois, Urbana-Champaign

In the mid-1960s members of the Girl Guides, Britain’s largest voluntary organization for girls, reported that camping, hiking, and associated outdoor activities were their favorite part of the group. Cooking simple meals outdoors, making shelters from natural materials, and finding one’s way in a forest were not just playful leisure activities, but a means to encourage character, intelligence, health, and service in efforts to create “strong, resourceful women.” This was not a romantic notion of camping embraced by adults. Instead of being a remove or hiatus from life in urban civilization with attendant shifts in socially acceptable behavior, camping could also bolster the values of life in town. Through these activities Girl Guides members learned to domesticate nature, align it to national values, and make it a familiar space in a way that aligned with expectations of their gender.
This paper examines the significance of nature and outdoor activities in shaping the girls’ attitudes about nature and national identity. For children, considered more assimilable to place than adults, outdoor pursuits offered the ability to exercise agency and control in nature, but also underscores the ways that ideas about nature contributed to the reinforcing of social norms, class, and behavior. This sort of leisure in nature imparted lessons marking it less as a departure from normal, modern life, but an extension.

“A Wealth of Romance”: Writing on and about Green Island, 1930–1960

Jayne Regan, Australian National University

From the interwar years, Green Island – a small coral cay on the Great Barrier Reef – came to feature in Australia’s bourgeoning commercial print culture, both as place of remote, natural beauty and as an increasingly affordable holiday destination for middle and working-class Australians. For writers like Vance and Nettie Palmer, Jean Devanny, Frank Dalby Davison, Brooke Nicholls, and William Hatfield, Green Island offered a kind of Thoreauvian retreat from their busy literary and political lives. Davison explained that, on the island, he enjoyed ‘a contented citizenship of this unspoiled fragment of loveliness’. In reality, when Davison visited in the mid-1930s, Green Island was already teeming with boatloads of day-tripping tourists. By the 1950s and 1960s the island was a playground for prosperous postwar Australians.

Novels, natural histories, travel books and tourist literature demonstrate the historical tension between Green Island’s natural value and its commercial value to Australia’s print and tourism industries. Writers visited Green Island with preconceived notions and hoped to produce books with an emphasis on tropical adventure and sense of retreat from society. Most also endeavoured to demonstrate an appreciation of the environment, perhaps inspired by American nature writer Henry David Thoreau or Queensland’s tropical equivalent E.J. Banfield. However, what they actually produced, often inadvertently, was a record of the transformation of Green Island into a tourist hotspot. Collectively, these writers offer important accounts of some of the modern, technological innovations – including photography, film, and faster and more accessible forms of travel – that helped to broaden the boundaries of Australia’s ever-growing tourism industry. Rather than offering ‘arcadian exile’, literary sources reveal that, between the 1930s and 1950s, Green Island's entrepreneurs were already building and extending the infrastructure which would support the mass tourism that characterised life on the island in the second half of the twentieth century.

Mimetic dimensions of bird–human interactions: The use of bird sound imitations and playbacks in birding

Riin Magnus, University of Tartu
Sugata Bhattacharya, University of Tartu

Humans have mimicked the sounds and behaviors of other species since the very beginning of their history. However, in the modern world, birdwatching is one of the few activities which still involves the imitation of other species in order to contact them. Imitating bird calls, pishing, whistling and more recently, the use of bird song recordings, form an integral part of both amateur birdwatching and the professional monitoring of birds (e.g., Johnson and Maness 2018; Hahn and Silverman 2007). The success of the imitation depends on the ability to merge human-specific means of communication with those specific to birds, and the inclusion of the perspective of the birds in the human umwelt (including the modeling of the habitat, the timing of the imitation and the choice of the bird call) (see also Viveiros de Castro 1998; Willerslev 2007).

In order to investigate the different techniques used in the aural imitation of birds, the attitudes towards the use of different devices to attract birds and the integration of imitation with other activities of birdwatching, we created a survey and distributed it among Estonian birders in the spring and summer of 2018. We received nearly seventy responses from both amateur birders and

professional ornithologists. The survey was supplemented by half-structured interviews to gain an in-depth knowledge about the practices of bird sound imitation. In our talk, we will discuss the results of the study, while situating them in the broader context of imitation and vocal mimicry as a means of interaction between humans and birds, as well as in the context of the changes brought along in the imitation-based interspecific communication due to technology.

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Willerslev, R. 2007. Soul Hunters: Hunting, Animism, and Personhood among the Siberian Yukaghirs. Berkeley, CA: University of California Press.

12:30-14:00 Lunch

14:00-15:30 Poster Session

Chair: Joonas Plaan, Tallinn University

Cultural landscapes on periphery, their protection and regional distribution in the Czech Republic
Markéta Šantrůčková, Silva Tarouca Research Institute for Landscape and Ornamental Gardening

Olive trees' survival ability in an arid desert environment without irrigation in the Negev Highlands of Southern Israel
Eli Ashkenazi, Beit Berl College
Yona Chen, Hebrew University of Jerusalem
Yoav Avni, Geological Survey of Israel

Environmental images of the borderlands: Evidence from the early modern Croatia
Borna Fuerst-Bjeliš, University of Zagreb

Agriculture – Water management – Climate change: Communicating science to politics
Agnes Limmer, TUM-IAS

The development of the cultural environment in rural Latvia, 20th–21th century: Case study of Tirza Village
Zenija Kruzmetra, Latvia University of Life Sciences and Technologies
Dina Bite, Latvia University of Life Sciences and Technologies
Margarita Barzdevica, Riga Music Secondary School
Jazeps Medins, Riga Music Secondary School

Traditional vine agroforestry as a sustainable agricultural strategy. The case of the arbustum and the alberata in Italy
Dimitri Van Limbergen, Ghent University

Historical evolution of the forest cover loss in the Amoron'i Mania region, central highlands of Madagascar, the case of Ambositra I and II
Randriamifidison Rindramampionona Fanambinantsoa Ankasitrahana, Institut Supérieur de Technologie Ambositra Madagascar
Tsaralaza Jorlin Tsiavahananahary, University of Mahajanga Madagascar

Extinct settlements: The space without frontier
Nina Schläfli, University of Bern

Transformation of the Sheksna riverbed in the Russian Empire and USSR: Between industrial development and ecosystem disturbance, 1890–1940s
Anna Agafonova, Cherepovets State University

Hofstad: A living lab for participatory research on urban agriculture and urban food production in the past (Antwerp, Belgium)
Tim Soens, University of Antwerp

Making risks in environmental history visible: The "risk spirals" of the spa- and ski-tourism community Bad Hofgastein (Austria) in the 20th century
Clara Gassner-Schneckenleithner, independent scholar

For a partial transboundaries building of the contemporary environmental history of Riga Gulf
Anatole Danto, CNRS
Mare Mätas, SA Kihnu Kultuuriruum

Land and faith? No, fish and wax: Military and political history of the Pskov–Livonian borderland as the struggle for natural resources
Elena Salmina, Archaeological Center of Pskov Region
Sergey Salmin, Pskov Archaeological Center / Archaeological Center of Pskov Region

Moving boundaries of responsibility: The International Society against Water, Soil and Air Pollution estd. 1877
Ulrich Koppitz, Medical History Library, Heinrich Heine University Düsseldorf

The revolution actually was televised: Environmental politics and the antinuclear movement's challenge to free enterprise from New England to West Germany during the 1970s
David Smith, University of Dallas

15:30-16:00 Coffee break

Book launch coffee break at Researchers' Forum in Astra building.
Johns Hopkins University Press presents "The Environment: A history of the idea" by Paul Warde, Libby Robin & Sverker Sörlin

16:00-17:30 Parallel Session 5

Session 5A
Through water: Environmental histories of hydrological systems and resource extraction

Organizer: Giacomo Parrinello, Sciences Po Paris
Chair: Leona Skelton, Northumbria University

Session abstract:
Water systems are linked in many ways to the environmental history of resource extraction. Important scholarship has shed light on the environmental history and impact of hydroelectric production. Environmental historians, however, have yet to investigate fully the more complex historical ramifications of water use in extractive systems. This panel puts together case studies that analyze some of these historical ramifications and linkages in agriculture, energy production and mining. Focusing on the expansion of irrigation in the American High Plains, Andrew Watson shows how the development of an industrialized agricultural sector depended on the unprecedented exploitation of groundwater resources, which in turn was made possible by the availability of cheap fossil fuels. Giacomo Parrinello analyses the history of hydroelectric development, sand and gravel mining, and natural gas extraction in the Po River basin in the Mediterranean in the light of their influence on the subsidence and retreat of the Po delta after the 1950s. Together, these papers reveal the important role of water systems for resource extraction in industrial economies worldwide as well as the lasting impact of these extractive practices on water systems.

The mirage of industrial agriculture: Fossil fuels, groundwater, and irrigation on the High Plains, 1950–1980
Andrew Watson, University of Saskatchewan

Environmental historians have not spent enough time thinking about the relationship between energy and agriculture. During the second half of the twentieth century, farmers transformed the High Plains of the United States into a non-renewable landscape. Using one non-renewable resource (fossil fuels) to exploit another (ancient groundwater), farmers broke the ecological constraints of the region's semi-arid environment and dramatically boosted cropland productivity. The development of North America's largest natural gas field made abundant and cheap fossil fuel energy available to farmers who adopted energy-intensive center-pivot irrigation technology. High cropland productivity attracted the cattle feedlot industry, which produced profits for farmers, but an incredibly low energy return on investment. Almost everywhere on the High Plains, fossil fuels alone were capable of providing the energy farmers needed to lift the enormous volumes of water needed for industrial agriculture. Farmers made decisions based on water, but their decisions were fundamentally structured by energy.

Water and sand: Resource extraction and delta retreat in the Po watershed over the twentieth century

Giacomo Parrinello, Sciences Po Paris

Rivers do not carry only water: they also carry sediments, which are an essential component of river systems. Resource extraction in river systems alters sediment fluxes, often with significant consequences on the river morphology and ecology as well as on coastal land, including the retreat of many river deltas of the world. This paper makes the case for a more sustained attention toward the geomorphological consequences of resource extraction from river systems. It does so by focusing on the connected history of river basin development in the Po River and the transformation of its delta over the twentieth century. After centuries of progradation, from the 1950s the Po Delta started to sink and retreat. This historic reversal was due to massive alteration of sediment fluxes by hydroelectric reservoirs and mining for the construction industry, and accelerated subsidence caused by natural gas extraction. This paper surveys the social, technological and environmental processes that led to changes in the delta's morphology and interrogates the understandings and institutional regulations (or lack thereof) of sediment fluxes and delta geomorphology by historical actors of river development.

Session 5B

Bordering the Little Ice Age and its human consequences: Spatial, temporal and conceptual aspects. Part III: From South-East Europe to the North-West of the continent and beyond

Organizers: Christian Rohr, University of Bern
Heli Huhtamaa, Heidelberg University
Chantal Camenisch, University of York
Chair: Christian Rohr, University of Bern

Session abstract:
Weather conditions and their human consequences are able to transcend geographical and political borders. Especially weather induced subsistence crises are usually caused by large scale extreme weather events and they are never limited to only one area. Similarly, epidemic diseases, of which some types are favoured by certain weather conditions, were not stopped by borders in the period of the Little Ice Age. Nonetheless, the way how society were hit by such crises, how they coped with them and their perception varies within Continental Europe. This third panel of a triple session on the Little Ice Age and its human consequences focusses on three case studies from different parts of Continental Europe. The first paper examines the perception of and emotions to extreme weather conditions and human consequences of these weather conditions in the West Balkan during the 17th and 18th century. In the second paper, the weather conditions of the Late Maunder Minimum and its human consequences, especially the subsistence crisis of the 1690s, in the monastery of Einsiedeln in North-eastern Switzerland will be analysed. In the third paper, different types of climate impacts on society and societal coping strategies in Rouen from the 14th to the 18th centuries will be discussed. Amongst these are damages to infrastructure by storms and floods, subsistence crises and the spread of epidemic diseases.
To conclude the triple session, all nine presenters will participate the last ten minutes and open up a discussion on how the presented insights have contributed to our understanding of the LIA.

The impacts of extreme weather on the society of northeast Switzerland at the end of the 17th century: An analysis of the Einsiedeln monastery's diary (1670–1704)
Lukas Heinzmann, University of Bern

At the end of the 17th century, the monastery of Einsiedeln (CH) was a popular destination for pilgrims and maintained contacts with the political, religious and social elites. The ownership of extensive agricultural areas on today's territory of northeast Switzerland partly contained the dominion over individuals and required a diligent administration, since it ensured the monastery's self-support. Father Joseph Dietrich (1645–1704), a monastery's property custodian, was the main author of the Einsiedeln monastery's diary. It was written between 1670 and 1704 and includes 18 books with a total number of 12'000 pages.
The Einsiedeln monastery's diary is a valuable source for the research of the Late Maunder Minimum (1675–1715), which delineates one of the coldest periods of the Little Ice Age in Central Europe. In the Swiss Confederation, an accumulation of very cold winter and spring seasons led to serious crop

failures in the last decade of the 17th century. The trading opportunities were restricted by a denominational conflict between Catholics and Protestants and an embargo of the Holy Roman Empire. As the grain prices significantly increased, many Swiss territories suffered from a supply crisis.
The diary contains frequent and detailed descriptions about weather phenomena, which enable the reconstruction of the climatic conditions and the expansion of the amount of existing data in the database Euro-Climhist (www.euroclimhist.unibe.ch). Due to the monastery's relations to the political elites as well as to the population on and around its landownership, the diary is suitable to evaluate the impacts of extreme weather and natural disasters on the preindustrial society in northeast Switzerland and to analyse coping strategies of different actors during the genesis, development and mastery of the crisis.

Climate impacts on the society in Rouen during the Little Ice Age (LIA)
Chantal Camenisch, University of York

During the Medieval and Early Modern Period, the city of Rouen played an important political and economic role in the duchy of Normandy. The sea vessels were able to ascend the Seine until Rouen, where the goods determined for Paris were transhipped on barges. Until the 20th century, the bridge in Rouen was the last over the Seine before the river flows in the English Channel. With about 75'000 inhabitants around the year 1500, it was also one of the largest cities in France. In this paper, the impact of climate variability and extreme weather during the LIA on the society of Rouen will be discussed. The information used in this paper derive from narrative as well as from administrative sources. Each source type has its own focus on weather events as well as on societal impacts of weather and a combination of them improves the analysis of the data.
During the examined period, Rouen had to cope with devastating storms, floods of the Seine that caused damage to houses in the city or drifting ice, which destroyed the bridge. Moreover, extreme weather conditions could damage or destroy grain, fruit and grape harvest what might lead to increasing prices and dearth. In order to support the people in need during crisis times, the city council of Rouen realised large infrastructure projects and payed the poor men, women and children with money and food for their work. In addition, the poor relief was several times reorganised after periods of scarcity. Recurrent epidemics – some of them are linked to certain weather conditions – forced the city council to repeated reorganisations of the hospitals.

Neolithisation allergy: Comparative considerations between Europe and Japan on the demographic fluctuations in Neolithisation
Junzo Uchiyama, Sainsbury Institute for the Study of Japanese Arts and Cultures

“Neolithisation”, the transitional process from nomadic hunter-gatherers to agriculture-based societies, is one of the major chronological boundaries in the history of human-nature relations that can be seen in various areas of the world after the end of the Last Glacial period onwards. As an archaeological term “Neolithisation” is normally depicted as a package of events, including the establishment of a sedentary lifestyle as well as the emergence of domesticated plants and animals, accompanied by several significant technological innovations like pottery. The original theory

predicts that once established in the agricultural core regions such as Middle East and Central China, the “Neolithisation package” then quickly spread into the peripheral areas, replacing local hunting and gathering traditions with agrarian socio-economic systems and producing a population increase on an unprecedented scale during a comparatively short period of time. However, archaeological investigations have revealed that Neolithisation was a highly complex and long-lasting process especially in the areas outside of the Neolithic cores, such as Europe and Japan. Furthermore, recent attempts to reconstruct prehistoric population trends indicate that Central and Northeast Europe and the mainland Japan evolved on more or less parallel courses of the population change from the middle to the late Holocene: a rapid growth and sharp drop in the beginning of Neolithisation and a recovery in accordance with the introduction of metal working technology after one or two millennia stagnation. What factors created such a phenomenon, was it environmental or socio-cultural, or a sort of combination of these? This paper will assess the question from comparative perspectives of socio-economic and environmental backgrounds of these areas and consider to what extent the process of Neolithisation remain a general-scale phenomenon on the northern coastal areas of the east and west ends of the continent.

Session 5C
Roundtable. Histories and futures of “the Environment”

Organizer: Etienne S. Benson, University of Pennsylvania
Chair: Sverker Sörlin, KTH Royal Institute of Technology

Leah Aronowsky, University of Illinois at Urbana-Champaign
Etienne S. Benson, University of Pennsylvania
Sebastian Grevsmühl, CNRS-EHESS

In the second half of the twentieth century, “the environment” became the focus of a new social movement and the conceptual foundation of numerous laws, institutions, scientific disciplines, and scholarly subfields, including environmental history. Until recently, however, the history of the concept itself has received remarkably little attention from scholars. In their new book, The Environment: A History of the Idea, Paul Warde, Libby Robin, and Sverker Sörlin describe the emergence of this object of concern and its wide-ranging ramifications, which continue to multiply today in domains such as the interdisciplinary environmental humanities and the international environmental justice movement. This roundtable session, featuring historians working at the intersection of environmental history and the history of science, takes The Environment as a starting point for reflections on the origins, development, and possible futures of the idea of “the environment.” Presentations by each of the roundtable participants will be followed by a comment from Sörlin, with ample time reserved for open discussion with the audience. Taken as a whole, the aim of the roundtable is to call attention to the ongoing need for critical historical engagement with the central concept of our field.

The scholars participating in the roundtable have each explored “the environment” in their own work in ways that point to the complexities and perhaps even the multiplicity of this seemingly all-encompassing concept. Leah Aronowsky has studied the emergence and multiple scientific lives of the concept of the biosphere in the postwar United States, showing how knowledge about the biosphere was produced and reified through scientists’ encounters with a broad range of geopolitical developments, including the Cold War nuclear test program, the political economy of natural resource scarcity, systems theory and cybernetics, and the Space Race-era goal of extraterrestrial territorial conquest. Etienne Benson has studied the use of information technologies in ecology and other environmental sciences, including the ways such technologies have been used to make the environment imaginable and manageable on a variety of spatial and temporal scales. Lino Camprubí has studied the science and politics of global resource management and conservation, including the roles played by geopolitics, the senses, and maritime spaces in the emergence of the deep ocean as an important part of and window onto the global environment. Sebastian Grevsmühl has studied the history of the geophysical sciences, environmental history, and the history of exploration, as well as visual culture and the role of images in the sciences, with a particular focus on global environmental images. Sverker Sörlin, in addition to being one of the authors of The Environment, has published extensively on the history of the environmental sciences, Northern and Arctic history, and the environmental humanities.

Session 5D
Everyday technologies: Energy use and transition in households

Organizers: Irene Pallua, University of Innsbruck
Jonas Schädler, University of Zürich
Chair: Ute Hasenöhrl, University of Innsbruck

Session abstract:
In view of the much discussed 'green' energy transition of recent years, historicizing past energy transitions has become one of the most prolific topics in current environmental and energy history. The recent literature focuses mainly on the macro perspective, investigating socio-economic systems as a whole or concentrating on different societal sectors of economic significance such as agriculture or transport. The household, however, is still a blind spot in most research on historical energy transition.
In this session, we conceptualize households as material and cultural junctions, where different actors – from humans to technology, energy, and material resources – as well as various imaginaries and perceptions of energy and the environment encountered and interacted with each other. To investigate how energy transitions worked on the household level and how they shaped both everyday lives and society as a whole, the session focuses on Western European case studies, namely in Austria, Germany, and Switzerland. Thematically, the three papers analyze key technologies of everyday use; hot water generation, space heating, and energy metering. While at the very heart of today's energy transition, these 'service technologies' were (and are) often neglected both by their users and in historical research. The temporal focus is on the middle of the 20th century, a time when social, technological, political, economic, cultural, and environmental change challenged incumbent energy systems and consumption practices in the household.
Putting the household in perspective, the session will not only deepen our knowledge in this vital but neglected field of research. Linking previously ignored small-scale factors of energy history with large-scale environmental processes, it will also show the analytical potential of investigating 'everyday technologies of energy use' bridging the gap between energy research in environmental history, history of technology, and social history.

Fuel-use in medieval Irish towns: Wood, turf and furze
Jim Galloway, Carlow College

In the 18th and 19th centuries two-thirds of Irish households depended on turf, cut from peat bogs, as their primary fuel. Towns as well the countryside burnt turf, although with significant geographical variations. This paper will argue that in the Middle Ages, by contrast, wood was far more important as an urban fuel. Murage grants and other sources indicate that while trade in firewood was a recognised and regular part of economic life between the thirteenth and fifteenth centuries, turf was much less commercialised. Some major Irish towns were remote from significant areas of either woodland or bog-land, posing problems for their development. Other bio-fuels, such as furze (ulex europaeus), could as a result assume considerable local importance. This discussion of

urban fuel will be located within the wider debate on the extent and exploitation of pre-modern Irish woodland.

Everyday ecology in the early modern home: The consumption of fire by Ghent households during the long eighteenth century (c. 1650–1850)
Wout Saelens, University of Antwerp

In his Fire and Civilization, the Dutch sociologist Johan Goudsblom (1992) saw in fire the source of civilization. As fire gives warmth and light, the history of fire – as initiated by Stephen J. Pyne (1997, 2001) – is perhaps the single most important ecological narrative in world history. Inspired by the concept of the Anthropocene, most environmental historians look at 'fire' – or 'energy' and 'nature', more broadly – predominantly from the tendencies towards ecological crises that are inherent to the capitalist mode of production, (world-)ecological system and its technological and energy basis since the rise of steam power and the dawn of the industrial era. The human-fire relation, Goudsblom claimed, was, however, much more rooted in the structures of everyday life. How have daily ecological practices changed over time and what effect did they have on the very basic and everyday human interaction with nature? In this paper, I will take Goudsblom's fire-metaphor as an indicator for the human-nature relationship at the most fundamental level of life, specifically looking at the changes in the consumption of 'fire' for household heating and lighting in eighteenth-century Ghent, one of the first major coal-fired cities on the Continent. I will study how households have heated and illuminated their homes by looking at the fire sources and fire appliances recorded in probate inventories. During the eighteenth century the stove as a new consumer product gradually replaced the traditional and symbolic fireplace, moving the burning of fire to a confined space and making the control of it easier and more efficient. Ultimately, it is hypothesized that the everyday ecology of the eighteenth-century home shifted towards a modern, more 'rational', 'disenchanted' and 'consumerist' model of fire consumption that laid the foundations for the current (western) energy-intensive lifestyle.

From single ovens to central heating systems: The heating transition in Switzerland
Irene Pallua, University of Innsbruck

A central goal in today's Swiss energy transition is the reduction of energy consumption for space heating since heating buildings (still) accounts for around a quarter of carbon dioxide emissions. The largest part of heat energy is consumed in private households. Focusing on this sector this paper scrutinizes the transition in space heating that occurred in Switzerland between the late 1950s and 1970, a hitherto blind spot in research on historical energy transitions. Geographically, the focus of this analysis lies on the German-speaking part of Switzerland.
The current patterns of space heating in private households can be attributed to two changes that began to gain momentum in the middle of the 20th century: Fully automatic central heating systems that prevailed over individual stoves, and the substitution of coal and firewood with heating oil. Building on secondary literature and a variety of primary sources, ranging from official documents and statistics, policy papers, scientific reports, and newspaper articles and publications and advertorials from heating industry, the paper examines the material and social contexts of the energy transition in the households.

In order to complement this structural perspective, the paper will additionally offer insights on changing perceptions and practices of space heating in cooperative buildings. The periodical of the Swiss National Cooperative Housing Federation ('Wohnbaugenossenschaften Schweiz') as well as studies on heating in residential buildings commissioned by this institution serve as primary sources to grasp this user's perspective. This multi-dimensional framework is intended to shed light on persistence and change of heating infrastructures and practices, questioning what has lasted until this day. Furthermore, it contributes to topical theoretical discussions in environmental history and the history of technology on the relationship between path developments/dependencies, everyday technologies, and actors.

Between power plant and household: The key role of the electricity meter in household energy transitions

Jonas Schädler, University of Zürich

Only few forms of energy shaped the household as much as electricity did in the 20th century. Though electrified residential buildings were still rare around 1890, by 1930 the electricity supply of most American and Western European apartments – at least in urban areas – was a standard feature. Electricity not only brought light into homes, but also stimulated the introduction of new technical solutions, and finally interacted with existing appliances by organizing energy networks, e.g. in thermostatic systems.

Unlike coal, wood, and gas electricity can't be grasped nor quantified by its materiality. In the initial years of the electrification process this insubstantial characteristic of electric power led to difficulties for consuming and selling electricity, a problem both for customers and suppliers. The electricity meter played a key role in the infrastructural transition: electricity is transmitted from the plant to the consumer, once reaching the house the energy has to be quantified thus it can be consumed. In its function of making the consumption of electricity 'visible' to the consumer and billable for the facilities, the electricity meter assumed a position as an interface and control device in energy transitions within the household.

In my paper, I will examine the meter within the electrification of households during the first half of 20th century, using primary sources and from suppliers and political authorities. For two reasons I look on Switzerland as an example: first, Swiss households were electrified early in the European context; in 1927 more than 90 percent were connected to the grid. And second, since a specific meter industry was formed in Switzerland that achieved an important worldwide position, transnational connections and transitions of energy and technical supply are demonstrated with this example.

Session 5E
Environmental histories of teleconnections

Organizer: Juan Infante-Amate, Pablo de Olavide University
Chair: Simone Gingrich, University of Natural Resources and Life Sciences (BOKU)

Session abstract:
Since the 19th century, global trade increased dramatically in volume, enabling some world regions like Europe to increasingly make use of far-off lands‘ resources. This is said to have contributed tot he Great Acceleration in resource use in the contemporary world.Trade thus caused that comsumption-related activities in a region of the world had an enviornmental impact on far-away territories. Comprehending these processes is key to identifying and better understanding the acceleration of global change and the responsabilities derived by it. In the last few years, scholars in the environmental sciences have explored the phenomenon through concepts such as 'teleconnections' which deals with grasping how some countries outsource environmental impact outside their borders. Most of these works study rather recent periods (1990 onwards). There is, therefore, an important historical gap in the research on the environmental impact of global trade before 1990. The goal of this session is to bring together several research teams that are studying, for the first time, environmental impact of global trade in the long term. The session assembles empirical and conceptual contributions assessing environmental impacts of international trade since the 19th century, covering a variety of countries, traded goods, and environmental impacts. We will pay special attention to biomass flows on account of its importance in historical perspective and for being particularly intensive in the use in certain resources such us land or water.

Historical environmental factors in trade: Advancing the geographical coverage before 1950
John Brolin, Lund University
Astrid Kander, Lund University

In the study of trade-embodied environmental factors (land, water, energy, or material flows) three conflicting interpretations prevail on what happened before 1950. The ‘great specialisation’ narrative argues that trade serves to lighten pressure on the environment by redistributing environmental services from where they were abundant to where they were scarce. The ‘great divergence’ sees an exploitative transfer from poor to rich and powerful countries or an environmental load displacement from rich to poor. The ‘great acceleration’ dismisses flows as insignificant either way. We review long-term national studies and find an almost exclusive focus on developed countries, mostly European and especially the UK, where more systematic studies tend to support ‘specialisation’ and/or ‘acceleration’. By contrast, more qualitative studies on individual exports from developing countries often support ‘divergence’, but since imports are excluded by design this can never be demonstrated. We propose widening the geographical scope of long-term national studies beyond Europe and extending existing studies with bilateral trade, and that developing country trade be quantified according to existing methods of environmental accounting.

The embodied water in Mediterranean agricultural exports, 1900–2010

Rosa Duarte, University of Zaragoza
Vicente Pinilla, University of Zaragoza
Ana Serrano, University of Zaragoza

The countries in the Mediterranean basin increasingly specialized in Mediterranean agricultural products (dried and fresh fruits, fresh vegetables, olive oil and wine) for exports during the first wave of globalization. Those located in the northern shore of the Mediterranean Sea had a key role in the articulation of international agricultural markets, being the main producing and exporting area of these products in the world. This process required the construction of hydraulic infrastructures, which enabled growing these water intensive crops, with a strong commercial orientation, in arid areas. During the second globalization wave the Mediterranean specialization consolidated and the trade on these crops strengthened, also involving gradually some countries in the southern shore. The intensification of exports, in a context of increasing international demand for these products, generated even stronger pressures on water resources. In this framework, the main objective of this paper is to quantify and discuss on the impacts that the growing Mediterranean agricultural exports have generated on water resources over the last 100 years. Similarly, this study aims to evaluate the role of the Mediterranean exports specialization as a determinant of the construction of water infrastructures in the different Mediterranean countries.

Land requirements of nutritional transition in Europe, 1901–2013

Juan Infante-Amate, Pablo de Olavide University
Jaume Vila, Pablo de Olavide University
Eduardo Aguilera, Pablo de Olavide University
David Soto, Pablo de Olavide University
Manuel González de Molina, Pablo de Olavide University

Nutritional transition is considered one of the main drivers of global change, with relevant impacts such as greenhouse gases emissions, deforestation, and soil degradation worldwide. This transition is mainly characterized by animal-dominated diets that, in general, are much more land-intensive than traditional, vegetal-based diets. The growing demand of animal origin products along with the increase of food intake or food waste play a significant role in the increase of land requirements associated to nutritional transition. Yet our knowledge on the historical origins of such interactions, with important impacts both for sustainability and health, is surprisingly limited. In this presentation with offer a novel estimation of the 'land embodied' in the trade of agricultural products for a set of 28 European countries between 1901 and 2013, covering the period when the major dietary and environmental changes have taken place in the continent. Existing research on this topic usually draws on online global databases that usually only provide data since 1990 or, at most, since 1961 (e.g. FAOSTAT), consequently providing only a limited historical perspective. One of the novelties of this research is, therefore, its long-term coverage. Our estimation will allow us to quantify actual land requirements associated to agricultural products consumption in each country, including cropland use outsourced to other territories. Our main goal it thus to analyze how the nutritional transition has affected land-requirements in Europe, identifying major national patterns. In a context of growing attention when it comes to evaluate the responsibilities of global change, this research

will provide important evidences on how dietary change in wealthy countries is affecting global land use and to what extent this impact is being outsourced to far-off territories. The presentation also aims to provide preliminary analysis on the drivers behind the changes in land requirements at a regional scale.

Food regimes, global trade flows and natural resource use 1850–2016

Fridolin Krausmann, University of Natural Resources and Life Sciences, Vienna (BOKU)
Ernst Langthaler, University of Natural Resources and Life Sciences, Vienna (BOKU)

The concept of food regimes is has gained high significance in the field of political economy. It investigates the role of global food trade in the evolution of the capitalist world economy and offers a structured perspective to the understanding of the role of agriculture and food in capital accumulation across time and space. Environmental aspects related to food regimes, so far, have received little attention. Here we take an environmental history and agro-ecological perspective and focus on the role of natural resource issues for food regime emergence and crisis. We quantify the size of physical trade with main agricultural commodities between continents from 1850-2016 and ask how the observed trade patterns relate to issues of resource use, in particular, to land use, soil fertility and the energetic basis of agriculture. Our results show the tremendous growth in the volume of agricultural trade, global exports rising from a few million tons per year in the mid-19th century to over one billion tonnes at the beginning of the 21st century. Rather than directed modernization we observe shifts in unequal relations of power, physical exchange and environmental pressure between changing centers and peripheries. The periods of growth in trade match with the periodization of food regimes in the literature, while during the transition from one regime to another trade flows stagnate and also production growth slows down. The shifts from one regime to another are closely related to changes in societies energy metabolism, in the resource base of agricultural production and also to agro-ecological crisis. Our analysis emphasizes that food regimes not only reflect changes in power relations in the world system, but also changes in societies natural relations. We draw conclusions on the characteristics of the current, neoliberal food regime.

Session 5F
Histories of waste

Chair: Finn Arne Jørgensen, University of Stavanger

Wasteful cities: A conflict over a sanitary landfill between Helsinki and Espoo
Matti O. Hannikainen, University of Helsinki

This case study analyses the planning of a proposed sanitary landfill site between 1963 and 1973 shedding new light on the growing impact of nature conservation in the urban planning and land use in Finland. In the early 1960s, the city of Helsinki struggled with its waste. Following rapid urbanisation of Finland from the 1950s, the neighbouring municipalities like Espoo grew and encountered problems in locating suitable sites for their waste. In 1963, Espoo proposed Laajalahti bay, located between Helsinki and Espoo, for a new sanitary landfill site for the use of both municipalities, which Helsinki approved. The planning of the site progressed slowly however given crucial changes over the policies concerning waste management, urban planning and nature conservation in an urbanising country.
While discussing the important points about why was Laajalahti bay chosen as the site and why was the plan abandoned, this case study addresses two pivotal points in environmental history. First, it highlights rise of 'new' environmentalism in Finland that challenged modernist ideas about urban space, human control over nature and the technocratic planning. Secondly, it sheds new light on how various boundaries were defined, discussed and partially redrawn during the planning process including, for example, 'hard' administrative boundaries, the 'soft' boundaries between urban and rural as well as built-up and natural, and the fluid boundary separating land and water.

It's a waste not to use it! Composting urban waste in Mandatory Palestine: Between local experts and imperial expertise
Yaron Balslev, Tel Aviv University

The paper deals with an environmental aspect of the British Mandate of Palestine: urban waste treatment. The 30 years of British presence in Palestine were characterized by constant changes: massive immigration, rapid urbanization, intensive modernization, and more. These changes were reflected in the growing amounts of urban waste, and its components. As waste accumulated, and started to turn into a sanitary hazard, municipal authorities looked for alternative solutions to dumping. In the search for solutions British officials and experts took a dominant role, using the Imperial knowledge and their personal connections around the empire. An Imperial effort was made by letters and envoys to collect information on modern methods of waste treatment and production of fertilizer out of urban waste.
In the paper, I mainly focus on Tel Aviv as a case study. In the mid-1930s Tel Aviv became the largest city in the country, populated by over 150,000 inhabitants, and accordingly its waste problem was the most severe among the municipalities of Palestine. As the town grew, municipal leadership started to look for alternative waste treatment methods. The Municipal Sanitary Surveyor, D. Geffen, as well as the mayors Bloch, Dizenfoff, and Rokach, looked for methods and techniques for

dealing with urban waste in Jaffa, Jerusalem, and Haifa as well as overseas. However it was not only a local-municipal problem.
Governmental officials, mainly from the Health and Agriculture departments, have acted to collect data on the matter from around the empire, and reported regularly to the chief Secretary. Moreover, British municipal sanitary officers were sent to Suez and Nicosia to study methods of producing fertilizer from urban waste. These efforts demonstrate the complexity of using the waste as a resource, which was related to issues of sanitary control, financial costs, agricultural benefits, and technological challenge.

Is recycling garbage?

Finn Arne Jørgensen, University of Stavanger

The green aura that has surrounded the term “recycling” since the 1970s is fading away. Long hailed as an environmentally beneficial practice that both consumers and businesses could engage with, recycling has come under considerable pressure from a wide range of critics.
Few disagree that the general idea of recycling is good. What recycling aims to do is to close the loop, redirecting streams of matter into something circular that ideally never reaches the waste stage. The implication is that a society that is sufficiently efficient at recycling is a sustainable society. Yet, critics argue that recycling is far from a panacea - it is either insufficient, misleading, busywork, or a green illusion, depending on who you ask. The global consequences of recycling are becoming increasingly evident - especially in their uneven distribution.
This paper uses the emerging research field of Discard Studies as a way into this shifting idea of recycling. It will situate recycling as an activity and a process at the intersection of the material and the ideological, and in doing so, it will take us into complex territories, full of both contested symbols and unruly materiality, laden with cynicism and hope, anchored in economy and ecology.

Session 5G
Epidemics, history and the environment: Crossing academic boundaries

Organizer: Nicolas Maughan, Aix-Marseille University
Chair: Daniel. R. Curtis, Leiden University

Session abstract:
This panel aims to explore specific climatic/environmental and institutional factors that shaped both the way in which plagues lato sensu and other epidemics, including cholera, yellow fever, typhus, typhoid fever, leprosy, syphilis, etc., originated and spread as well as the consecutive significant demographic and socio-economic consequences at a local or regional scale throughout history without geographical limitation. A particular attention is given to original interdisciplinary approaches linking natural proxy archives and written documentary sources.

The study of plague in the past and now: Integrating historical and biological approaches
Nils Christian Stenseth, University of Oslo

Plague has given rise to at least three major pandemics. The first ("the Justinian plague") spread around the Mediterranean Sea in the 6th century AD, the second ("the Black Death") started in Europe in the 14th century and recurred intermittently for more than 300 years, and the third started in China during the middle of the 19th century and spread throughout the world. Purportedly, each pandemic was caused by a different biovar of Yersinia pestis. Given this history, plague is often classified as a problem of the past. It is easy to forget it in the 21st century, seeing it as a historical curiosity. But plague should not be relegated to the sidelines, it remains a current threat in many parts of the world, particularly in Africa, where both the number of cases and the number of countries reporting plague have increased during recent decades. Following the reappearance of plague during the 1990s in several countries, plague has been categorized as a re-emerging disease.
In this presentation I will discuss how historian and biologists (including geneticists) ought to work together in understanding both what happen in the past as well we what might happen in the future plague occurrence. I will further discuss how the study of current plague cases can help us understand the mechanisms which lead to past pandemics (such as the Black Death). Methodologically, I will promote discussions with participants from an interdisciplinary point-of-view on epidemics.

Major climate-related demographic losses in Mexico during the last 1000 years
Rodolfo Acuna-Soto, Universidad Nacional Autónoma de México

Mexico has a long and well-documented history of demographic catastrophes associated with droughts. The collapse of the Mayan and Teotihuacan empires, as well as the great demographic loss of the 16th century, are the best-known examples. Mexico's historical record reveals numerous other events of population losses, notwithstanding, their relationship with extreme weather events

has not been studied. The purpose of this paper is to investigate the relationship of climate with multiple episodes of significant population losses during the last 1000 years in Mexico. For the analysis, a database developed over the course of 24 years that includes epidemics, famines, war and other events associated with loss of human life was used. This information was coupled with different paleoclimate databases. The results indicate that the Child / Southern Oscillation and the Atlantic Multidecadal Oscillation have a strong influence on the most significant events in the history of Mexico. In the 1000-year record, a total of 43 famines, 12 epidemics of drought-associated hemorrhagic fevers of unknown origin, 24 major epidemics of typhus, the Mexican Independence war, the Mexican revolution as well as most large Native rebellions, were associated with drought and other extreme climate events. Throughout its often-calamitous history, Mexico has been very sensitive to climate influences, this effect will, very likely, continue in the future.

Urban landscape, society and The Black Death in Toulouse: An interdisciplinary approach to a mortality crisis in the Southwestern France

Michaël Gourvennec, Archeodunum

The archaeological excavation done at the the Saint-Michel suburb in Toulouse during the year 2014 has uncovered part of the medieval occupation of this large district. The excavation uncovered a burial ground used during the 14th century AD. This cemetery contains 109 graves, 29 of which are collective graves with a total of 444 individuals, 306 of which are buried in three mass burial graves. These graves, whether individual or collective, have been attributed to the second plague pandemic (1347–1353 AD) thanks to a variety of archaeological techniques drawn upon a range of disciplines (ancient DNA, isotope analysis, numismatic and ceramic studies, etc.). The excavation also uncovered the presence of various artisanal activities (small crafts, bell foundry workshop) working together at the same time as the Black death cemetery.
In this communication, first, we will present the scientific and forensic methods mobilized to identify skeletal material and to ascribe these putative plague graves to the Black Death. Secondly, thanks to information from the graves, as well as from local historical archives, we will try to understand how the local people have dealt with the epidemic in their daily life and to explain how the urban landscape of Toulouse was subsequently modified. Finally, we will present the specific impact of this plague outbreak on the urban morphology in the Late Middle Ages.

Digitizing and mapping historical epidemics: The case of the last major plague in France (1720–22)

Nicolas Maughan, Aix-Marseille University

Outbreaks of bubonic plague initiated by the flea-borne bacterium Yersinia pestis have repeatedly afflicted the Old World since the onset of the “Justinian Plague” in 541 AD. The second European pandemic, the “Black Death” rapidly killed around half of the population during 1347–1353 AD. Both pandemics then persisted with recurrent local outbreaks over several centuries. The threat from the plague bacillus, which still induces several thousand human cases annually, may well increase under projected climate change.

The last major plague in France, the famous “plague of Marseille”, started in Marseille and occurred between 1720 and 1722 AD across the South East of France and the Massif Central. The epidemic lasted 31 months and killed about 120.000 people, 240 communities were contaminated.
Here we present newly digitized and mapped data of all cases of this plague outbreak, based on a first inventory initially published 42 years ago. This inventory based on a large corpus of historical archives was updated and corrected, all remaining uncertainties have been removed. This and comparable compilation should be of great value to researchers across diverse disciplines worldwide, providing insight on spatiotemporal patterns and dynamics of this devastating historical plague outbreak. New research opportunities offered by such a large digital database that contains hundreds of recorded cases of plague, that can help shed new light on epidemics, as well the limitations in the use of preexisting data sets will be discussed.

Session 5H

Global capitalism, local environments

Chair: Roberta Biasillo, KTH Royal Institute of Technology

Swamps and woodlands of the Ottoman Aegean in the age of global capitalism

Onder Eren Akgul, Georgetown University

This paper explores the transformation of the previously commonly-used woodlands and swamps into private lands in the Aegean Anatolia – or western and southwestern Anatolia – in the period of Late Ottoman Empire. From 1740s to 1910s the ecology of rural Aegean Anatolia changed dramatically as most of the uncultivable malarial swamps, wastelands, and the woodlands of the region were brought under the plow and put into productive use. Jason W. Moore has argued that history of capitalism is the history of appropriation of nature, energy, and labor, which operated on a global scale. The expansion of capitalism meant the opening of new commodity and labor frontiers to global capital accumulation which radically transformed the relationship of humans with nature. Through relying this framework, I see the swamps and woodlands of western Anatolia as a "frontier of appropriation" by the 1740s, which came to be colonized by commercial crops as global economic growth picked up in the 1740s and once again in the 1840s and new frontiers of cultivation were needed to supply European markets. The demand of European markets for commercial crops provided ample opportunities for those who had economic or political capital to open swamps and woodlands of the region to commercial agriculture through converting them into the big farms (çiftlik). This paper comprehends the formation of big farms as the beginning point of a new system of human ecology and looks into the change in human relationship with the environment.

Assessing environmental risks in credit approval procedures in Slovenia in the 1970s

Željko Oset, University of Nova Gorica

Relatively concurrently with the other Western European countries, in few years after the UN conference on the Human Environment, Yugoslavia on the federal level and Slovenia on lower republican level adopted environment protection legislation, and proclaim the right to live in a clean environment as basic human right. This was in line with the socialistic theory that included the costs of pollution in its planning unlike the external treatment inherent in the market economy. But the legislation had a smaller impact than anticipated due to insufficient law enforcement and investments and the lacking social guidance on pollution hazards.

One of the new, almost ground-breaking pieces of legislation was a mandatory assessment of environmental risks in credit application when a "customer" was planning to use credit to build a new commercial building; e.g. warehouses, retail buildings etc. The Slovenian authorities were keen to discourage building factories with outdated technology or construction of factories in flood zones. Due to lax law enforcement and lobbying activities of local stakeholders, the credits were awarded to applicants with blatant disrespect for the national environmental legislation. This paper will present how and to which extent assessment of environmental risks was applied in credit approval procedures in Slovenia in the 1970s, and a few case studies of enterprises that were awarded credits as well.

Beyond violence: Commodity, nature and the expansion of a global market in pre-modern south-eastern Mongolia

Siping Shan, University of London

In the winter of 1891, a bloody storm swept the Rehe region in southeast Mongolia, which had provided a home for Mongols, Manchus and Han Chinese over the preceding two centuries. Followers of heterodox sects attacked local Mongol settlements and Christian churches, some even attempting to establish their own earthly regimes. The most active sect amongst them was the Jindandao 金丹道 (Golden Elixir Sect), making this event known as the 'Jindandao incident'.

Inevitably, this phenomenon provoked the Qing government, which was still recovering from multiple uprisings throughout its empire (Taiping, Nian, Muslim and other local rebellions, and large-scale unrest in the Qing empire's northwest). Hence, the Qing government immediately sent armed forces to suppress the rebels. Although the unrest was pacified within two months, it still proved extremely destructive to local society; thousands of local residents lost their lives and hundreds of settlements vanished. And because different religious and ethnic groups were intent on eliminating their competitors, the local demographic structure was profoundly affected, even providing a factor for the incipient independence movement in twentieth-century Mongolia.

This paper will demonstrate that the 'Jindandao event' was trigged by the commoditisation of the local natural resources, representing a fundamental change in environmental ideology as a by-product of the capitalist market system's global expansion. Therefore, the conflict between the Han immigrants and the Mongol natives was not a result of different lifestyle, but a consequence of both being integrated into a global market. Competition over the local natural commodities and the desire to maximise profits also ignited conflict between the various sectarian movements, as well as with the Christian congregations. For this reason, we can conclude that not ideological divergence was at fault in the break-up of Mongolia, but a conflict between different types of social organisation, each trying to afford their members added advantages in an unstable commercialised new world order.

A new north: Cuisine, culture, and boundaries

L. Sasha Gora, Rachel Carson Center for Environment and Society

In 2010 'Restaurant Magazine' crowned Noma the best restaurant in the world. Opened in Copenhagen in 2003, Noma's coronation seven years later was the first for a restaurant in the Nordic region and thus represented a shift in haute cuisine. Since 2010, the appeal of new Nordic cuisine has become boundless. From Panama to Australia, one can find new Nordic cookbooks the world over. Eating—and discussing what one eats—has become a form of popular culture.

To talk about cuisine is to talk about spatial boundaries. It is to talk about places, environments, and their natural resources. My proposal for the 2019 ESEH conference departs from its location: Tallinn. Anchored in environmental and food cultural history, I propose to discuss the spread and global influence of new Nordic cuisine from the perspective of boundaries. The same year Noma was ranked best restaurant in the world, its Chef and co-founder René Redzepi published the cookbook 'NOMA: Time and Place in Nordic Cuisine.' It opens with a map of its suppliers. Identifying Greenland, Iceland, the Faroe Islands, Denmark, Sweden, Norway, and Finland, the map clearly

marks which countries belong to the Nordic region, as well as those that do not. Although parts of the Baltic States and Russia appear as dusty landmasses of trees, they are not identified. Even though they might be home to similar, and even the same, ingredients that are associated with new Nordic cuisine, they are not included in Noma's geography. However, plants and animals do not adhere to the boundaries Noma draws. My paper will further consider boundaries between local and global, food and nonfood, plants and weeds, and animals on land and in water (both wild and farmed).

Session 5I

Border crossing and crossing borders in and across Ligurian landscapes

Organizer: Vittorio Tigrino, Università del Piemonte Orientale
Chair: Giulia Beltrametti, Laboratorio di Storia delle Alpi, Università della Svizzera Italiana

Session abstract:
Arching around the Gulf of Genoa in the Mediterranean Sea, from the Franco-Italian border to that bordering Tuscany, the NW Italian region of Liguria is a the 'land of sea and mountain'. Squeezed between the Apennines and the Mediterranean, Liguria has a long, complex environmental history as a 'border' region; physically, imaginatively, theoretically and methodologically. These borders have been crossed for millennia by successive movements of humans, more-than-humans, goods and ideas, characterised by connections rather than ruptures in the Mediterranean. The spatio-temporal dynamics imbued in the environmental history Liguria have resulted a body of research facilitating verification of the environmental historical dynamics and richness of these multiple border areas.
Historiographically, research on Liguria in recent decades has explored places, spaces and subjects of interdisciplinary debate, enabling a re-examination of the borders 'between' diverse research typologies, characterised by a particular focus on the history of activation of environmental resources analysed at the local, "topographical" scale in terms of microhistorial approaches to political and social history, historical ecology, environmental archaeology and historical-geographical microanalysis; porous borders transgressed with the publication of Ligurian Landscapes (2004) that embodied the vitality of theoretical and methodological international collaboration focused on a specific study area.
This panel addresses these practices and processes by way of case-studies relating to themes pertinent to border crossing and crossing borders in environmental history; namely of the marine coastline, spatial ownership, cultural-linguistic divergences and the more-than-human movements. The contributions will discuss the historiographical traditions and discuss contemporaneous analytical potentialities and actualities in research past, present and future, drawing on discussions advanced during the last 25 years by academics in the Laboratory of Archaeology and Environmental History, engrained into the spirit and essence of the Permanent Seminar on Local History at the University of Genoa and beyond.

'Above and below the surface': Border crossings and crossing borders and the environmental histories of the Colombian Exchange in the Mediterranean basin

Robert Hearn, University of Nottingham

In his text of seminal importance in the genesis and development of environmental history, Alfred Crosby (1986: 94) noted that European colonialist and exploring transported 'a grunting, lowing, neighing, crowing, chirping, snarling, buzzing, self- replicating and world-altering avalanche", of floral and faunal species; a veritable ark of diverse portmanteau biota that has since come to be described as the Columbian Exchange, a direct result of the biological expansion of Europe following the first endeavours of Christopher Colombus in 1492.

This paper directly engages with this area of research in the cultural-environmental histories and humanities and cultural-historical geography through exploring the species histories and animal-plant histories and geographies in and around the port of city of Genoa, Liguria, birthplace of the famous explorer. Combining interdisciplinary approaches and methods pertinent to this research areas, this paper will present a series of case-studies concerning diverse aquatic and terrestrial floral and faunal examples, exhibiting the movement of various species around the Mediterranean basin by way of the port of Genoa, the hinterlands, and the impacts these have had on environmental histories of the biodiversity of the immediate coastal areas along the Ligurian coast and how these socio-cultural and economic ramifications these have had in the hinterlands of NW Italy.
In doing so, this paper will shed light on the interlocked ecological and social processes that have reshaped this part of the Mediterranean environment in the urban-industrial era, from the nineteenth century to the present, emphasising the importance of the movement of these species in terms of their of their cultural, historical, and economic specificities, and in doing so combine approaches from history, anthropology, oceanography, marine biology, environmental studies, and the environmental humanities.

The thin boundaries between tenure and ownership: Changes in access to common resources in Ligurian Apennines (17th–21th c.)

Anna Maria Stagno, University of Genoa

Since the '90s the Laboratory of Environmental Archaeology and History of the University of Genoa carried out multidisciplinary researches in various areas of Ligurian Apennines. After 2000s those researches were organised as didactic activities for the PhD students of the Doctoral School on Historical Geography. In that framework, a sequence of field studies were carried out in collaboration with scholars of the University of Piemonte Orientale, in an area of the Ligurian Apennines characterized by a high density of common lands (known locally as "comunaglie"). That research inspired a careful reflection on how the dynamic interweaving of rights, practices, negotiations contributed to a historical definition of the locality. Starting from an analytical approach focused on localized case studies, the interdisciplinary researches - archival, cartographic, oral, archaeological and other field sources - made it possible to interconnect different subjects: documentary sources revealed the existence of historical conflicts which shaped the borders between the different municipalities and parishes from the Old Regime to the 20th century, while field sources suggested a direct connection between the management of environmental resources, the claim of the common rights and the evolution of the settlements patterns. Starting from these results the paper aims to investigate the relationship between changes in access rights and in agro-forestry-pastoral practices, and how those relationships contributed to changes in the social and juridical organisation of local communities.

Linguistic boundaries in a XVIth century botanical manuscript from the Eastern Ligurian Apennines: Folk taxonomies vs Linnaean nomenclature

Raffaella Bruzzone, University of Nottingham

In 1982 a herbal manuscript dated 1598 was discovered in a family archive in Val di Vara (Eastern Ligurian Apennines) by a research group based in the University of Genoa, interested in a trans-disciplinary environmental history of the Ligurian landscape. The manuscript shows both botanical iconographies and names; the analysis of the plant names requires different expertise and knowledge, including botany, history, linguistics and ethnography and it is therefore imperative to adopt a multi-disciplinary approach at a topographical scale. The plants names in the herbal were compared with names found in comparable manuscripts and printed herbals, with particular use of the works of other researchers on vernacular nomenclature on this region. The linguistic research focused on local-regional names of plants, through their linguistic layers: some of the names came from the medieval herbal tradition, others directly from local folk floras.

On the basis of linguistic coincidence or affinity with the vernacular names of the plants, it was possible to restrict the geographical area in which the herbal was produced: in fact, different names seem to have still been used at the end of the nineteenth century in Liguria, Tuscany and Emilia Romagna. The combined analysis of the plant names and the illustrations enabled botanical identification of the plants represented. The botanical identification of the plants in the manuscript was not straightforward as many drawings are very imaginative and it was difficult to correspond many with current scientific nomenclature.

The botanical names in the manuscript cross different kind of borders: geographical ones (between Liguria, Tuscany and Emilia Romagna, coming from the Apennines, a border themselves) and the border between pre Linnaean nomenclature and folk taxonomies, the interaction between a high culture (who probably bought/produced the manuscript) and a 'low' one which went on with the use of these plants for centuries.

Liquid boundaries: A microhistorical approach to the Ligurian coastal landscape (Mediterranean, 18th c.)

Vittorio Tigrino, Università del Piemonte Orientale

Liguria has a particular conformation: a long coastal strip, with the mountains in many parts almost leaning against the sea: for this reason coastal landscape had a particular importance in the history of this region. But its history is almost still unknown, because Genoese maritime history has been for a long time studied just for important commercial role that Republic of Genoa had in medieval and early modern mediterranean, or for the implication of trade and ports in the Riviere, strictly controlled by the government of the Republic. This paper wants to investigate, with a microhistorical, local, approach (the same that microhistory applied in particular to analyse 'periphery' of the Genoese state), the heterogeneous history of this space, that is really complex and dynamic, politically, geographically and environmentally speaking. I will use in particular sources produced by aristocratic government of Republic during XVIII century in occasion of an institutional and administrative intervention regarding control and regulation of coasts and beaches (often with the aim of selling parts of this common heritage to rehabilitate public finances). These different kind of 'political' sources - administrative, juridical but also cartographical – shows as these areas has

been for long time particular and hardly defined boundaries: between land and sea, but also between common appropriation, private property and ‘public’ nature. They also show that different activities on coastal local resources – fishing, hunting, use of materials, control of river mouths – had built through the centuries the boundaries of this region: the recent problems that these coasts have had following a series of strong storms (which, according to the regional government, have "completely changed the coast line" – October 2018) are the consequence of an often unconscious or uncontrolled management of this historical landscape.

Session 5J

Geography and ideology: The influence of geographical conditions on national perceptions and national settlement

Chair & Organizer: Anat Kidron, Ohalo academic college / Haifa University

Session abstract:

Works on the development of a national discourse in its geographic contexts tend to deal with the development of the settlement map, settlement utopias influenced by the national narrative, or national values (for example the tendency to prefer one form of settlement to another). In reference to the Zionist national movement, the geographical aspect of the national action is emphasized in light of the demographic aspect, which involves issues of intensive Jewish immigration on the one hand, and the way in which two national movements share a common space.

The proposed session focuses on the manner in which geographical, geological or hydrological conditions affect not only the act of settlement but also its metaphoric boundaries. The papers focus on two places, the Dead Sea in south Palestine, and the Gulf of Acre to the north of the country, where the geographical conditions were significant in formulating the metaphorical discourse that deals with ethnic, political and ideological boundaries. The third paper deals with the connection between water, a precious resource in Palestine, and the manner in which it is expressed in the national discourse.

A land flowing with milk and honey ...and water? The perception of water availability and its place in the Statism, before and after the establishment of the State of Israel

Orli Sela, David Berg Foundation Institute for Law and History, Tel Aviv University

From its outset, the Zionist Movement's aspiration to turn the Holy Land ("Palestine," under the British Mandatory's rule) into the Jewish state relied upon the assumption that the area's "productive capacity" was sufficient to sustain the millions of Jews who would immigrate to the land. This assumption was not obvious. Rather, it required empirical and political support.

The main challenge was to create a worldwide positive public opinion. That is, to persuasively demonstrate that the difficulties engendered by the scarcity of water in the semi-arid climate of the land could be overcome. To this end, the Zionist leaders commissioned in the mid-1940s the service of the best-known soil and water engineering experts of the time in the USA, Walter C. Lowdermilk and James B. Hays. The results of the water surveys conducted by them were made public in Lowdermilk's, "Palestine, Land of Promise" (1944) and Hays's," T.V.A on the Jordan" (1948). The two publications built a narrative. It asserted that proper water management would generate ample resources for the projected massive immigration to Palestine.

"A land of salt". The Dead Sea's West coast: Changes in landscape and image, 1947–1967

Orit Engelberg-Baram, Haifa University

In the 1950s, John Brinckerhoff Jackson determined that “a landscape is a beautiful and abundant book always open to us, and we must only learn how to read it.” Much like words, the components that comprise a landscape are symbols through which we can decipher the values of the society that created them. This type of “landscape interpretation” usually reveals a connection between the image of a certain location and processes that led to the establishment of a group identity, and shows that the space-appropriation process constitutes a central motif in the national ideology.
The proposed lecture will analyze the reciprocal relations between human activity on the west coast of the Dead Sea, the changing landscape, and public discourse of it. The Dead Sea – the lowest point on land– geographically remote and subject to harsh environmental conditions, is a unique natural phenomenon. Nowadays, the Dead Sea region borders on three political entities (Jordan, Israel, and the Palestinian National Authority), when in fact, it has always been a border – whether political or metaphorical. Ever since Ancient History, people have lived along its shores or in its vicinity, moved their wares through it, aspired to use it as a financial resource, traveled and vacationed near it, or fled Jerusalem and secluded themselves there, in its nearby caves and ravines. Throughout the whole of history, the Dead Sea was both a subject of attraction and concern, and its image is littered with contrast: heaven – hell; the land of Genesis – a modern industrial space; a place of death – a place of recovery.
In my lecture, I shall review the effects of social, economical and political agendas on the physical space of the Dead Sea since the foundation of the State of Israel – when only a part of the Sea was under Israeli control – to the Six-Day War, when the Sea was conquered in its entirety and the state’s borders dramatically changed; a fact which affects the country to this very day

The influence of the land structure on the settlement discourse in the Acre Bay during the British Mandate period

Anat Kidron, Ohalo academic college / Haifa University

The Gulf of Acre in northern Palestine is characterized by sand dunes along the coast in addition to salt and swamp areas. As a result, the settlement in this area over the years was very sparse, consisted of mainly Bedouin tribes, and concentrated in the cities of Haifa and Acre, located at both ends of the Gulf. However, In the 1920s and '30s, the region experienced a Settlement flowering, mainly by the Zionist movement. The momentum of this settlement entered the historiography as part of the National-Jewish "conquest of the wilderness". the city of Acre was largely ignored by Zionist settlers. The historiographical factors of this geographic dispersion point to the city's economic weakness, the preference for agricultural settlement, and the city's Arab character. However, these explanations are only partial, in view of the fact that the mixed city of Haifa experienced increased emigration of Jews, that was described as a Zionist effort to settle the mixed cities. Never the less, during the 1920s, for one decade only, there was an attempt at a Jewish settlement in Acre, which was described in similar ideological terms i.e. the need for Jewish settlement in the mixed (or Arab) cities. In other words, the national narrative regarding colonization in Acre changed as a result of the failed attempt of the Jewish settlement, and not as a distinct national ideology.
I argue that one of the reasons for the failure of this settlement was the unique soil conditions, especially the marsh belt surrounding Acre, which required a large economic investment in urban development. The drainage rate for the marshes that the British authorities set determined to a

great extent the ability to settle and develop in the area. Hence, the metaphorical boundaries of the Zionist settlement narrative were affected by the need to adapt to the geographical and economic conditions. Among other things, this encouraged the attitude towards Haifa as a mixed city that should be settled by Jews, and of Acre as an Arab city that has to be surrounded by Kibbutzim, but without a Jewish community of its own.

Session 5K
Contesting wilderness

Chair: Jane Carruthers, University of South Africa

Euro-American ideas on race and wilderness: Africa-inspired reflections on race and masculinity by Theodore Roosevelt and Akseli Gallen-Kallela
Mikko Saikku, University of Helsinki

In the fall of 1909, two nationally celebrated figures from the spatial extremes of "Western Civilization" met for lunch. Of all places, the location for their short meeting was a rustic villa in the outskirts of Nairobi, the capital of British East Africa. At the time, Theodore Roosevelt, the fresh ex-president of the United States, and Akseli Gallen-Kallela, the foremost painter of the National Romantic School in Finland, were both conducting an African safari.
Roosevelt and Gallen-Kallela arrived in British East Africa with hopes of being rejuvenated by "the strenuous life" amidst the continent's supposedly unspoiled nature and native peoples. A crucial aspect of their African journey was big game hunting, partly as recreational pastime but also to amass zoological specimens for their respective national museums.
Challenging encounters with African nature enabled Gallen-Kallela and Roosevelt to test their male strength and endurance in entirely new surroundings and provided them with a new outlook on the perceived core values of Finnish and American cultures. Both the artist and the politician exhibited primitivist tendencies, expressing genuine admiration for pristine landscapes, the continent's magnificent wildlife, and even certain features of native African life while still remaining deeply entrenched in their own cultural values and prejudices.
But how did it happen that these two men, an American ex-president and a leading Finnish artist, found themselves in the wilds of Africa in the first place? Safaris were still uncommon in 1909; they became truly fashionable for non-colonial sportsmen only after Roosevelt's much-publicized feat. I argue that the reason has much to do with the special emphasis both "young" nations, the United States and Finland, placed on pristine landscapes and the image of the wilderness hunter when developing ideas about the national character. These in turn were deeply related to ideals of manliness.

Thomas Cole, Native Americans, and the failure to police boundaries of time and place
C*hris Slaby, College of William and Mary*

The landscape paintings of English-American artist Thomas Cole do not appear to tell a particularly complicated environmental story. Building off of romantic, idealized European aesthetics of nature, Cole's work neatly narrates a history of American development in the Northeast, from a state of nearly pristine wilderness to an often equally aestheticized human-nature relationship. Art historians and other cultural critics are unsure if Cole was endorsing early nineteenth-century environmental change as successfully harmonious with nature or using his art to suggest otherwise, but one thing is clear in this story: the place of Native Americans. For Cole and many others, they could occupy an idealized moment in the past, but they were not part of the contemporary landscape. There is just

one problem with this. It wasn't true. That Cole played his role in perpetuating the myth of the vanishing Indian is not particularly remarkable. Like many in his day, Cole presented a view of Indigenous peoples as stuck in the past, even as they continued to exist in his present/presence (as they do to this day in the United States and around the world). What is notable is the degree to which Cole failed to police these boundaries of time and place. Visual evidence of this failure exists in Cole's 1827 painting The Clove, Catskills, which subtly depicts a half-present, half-hidden Native American figure directly in the center of the canvas. This paper argues that The Clove is evidence of Cole's inability to fully erase Indigenous peoples from his romantic, idealized views of American nature. Traversing the traditional boundaries of history and art history, this essay is among the first to connect art (especially landscape painting) with the realities of environmental history and Indigenous peoples, and thus provides an occasion for reassessing many histories of land use, representation, and belonging.

"We have never been wild!": Contesting the transnational production of wilderness in Eastern Europe

George Iordachescu, IMT School for Advanced Studies Lucca

Eastern Europe is currently the focal point for many conservation initiatives advocating for a wilder future landscape. Within these projects, a rich history of past extractive industries and traditional land uses are to be replaced by green businesses, ecotourism, and strict reserves. The paper emphasizes the urgency to use environmental history politically to advance nature's and local communities' rights on public agenda.

Expert discourses about the conservation potential of abandoned or deserted rural environments legitimate powerful actors' claim to appropriate, control or manage resources in diverse settings such as the Carpathian Mountains, the Danube Delta or the marshy region lining the Pripyat River. While being highly political, local and transnational attempts to make the region a wilder place disregard both the local memory and the affective labor of communities in caring for the environment.

Starting from the example of Fagaras Mountains in Romania and moving to other regional geographies, the paper will question the way local history is being revised in an attempt to enhance conservation-cum-tourism. This process entails both the commodification of authenticity and the writing off the landscape of uncomfortable collapsed local industries or other non-human actors not considered wild enough (dams, forestry roads, feral dogs, alpine settlements, commercial monocultures). I see the current rewilding narrative, as a war on local knowledge and memory. Nature being depoliticized by a selective remembrance of its co-produced history is just one outcome of this transnational wilderness momentum.

In-depth ethnographic fieldwork, archival research and discoursive analysis of a vast plethora of legal, grey and public policy documents inform the argument.

While mingling memory studies with local environmental history and political ecology, this research aims to question the currently hegemonic narrative that intact landscapes of Eastern Europe are human-free wild areas prone to be saved by nature-based tourism and strict fences-and-fines protection.

Tanzania's forgotten "wilderness"
Nicole Wiederroth, University of Duisburg Essen

It might be expected that more than 50 years after the Berlin Conference, missionaries, so-called explorers, colonial officials as well as traders or researchers must have observed, classified and rated every part of today's Tanzania territory. But even after independence in 1961, parts of the country remained barley visited, also by Tanzanians.
The envisaged region, which was South of the Malagarasi river within the Western Province of the Tanganyika Territory, was covered mostly by miombo woodlands. For several reasons it was comparatively sparsely populated, under Tanzanian, British as well as under German rule. Often mentioned in colonial reports was the difficult access, but more often the Tsetse fly, a potential carrier for trypanosomiasis respectively "sleeping sickness". The potential risk of the vector-borne disease produced a lot of interest as well as fear. Especially the latter might have made it possible that the region served regularly as a refuge, e.g. for groups of people who sought to escape from violence, prosecution or domination.
In the course of colonial penetration or "development" programs, the different administrations seemed sporadically tried to overcome their lack of knowledge and ignorance about the area. The paper will describe some of these engagements, considering also the continuing (re-)production and legitimisation of a colonial order and its imaginaries. Strongly focussing on the time following the late 19th century, and based on archive material, it is intended to uncover particular interests of some actors and their entanglement in certain processes of knowledge production in and about the so-called "Southern Wilderness".

17:30-18:00 Coffee break

18:00-19:30 ESEH Ordinary General Meeting

19:30-20:30 ESEH Incoming Regional Representatives meeting

FRIDAY, 23 AUGUST

09:00-10:30 Parallel Session 6

Session 6A
Where land and water meet: Histories across the terrestrial–aquatic divide

Organizer: Miles Powell, Nanyang Technological University
Chair: Dolly Jørgensen, University of Stavanger

Session abstract:
A key trend in environmental history over the past two decades has been increasing attention to aquatic and especially marine spaces. This development has taken many forms: the efforts of Poul Holm and his collaborators in the History of Marine Animal Populations (HMAP) project to assess historical fish stock abundance; studies of international oceanic environmental policy and diplomacy by Carmel Finley, Kurkpatrick Dorsey, and others; a host of excellent projects on whaling by Jakobina Arch, Josh Reid, Ryan Tucker-Jones, and many others; and sweeping studies of bodies of water, including Jeffrey Bolster's analysis of the Atlantic and Jack Davis's examination of the Gulf of Mexico. Yet most of these studies treat the histories of lakes, rivers, and seas as separate and distinct processes from land-based environmental histories, and few scholars—with some notable exceptions, including Chris Pastore—have explicitly sought to link these stories.
Participants in this session will present histories that challenge the boundary between the terrestrial and the marine or aquatic. By exploring narratives that muddy—literally and figuratively—tidy demarcations between land and water, we demonstrate the inseparability of historical processes that unfold within and across both. In this manner we will bring fresh insights to such critical historical themes as human migration, border control, national and urban development, and perceptions of space and time. We hope that our three presentations will serve as a springboard for a lively discussion of the various ways environmental history can connect aquatic and terrestrial developments in novel and enlightening ways. The author of an important study of artificial reefs (which use terrestrial objects to manufacture aquatic environments), Dolly Jørgensen is ideally qualified to guide this conversation.

Singapore's buried coast: Lost cultural connections and the struggle to preserve a hybrid shore
Miles Powell, Nanyang Technological University

In my paper, I will examine the history of land reclamation in Singapore. Beginning during the colonial period, and greatly accelerating following independence in 1965, Singapore increased its national domain by nearly 25-percent. The construction of new land where waves once rolled was a key component of the nation's celebrated rise from "third world" to "first world" in the postcolonial period. But the economic benefits of remaking Singapore's coastline came at significant ecological and social costs. Nearly all of the original shore, and its attendant mangrove forests and natural beaches, were lost. So too were two-thirds of Singapore's coral reefs. While carrying out this reclamation, the state also erased a number of sites at which people made a living from the sea, including indigenous communities on the outer islands, age-old fishing villages, kelongs (large, traditional offshore fishing platforms), and prawn farms.

The history of land construction in Singapore offers a number of important insights concerning the relationship between humans and our environments, of which this paper will focus on two. The first is a perhaps unforeseen consequence of bulldozing and burying sites at which humans derived their livelihood from living oceanic resources: the loss of a cultural connection to the sea, based on knowing nature through work. Whereas these communities once connected the island's inhabitants to their surrounding waters, Singaporeans now often comment on feeling cut off, and disconnected, from the sea. The second is the question of how environmental advocates can pursue conservation in a setting like Singapore's shores, which we can no longer in any way consider pristine or natural. That is to say, the ongoing efforts of environmentalists to protect flora and fauna in Singapore's waters speak to the necessity of, and challenges presented by, preserving hybrid (neither entirely natural nor entirely artificial and neither purely marine nor terrestrial) coastal spaces.

Dredging in the age of ecology

David Stradling, University of Cincinnati

Dredging is a centuries-old global practice, essential to the maintenance of nearly all commercial ports, the conservation of some recreational beaches, and the creation of new land for both human and ecological purposes. Despite all this, dredging occurs off stage in most historical accounts of human-water interactions. Even in the best environmental histories in which cities deepen ports or nations build canals or raise dikes, we assume the dredging that must take place. We learn little about public discussion of or the ecological impact of the dredging itself. This paper assesses dredging in the late twentieth century, especially in North American and Europe, where citizens began to suspect that this disruptive practice might have serious ecological and human consequences. This topic crosses the boundaries of engineering and science, policy and practice, as well as activism and expertise.

As global trade increased in the late twentieth century, so too did the size of commercial vessels. At the same time, as the use of synthetic chemicals became more widespread, so too did pollution loads in waterways and ports. Dredge spoils – the solid materials pulled up from beneath the waters – became a voluminous threat to sea and land. The absolute necessity of continued dredging along with the growing understanding of spoils as contaminated led to political efforts to protect aqueous environments, from industrial rivers to open ocean waters. Not surprisingly, dredging became both a means of cleanup and a threat to environments many considered too pure to accept polluted wastes. This topic raises questions about the creation and maintenance of hybrid environments (including all modern ports), about the authority of scientific expertise in the political arena, and the limits of environmental activism in a world dependent upon the continuation of problematic practices.

Connections reordering coastal rurality

Tarmo Pikner, Tallinn University

Coastal areas have become intensified contact zones between land and sea, where different entanglements, ecologies and technologies meet, and generate tensions. Therefore, there is a challenge to scrutinise the landward bias in understanding territories and landscapes, and look at

surfaces and assemblages additional to earth terrains. Coastal terrains embed and are often described through rich transoceanic connections and influences, which may contrast discursive frames of rurality as passive and isolated. On the other hand, the approach of 'planetary urbanisation' indicates resource extraction processes which significantly restructure countryside to the extent that no places can considered outside from urban realities. This evoke questions on occlusions and continuities of non-urban autonomous spaces. The paper would like critically to examine the total urbanisation arguments within context of small coastal villages. More specifically the focus will be in scrutinizing affects and future oriented responsibilities embedded to processes and tensions bound to reconstruction of small-craft harbours in north-eastern Estonia. These existing and projected harbours (together with historical contexts) could be seen as complex assemblages which through (dis)connections generate differences and modify boundaries.

Session 6B
Imaginations of efficiency: Human–plant relations in climate engineering

Organizer: Ariane Tanner, University of Zurich / University of Lucerne
Chair: Etienne S. Benson, University of Pennsylvania

Session abstract:
The Anthropocene has been discussed as the era of human intervention into earthly environments on a planetary scale. The Anthropocene is also, and perhaps much more so, the era of anticipation of technoscientific endeavours to battle the unintended effects of powerful environmental interventions. Geoengineering, applying technological fixes to environmental problems, reaches back to the optimism of post-World-War II to make human-nature relations more efficient. In the environmental laboratories of the 1950s as well as in vast earthly spaces, natural cycles were to be optimized or repaired in their self-sustaining capacity and yield. While we tend to think of the Anthropocene in terms of intricate contraptions and large-scale technologies, how have plants played a role in these schemes?
This session explores how plants and biotic matter, from phytoplankton to algae to crops, have been put to work on the human-nature relation and to shift the boundaries of human environments and climates locally and globally. The papers address engineering visions and projects ranging from creating climate change in the laboratory for maximizing plant yield in the 1960s and reforestation to protect shorelines against sea-level rise, to applying phytoplankton for sinking carbon dioxide in the oceans and to geoengineering algal growth and cultural eutrophication. Entering an exchange with lively and unwieldy plants never followed a simple and straightforward plan. Instead, as the papers show, plants repeatedly questioned and overturned the powerful imaginaries of geo-engineering. Thus, the papers also provide their own contemporary reflections on the complications of environmental mono-cultivation that are featured in the concept of the “plantationocene”.

Climate change in the laboratory: Plant engineering in the 1960s
Sabine Höhler, KTH Royal Institute of Technology

In the second half of the twentieth century, ex situ practices, both conservative and experimental, became central to modern plant studies. From air-conditioned greenhouses to seed banks, new repositories of plant knowledge and plant practice technologized earthly environments. This paper studies plant experimentation and environmental engineering in Sweden’s first phytotron facility, which began its operations in Stockholm in the 1960s. The phytotron was a “climate laboratory” for plants. It enabled a specific form of climate governance that built on techniques of limiting and scaling environmental spaces for environmental control. A sealed greenhouse was equipped with computer and control facilities to enable the study of plant physiology and plant genetics in highly engineered climates that emulated environments elsewhere in time and space. In a seamless play of scales the phytotron put the vegetation periods, growth, resistance and yield of plant mutants on trial. The paper studies the emergent proto-environments of the phytotron as a repository of visions and tools to expand the laboratory-generated climates and thereby advance forest and crop growth

in Sweden's north. The aim of the paper is to explore the place of plants in human's transformation of the environment as a technoscientific infrastructure and manageable entity.

Optimizing the "biological pump". Phytoplankton as the Great Sink of the Anthropocene?

Ariane Tanner, University of Zurich / University of Lucerne

Regulation and optimization of phytoplankton have been evoking rich imaginaries of increased fish crops and an endless protein source since its scientific and technological exploration in the second half of the 19th century. Yet, in the middle of the 1980s, phytoplankton was transferred to another context: The metaphor of the "biological pump" was coined and soon accompanied by dreams of optimizing the ocean's ecosystem in a new way: CO2 was to be 'pumped' through phytoplankton from upper water layers to certain depths where the lower temperatures and the higher pressures inhibited its dissemination for hundreds of years. Large-scale experiments between 1993 and 2009 aimed at increasing this natural process and promised a cheap way to mitigate climate change.

This paper explores experiments of "ocean fertilization" and their related controversies that show how the hydraulic idea neglected biological complexities of the food web and the physical down- and upwelling of the ocean. Despite these insights, commercial companies identified huge business potential related to carbon trading. The experiments eventually led to a simple discursive opposition: preservation of "Gaia" or "technological fix" of the planet.

The paper aims at showing the attractiveness of the metaphor of "biological pump" from the 1990s to the recent discourse of the Anthropocene. It emphasizes the translation of a biological object (phytoplankton) into a logistic one (carbon carrier). Furthermore, it demonstrates how the large-scale experiments reveal that the distribution of nutrients, carbon, phytoplankton and temperatures are an outcome of the history of the oceanic space itself. Through the analysis of the intended stimulations of oceanic plant regulation we encounter the progressive shifting of planetary parameters as a consequence of human activities and become aware of the "deep history" of the human-plant relations.

Breathing life: Algae, oxygen, and geoengineering in science fiction and the Baltic Sea

Jesse D. Peterson, KTH Royal Institute of Technology

As a response to climate change, ocean fertilization projects have sought to sequester carbon in the cellular bodies of algae adrift in the Earth's oceans. Yet, the oceans, like the atmosphere, also must deal with the unintended effects of industrial societies such as warming temperatures, acidification, and deoxygenation. Indeed, the unchecked growth of algae has contributed to the formation of marine environments with little to no oxygen, creating deadly spaces in the seas and which are now commonly called "dead zones." As a result, many marine scientists have been attempting to do the exact opposite of those who have backed ocean fertilization, namely to reduce the number of algae in the sea. Some of these scientists also have turned to geoengineering as a possible solution to address this problem. This paper presents a glimpse of the interrelationship between algae and oxygen both in geoengineering fictions and geoengineering fact. I plan to provide a brief overview of the sci fi genesis of algae from Carl Sagan's ideas to terraform Venus to Kim Stanley Robinson's Mars Trilogy and the movie Red Mars. I then trace efforts in and around the Baltic Sea, primarily the Deepwater Oxygenation Project (2009–2012), that attempt to mitigate the lack of oxygen in the seas caused by nutrient pollution and algal blooms. This section seeks to illustrate how such efforts

respond to algal blooms as a break or rupture to commonly held visions about the sea and how its water and organisms ought to act or behave. As a final rumination, this presentation investigates – in respect to the relationship between algae and oxygen in geoengineering scenarios – how plants mobilize as well as trouble visions for large scale environments as well as why plants and water are often candidates for large-scale technoscientific fixes.

Session 6C

Baselining nature: On the shifting boundaries of science, policy, and memory in nature conservation and ecological restoration

Organizer: Thomas Lekan, University of South Carolina
Chair: Libby Robin, Australian National University

Session abstract:
The papers in this panel explore an indispensable yet usually overlooked process of nature conservation, environmental management, and ecological restoration: the determination of baseline conditions. The mobilization of baseline data is critical to establishing protected areas, restoring habitats for vulnerable species, or building scenarios to mitigate the risks of climate change. In each of these arenas, scientists and policymakers interested in preserving, mitigating, or restoring the environmental impacts of human activity must first, often in accordance with environmental impact statement requirements, establish a baseline state. Such a state is usually understood as the "natural" or "historical" reference point for a species, landscape, ecosystem, or climatic zone.
The papers in this panel argue that setting baseline conditions involves complex negotiations and value judgments over what constitutes an "ideal" environment. Using the tools of environmental history, science and technology studies, participatory planning, and paleo-ecology, the panelists argue that there are no baselines without "baselining"—the diverse set of sociological practices that structure norms, protocols, and citizen engagement. Baselining nature is always, in this sense, both contingent and structural, imaginative and political. The papers build in part upon Daniel Pauly's (1995) seminal insight about "shifting baselines syndrome" (SBS), which warned of the dangers of intergenerational ecological memory loss in fishery conservation. Yet the contributions ask deeper questions about SBS, using case studies from Europe, Africa, and Australia: how do scientists, policymakers, and conservationists arrive at their "ideal" environment in the first place? Which technologies and sampling techniques are used to produce environmental knowledge about baselines—and how does such knowledge incorporate some human and non-human stakeholders and not others? What is the relationship between baselining the past and anticipating the future, particularly given the accelerated anthropogenic changes associated with the Anthropocene? By asking these critical questions about the complex processes of baselining nature, we seek to a new dialogue between conservation science and history.

"An ideal region": Defining baseline conditions and preservation aims in early Alpine conservation
Wilko Graf von Hardenberg, Max Planck Institute for the History of Science

The concept of baseline condition is, as such, admittedly a recent one in conservation. Already in the first half of the twentieth century its spirit, however, arguably inspired debates about the desirability of nature conservation. At the time, throughout Europe, the professed pristine conditions and singular characteristics of different regions were, in fact, called upon to justify proposals to setup national parks and nature reserves. Within individual nation-states the selection of locations where to set up new parks occurred within a competitive framework in which different proposals vied for state support and limited funds. On the international stage, the features of certain landscapes were,

on the other hand, used propagandistically to foster the exceptional character of each nation's nature.
In this paper I look at a handful of select cases from the Alpine range, with the aim to show how the peculiarities of certain landscapes where profiled at the expense of other, less desirable features when it came to promote a given locality as a possible venue for conservation. Their features were however also discussed frequently as mere initial conditions that, under the rule and control of conservation institutions, would allow scientists to study the natural development of the protected areas, following the widely cited example of the Swiss National Park. Almost paradoxically, these features served thus at the same time as justification for the conservation effort and as reference point for still expected future changes. Through this analysis of the diversified political uses of baseline conditions by early conservationists it can be shown how the social and scientific construction of pristine natures was an openly discussed issue from the very beginnings of conservation in the Alps.

Decolonizing the savannas: Wildlife conservation and imperial legacies at the Serengeti Research Institute in the 1960s

Thomas Lekan, University of South Carolina

Established in 1961, the same year as Tanganyika's independence from Britain, the Serengeti Research Institute (SRI) became the most important ecological field station in Africa. Building on the pioneering 1957–58 aerial surveys of the Frankfurt Zoo director Bernhard Grzimek, the SRI's researchers counted animals, tracked the migrations of wildebeest, measured climatic patterns, and sampled grasses to establish a baseline for "sound, long-term management." Schooled in ecological notions of "carrying capacity," SRI scientists accepted Grzimek's conclusion that the national park needed to be emptied of its human inhabitants because the semi-arid environment could not support both domesticated cattle and wild animals, as livestock inevitably trampled the fragile soils and overgrazed the vegetation. Few SRI scientists understood the political import of the Grzimeks' methods, which were designed to stop a British plan to shift the national park borders to accommodate resident Maasai herders.
Using the tools of environmental history and the history of science, this paper shows how contemporary anxieties about African independence and the loss of European control filtered into baseline assessments that depicted the Serengeti as pristine ecosystem. Fears of impending extinction and a "dustbowl" caused by "overstocking," I argue, left scientists ill-prepared for the remarkable return of the rains and an "explosion" of wildebeest and buffalo numbers that occurred in 1962. The British ecologist Anthony Sinclair determined through serology that Rinderpest – a viral disease introduced to Africa by European colonialists in 1889 – had devastated Maasai cattle along with wildebeest and buffalo until veterinarians discovered an effective vaccine in the late 1950s. As such, "invasive" diseases – not African habitat destruction – were the key to understanding animal population dynamics. Yet ecologists again never recalibrated the baseline to encompass historical data on diseases or indigenous histories of place. Instead, they sidelined the entangled story of humans, livestock, and wild game altogether and made 1961—a politically, rather than ecologically significant date – the new baseline for scientific monitoring. As such, I conclude that the SRI's first decade reveals "shifting baseline syndrome" in reverse: an intergenerational tendency to dismiss

evidence of once robust pastoral landscapes in favor of doomsday assessments about African threats to the ecosystem.

The life of nature restoration projects in the postsocialist world: Practices, policies and histories

Stefan Dorondel, Francisc I. Rainer Institute of Anthropology

Socialist countries had little concern for preserving nature. Forced industrialization, intensive agriculture, water pollution and the heavy engineering of the environment had appalling consequences. Thus, the ecological restoration projects were needed more than anywhere else. This paper tells the story of the very first nature restoration project in Romania (and maybe throughout the postsocialist Europe), unfolded between 1991 and 1994 in the Danube Delta. Carried as a collaboration between WWF Germany and a newly (at that time) Romanian research institute specialized on the Delta, the restoration of 2000 ha of a Danubian island was less 'a textbook' restoration and more an opportunity act. The paper examines this project's history which developed at the same time with declaring the Danube Delta as a Reservation of the Danube Delta Biodiversity and accepted as an UNESCO world heritage and concomitantly with land reform and land (and forest) restitution to pre-socialist owners. We show that the baseline set in this project is directly linked to the last (unfinished) socialist local action: transforming wetland into a rice plantation. Based on ethnographic fieldwork and archival research we seek to understand the evolution of what has been considered a successful nature restoration project and a model to be followed, the policies that triggered the action, the technologies involved, and the reactions of locals who live in the village next to the restored area. In order to understand better the intertwined and intricate character of nature restoration policies with the economic arguments and the land restitution process we look at similar projects carried elsewhere in Southeast Europe and shows the similarities and differences in carrying the projects and setting the baselines. As nature restoration project aims at resetting the relationships between the dominant species – Homo sapiens – with the other species and with the natural environment we take as theoretical basis the multispecies ethnography.

Session 6D
Nuclear fallout

Chair: Kati Lindström, KTH Royal Institute of Technology

"Nuclear" narrative: Shifting boundaries
Inna Sukhenko, University of Helsinki

The contemporary necessity of reconsidering nuclear energy issues against climate change rhetoric and sustainable development agenda not only fosters the development of environmental humanities and energy humanities but also encourages remapping the narrative dimensions of nuclear energy and "Atom for Peace" initiative. Initially being regarded within the political and propaganda rhetoric (mainly, that of the Cold War) "nuclear" narrative went through transformations after the Chernobyl NPP's explosion.
Studying "nuclear" narrative in US nuclear fiction of the post-Chernobyl age gives a chance for reconsidering how cultural and social dimensions of nuclear energy issues sifted the boundaries of nuclear narrative in the late Cold War and beyond. First of all, "literary Chernobyl" shifts the whole nuclear rhetoric from a global level to a local, even peripheral, level (the nuclear counteraction and nuclear weapon race of the superpower states comes to the local level – Chernobyl, Three Miles Island, Los Alamos and other nuclear weapon production plants and nuclear tests sites). Secondly, "nuclear" narrative changes its geopolitical rhetoric into an ecological one, while stressing own local ecological cases, related to nuclear issues (explosion, tests, uranium mines, nuclear wastes) rather than the propaganda narrative of political counterparts. And thirdly, post-Chernobyl fiction demonstrates the weakness of "apocalyptic" rhetoric and encourages the "Survival is possible!" idea, while transforming Derrida's "fabulously textual" content of "nuclear" narrative.
This aspect of research faces the issues on the edge of humanities and sciences while regarding "nuclear" narrative in the perspective of social, political and ethical representations in nuclear fiction, which generally is correlated with the acute issues of environmental humanities and literary energy studies. Under such circumstances "nuclear" narrative's features are studied in its relation to conceptions of sustainable development, technology, energy humanities and environmental humanities.

Chernobyl: Beyond the public–private divide in the Anthropocene
Anna Barcz, University of Dublin

The paper addresses the problem of narrating the Chernobyl catastrophe and how it has been changing due to the Anthropocene. The author is interested in the event's influence on the new, alternative historical narrative by referring to a very private and intimate experience of the catastrophe as presented in Christa Wolf's Accident: A Day's News (1987), Svetlana Alexievich's Chernobyl Prayer: A Chronicle of the Future (1997) and major literary texts created by contemporary Ukrainian writers. Literature and cultural memory narratives can be helpful in expressing the blurring boundary between what is private and what is public in the Anthropocene. Since the Anthropocene does not represent a mere geological period but a huge and necessary debate over the human

condition and environmental change, the style and methodology of historical narration have been changing as well.

Chernobyl's transnational environmental legacy

Achim Klüppelberg, KTH Royal Institute of Technology

Nuclear Energy is transnational.

According to this statement, Chernobyl was not only caused by a deficient reactor design and operational mistakes made by scientific-technical personnel on-site. Instead, a certain technocratic culture can be described, which majorly contributed to the core melt-down. Although secrecy and national prestige had played its role, this specific culture has always had inherent transboundary aspects. Consequently, the results of the USSR's Chernobyl nuclear project continue to be transnational up to this date. By looking at the recently built second sarcophagus and the renewed Belarusian nuclear project, this presentation strives to illustrate transnational links inside the nuclear discourse of the Soviet Union and today's Ukraine, Belarus and Russia with a special interest on water-related environmental issues in an historical perspective.

Thence existing literature, contemporary sources and current media of primarily Ukrainian, Belarusian and Russian origin will be analysed, to display the transnational characteristics of Chernobyl's technocratic culture and its relation to current nuclear projects and environmental concerns.

From the place of environmental disaster – to the territory of innovations and the revival of wildlife: Experience of Chernobyl exclusion zone

Tetiana Perga, Institute of World History of National Academy of Science of Ukraine

The Chernobyl Nuclear Power Plant Zone of Alienation (Exclusion Zone) was established in Ukraine immediately after the accident on the Chernobyl NPP. It determined the administrative boundary of the territory with a high level of radioactive contamination, which is prohibited for living and open access of public. For a long time, ecological boundaries coincided with this administrative border and divided Ukraine into "clean and safe" and "dirty and dangerous" territory. However, during the last decade, in result of activities of some actors, the ecological boundaries of the Exclusion Zone begun to "shorten" although the administrative boundaries of the territory remained unchanged.

The report will investigate the main factors and actors who contribute to this process. On the one hand, it is a unique natural environment, which contributes to the development of rare species of flora and fauna, on the other - the need of socialization and economic development of this place. The author will analyze the Exclusion Zone from the perspective of new opportunities - both for natural resources and for the society.

In this context, the following issues will be considered: the activities of the Chernobyl Biosphere Reserve established in 2016; involvement of the zone in industrial activities (renewable energy and repositories for radioactive waste); social life (tourism to the zone, development of the social infrastructure of the adjacent settlements); regional and international cooperation in research and innovations, environmental education.

Thus, the experience of the Exclusion Zone will demonstrate how human activities can expand ecological borders and transform the territories of the industrial disasters into the places of nature conservation and revival of economic activities.

Session 6E
Plants and peoples in the US–Mexico borderlands

Organizer: Katherine Morrissey, University of Arizona
Chair: Aleksandar Shopov, Rachel Carson Center for Environment and Society

Session abstract:
This session investigates the intersections of plants and culture, with a focus on a North American native, U.S. and Mexican borderlands. Plants, as well as the impact of people's relationships with plants, mark the landscapes, waterscapes and diverse human cultures of the northern Mexico and southwestern U.S. region. The boundaries we explore are geographic, international, cultural and natural. What can we learn, we ask, from starting with a plant? Centering on specific plants—tamarisk, cirio, mesquite, and creosote—these four papers trace histories that reveal the boundaries and connections between environment and conservation, race and memory, representations and identities, and raise questions about the politics of plants in the 20th and 21st centuries.

Telling plant tales in a borderlands
Katherine Morrissey, University of Arizona

When Godfrey Sykes, associated with the Carnegie Desert Laboratory, encountered an odd-looking arid lands plant on his early 20th-century northern Mexico sojourns, he celebrated its exoticism by naming it after a presumed caricature in Lewis Carroll's The Hunting of the Snark: the boojum tree. For the Comcáac (Seri) peoples of the Sonoran Desert, the same plant is named cototaj. Its ethnobiology is embedded in cultural knowledge and origin tales, including one of the ancestral giants who escaped a great flood by being changed into the spiny tall plants. The Cochimí peoples of Baja California knew the plant as milapá, and used the distinctive plants as markers of usufruct rights. And the eponymous Spanish name used in Mexico for the plant is cirio, a reference to the slender tapered altar candles to which its branches resemble. Its origin may come from Catholic missionaries, familiar with the religious paraphernalia and, perhaps, with the spiritual power natives invested in the plant. As the various names suggest, scientific, indigenous, and popular interpretations of this visually striking tree, Fouquieria columnari, reveal divergent political and cultural attitudes. This paper follows the shifting tales told about this unusual plant as a way to examine multiple, and competing, cultural and environmental perspectives through the US/Mexico borderlands.

The mesquite tree and the Salton Sea: Transformation of the US–Mexican borderland from the desert native's perspective
Marta Niepytalska, Ludwig Maximilian University of Munich

The mesquite tree, native to the US-Mexican border, was a silent witness to the turbulent emergence of the irrigation of the American West. The Salton Sea appeared in the Colorado Desert

in 1905 as a result of flooding and it remained there, gathering agricultural runoff from the Imperial and Coachella Valleys, and sewage from both sides of the border.
In the first decades of the 20th century, the Salton Sea developed a complex relationship with the mesquite. The interaction began in the depths of the Salton Sea, where submerged branches underwent a curious chemical reaction. It continued on its surface, where partly submerged trees helped to navigate through the Sea. It expanded to the shores, where new bird species attracted by the Sea built nests in the trees.
This paper focuses on two aspects.
1. Science
Mesquite played an important role in many findings of scientific surveys conducted at the Salton Sea. In 1908, the ornithologist Joseph Grinnell took a cruise around the Salton Sea to observe the newly arriving cormorants and white pelicans. The birds chose the protective mesquite bushes and branches to nest, which allowed their population to grow. In 1914, when the surface of the Salton Sea was covered in a thick coat of algae, decomposing mesquite clumps helped the biologist Melvin Brannon to discover that it was the marine bacteria Beggiatoa that caused this unusual bloom.
2. Nature writing
This paper highlights profiles of mesquite found in literary accounts related to the Salton Sea. In 1906, George Wharton James dedicated vast parts of his romanticized "Wonders of the Colorado Desert" to the mesquite tree. In the account of his 1922 journey through the Colorado Delta, Aldo Leopold argued that he had "not seen perfection" until he "roasted a young goose with Delta mesquite".

Native invader: The politics of plants and the shifting identity of the creosote bush in 20th- century US–Mexican borderlands

Ligia Arguilez, University of Texas, El Paso

The environment can be viewed in starkly different ways depending on whose gaze is upon it. This can be seen through the shifting identity of the creosote bush (Larrea tridentata). Ranchers characterized it as "worthless," "a major threat," and an "invader," while at the same time some indigenous and Mexican people called it "buena," "potente," and "our drugstore." Although these descriptions are not monolithic, nor fixed in time or place, they can nonetheless be viewed as salient indicators about people and their relationship to the environment. The rhetoric of creosote can show the influence that capitalist ranching culture had in framing the plant as an enemy, while bringing the powerful connections that everyday Mexican and indigenous peoples had to the plant into high relief. In this paper, Arguilez explores people's 'political' relationship with the creosote bush, and reveals the contrasting perceptions of ranchers, Tohono O'odhams, and Mexicans, who may have shared its arid environments but their discourse about, and relationship with, the creosote bush reveals distinct cultural outlooks. More specifically, 20th century ranching culture, with its pursuit of profits limited the connection to the desert environment and worked as cultural filters that converted the creosote bush into an enemy that needed to be eradicated, instead of the vital, nourishing plant that it was to many indigenous and Mexican people of the U.S.-Mexican borderlands.

Zombies on the Rio Grande: Tamarisks, toxins, Mexican–American laborers, and environmental justice

Marsha Weisiger, University of Oregon

In the 1910s and 1920s, conservationists – including the now-celebrated ecologist Aldo Leopold – began planting a willowy Eurasian shrub in Arizona and New Mexico to check erosion and wind and to beautify the landscape. Before long, tamarisks (Tamarix spp., aka salt cedars), had spread so successfully along the river courses of the Southwest borderlands that those same conservationists came to view these once welcomed immigrants as alien, invasive "monsters." At the Bosque del Apache National Wildlife Refuge along the Middle Rio Grande in central New Mexico, resource managers employed an arsenal of weapons to eradicate tamarisk thickets, which – despite decades of determined effort – refused to die. Like zombies, tamarisks reemerged from the earth time and again. Refuge managers endeavored to exterminate the pest with flooding, scythes, harrows, brush cutters, bulldozers, fire, and finally, the toxic herbicide 2,4-D. It was, however, Mexican–American laborers, whose family and friends had lost their own farmland to the refuge, who carried out the task of rooting out the invader with toxins. This paper explores the history of this plant along the Rio Grande and the environmental justice issues surrounding efforts to eradicate the "invaders."

Session 6F
Bordering upon waste

Organizer: Iris Borowy, Shanghai University
Chair: Yaron Balslev, Tel Aviv University

In myriad ways, waste structures our lives, subtly creating and undoing boundaries between different geographical, political and social sectors. For instance, the definition of what constitutes "waste" also delineated the boundaries between the useful and the useless, the dangerous and the harmless, the acceptable and the unacceptable.
The most obvious case is presented by Sophie Lange, as she explores how the existence of a border between two German states encouraged the establishment of a large dumpsite and the sudden disappearance of this border turned a waste site outside of one country into one in the inside. In fact, not only did the border dictate the position of the site, by being placed just beyond the border (from a West German point of view) the dumpsite marked the boundary in itself.
In the paper by Katarzyna Jarosz waste itself becomes the boundary for the economic development of the country, whose touristic sector depended on the perception of a pristine environment. In the paper by Iris Borowy, it is waste itself that was tested for inherent boundaries, as the new category of "hazardous waste" requires singling out one component, to be excluded from the rest by contested, imaginary borderlines. At the same time, the disposal of these wastes defined the end of living spaces of humans.
Finally, the paper by Alice Twemlow addresses the planetary boundaries of sustainability, which waste reflects but to which is also contributes. By exploring new forms of design, the paper questions the possibility of retreating so far from the planetary limits as to make them invisible. But at the same time, the reference to accumulating human waste on the moon also sends a powerful message that boundaries within space get muddled when it comes to discarded bottles and tennis balls.

"Rubbish between Germans": A case study on the Dumpsite 'Schönberg' (1979–1990)
Sophie Lange, Humboldt University of Berlin

The Federal Republic of Germany started to export its waste to East-German dumpsites on a larger scale in the 1980s, among them the repository Schönberg. This waste disposal site was situated on GDR ground but just five kilometers away from the inner-German border. What had started as an inner-German bargain in a win-win situation soon developed into an environmental problem which had to be solved by the two states. Thus, we can observe a turn – at least in the West-German Legislative – from the economical to the ecological politics which stands in the focus of this presentation. Whereas, within the GDR, a powerless environmental minister faced one obstacle after another. Nevertheless, both states had to talk about the difficult situation, they managed themselves into. Next to the political, the dumpsite Schönberg involves also a great deal of environmental entanglements across the border: the river Elbe – flowing from East to West – was overloaded with metals and other toxic materials; Mercury, cadmium and more dangerous substances took up on the sediments; Hamburg excavated these sediments to enlarge their port and

brought those to the dumpsite in Schönberg. Thus, toxic seepage water potentially might reach out for the drinking water resources beneath the border. So, Protesters, especially in the West, were confronting their government because they feared for the west-German city of Lübeck close nearby. But also in the East, protest was arising, but they shed a slightly different light on the situation. Over time, the VEB Deponie Schönberg became a symbol for the fading of the Cold War, national identity and protest against the export of – the more and more – toxic waste.

Trawling the trash: Design's critical engagements with waste
Alice Twemlow, Royal Academy of Art, The Hague

When product design is considered from the perspective of the waste it will inevitably become, then, as design theorist Ben Highmore has observed, 'it is hard not to see global warming and climate change as a consequence of a variety of design processes, design values and design products'. A gathering acknowledgment of the design's complicity in climate change is generating demand for consideration of other moments in a product's lifecycle, apart from its birth, such as how it might be used by someone over time, what happens after its period of usefulness is over, and when it is disposed of. At the same time, this perspective reveals to what extent waste plays an active role in development that push against the boundaries of global life support systems.
Recently, some designers have sought to soften those boundaries by deflection of attention away from the physicality of waste, such as the supposed immateriality of information, the 'cloud', service design, 'innovation culture', and the 'creative economy'. This paper takes a critical look at what happens when a designed product becomes trash, of the social behaviours, politics, infrastructures, mechanisms, and economies that shape and gather around refuse and its disposal.

It is such a waste! Solid waste management in Kyrgyzstan and tourist attractiveness
Katarzyna Jarosz, International University of Logistics and Transport in Wrocław

The expected economic improvement is one of the primary motivations for a region to promote itself as a tourist destination. Kyrgyzstan is a small, landlocked country in Central Asia, of tourist potential both for foreign visitors and companies who might be interested in investing in tourism. A key factor making the region so attractive for tourists is its history, starting with the Silk Road, which dates back to Roman Times, continuing with the dominance of the nomads, the Russian empire, the Soviet era. If we add the beauty of the nature, Tien-Shan mountain range, Issyk-Kul lake, national parks, it is clear that the country can be a very attractive tourist destination. However, Kyrgyzstan is struggling with environmental problems, typical for developing countries, it lacks proper infrastructure and has not developed proper mechanisms to attract more potential visitors and tourists.
Kyrgyzstan, with a population of about six million people, produces on average 1.5 million tonnes of waste per year. With no waste processing or incineration facilities, since 1991, the year when Kyrgyzstan proclaimed independence, according to reports, the country accumulated approximately 15 million tonnes of waste. They are deposited at both legal and illegal landfill sites. The tourist attractiveness index demonstrates that quality of the environment, water supply, sewerage system, and ecological points for collecting waste have significant impact on tourist attractiveness of an area,

arguably to the same level as landscape, archaeological vestiges or historical monuments. Specifically, the lack of waste management collecting system limits the perceived attractiveness and, therefore, the touristic value of Kyrgyzstan.
I asked the following research questions:

- What is/are the main method(s) of solid waste management in Kyrgyzstan
- Whether they influence tourist attractiveness and in what way.

Hazardous waste in the twentieth century: The response of international organizations to an evolving global challenge

Iris Borowy, Shanghai University

In the 1970s, both national governments and international organizations began confronting the challenge of "hazardous waste," a concept that gained traction along with the growing recognition of solid waste disposal as a rapidly growing urban challenge around the world. This paper will look at how the Organizations of Economic Cooperation and Development (OECD) and the World Health Organization (WHO) addressed this issue and concomitant issued of definition and demarcation.
At the OECD, the topic was framed as one of regulation, as industrialized countries sought ways to define what type of site was required for the disposal of material that was considered directly or indirectly hazardous to human health. But views on what constituted "hazardous waste" differed. The OECD used the definition of the US Environmental Protection Agency, based on the inherent qualities of substances, such as ignitability, reactivity or toxicity, while several member countries used the seemingly clearer direction of the European Economic Community, which simply issued a precise list of substances. Concern about "toxic waste" (France), "chemical waste" (Netherlands; Switzerland, Denmark) "noxious waste" (Australia) or "dangerous waste" (Finland, Netherlands) translated into concern about how it could be safely disposed of.
Meanwhile, the World Health Organization used a more fluid approach, with less of an assumption that hazardous materials would inevitably end in landfills or incinerators or that it would only present health threats after being becoming waste.
This paper analyzes how different stakeholders sought to delineate, on the one hand, the types of waste were "hazardous" and, on the other, places where such waste could be taken without posing health threats. In often unreflected ways, these efforts constituted a two-fold process of boundary construction.

Session 6G
In the name of progress

Chair: Marco Armiero, KTH Royal Institute of Technology

Breaking down boundaries: Environmental perspectives on democratisation in occupied Japan (1945–1952)
Christopher Aldous, University of Winchester

Only recently has the Allied Occupation of Japan attracted analyses of such environmental issues as wildlife conservation, whaling and fisheries. The relative neglect of the environmental dimension of reform reflects the conventional emphases of most histories of the American-led Occupation, which explore its goals of demilitarisation and democratisation by focusing on the programmes of the Government Section and the Civil Information and Education Section of GHQ SCAP (General Headquarters, Supreme Commander for the Allied Powers), relegating those of the less prominent Natural Resources Section (NRS) to the side-lines. And yet food lay at the heart of the Occupation, and the success of democratisation largely depended on ensuring an adequate supply of calories for an exhausted, malnourished population. One response to this was obviously importing food aid, the other more long-term solution was agricultural reform aiming at the optimal use of the land available for production of crops. These priorities were captured in the report of the Food and Fertiliser Mission dispatched from Washington DC to Japan in March 1947 and led by Colonel Harrison. This paper examines the work of the Natural Resources Section on soil science and fertiliser before and after the Harrison Mission, exploring the degree to which the boundaries of these subjects were negotiated by American and Japanese scientists and the degree to which constricted territorial boundaries – the loss of Japan's empire - frustrated attempts to acquire raw materials for the production of chemical fertilizers, particularly phosphate rock. Also considered will be the long-term impact of intensive use of inorganic fertilizers on the ecology and bio-diversity of Japan's natural environment.

Environment, technology, and imperial politics in late Ottoman and French Mandate Syria and Lebanon
Elizabeth Williams, UMass Lowell

In late Ottoman and interwar Syria and Lebanon, many Ottoman and later French, Syrian, and Lebanese administrators and technocratic officials enthusiastically anticipated the benefits they claimed rapidly-proliferating new agricultural technologies promised when applied to local environments. But introducing new technologies proved challenging. Technologies already in use locally and their associated practices were well-adapted to a number of economic, social and ecological conditions and many farmers were skeptical about the suitability and potential consequences of new tools and methods, especially those that had been developed for use in different ecologies.
Using sources from Ottoman, French, and Lebanese archives and libraries, this paper compares

the politics that characterized the process of introducing technological innovations in agriculture as the region that became the nation-states of Syria and Lebanon transitioned from being a part of the Ottoman Empire to being under French mandate rule following the First World War. The paper considers the ecological conditions that made many farmers reluctant to adopt these technologies and spurred technocratic debate regarding their relative merits. It then traces how the shift in imperial space precipitated by the imposition of mandate rule after the First World War subjected technocratic planning regarding agriculture-related environmental management to a new set of political considerations. Finally, it examines how the discourse produced about these technologies' transformative impact on existing practices obscured emerging technologies' dependence on local knowledge of the environment for effective adaptation and, in the case of the mandate, justified imperial rule. I argue that while state technocrats and some mandate officials found a degree of interest from farmers in their efforts to encourage the use of these technologies, they also met resistance as social and economic practices rooted in specific environments as well as the environments themselves posed obstacles to their use.

Brazilian march to the west: Bororos indians and capitalist expansion

Alexia Shellard, The Federal University of Rio de Janeiro (UFRJ)

This paper seeks to analyze the transformations that occurred in the landscape of the Western borders of Brazil in the turn from 19th to 20th century. Until that time, this region had not been effectively incorporated by the national state, being most of it under indigenous dominium. It was a space of abundant biological diversity, lived throught the ritm of the waters which annualy floaded banks and plains. The "modernity" was restrict to punctual towns and farms on the banks of bigger rivers such as Paraguai. In the end of 19th century, capital´s search for new markets and products brought to Mato Grosso new actors who intended to "civilize" and "modernize" these spaces. Brazil´s government invested in mapping and connecting Mato Grosso to the country´s capital, Rio de Janeiro, while "cleaning" the lands from its original inhabitants, to attract international ventures. Labor was an issue so that expropriating was a two-handed strategy: on one side, it freed the terrain to capital, on the other, it provided workforce for the enterprises. In 1881, Fazenda Descalvados, a great extension of land – around one million hectares – located in the complex of Pantanal in São Luiz de Cáceres, extending itself to bolivian territories, was bought by an Uruguaian named Cibils Buxareo, who would transform it, with financial and political support from Belgium in the biggest company from the region, exporting meat products to Europe and other parts of the world. As Descalvados, many other enterprises were settled there to profit from the richnesses of South American´s interior. Nature became gradually overshadowed by fences, steamboats, deforestation and monocultures.

Ottoman agricultural reforms between 1890–1909 and its harmful effects on the environment

İbrahim Kışla, Middle East Technical University

To integrate into the changing world between 1890 and 1909, the Ottoman Empire made many agricultural reforms for the primary income of the Empire, namely the production of grapes, cotton and silkworm, especially in the Aegean. Most reforms were imposed on the government by Western

Chambers of Commerce, with economic interests at the forefront. Thus, traditional agricultural methods were replaced by modern methods; mechanization, imports of large quantities of foreign seeds and seed improvement, and chemical control of agricultural diseases were introduced, leading to soil destruction, disappearance of locally species adapted to the natural conditions of the time. Newly imported species brought foreign diseases into the Empire. To cope with resulting problems, chemical use became mandatory in agricultural production, affecting and Anatolian biodiversity, soil and seed quality negatively.

This paper will address the introduction of modern agricultural processes into Anatolia and their environmental impact. Seed characteristics, breeding methods, and seed exporter recommendations to the Ottoman government were given in the French newspaper Revue Commerciale du Levant, published in Istanbul between 1890-1909. Furthermore, records of seed quantities imported to the port of Izmir, and their areas of distribution will be analysed. In the light of these two sources, regional outbreaks of diseases related to seeds applied according to the specified Chamber of Commerce recommendations. Finally, methods of elimination of problems arising from the innovations will be discussed. In particular, the use of brochures and regional newspapers distributed in the outbreak areas will be analysed in the case of the application of chemical methods. Finally, the discussion will conclude with consideration of the build-up of negative impacts on the environment towards today's scientific methods.

Session 6H

Roundtable. Merging environmental history, business history, and history of science and technology in the study of natural resources

Chair & Organizer: Per Högselius, KTH Royal Institute of Technology

Stathis Arapostathis, National and Kapodistrian University of Athens
Matthias Heymann, Aarhus University
Julia Lajus, National Research University Higher School of Economics
Mats Ingulstad, Norwegian University of Science and Technology
Erland Mårald, Umeå University
Urban Wråkberg, UiT The Arctic University of Norway

Historical studies of natural resource extraction are common in environmental history, business history as well as in the history of science and technology, and natural resources figure prominently in the canonical works of all three fields. But even if the object of study is more or less the same, the fields largely operate in isolation from each other. For example, whereas environmental historians love to immerse themselves in the negative environmental impact of natural resource extraction, historians of technology celebrate the ways in which the same extractive activities have opened up totally new technological opportunities. For environmental historians, the history of natural resources is a history of problems; for historians of science and technology, it is a history of solutions; and for business historians – a history of fabulous fortunes and dramatic bankruptcies. How, then, could one possibly merge the three fields and overcome what might seem like an unnecessary academic boundary – and make sure they cross-fertilize each other? The roundtable will look at these and related questions from different geographical academic points of view, comprising scholarly voices from Europe's north and south, east and west. One theme to take into account will be the value of conceptual bridging ideas such as envirotechnical analysis and commodification processes in the history of natural resources, as seen from different disciplinary angles; another will be the potential of "area studies" (such as Arctic studies, Baltic studies, East European studies, Asian studies, etc.) as arenas for interaction and academic boundary-crossing in the history of resource extraction.

Session 6I

Special session. History of European environmental protection: A Europe in the World-Café

Facilitators:
Patrick Kupper, University of Innsbruck
Anna-Katharina Wöbse, University of Giessen

Session abstract:

We like to use this session to trigger a discussion on the role of environmental historians in (re-)writing the history of Europe. What new perspectives on European history can and should environmental historians contribute? What has our field to offer and what are the opportunities and prospects as well as the difficulties and pitfalls? How can we write truly European environmental histories that leave behind national histories? And how can we overcome the historiographical boundaries in Europe and go beyond collecting and comparing national cases?

We believe that environmental history is well positioned to rise to the challenge of becoming European. Its community and research are highly internationalized and its subjects of study are transnational "by nature". Surprisingly and disappointingly, however, the environmental history literature on Europe is most limited, which points to the fact that so fare environmental historians have rarely framed their research and publications as European. Nearly no scholar has explored the historical aspects of Europe's materiality and spatiality and the many ways people interacted with the continent's physical features and attributions and vice versa. Neither do European moments of contact and/or collaboration across borders and regions figure prominently in the environmental history scholarship.

In our session we will invite everybody to share his or her experiences, expectations and concerns. At the beginning we will provide a short plenary presentation of a recently started handbook project on the history of European environmental protection, which we are editing and which is part of a new handbook series "Contemporary European History" published by de Gruyter. This will be followed by a World-Café. Contributors to the handbook will be present and host several tables, where the participants will debate, while moving from table to table, various challenges of writing environmental history on the European scale. The group discussions will be recorded in the form of European maps, which will be used in the end to wrap up the session in the plenary.

Session 6J
Mapping land and sea

Chair: Giacomo Parrinello, Sciences Po Paris

Mapping Plus Ultra: Francisco Hernández scientific expedition in New Spain 1570–1577
Adam Wickberg, KTH Royal Institute of Technology

This paper will discuss the case of Francisco Hernández, General Physician of The Indies and director of the first scientific expedition 1570-1577, as a base for a critical discussion of the onto-epistemology of the mapping impulse in Early Modern media. Hernández was sent out by Philip II to produce a natural history of the new world which resulted in over 20 volumes of text and illustrations. He also sent back a large number of plants and animals across the Atlantic. Simultaneously, the cosmographers at the Casa de Contratación in Seville were working on the same mapping project from a distance, using surveys to gather quantified data known as Relaciones geográficas. The decade of 1570-1580 in particular saw an intense activity of media practices of mapping the new world under the rule of Philip II, who became known as the paper king. He adopted the motto 'Plus ultra', meaning further still in Latin, as an emblem of his transatlantic empire that came to reach over to the pacific and the Philippines.
The paper draws on recent developments of media theory and Environmental Humanities and discusses how the colonial enterprise processed the geobotanical intervention associated with resource exploitation.

The illusion of permanence: Climate maps and German colonial revisionism
Philipp Lehmann, University of California, Riverside

The conclusion of the First World War also marked the end of the German overseas empire. And while it was ultimately a rather quiet and subdued end, colonialism did not vanish without a trace. During the thirty years of German colonial presence in Africa, China, and the Pacific islands, geographers and climatologists had been busy collecting atmospheric data and mapping the climatic conditions of territories from the deserts of Southwest Africa to the tropical forests of the Bismarck Archipelago. In the 1920s these maps would not only serve as a reminder of the colonial past and material for further studies, but also as propaganda for colonial revisionism – practiced with particular vigor by a group of German geographers and climatologists who had worked in the German protectorates before the war.
This paper traces the history of not only the scientific and economic circumstances of the creation of climate maps in the German colonies, but also their changing scientific and political valences from the colonial period to the post-colonial years of the Weimar Republic. While depicting the notionally borderless atmosphere, climate maps nevertheless contributed to the spatialization of the German Empire and, ultimately, to the Germanization of colonial space, which enjoyed its heyday only after the official end of German overseas colonialism. In this process, weather and climate boundaries quickly became conflated with real or imagined economics, racial, and political borders. Finally, the paper will pose and begin to answer the question in how far the static display of climatic conditions

on maps related to the desired – if ultimately chimerical – permanence of political borders in the colonies.

The satellite and the sea: Transnational collaborations in the Baltics, 1988–1998
Johan Gärdebo, KTH Royal Institute of Technology

During the dissolution of the Soviet Union the environments of Europe were redrawn. This paper describes how the Swedish Space Corporation used satellite remote sensing to produce new base maps of the Baltic states (Estonia, Latvia, and Lithuania). These base map projects began as transnational collaborations in the late 1980s to gather environmental information on the Baltic region but would during the 1990s play a role also in asserting the territory of the Baltic states from that of Russian influence. The base map projects also changed how the Swedish Space Corporation perceived the satellite remote sensing technology. Whereas mapping previously relied on a mosaic of scenes, the mapping of the Baltic illustrated how repeatedly sensing the same region allowed for Swedish companies to secure additional projects in the Baltic states.
The paper, firstly, demonstrates the use of environmental projects for other political enterprises at the time, initially as part of nationalist movements, then in collaboration with other Baltic states, and eventually to promote European integration. This is important for understanding how environmental knowledge, and the technologies that provide it, have served as infrastructures for expanding European political unity. The paper, secondly, illustrates how satellite remote sensing technology changed from mapping projects towards repeatedly sensing the same part of the Earth's surface. This digital saturation is important for understanding how environmental expertise in the late 20th century increasingly came to rely on a digital environment to argue for environmental change not just locally in the Baltic Sea but globally.

An empty seabed: On map making and the creation of a new land and future
Leonoor Zuiderveen Borgesius, University of Oslo

This paper sets out to investigate the function of maps and the technologies of space making in the construction of large-scale modernist land reclamation in the early 20th century Netherlands. The construction of these Zuiderzee Works, a system of water drainage works, dams and land reclamation, started in 1918 and lasted over the six decades, during which an entire new twelfth province was 'conquered from the sea'. Essential for this modernist enterprise was the production of eight reports of meticulous measurements and data collection of the sea bottom by engineer and later technocrat Cornelis Lely. 'Plan Lely' proposed a map of the future Netherlands, on which the newly constructed lands were explained to be a 'clean slate' for the design of a new land, as well as a new society.
This paper addresses two questions on the basis of this plan. First, how was Lely's map employed as rhetorical tool in the creation of public support of this large-scale land surface change? Secondly, what role does the constructed emptiness of the land and its history play in the imperial discourse of internal colonisation – for example rooted in narratives of 'polder pioneers', 'settler communities', and 'virgin lands'? I will answer these questions by showing that maps, being vehicles for conveying geographical conceptions, were essential for communicating the inevitability of future landscapes in Plan Lely. Furthermore, I argue that the physical production of empty land as an engineering practice

on the Dutch main land shows conceptual and technological overlap with the discourses of empire overseas: a constructed cartographical emptiness facilitated the production of a physically empty space, perceived to be devoid of cultural and material history. As such, Plan Lely physically and conceptually eradicated the boundaries between cultural and natural space, and blurred the categories of history and future.

Session 6K

From red to green? Reassessing the 1991 boundary in (post-)Soviet environmentalism. Part I: Pollution, climate change and soil degradation

Organizer: Benjamin Beuerle, German Historical Institute Moscow
Chair: Stéphane Frioux, Université Lumière Lyon 2

Session abstract:
1991 is an ambiguous boundary for environmentalism in the Russian and Soviet space. It marked the end of both the Soviet regime as a political and socio-economic system and of the Soviet empire as a territorial entity (Kotkin 2008). This tremendous change had contradictory environmental impacts. On the one hand industrial production fell to brutally low levels, reducing considerably greenhouse gas emissions in all new post-Soviet states (Josephson et al., 2013). In continuation of a late-Soviet trend, post-Soviet governments set up Ministries of the Environment, promoting ecology to an important state affair. On the other hand the powerful green movement that had shaken the Soviet Union in the 1980s, furthering centrifugal tendencies among republics and helping delegitimize regional and central authorities, had come to a standstill. No green party could firmly settle itself in the post-Soviet area, except in the Baltics, regardless of the ongoing considerable environmental crises ranging from nuclear ocean dumping to the Aral sea disaster and forest fires.
This panel is part of a tandem of two panels examining the year 1991 in post-Soviet environmentalism. Here, the focus is on ecological problems and policies spanning the 1991 divide. In terms of public policies and administrative structures, was the "green moment" that began with the constitution of 1977 and was largely reinforced in 1986 just an anomaly in the long-term history of the Russian "predatory tribute-taking state" (Weiner 2009)? How did environmental debates and decision making processes evolve and how did they impact the state of the environment?
Josephson P. et al., An Environmental History of Russia. New York 2013
Kotkin S., Armageddon Averted: The Soviet Collapse, 1970-2000. Oxford 2001.
Weiner D., "The Predatory Tribute-Taking State. A Framework for Understanding Russian Environmental History" In E. Burke, K. Pomeranz, The Environment and World History. Berkeley 2009.

Steppes in crisis? Climate change and the collapse of collectivized agriculture in the virgin lands of post-Soviet Kazakhstan (1980s–2010s)
Marc Elie, CNRS / CERCEC (EHESS, Paris)

After the end of the USSR, the agriculture of the fifteen newly independent countries endured a tremendous and dramatic downfall. This paper assesses the impact of the collapse of socialist farming on the steppe environment in Northern Kazakhstan and Western Siberia. It will tackle three questions: first, how far did land abandonment help relieve human pressure on the steppe biome, and did the steppe recover from forty years of grain monoculture? The paper will showcase the extent of the "secondary steppe" formed on abandoned lands.
From there, a second central question is to understand whether 1991 merely was a parenthesis in the history of the conquest of the steppe or a definitive break with the Soviet practice of extensive

monoculture. Already in the middle of the 2010s the abandonment trend was reversed and now ecologists warn that a "new Virgin Land Campaign", similar to Khrushchev's conquest of the steppe in the 1950s, is underway in a capitalist guise (Levykin/Kazachkov 2014). Based on a review of climatic literature, the paper argues that ongoing climate change in the steppes makes a return to the extremely high proportion of land devoted to grain cultivation in Soviet times (up to 80%) unrealistic.

However, the grain specialization of the steppe regions is not called into question, neither in Russia nor in Kazakhstan. This enduring attitude raises a third question: How detrimental to the steppe biome are current cultivation practices? The paper compares agricultural policy and agronomic systems in Kazakhstan and Russia to that of the late Soviet Union to see what has changed since then and what remained the same.

Levykin, S., G. Kazachkov, 2014, "Tseline 60: Novyi Vzgliad Na Istoki, Posledstviia i Sushnost'", Voprosy Stepevedeniia : 26-37

The Arctic disaster zone: Russian polar politics and environmental problems (1980s–1990s)

Alexander Ananyev, Eberhard Karls Universität Tübingen

"The Russian Arctic is on the brink of environmental catastrophe, and some areas within it have already entered this disastrous state", a group of well-respected experts wrote in 1996. Their criticism put into question not only the Soviet success-story of the Arctic conquest, but also the post-Soviet promises of international cooperation in this region.

Exploration of the Arctic had become a top state issue of the Soviet government by the end of the 1920s under the slogan "The Pole is Ours!". Built on the bones of Gulag prisoners in Norilsk and other Arctic cities, the polar regions turned into huge industrial areas. These places, of utmost importance to the centrally planned economy, also became some of the worst polluters of nature in the USSR. Active investigation and research of the "Red Arctic" continued right up until the collapse of the Soviet empire.

In the 1980s and 1990s, ever-widening parts of Russian society gained access to information about ecological problems connected to Arctic exploitation. The late Soviet and early Russian governments opened up the Russian Arctic to international cooperation and the Northern Sea Route to foreign navigation, making public the disastrous state of the region. Yet, from the mid-1990s a new freeze set in with more restrictive access to the area and greater suspicion toward ecologists.

This paper accounts for this political change by showing how discussions on the Arctic as a disaster region evolved in parliamentary debate from the late Soviet period to New Russia. The town of Shoyna, which was officially recognized an ecological disaster zone, serves as a concrete case for key environmental problems.

Climate change mitigation in late-Soviet and post-Soviet times: The cases of exhaust emissions and renewable energies (late 1970s–2010s)

Benjamin Beuerle, German Historical Institute Moscow

Although there was no formal Soviet climate doctrine and no coherent set of measures labelled 'climate policy', one can retrospectively designate as such various aspects of late-Soviet policies

which on the one hand would nowadays be regarded part of climate change mitigation efforts and which, on the other, have already in late-Soviet times occasionally been explained as necessary steps to combat global warming (even though in most cases this was not the primary motivation for engaging in these efforts). Defined in this way, various elements of late-Soviet climate policy can be found at the local, regional and national levels. Two concrete examples which both started in the late 1970s are efforts for reducing car emissions in various towns of Primorsky Krai and late-Soviet plans for developing and installing renewable energies. The former were initiated by the regional branch of the Allrussian Society for Nature Protection and resulted in thousands of cars with excessive exhaust emissions banned from circulation. The latter was a Soviet-wide programme which was widely discussed in several Soviet agencies and resulted in the installation of a number of energy facilities, among others on Kamchatka and in Southern Ukraine (as such, the first Soviet solar power plant was installed on Crimea). Both had other primary motivations, but were later framed by key actors within the need to combat global warming.
By means of these examples, the present paper sets out to explore what the political boundary of 1991 meant for concrete emission reduction actions: To which extent did the deep economic crisis, the new political system(s) and the new international climate policy framework (resulting from the Rio conference in 1992) impact these efforts? The emerging picture might contribute to a better understanding of the potential and the reality of Russian climate policy.

Comment: Stéphane Frioux, Université Lumière Lyon 2

10:30-11:00 Coffee break

11:00-12:30 Parallel Session 7

Session 7A
River histories

Chair: Santiago Gorostiza, ICTA – Universitat Autònoma de Barcelona

Border or boundary? The untamed Rhine river, between France and Germany (1648–1815)
Benjamin Furst, Université de Haute-Alsace

For most of the last three centuries, the Rhine has been used as a support to define the border between France and Germany. Such a mean to delimit the two countries works especially well for a dammed river, with only one channel and regular banks, and with populations that are willing to accept these limits. However, from 1648, when France sets foot in Alsace, to 1815 and the first formal international administration of the Rhine (its navigation, at least), the numerous channels of an untamed river separated two political and administrative territories but also flowed through a unique cultural, economic and ecological space.
The paper intends to address how the French monarchy and its successors handled these contradictory uses of the territory. Taking into account the hydrological characteristics of the Rhine, its uses by the local populations, and its economic and military potential, the French State developed an array of specific policies to protect its subjects' interests as well as its owns. On the left bank, it exerted its full sovereign power to shape the territory to fit its needs, but for the shared space of the Rhine itself, diplomacy and compromises were often advised, whereas in peace treaties or in more frequent and local conflicts caused by competitive uses of the river. Such measures contributed to creating a dual space, where the Rhine was at the same time a dividing line between sovereign states, and a territory in its own right, a boundary area of conflicts, circulations and exchanges where the environment influenced politics and policies rather than the opposite.
By covering such a topic, this communication will also be an opportunity to address the stakes of practicing environment history in multilingual, transboundary spaces such as the Upper Rhine valley.

Relationship between the communist regime and the rivers: The example of Drava river in Yugoslavia
Hrvoje Petrić, University of Zagreb

Since the mid-1980s in Yugoslavia, there was a series of spontaneous activities of citizens or environmentally oriented associations, which took place at the same time. They developed alternative environmental concepts to the ruling Communist party and their appearance and self-initiative "from below" was an indicator of the gradual dissolution of political monopoly of the Communist Party, a rise of democratization, and increase of environmental awareness in the society. One example of a social movement organized from "below" is the successful fight against the construction of hydroelectric power plant Đurđevac, which began in the mid-1980s. The Drava riverwas at most parts a bordering river to the Mura River, so that the issue of its use and spatial planning should have been planned in co-operation with the neighboring Hungary. Therefore, in

1956 the two countries signed the “Agreement between the Government of the People's Republic of Hungary and the Government of FNR Yugoslavia on water management issues,” that established a Yugoslav-Hungarian Commission for Water Management. Over time, the commission agreed on the use of the Drava through four water steps: Đurđevac, Barcs, Donji Miholjac and Osijek. The Đurđevac hydroelectric plant was supposed to be a joint Yugoslav-Hungarian investment (with Yugoslavia’s share of 87.5%) with strength of 145 megawatts and an annual production of more than 750 gigawatts of electricity. In the early 1980s previously conceived plans to build a hydroelectric plant Đurđevac were launched, and the plant was planned as one of the largest on the Drava. The difference between this new one and earlier hydropower plants was that the new law on construction building from 1984, forced investors to draft a feasibility study on environmental impacts so that prior to the beginning of the construction works of Đurđevac hydroelectric plant research about the effects on the environment began.

Boundaries of rivers, boundaries of technology: Some remarks on Ancient Roman flood management

Jasmin Hettinger, German Maritime Museum

The ancient Romans hat to cope with river flooding everywhere in their huge empire, among them very different types of flooding. In the Mediterranean, for instance, river floods underlay particularly severe meteorological severe variations: Water levels vary considerably depending on season, but they can also vary from year to year.
Roman water technology achieved high standards and the building of dams as well as the containment or the deviation of rivers in order to reduce flood risk was a rather common practice. The emperors of the first and the early second century AD even claimed these practices to be evidence for their omnipotence. During the course of the second century, though, the way Roman engineers and officials dealt with river flooding saw some major changes. Land surveyors conceded rivers more space for flooding and represented their legal width on cadastral maps. Also, the correspondent imperial rhetoric changed. This phenomenon will be analyzed in the proposed presentation.

What will ensue to the river and its waters? The coping of the authorities with the water level changes in the Ayalon river (1948–1965)

Assaf Selzer, University of Haifa

Due to the location of the state of Israel in arid area or semi-arid region, the Israelis authorities does not have any tradition of flood control management. In the early 50’s, and during the first two decades after the establishment of the state of Israel, Tel-Aviv – Jaffa local administration needed to cope with floods in the Aylon river. By trying to do so they had built walls, changed the route of the river and its depth. But all this actions did not solve the problems. A dramatic action was needed!
The drainage basin of the Aylon starts form the Judean hills, and covers an area of 815 square kilometres. It is the only river that drains this area, which is why during extreme weather conditions, the river overflows damaging houses and infrastructure in the eastern neighbourhoods of Tel Aviv. The residents of these areas kept demanding help from the municipality and the city council in its

turn approached the ministry of interior and others ministries. But these were not the only participants in the discussion on the flooding water problem. Water experts and the country planers were also taking part in this discussion.

In my paper I will describe the different interests of all the participant in this discourse. I will once again show that water issues give us a unique opportunity to reveal the underlying relationships between local and central governments and between local and international water experts.

As part of the solution of the Ayalon flooding, in 1965 an infrastructure company had been established as a partnership between the city of Tel Aviv-Jaffa and the Israeli government. The main mission of this company was to construct a highway in the path of the river. is this being the dramatic action that was needed?!

Session 7B

Special session. Climate witness: Oral history and community-based research

Facilitators:
Tatyana Bakhmetyeva, University of Rochester
Stewart Weaver, University of Rochester

This interactive workshop/roundtable explores innovative approaches to teaching and conducting research in environmental history and global environmental justice, approaches that many have proposed as potential answers to the growing pressure on academia to make research more relevant, inclusive, and responsive to contemporary problems. The workshop raises questions that invite the audience to interrogate the traditional academic boundaries between researchers and their subjects, as well as teachers and students. Among these questions are: who has the right to conduct and own research as the traditional boundaries of scholarship of discovery are expanding to include scholarship of application and scholarship of pedagogy? What is community-based participatory research? How can it be applied to environmental history, and what value is there, if any, in using this approach to study and teach environmental history and global environmental justice?

Session 7C
Scientific bonanzas: Exploring the boundary of infrastructures and environmental knowledge

Organizer: Martin Meiske, Rachel Carson Center for Environment and Society / Deutsches Museum
Eike-Christian Heine, TU Braunschweig
Chair: Matthias Heymann, Aarhus University

Session abstract:
Our panel focuses on infrastructures as places where environmental knowledge was produced in modern and contemporary history. In the language of mining, bonanza is a place where two veins of precious metal meet. No wonder a sudden increase in success is called a bonanza. Yet, the promise and reality of such wealth for some rarely comes without disappointment and suffering for others, as the story of the Klondike Gold Rush illustrates. Until today, mining is often accompanied by the disruption of local populations and ecological devastations. Accordingly, we do not aim to tell histories of technological and scientific progress. Instead the two veins that intersect in our panel – infrastructures and environmental knowledge – do so ambivalently.
Infrastructures are more than just technical artifacts or networks, "they are […] bundles of relationships" (Carse 2016). That makes them treasure troves for historical studies about conflict, cooperation and boundary-work between politicians, planners, engineers, workers, local inhabitants, activists, farmers or fishermen. Our panel will focus on the various forms of environmental knowledge that were produced alongside infrastructures. It included academic knowledge about the natural world, including flora and fauna, hydrology or geological features. Yet it also included the know-how and lives of other people, such as the knowledge of operators and users, or that of protesters, who in the twentieth century established "knowledge infrastructures" for monitoring environmental impacts.
Infrastructures were "Tools of Empire" (Headrick 1981) and played major roles in nation building, economic expansion and imperialism. Our proposed panel not only puts forward a perspective that urges the history of science, technology and the environment to appreciate infrastructures as boundary places of knowledge production next to the classical dichotomy of lab and field, but also forces us to avoid affirmative narratives of modernization.

Exploring the Earth through its anthropogenic scars: Geology and the construction of the Panama Canal

Martin Meiske, Rachel Carson Center for Environment and Society / Deutsches Museum

The sabre-rattling of rising global empires before WWI had left the upper lithosphere with two of its longest and deepest gashes: the Kiel Canal and the Panama Canal. Like the fencing duel scars in the faces of bourgeois German students (the 'Schmiss') was an elitist symbol for a promising career, so was the completion of a sea canal for rising empires like Germany and the United States at the beginning of the 20th Century. In the shadow of an expanding global economy and spreading transport infrastructure networks, geologist dived deeper and deeper into the archives of the earth, reconstructing its past and shaping its future.

Geoscientific knowledge advanced during the planning, construction, and expansion of sea canals and was mainly produced by two groups: geologists and engineers. In a first step, I want to discuss the increasing collaboration and boundary-work between these two disciplines. Based on field notes and correspondences as well as other archival and printed material, I will describe one of its consequences, namely the formation of engineering geology. Geologist became more and more an integral part of the planning, construction and management of the technological infrastructures built in a complex nature.
In a second step, I want to reconstruct how geologists and institutions like the US Geological Survey used these large-scale construction projects to initiate geological research and trace back its impacts on wider geo-scientific debates, mainly between 1900 and the 1930s. The field work of geologists at the sea canals also became a scientific bonanza for more general debates of geo-sciences, e.g. by uncovering new evidence that informed debates on evolutionary theory and continental drift theory. Finally, I want to discuss the power dimensions of these geo-scientific bonanzas that evolved in an age that was characterized by expansive ambitions of rising empires and big private players of an extending global economy. In the case of the Isthmian Canal, geological field work in the wider region related to mining, oil and banana industry. In this context geologists became both tools of empire and agents who actively sought to connect their work to imperial politics and practices.

The West Siberian petroleum complex as a bonanza of Soviet environmental anthropology
Valentina Roxo, Rachel Carson Center for Environment and Society

In 1962 the Soviet government initiated the construction of the West Siberian Petroleum Complex (WSPC). It was convinced that the project could only be a success, when the remote region, which had been on the margin of the Russian Empire and continued to be on the margin of the Soviet Union, was also transformed politically. In particular, the tribes of Khanty, Mansi and Nenets were to be (re)settled to free up their homeland for a giant industrial complex. This meant that alongside with engineers and petro-geologists the project needed ethnographers to study the aborigines and their potential of becoming proper Soviet citizens who were capable of functioning productively within the petroleum complex. The party-state believed that industrial infrastructure would have a transformative effect and foster a truly socialist lifestyle. However, their engagements with the adaptations of traditional culture and economy to the needs of a petroleum complex led the ethnographers to illuminate the environmental drawbacks of socialist construction in the North. In their research, Zoya Sokolova and Yuri Strakach criticized the settlement policy and emphasized the importance of indigenous tradition in maintaining balance in the relations between humans and the fragile Siberian environment. For this reason, the paper identifies the intersection of ethnological fieldwork and the construction of the petroleum complex as a bonanza of Soviet environmental anthropology.
My paper shows how the ethnographers, contrary to their assigned mission, developed critical views of the environmental and cultural impact of the WSPC. Accordingly, the paper reveals specific traits of environmental knowledge production alongside infrastructural projects during the late Khrushchev- early Brezhnev period. Furthermore, the paper shows how the results of ethnological research, produced as early as 1960s, crossed the boundaries established by the Soviet state for ethnographic science, and formed environmental knowledge that challenged some cornerstones of the official vision of Soviet modernization through infrastructure constructions.

Landscapes of calculation: The design agency of cost–benefit analysis in infrastructural projects

Neta Feniger, Tel Aviv University
Roy Kozlovsky, Tel Aviv University

The administrative process of designing and approving infrastructural projects includes cost-benefit calculations of their social and environmental impact. These techniques of assessment and judgement, originated as political and economic tool for the governmental rationalization and increase of transparency, came under criticism for their failure to properly assess non-monetized values such as nature conservation and social equality, and for discounting long-term impact on the environment. Consequently, the method was modified to accommodate the rise of environmentalism and resistance to nature-altering development.

The aim of this paper is to explore the intersection of this evolving managerial technique with environmental and infrastructure history. It examines the agency of cost-benefit analysis and risk assessment in designing and implementing the Ayalon expressway in Tel Aviv, using archival materials. The project, initiated in the 1950s and implemented until the 2000s, transformed a dry riverbed into a railroad, highway and a concrete flood control canal. Experts developed probabilistic methods for forecasting the erratic behavior of the river and determining the accepted risk of the design according to cost-benefit calculations. The recurring flooding of the project led to a crisis in public confidence in technical expertise, and growing awareness of how development impacts water flows. The next stage of the project relied on the Multiple Criteria Assessment method, which prioritizes non-monetary benefits such as nature conservation, sustainability and recreation. The adaptation of this assessment technique took effect when the political force of environmental protection was on the rise and the knowledge of sustainable development emerged. This convergence resulted with a scientific bonanza: the production of new environmental knowledge of river basin reclamation and the re-configuration of the Ayalon project as a redemptive act of landscape restoration.

Session 7D
Envisioning oil

Chair: Anu Printsmann, Tallinn University

Building visions and techno-political orders: In pursuance of oil and gas in Southeast Mediterranean, 1950–2017

Stathis Arapostathis, National and Kapodistrian University of Athens
Yannis Fotopoulos, National and Kapodistrian University of Athens
Serkan Karas, National and Kapodistrian University of Athens

In the present paper, we study the co-production of visions about geopolitical power and statehood with the exploration of hydrocarbons in Southeast Mediterranean. We focus on the cases of Greece, Turkey and Cyprus since 1950 and we study the role of campaigns for the exploration of oil and gas in shaping processes of state building through relevant energy and industrial policies, technology diplomacy and geopolitics. We study the Southeast Mediterranean as the place where concepts and meaning about natural commons were closely related and strongly entangled with national energy policies, development policies and priorities as well as geopolitical aspirations in a context of transnational competitions and conflicts. The three countries have a contemporary history of diplomatic rivalries and military conflicts. While scholarship from political science, political history and international relations have unraveled the dynamics of the transnational relations, the debates over the exploration of hydrocarbons and the energy politics as part of the geopolitics of the region have been d. We will study how the public discourses and sociotechnical imaginaries were shaped and co-produced with energy policies during critical episodes in the political, economic and diplomatic life of the three countries. The critical events to be studied are: the oil crisis of 1973 that coincided with the Turkish occupation in Cyprus, the major political crisis of in the end of 1970 in Turkey, of the Junta years in Greece and the decolonization and intercommunal strife (1955-1965) and the Levant Gas findings (2010-2017) in Cyprus as well as the multiple financial crisis in the 1990s and the early 21st century. We argue that natural commons like the hydrocarbon sources acquired meanings and valorization within a context of state energy policy or state foreign politics and the quest for a geopolitical order that would secure a privileged position for each of the countries that we study. The paper historiographically aims to contribute a new understanding of state building processes by studying the way that visions were built, focusing on cases from Southeast Mediterranean stressing the importance of political contingencies in framing natural commons and relevant energy policies. The paper will be based primarily on research in the national presses and engineering journals.

Futures made of petroleum

Tanja Riekkinen, University of Oulu

The history of petroleum is a history of human-nature interaction, in which human as a part of nature exploits the nonhuman natural resource through a set of technologies. When humans have harnessed oil for their own uses, oil has responded as natural disasters, pollution and climate

change. Petroleum has become an inseparable part of modern life: in the nineteenth century it was mainly used to power lamps, but in the next century it was utilised in various ways to move vehicles and people, to heat houses, to increase crops and to manufacture artificial fibers, plastics, paints, make-ups and medicines.
In this paper I examine what kind of social and technological future visions did the state of Finland present about petroleum from the 1950s to the First Oil Crisis in a global context. Of what kinds of values regarding nonhuman actors, such as petroleum, do the presented visions tell? The focus is on the Post-World War II years because this is when the consumption of petroleum products exploded in Finland.
At the moment, a transition to post-fossil world is widely perceived as necessary. To tackle pervasive fossil fuel dependency, it is essential to be aware of the choices and future visions, which from their part led to the current situation. The main sources of my study are the documents of the Finnish Parliament.

Visual cultures of mining: Working with the artistic representations of the oil shale industry
Linda Kaljundi, Tallinn University
Tiina-Mall Kreem, Art Museum of Estonia

Since the industrial revolution, visual representations of factories and industrial environments have been of great interest to the artists and their audiences alike, spreading widely in various image albums next to visualisations of landscapes and cityscapes, historical architecture and artworks. Not of lesser interest has the pictorial depiction of industry been to political and economic elites, enabling to create representations of wealth and welfare, as well as to construct positive imageries of industrial production and landscapes. The current paper is based on our research and curatorial project on the art collection of the Estonian oil shale industry. Consisting of more than 600 images – dating from the interwar period, the Second World War and the Stalinist years, the Thaw and the perestroika period – this collection enables to trace the transfer and transformation of visual motifs and themes that have had a strong influence on the conceptualisition of the oil shale mining and industry. In exploring this pictorial tradition, the paper focuses especially on the transnational traffic of symbols and topoi. Next to this, it also discusses the gradual appearance of the environmental concern in the late Soviet period, comparing how environmental problems are addressed in the works of the local and the non-local artists.

Blessings, curses and dependencies: Approaching "natural" resources across the boundaries of the material realm
Fausto Ignatov, Rachel Carson Center for Environment and Society

"Natural" resources have been a fundamental and ever-recurring subject in environmental history. This type of resource has been used numerous times to illustrate the way in which humans interact with the environment from a historical perspective, not to mention the vast literature on the effects of discoveries, uses, abuses and depletions of "natural" resources on peoples, institutions and societies and their impact in lives and livelihoods.

The deconstruction and analysis of the very concept of “natural” resources, linguistically based on a distinct set of assumptions, values and traditions, allows for multiple approaches to this relation, including cross-boundary enterprises. Since “natural” resources are conceptually constructed and at the same time materially grounded, they can transgress the boundaries of the material realm and shape immaterial occurrences, offering a unique perspective into the intricate relationship not only between the material and immaterial world, but also between environment, culture and society.

With oil as an example and considering the recent Ecuadorian history I will shed light on this transgressive character of “natural” resources, moving from oil as a black, bituminous material source of energy, to oil as not only mere rents and revenue, but as a powerful message of hope capable of forging societal structures and changes taking into account the discursive effects that accompany this cross-boundary exercise.

Session 7E
Boundaries of race, nation, species, and space: Southern Africa's Orange River borderlands

Organizer: Bernard C. Moore, Michigan State University
Chair: Andrea Gaynor, The University of Western Australia

Session abstract:
The lower Orange River forms the international border between Namibia and South Africa since apartheid South Africa's rule over Namibia ended in 1990. But for the majority of the 19th and 20th centuries, there was no international border along the river, facilitating the movement of humans, animals, and ideas. In our panel, we will explore such movements and exchanges, noting how alternative borders and boundaries, both material and conceptual, were forged in this arid area, becoming central aspects of the region's spatial, socio-cultural, economic and environmental context.
Moore's paper explores the political economy of the socio-legal and conceptual term 'vermin' in Namibian agricultural and conservation history. He shows that economic developments in this borderland region transformed the conceptual boundaries between what was defined as "acceptable" livestock and wildlife (to be capitalised upon) and "vermin" (to be exterminated). Lenggenhager & Miescher's paper proposes an "archive of landscape narratives" as a theoretically and empirically innovative way to integrate an interdisciplinary assemblage of land and water use in the Orange River borderlands. Rosengarten examines the lower Orange River region as a site for intellectual production and ethno-linguistic differentiation, often closely linked with the environmental and economic context. The mobility of missionaries and pastoralists within this region enabled both the formation of boundaries between ethnic groups, as well as ways in which they were challenged. McKittrick explores how the confluence of intellectual frameworks and physical environments shaped settler views of the Orange River's potential in the late nineteenth and early twentieth centuries.
The goal of this panel is to rethink how each of these diverse "boundaries" and "borders" interacted in time and space and explore possibilities to conceptualise them alongside one another.

Defining vermin in an apartheid landscape: Southern Namibia, 1950–1990
Bernard C. Moore, Michigan State University

Namibian sheep farmers have always struggled with jackals, especially in the arid southern districts bordering the Orange River. In precolonial times, Nama shepherds ensured that several trained hounds accompanied the flock as it moved from one grazing site to another. During the early years of colonial white settlement in the region, this practice was continued on white-owned land, except the African shepherds were now tenants or wage-labourers. With economic boom and the institutionalisation of apartheid from the late 1940s, formal strategies were pursued to combat 'vermin': a socio-legal category encompassing carnivores deemed to threaten the economic stability of white settler agriculture.

This paper explores the political economy of the term 'vermin' in Namibian agricultural and conservation history. From the early 1950s, increased investment into farm infrastructure in Southern Namibia – particularly into jackal-proof fencing and poison – witnessed the decimation of carnivorous vermin, to the detriment of the shepherding workforce. After all, once these massive sheep farms are cleaned of carnivores, jackal-proofed, and divided into grazing camps, shepherds are no longer needed; during the late 1960s and early 1970s (when fencing was completed) Southern Namibia 30-70% of shepherds were released.
However, as agricultural systems and technologies change, so does the very definition of 'vermin'. The aardwolf, an insectivorous relative of the hyena, and the aardvark were the main victims of this change. Because of insectivores' tendencies to burrow under fences in search of termite locations, jackals could then use their tunnels to re-enter cleaned camps. Insectivores, therefore, had to be eliminated. As late as 1989, the eve of Namibian independence, aardvarks and burrowing honey badgers remained on the 'vermin' list in jackal-proofed districts.
Aardwolves and other non-carnivores became 'vermin' not because of active predation, but because of their interference with newly created agricultural technologies and the possibility of a shepherd-less farm, and by extension, the profitability of apartheid white settler agriculture. The categories 'Vermin', 'Pest', or 'Problem Animal' don't just reflect anthropocentric concepts of nature, space, and environment; they are economic categories reflecting specific historical developments of particular agricultural landscapes.

Creating an archive of landscape narratives along the lower Orange River

Luregn Lenggenhager, University of Basel
Giorgio Miescher, University of Basel

The proposed paper discusses an envisioned "archive of landscape narratives": a central theoretical and practical outcome of the larger interdisciplinary joint-research project Time in Space, which the two authors are involved in. The project brings together scholars form South Africa, Namibia and Switzerland, based in the disciplines of physical and human geography and history. The project focuses on the Namibian-South African border along the allochthon lower Gariep/Orange River.
The region's patterns of water and land use have experienced profound changes over the last 200 years. Today, large-scale nature conservation and agriculture projects both benefit from the river (and the border) and are at the same time the driving forces behind a further restructuring of the region, in which large parts of the population remain poor. In order to get a deeper understanding of these social-political issues of land rights and land uses we suggest a digital tool, that should provide for the complexity of the history of land uses and land claims.
Based on preliminary research data from diverse disciplines, the paper explores short- and long-term transformations in land use along the River and an attempt to synthesise their analyses to discuss and theorise what we tentatively call an "archive of landscape narratives".

Ethnicity and environment in the early colonial Orange River borderlands: Guides, translations, and the boundaries of "Nama" as a linguistic and cultural category

Andrea Rosengarten, Northwestern University

This paper examines mission stations as sites of intellectual production for ethnic and racial thought in the 19th century Orange River borderlands, from ca. 1805-1870.

In the early 19th century, several generations of indigenous communities north and south of the lower Orange River engaged with protestant missionaries from Europe. Men from the London, Wesleyan, and Rhenish Missionary Societies set out to bring Christianity to the semi-nomadic pastoralists in the northern Cape Colony, and beyond its Orange River boundary. Over the first seven decades of the century, what they succeeded at was adjusting complex and often flexible pre-colonial arrangements of ethnicity and group-ness into more stable, bounded categories in the region's political economy. On the mission stations - centers of wealth and resources in the challenging environment of the lower Orange region - "Namaquas" or "Namas" were increasingly understood as distinct from other socio-ethnic categories of people the missionaries termed "Bushmen" and "Berg Damara", many of whom spoke the same language or similar dialects but relied primarily on hunting and foraging as modes of subsistence.

Examining primary sources in English, German, Dutch, and Nama from archives in Namibia, South Africa, Germany, and England, this paper sets out to identify the Nama-speaking translators and intellectuals who made these mission stations function. These African men and women produced an early 19th-century Orange River literary tradition by helping standardize the orthography of a click-language termed "Nama"; they crisscrossed the river, aiding missionaries to bring in semi-mobile communities of speakers of mutually intelligible languages spread out over large distances under the umbrella of a larger "Namaqua mission"; they translated foreign ideas into their own language, and helped record a corpus indigenous folklore and philosophical traditions that added cultural textures to the linguistic category of "Nama" under construction.

Environment was central to this early colonial history of ethnicity in the Orange River cultural region. The identity and boundaries of Nama-speaking communities became increasingly tied to mission stations as capitals for each Nama sub-group, as seen in emergence of the ethnonyms such as "the Berseba people" and "the Bethany people". After crossing the Orange River heading northward, Nama-speaking guides helped missionaries survey the semi-arid landscape and identify well-watered locations for founding stations. The missionary journals of the earlier 19th century demonstrate an ever-present environmental imagination: to "civilize the Namaquas" was not only to bring them Christianity, but also bring them out of nomadic life into permanent settlement at locations environmentally suitable for crop production.

Session 7F
Environmental histories of transportation

Chair: Kaarel Vanamölder, Tallinn University

Across the river: Vienna's bridges on the Danube, 1440 to present
Friedrich Hauer, Vienna University of Technology
Severin Hohensinner, University of Natural Resources and Life Sciences (BOKU)

River Danube's power and its devastating floods have conditioned the development of Vienna from Roman times on. Until the late 19th century the vast adjacent floodplain was an important boundary for urban development and in case of war. It was a hindrance for land transport, too.
Crossing 6 km of riverine landscape was a technically difficult endeavor, the first complete bridge dates only from the 1440s. In early 16th century, when Vienna became the stable residence of the Habsburg emperors, permanently usable bridges across the Danube arms were becoming increasingly important. Constantly changing river channels, ice jams and floods almost annually damaged or even destroyed sections of the wooden bridges. Because the Viennese restrained from relocating the bridge heads, they were repeatedly forced to lengthen existing bridges and to construct new ones. In 1565, bridges with a total length of 1390 m and 21 elevated wooden lanes over swampy terrain were needed to reach the opposite bank. By the early 1800s, the wooden bridges proved to be severe obstacles for the conveyance of floods, thereby contributing to the upstream flood severity.
While one stable crossing sufficed until 1838, the great Danube regulation set up a scheme of five new bridges of 700 m length each. This marks an important caesura in terms of constructional techniques and city-river-relations alike. The former natural boundary of the floodplain slowly dissolved. The agglomeration started to grow across the river. By the mid-1900s, for the first time in history, one out of ten Viennese would live in areas on the left riverbank. Bridges were key arrangements in this process of expansion, not only eminently increasing in numbers (from five in 1960 to eleven in 1998) but also in their carrying capacities. Only in the 1970s the Danube ceased to be an "obstacle" for city development and assumed an unprecedented role as a centric recreational area.

Excluding "heavy trucks" out of the city's boundaries: A history of an implicit environmental policy, the example of Lyon, 1910s–1980s
Louis Baldasseroni, Université Paris-Est Marne-la-Vallée

Now many European cities are progressively forbidding their center to the most polluting vehicles. So, it seems interesting to return to the historical bases of these policies, which are described as "environmental policies". The various nuisances of vehicles are defined very early as political problems in many western cities, as shown by the case of public action on "trucks" in the city of Lyon.
This study will show that restricting the use of "heavy goods vehicles" by urban authorities indicate a desire to define new frontiers to protect the city center. By their size, their weight and their freight,

these vehicles appear as a concentrate of the nuisances of transports: noise, vibrations, insecurity, air pollution. So, it must be removed from the territory considered as the most sensitive, by defining particular boundaries. The definition of "heavy trucks" to make it a category of public policy deserves to be historicized to understand the evolutions of stakeholder's minds about this transport mode and territories concerned. This policy of protecting central areas is not completely assumed as a use restriction policy until the 1970s, as it faces significant conflicts with freight transport users.
The case of Lyon, second French city, shows a progressive extension of the prohibited zones, as the environmental stakes are specified. Local governments face many conflicts that demonstrate the sensitivity of these environmental issues. This city, due to its particular geographical location in France and its two waterways, must face problems of transit traffic very soon. The municipal and departmental actors are rapidly debating these issues in dedicated commissions, whose archives are our main study materials. It also allows to study the user's place in the decision process, dominated by municipality and inhabitant's claims.

The role of 'early industrial' canals in reshaping flows of water in Britain

Alice Harvey-Fishenden, University of Liverpool
Neil Macdonald, University of Liverpool

This paper will explore how canals and related infrastructure built in the later 18th and early 19th centuries reshaped how water moved through the landscape and paved the way for later developments. Whilst the earliest canals relied on water from streams and rivers, sometimes supplemented with water drained from mines, over time this became insufficient. Consequently, canal companies began to investigate other methods of supplying the canals, including using pumps to move water around and large reservoirs to store winter rainfall for use in the summer. These interventions caused major changes in the way water moved through the landscape. In the case of the Trent and Mersey Canal company's Rudyard Reservoir, begun in 1797, water which before would have flowed down the Trent and reached the sea on the east coast, could now end up in the Mersey, and flow into the sea on the west coast. In order to limit the downstream impacts of storing water, methods of providing a regulated compensatory flow had to found. Today reservoirs are perhaps the most important tool for managing water supplies, particularly during extreme weather events. Although Britain's canals have fallen out of commercial use, their legacy remains in the form of technological advances in the storage, regulation and transportation of water.

Session 7G
Exploring sources for environmental history

Chair: Paula Schönach, University of Helsinki

The weather diaries of a hunting and fishing estate in Connemara, Co. Galway, Ireland from 1898 to 1972

Kieran Hickey, Department of Geography, University College Cork

A game hunting diary from 1898-1917, a fishing diary from 1899-1951, which also includes game hunting information from 1933-1972 and daily work and weather diaries from 1933 -1972 have survived from the Fermoyle Lodge estate, Connemara, Co. Galway, Ireland. The diaries come from three generations of the Spellman family who retained their role as estate managers despite a number of changes in ownership over this time period. Using the information preserved in these volumes this paper will reconstruct the role of weather in the daily activities of this hunting and fishing estate.

The weather and especially severe weather played an important role in the general operation of the estate and the lives of the estate manager's family in this relatively isolated location. This was especially true of severe weather, whether storms, flooding, cold or other extremes e.g. the exceptional cold spell of 1947 and its impact is detailed in the weather diaries. Severe weather generally only limited the numbers of days when hunting took place. In the case of fishing severe weather could limit the number of days of fishing as could low water in the streams connecting the lakes to the ocean which hinders fish runs upstream. However, flood waters or spates on the streams connecting the ocean to the small lakes on the estate improved fish runs during the spawning season which led to much improved fishing on the lakes. In addition the selection of which lakes to fish was also dependant on the wind direction and strength.

A long term view. Precipitation reconstruction for Northwest Portugal between 1600 and 1850: A historical and environmental path for the Iberian Peninsula

Luís Silva, University of Porto, CITCEM / FLUP
Inês Amorim, University of Porto, CITCEM / FLUP

Climate change has emerged as one of the major environmental challenges of our time. In the last years, several experts have insisted in the importance of historical data for the study of pre-instrumental climate in order to gain a long time perspective, necessary for a deeper understanding of large-scale processes. Historical records can provide precious and long series of direct and indirect information, particularly useful for periods prior to the creation of national meteorological networks in the mid-nineteenth century.

Within this framework, and based on a large set of private and institutional documentary records, we intend to analyze the temporal variability of precipitation in the Northwest of Portugal between 1600 and 1850, evaluating its environmental and socioeconomic impacts. In this work, we'll identify the main rainfall anomalies and evaluate the magnitude of the environmental, material and human damages caused by these natural phenomena. We'll also carry out a critical and reflexive analysis

around the sources available in Portugal for the study of this subject, trying to identify the potentialities and the limitations of different documentary typologies. Finally, we'll present a methodology, based on qualitative and quantitative approaches, for the study of past climates, especially in the pre-instrumental era.
The results of the current historical study on the temporal variability of precipitation and its environmental and socioeconomic impacts in the Northwest Portugal between 1600 and 1850 should provide very valuable information for a better understanding of climate change in Southwest Europe and to reconstruct specific paths of Iberian Peninsula.

A multidisciplinary approach to tell North Atlantic's history of globalisation and climate change in 1400–1700 CE

Cordula Scherer, Centre for Environmental Humanities, University of Dublin
Richard Breen, University of Dublin
Patrick Hayes, University of Dublin
Francis Ludlow, University of Dublin
Al Matthews, University of Dublin
John Nicholls, University of Dublin
Kieran Rankin, University of Dublin
Charles Travis, University of Dublin
Poul Holm, University of Dublin

The NorFish project (ERC advanced grant 2016–2020) takes a multidisciplinary approach to establish the human and environmental origins and consequences of what has become known as the 'The Fish Revolution' in the late medieval–early modern times (1400–1700 CE). During this period fish changed from a high-priced, limited resource in the Late Middle Ages, to a high-quality low-priced resource with the opening of the Newfoundland Grand Banks from the sixteenth's century. This is one of the first examples of the disrupting effects of early globalisation and climate change in the early modern world and affords an important opportunity to examine how past societies understood and responded to these challenges at and around the sea potentially providing a distant mirror for today's changing world.
With four leading questions on the environmental dynamics, societal adaptation, political perception and the role of fisheries in the North Atlantic region much progress has been made by the transdisciplinary NorFish team to uncover some of the mysteries engirding the Fish Revolution. It is clear that this period is a prism of environmental and societal change in the Atlantic world.
Some questions remain, but utilising the rich records and databases surrounding the Fish Revolution, the expert team established a common language to share their knowledge in climatology, digital humanities, environmental history, geography, marine ecology, mathematics and statistics, philosophy, social sciences and zooarchaeology. The team further combines developing paleoclimates and palaeoceanographic data with historical fishery data and proxy records of ocean productivity to investigate the sensitivity of ocean life to changing climates, environments and anthropogenic pressures in the 'old' and the 'new world' of the North Atlantic during 1400–1700 CE. This approach 'undisciplines' the disciplines and overcomes boundaries to investigate the environmental and human history of the North Atlantic.

Session 7H

Crossing the market's natural boundaries: Alpine conservation and the obstruction of the European Common Market (1970–2000)

Organizer: Romed Aschwanden, University of Basel
Chair: Patrick Kupper, University of Innsbruck

Session abstract:

This session addresses the impact of European Integration on natural and political boundaries within the Alps during the second half of the 20th century.
The Alps have always represented a geographical boundary within the European continent. Since early modern times, warlords, travelers and traders tried to and successfully did conquer the natural mountain barrier. The Alps themselves have been divided by various political boundaries, national borders, that separated markets and constrained collaborations.
European Integration eliminated some boundaries, but at the same time new boundaries developed. In the course of European Integration, the Alps became to be perceived as a common good, an environmental heritage to be conserved for further generations. The quest of protecting them from the threat of industry (e.g. tourism and transport traffic) and societal dynamics became a concern not only for the individual nation states, but for the "whole of Europe". On the other hand, the emerging European Single Market facilitated a growth in transalpine traffic, which spurred the development of the Alpine conservation movements in Austria and Switzerland – and thus created a new boundary between the transit countries and Europe.
This session focuses on the growing opposition to transalpine traffic and the Alpine conservation movement's collaboration across national boundaries between 1970 and 2000. Inspired by the political science model of "multi-level governance" it addresses transnational processes and issues in Alpine conservation on the supranational, national and local level: The first paper focuses on the area of conflict around the EU's Alpine Transit Policy, whereas the following two analyze the rise of anti-transit movements in Austria and Switzerland and their joint, transnational actions. A commentary concludes the session.

Networks and negotiations: The EU's Alpine transit policy
Kira Schmidt, Ludwig Maximilian University of Munich

This paper aims to analyze and discuss the intergovernmental and supranational dimensions of the EU's Alpine Transit Policy. In a top-down approach it focuses on the most important bodies of the EU (and its precursors), the European Commission and the European Parliament, but also considers influential international and intergovernmental institutions e.g. Arge Alp as well as relevant non-governmental organizations.
Transit Policy became an important issue form the 1980s onwards in course of the creation of the European Single Market. The Alps played an essential role as they posed a boundary between the northern and southern part of the EU. The necessary infrastructures for transalpine traffic caused controversy among EU member states and between the EU and non-member states – as did

ecological concerns for the fragile alpine ecosystem. This examination explores the area of conflict between ecological and economic interests concerning the alpine region and the formal and informal networks that shaped EU transit agendas.
This study employs an actor-centered approach to the negotiating within the complex multi-level governance of the EU. It inquires into how the actors argued for or against transalpine traffic, how they positioned their issue, how they used expert knowledge and how they collaborated. Thereby the actor's transnational networks and institutional linkages will be examined. Networks and linkages are seen as means to cross boundaries.
Using Alpine Transit Policy as a case study this paper points to the influence of various nation-state and civil society actors on EU's agenda-setting and policy making and the relevance of transnational networks within the EU's multi-level governance.

Protecting the heart of Europe: Alpine conservation between protest and political negotiations in Austria

Maria Buck, Leopold-Franzens-Universität Innsbruck

Since the 1970s there has been a huge resistance against the increasing transit traffic along the Brenner route. In Austria the transit question became an important topic of environmental organizations and local initiatives. Due to protests of those actors transit traffic gained importance in political agendas not only nationally, but also transnationally over the last 30 years and is still such an important and controversial topic in society.
The debate got even more serious during the negotiation of Austria joining the EU and the contract conclusion of the transit negotiation with the EU in 1992. When Austria joined the EU in 1995 there was a Europeanization and liberalization in the transport policy of Austria observable. In consequence the EU took an opposing position towards local initiatives, because they basically aimed for opposite developments. On the other hand the initiatives needed the EU to realize their goals out of the reason, that the EU had more power and possibilities to change something in comparison with smaller governments.
The paper focuses on the ambivalent position of the initiatives as "defender of the Alps" and the opponents of the transit towards the EU. Furthermore the protests of those local initiatives had not only an impact on the Austrian transport and environmental policy, but also on the EU policy. Therefore, this paper examines how those local initiatives became an important factor on the transnational and European level.

Tunneled like a Swiss cheese: Environmental protection as an argument against European integration during the 1990s

Romed Aschwanden, University of Basel

This paper addresses the ambiguity of the Swiss environmental movements against alpine transit traffic during the 1990s concerning nationalist and integrationist ideologies. In 1992 the Swiss sovereign rejected to join the European Economic Community. In the meantime, an environmental movement called "Alpen-Initiative" collected signatures for a popular petition to ban transalpine truck-traffic from streets. Although its arguments were strictly ecological, the initiative opposed the

principles of the European Common Market: liberalization of traffic and transport. The popular petition was accepted by the Swiss sovereign in 1994.
As a non-EU-country, Switzerland had limited access to the policy-making-processes in the EU but still was undergoing strong pressures for liberalizing its traffic-market. However Switzerland, with the Gotthardpass as an important north-south link, possessed a strong collateral during negotiations with the EU, which environmental movements sought to use as a bargaining chip to reach legal restrictions in traffic.
The paper analyses the negotiations on the "Bilateral Agreements" (especially the land traffic-agreement) between Switzerland and the EU and their observation by social movement organization "Alpen-Initiative". During the negotiation-process (1995-1998) the "Alpen-Initiative" actively reached out to other anti-transit groups all over Europe, especially in Austria and France, to join forces against growing alpine transit traffic and to lobby on EU-levels. The analysis of the reciprocal transfer between national and European levels offers new insights into the understanding of the societal and political changes initiated by the process of European Integration.

Comment: Jan-Henrik Meyer, Max Planck Institute for European Legal History

Session 7I
Conservation's roots: Communities in pre-industrial conservation

Organizer: Abigail Dowling, Mercer University
Chair: Maïka de Keyzer, KU Leuven

Session abstract:
This panel illuminates the diversity of practices in premodern environmental history across Europe from the Middle Ages to the brink of modernity. The contributors use three different approaches to community resource use, from the local to the state levels, to re-consider the idea of historical "conservation" in the Western world. The cases studies, which come from Belgium, Sweden, and England, simultaneously address legal and social management of natural resources to demonstrate that pre-industrial communities consciously deployed conservative practices for heaths, woodlands, and rivers.

Keep the water flowing! Swedish pre-Modern water management
Eva Jakobsson, University of Stavanger / Vrije Universiteit Amsterdam

The Swedish pre-modern waterscape cannot be described as not touched by man, neither in discourse, practice, nor in a political sense. Pre-modern water management was about keeping the watercourses open, to "improve" nature. In a country with abundant water, it was important to increase the water's ability to flow through the Swedish landscape, for example by keeping the watercourses open. I will analyze an ancient Swedish legal concept - the King Vein -, as a tool for pre-modern water conservation. I will look closer into how the King Vein was practiced and especially observe the continuity of the concept. We can describe the King Vein as a type of commons, present in the privately owned Swedish pre-modern watercourses. It protected the natural flow of these rivers. It adjusted the interdependence between up- and downstream interests, to make watercourses sustainable resources. If we regard pre-modern rivers as "organic machines" - a concept that is not only to be used on rivers of industrialism and capitalism - the concept represents a recourse strategy to keep pre-modern rivers productive, by maintaining them free flowing and open. In this presentation my arguments are: First, the will to control rivers does not only belong to modern discourse. Second, free flowing waters can also be products of political control and, thereby, third, what we label free flowing rivers can in a pre-modern, (as well as in a modern waterscape) be nature transformed by man.

Sustaining pre-Modern heathlands (1400–1750): Collective knowledge and peasant communities in the Campine, Belgium
Maïka de Keyzer, KU Leuven

Heathlands are vulnerable soilscapes. Overexploitation and mismanagement progressively lead to soil degradation and sand drifts. Throughout history, the management of these landscapes has been a challenge. The question therefore arises whether heathlands were managed sustainably, and if so,

whether we can describe this management as a prototype or pre-modern form of conservationism. From the end of the seventeenth century, the general opinion of agronomists, improvers and governments was that European heathlands were mismanaged. For many years, historians, archaeologists, and geologists have adopted the perspective introduced by eighteenth-century agronomists. The ecosystem was supposed to have been progressively degraded from the later Middle Ages onwards, causing the ecologically diverse heathlands to degrade and eventually become open sand bowls. This dire picture is not supported, however, by the evidence. Pre-modern communities in heathland regions showed an environmental awareness and willingness to conserve the entire ecosystem. One particular case is the Campine in the Low Countries. Soil degradation was reduced to an absolute minimum despite rising population densities and he development of commercial sheep breeding. This paper will show how the local communities were able to develop a sustainable management and why this management was not fundamentally different from 18th century conservation practices.

Conserving the 'vert' in Early Modern Sherwood forest

Sara Morrison, Brescia University College at Western University

Trees and woods are a renewable resource if well managed, when regrowth is protected from nibbling animals after felling. Broad-leafed deciduous trees like oak and birch regenerate naturally by shoots sprouting from cut stumps, trunks or roots. Traditional woodland management practices existed in medieval and early modern Sherwood Forest, one of the royal forests lying in the county of Nottinghamshire. In a royal forest 'vert' describes all types of woodland – mature woods, understorey, wood-pasture commons and ground cover vegetation. Inside Sherwood's forest boundary special forest laws, courts and local officiers protected the vert. The wise use of woods, coppices, wood-pastures and mature forest trees was essential to the survival of the wood-based economy of pre-modern England. During the sixteenth and seventeenth centuries some areas experienced a timber or fuel famine, especially in southern England near London. However, in Sherwood Forest there were plentiful supplies of mature timber trees for use by the navy and coppice woods producing small wood for ironworks during the seventeenth century. This paper argues that woods in Sherwood enjoyed multiple layers of protection – a combination of traditional woodland practice, oversight by the Tudor and Stuart state, and a mid-seventeenth century revival of forest laws, courts and forest officers, which protected the vert. While early modern statutes protected supplies of mature standard trees for naval use and mixed-aged coppice woods, supplying a range of wood products for fuel, building and repairs, the local forest courts in Sherwood prosecuted offenders who mismanaged woods or cut vert illegally. During the early modern period trees and woods in royal Sherwood Forest grew by natural regeneration, not in man-made plantations of acorns and saplings.

Session 7J
Struggles to protect nature

Chair: Stefan Dorondel, Francisc I. Rainer Institute of Anthropology

Minority protection and nature conservation: A case study from the late 19th century German Empire
Jana Piňosová, Sorbian Institute

How are the concepts of nature conservation and minority protection historically interrelated? This paper will pursue the question by exploring the early linkages of nature conservation and minority protection in a case study situated in the German Empire in the late 19th century.
From the middle of the 18th century Prussia engaged in an intensive policy of inner colonisation, which involved the drainage of large territories. It was not unusual that the construction works faced resistance from the local population, who feared to lose their livelihood. However in the 1880s, when the Prussian government presented plans for the drainage of the Spreewald near Berlin, the opposition came from a surprising and hitherto unknown side, which added a wholly new quality to the debate.
The Spreewald was populated by the Slavic minority of the Sorbs, who became a subject of scientific interest around that time. Ethnographers, prehistorians and linguistic researchers, among them the eminent pathologist and prehistorian Rudolf Virchow, criticized the drainage plans as they regarded them as endangering the survival of the Sorbian people. The unique culture of the Sorbs, they argued, was not only based on language, habits, myths and legends but also on the cultivation of the specific nature of the Spreewald. The transformation of this nature, so the reasoning, would destroy the natural foundations of Sorbian culture. The drainage of the land would de-root the Sorbian people, who would consequently fell victim to the assimilation by the German majority. Thus, the drainage would not only shift the boundary between water and land, but also the ethnographic border. To successfully protect the minority of the Sorbs from disappearing it was mandatory to conserve their particular natural environment.
The paper will present preliminary results of an on-going larger research project on the relation of nature conservation and minority protection.

Nature and power in interwar Poland
Slawomir Lotysz, Polish Academy of Sciences

The relationship between nature and power in interwar Poland, particularly after the 1926 coup d'état, is commonly seen through the mid-1930s scandal of the cable line to Kasprowy Wierch in the Tatra mountains. The way in which the so-called sanation government pushed the project, over-riding the environmental concerns expressed by society at the time, was emblematic of such authoritarian regimes, with their tendency to look at nature as a resource rather than an asset. As a result of this dispute, in 1935 Władysław Szafer, the president of the State Council for Nature Protection, who gave face to a social movement comprising a hundred or so tourists, pro-nature, and academic associations, stepped down.

However, a few years before the Kasprowy cable line outrage broke out, Szafer had engaged himself in yet another fight to put nature on the agenda. At stake then were the largest European wetlands, the so-called Pripet – or Polesie – marshes. In 1928, the Polish government set up the Bureau of Amelioration of Polesie, and tasked it with preparing a plan for draining some 1.5 million hectares of marshes and converting them into farmlands. Carrying this plan out would have obviously meant destroying wild life in areas still largely un-besmirched by human presence.
In this paper, I will argue that the dispute over Polesie, being in fact the first clash between early Polish environmentalists and the authoritarian government and its agencies, had a different background, and resulted in the inclusion of pro-nature postulates into the governmental agenda.

Czechoslovakia, 1925: Looking for a place for a national park
Jiří Martínek, The Institute of History, Czech Academy of Science

Czechoslovakia, founded in 1918, became a republic following the pattern of France and the United States. An American example has influenced into almost all areas of human activity – politics, culture, music (jazz), but also science and nature conservation. A group of Czech scholars (Karel Domin, Viktor Dvorský etc.) also decided to initiate the creation of the first national park following the American pattern. Since the mid-1920s he has been looking for a suitable place for him, especially in Slovakia – the High Tatras or the Pieniny Mountains were considered; for a variety of reasons (more detailed in this paper), this happened only after the changed political situation after 1948.

The establishing new borders of protected territories at the Soviet Union
Alexey Sobisevich, S.I.Vavilov Institute for the History of Science and Technology of the Russian Academy of Sciences

By the early 1960's due to the development of industrial production, the natural environment of the Soviet Union forced with the threat of reduction of many endemic species. According to the minds of some scientific experts, the industrial needs made impossible the total preservation of its natural environment. In 1960th the Soviet Union had only one form of nature protection on the local level as the establishment of nature reserves (zapovedniki). This changed with the creation of specially protected biosphere reserves under the auspices of soil scientist Viktor Kovda and others in the wake of the 1972-UN Conference on the Human Environment. There, any human activity was strongly forbidden and scientists can participate in ecological research. Biosphere reserves became the places with more high standards of environmental protection than national parks and even the natural reserves. The creation of biosphere reserves has not only the goal to save natural diversity, but they also became an important instrument for ecological cooperation with Western countries and socialistic countries. For instance, biosphere reserves participated in environment program of UNESCO and Comecon (The Council for Mutual Economic Assistance). Creation new national parks led to the spreading semi-protected territories. To explain the creation of new protected territories and establishing its borders the various aspects of conservation policy in the Soviet Union would be described in that presentation.

Session 7K

From red to green? Reassessing the 1991 boundary in (post-)Soviet environmentalism. Part II: Actors between triumph and nostalgia

Organizer: Timm Schönfelder, University of Tübingen
Chair: Elena Kochetkova, National Research University Higher School of Economics

Session abstract:
1991 marked the end of the Soviet political space where a multiform environmentalist movement occupied "little corners of freedom" and survived in an authoritarian context (Weiner 1999). Under Gorbachev environmentalism moved from the scientific establishment to the streets and to democratic politics (Larin et al., 2003). Ecological issues took the center stage: the Chernobyl disaster, the Aral Sea's destruction, water and air pollution in big cities were major issues in the campaign for the first free elections in March 1989. The greens seemed to have eventually prevailed in their struggle against the transformist forces of Soviet technocracy. After 1991, however, when Yeltsin's reforms led Russia into an unbridled oligarchy economy, the space for political ecology faded away. The green movement entered a long period of decline.
How did environmentalists adapt to this new era of gangster capitalism and increasing authoritarian leadership under Putin? This panel will explore the actors' "menu of choices" (Henry 2010) in selecting organizational forms and activist practices. On the other side, did the transformists manage a comeback in the new institutional setting? The panel will test whether nostalgia for the Soviet past is a pertinent category to analyze the adaptive strategies of both the eco-activists and the productivist planners and engineers.
This panel is part of a tandem of two panels examining the year 1991 in post-Soviet environmentalism. The participants of this panel look at how both sides of the Soviet debates on nature – green activists and nature subjugators – dealt with the breakdown of the Soviet Union: the water meliorators, the student green brigades and anti-nuclear activists.
Henry L., Red to Green: Environmental Activism in Post-Soviet Russia. Cornell 2010.
Larin V. et al., Okhrana prirody Rossii: ot Gorbacheva do Putina. Moscow 2003.
Weiner D., A Little Corner of Freedom. Berkeley 1999.

From 'Golden Age' to irrigation nostalgia: Hydro-melioration in post-Soviet Russia (1986–2016)
Timm Schönfelder, University of Tübingen

Before the end of the Soviet Union, its greatest irrigation projects had already come to a halt. In 1986, Mikhail Gorbachev decided to cancel the water builders' most prestigious designs: the redirection of the Siberian rivers to Central Asia and the diversion of the northern Russian rivers to the dry steppes of the country's south. In the words of a renowned hydro-engineer, this marked the end of the „Golden Age of Melioration" (Boris Maslov).
Since the 1970s, those plans had been at the heart of an agromeliorative complex that evolved around the Ministry of Melioration and Water Treatment (Minvodkhoz). It decidedly favored ever larger irrigation projects over locally adapted means of land reclamation. For too long the Soviet leadership had stood by and watched it waste not only financial but also precious environmental

resources. With Glasnost and Perestroika, an increasingly disillusioned and eco-conscious elite of scientists and administrators contested the meliorators' utopian plans. Due to their strong criticism, the All-Union-Minvodkhoz was disbanded in 1989, followed by its Russian counterpart in 1990.
Even though a growing nostalgia for the grand ideas of the agromeliorative complex was felt in certain circles of power, the economic constraints of the ensuing decade did not allow for much attention to it. Irrigation equipment was abandoned and fell into disrepair across the Russian Federation. However, with environmental agencies and independent monitoring increasingly suppressed by the Kremlin in the new millennium, some of these old projects are now presented as promising remedies for the ailing agricultural sector.
The paper focuses on Russia's granary around the North-Caucasian river Kuban where, from the 1950s onward, an extensive hydro-infrastructure the size of Portugal evolved. It examines the years around 1991 as a turning-point for the environmental history of Russia by tracing the questionable appeal of the meliorators' plans.

From socialist vigilantism to neoliberal disaster management: How student green activists made it into New Russia (1960s–2010s)
Laurent Coumel, National Institute for Oriental Languages and Civilizations (INALCO)

This paper investigates the history of student "nature protection brigades" (DOP) in the USSR and contemporary Russia before and after 1991. The brigades were official student organizations created in the 1960s in academic centers such as Moscow State University. Acting as green vigilantes, they assisted the state authorities in the repression of poaching and other violations of environmental laws in the Moscow region. At the end of the 1980s, they played a crucial role in the emergence of a dedicated green movement in Russia. At that time they evolved into a lobby, influencing decision-making at the top of the political system. However, the fading away of ecological debates in 1990–1991, due to the acuteness of the economic and social problems of the time, put an end to their ideal of ecologist technocracy.
Yet the brigades survived the fall of the USSR: They changed again, switching to local field work and eco-educational programs for school pupils. New forms of vigilantism emerged, directed not against individual offenders, but toward mitigating natural disasters like the 2010 forest fires. The brigades now supplement the neoliberal state which has withdrawn from forest management. By questioning the 1991 boundary in the history of Russian ecological movements, this paper defines how ecological activism evolved from the late Soviet era to post-Soviet times, and how narrowly it was tied to official agendas.

Where have all the greens gone? Anti-nuclear activists after the ecological boom in Ukraine, Belarus, and Lithuania (1980s–2010s)
Melanie Arndt, Leibniz Institute for East and Southeast European Studies

The disaster at the Chernobyl nuclear power plant in 1986 affected how the nuclear industry was managed around the world. Much more visible than the expert panels behind closed doors and in many ways more powerful became the processes of sensitization and mobilization that the disaster stimulated in wide segments of the Soviet public, particularly in those emerging networks that can

be described as social and environmental movements. The realization that the Soviet state was neither able nor willing to protect its citizens from the consequences of the accident caused hundreds of thousands to take to the streets. Concerned citizens could no longer be satisfied by "little corners of freedom" (Weiner) that existed before Chernobyl, they demanded much more room and attention to express their concerns, develop ideas and achieve real ecological change. This process was fostered by international attention and support from environmentalists from the West.
The steady wind of change, however, closed the window of opportunity very soon: After the ecological boom of the late 1980s and early 1990s, the material and psychological hardships of transformation and – in fewer cases – the opportunities in a new era occupied people's minds and bodies; the disaster and ecological concerns faded into the background.
The paper traces the development of the green movement(s) from the ecological boom to the 2010s and examines the causes of the ephemerality of the broad ecological interest on the basis of selected examples from Ukraine, Belarus and Lithuania. It pays special attention to the interaction of Eastern European Greens with foreign environmentalists asking how these exchanges of ideas impacted them. Additionally, the paper will take into account counter-movements, above all pro-nuclear activists.

Comment: Julia Herzberg, Ludwig Maximilian University of Munich

13:00-14:00 Lunch

Women's Environmental History Network's no-host lunch at NOP Café (Köleri 1). Registered participants only (RSVP by August 20 to srhamilton@auburn.edu)

14:00-15:30 Plenary roundtable. Boundaries in/of environmental history

Prof. Dolly Jørgensen, University of Stavanger
Prof. Kalevi Kull, University of Tartu
Ass. Prof. Andrea Gaynor, University of Western Australia
Ass. Prof. Franz Mauelshagen, University of Duisburg
Dr. Stefania Barca, University of Coimbra

We reflect on where do the boundaries run within the environment, history and environmental history? And where are the boundaries of the discipline itself?

Dolly Jørgensen is a professor of history at the University of Stavanger, Norway. Her new monograph Recovering Lost Species in the Modern Age: Histories of Longing and Belonging is coming out with MIT Press in 2019 .She has previously co-edited several books on technology and environment, including New Natures: Joining Environmental History with Science and Technology Studies (2013). She was twice President of ESEH (2013-17).

Kalevi Kull is a professor for biosemiotics at University of Tartu, Estonia. He started as a biologist and became the founding father of biosemiotics as a new discipline. As an expert in the field of ecology, theoretical biology, and semiotics, he has worked in elucifating the basic mechanisms of meaning-making and diversification in living systems. He is the editor of the journal *Sign System Studies*, and co-author of many books on theoretical biology and biosemiotics (*Biosemiotic Perspectives on Language and Linguistics* (2015), *Theoretical Biology in Estonia*, 1985).

Andrea Gaynor is an Associate Professor in History at The University of Western Australia. Her research seeks to use the contextualising and narrative power of environmental history to solve real-world problems. She is author of the book *Harvest of the Suburbs: an Environmental History of Growing Food in Australian Cities*(2006), co-editor of *Never Again: Reflections on Environmental Responsiblilty After Roe 8* (2017), and co-editor of *Reclaiming the Urban Commons: The past, present and future of food growing in Australian towns and cities*(2018).

Franz Mauelshagen is a Senior Fellow at the Centre for Global Cooperation Research / Käte Hamburger Kolleg at the University of Duisburg, where his research is work is on planetary politics in the Anthropocene, and he is also affiliated at the Institute for Advanced Sustainability Studies in Potsdam. His forthcoming monograph Clio meets Gaia: History in the Anthropocene (translation from German title) is on the implications of a new geological era for our understanding of history. Recently, he has co-edited The Palgrave Handbook of Climate History (2018) and Climate Change and Cultural Transition in Europe (2018).

Stefania Barca is a senior researcher at the Center for Social Studies of the University of Coimbra. She holds a PhD in Economic History (Italy 1997) and has been a visiting

scholar at Yale University (2005-06), postdoctoral fellow at UC Berkeley (2006-08), and guest professor at Lund University (2015-16). Her monograph Enclosing Water. Nature and Political Economy in a Mediterranean Valley, 1796-1916 (White Horse Press, 2010) was awarded the Turku book prize in 2011; she has served as ESEH vice-president for the 2011-13 term and as member of editorial board of Environmental History in 2014-17. In the past ten years, she has written about the environmental history and political ecology of labour in transnational perspective and is now working on a new book manuscript called Forces of Reproduction. An Anti-Master Narrative of the Anthropocene, to be published in the series Elements in Environmental Humanities by Cambridge University Press.

15:30-16:00 Coffee break

Book launch coffee break at Researchers' Forum in Astra building.

White Horse Press presents "Seeds of Power: Explorations in Ottoman Environmental History" and "The State in the Forest. Contested Commons in the Nineteenth Century Venetian Alps" by Giacomo Bonan

16:00-17:30 Parallel Session 8

Session 8A
Boundaries of coldness: Russian and Soviet coldness talks and experiences between politics, ideology and nature

Organizer: Ekaterina Emeliantseva Koller, University of Zurich
Chair: Julia Lajus, National Research University Higher School of Economics

Session abstract:
"The North" and "cold" or "harsh climate" as cultural categories are multilayered complexes of associations and symbols; they are also products of everyday practice. Discourses about the natural environment and climatic conditions are embedded in social interactions and engender symbolic capital. For Russia, "the North" and "coldness" have served as complex symbols of its peculiar place within the cultural landscape of Europe since antiquity. The Soviet authorities forged a specifically Stalinist "Arctic myth" (McCannon) from the cultural connotations evoked by Russia's North, one they hoped would mould Soviet citizens into heroes and mobilize the masses for the conquest of space and nature on the road to Communism. Not that this myth was ever only sanctioned propaganda. Its Promethean appeal also opened up very real new opportunities for individual self-expression, ranging from alternative ways of myth celebration to ambivalent feelings and criticism.
The panel focusses on Russian and Soviet harsh climate experiences and discourses by asking how speaking about climatic conditions was used in negotiations about balancing economic, ideological, and human needs, about regional and scholarly identities, and about Russian and Soviet modernity paths.

The hunt for cold in Tsarist and Soviet Russia
Julia Herzberg, Ludwig Maximilian University of Munich

Even more than the economic expansion of the Russian state into Siberia in the 16th and 17th centuries, the scientific expeditions of the Academy of Sciences in the 18th century increased the geographical and meteorological knowledge of the world. The question of how temperatures and climate are distributed around the world and where the coldest and hottest places are, has been playing an increasingly important role ever since. The search for the coldest place in the world was an exciting question for the scholarly European public. In the second half of the 19th century, the hypothetical place now known as the "cold pole", which had not yet been located beyond doubt, became a place to be found and entered - like the magnetic and geographical North and South Poles. The talk traces the emergence and transformation of the concept of the cold pole in the 19th and early 20th centuries. With Yakutsk, Verchoyansk and Oymyakon in Yakutia and the stations Vostok and Sovetskaja in Antarctica, it presents five different places that were regarded as cold poles. It will become apparent that with the shifts of the cold pole, the notions of what the cold pole was also changed. The presentation focuses above all on the people who measured, published and circulated these lowest temperatures. With their biographies, they contributed significantly to the change in

connotations, metaphorical meanings, and also the supposed social, cultural, and health consequences associated with living in extreme cold between the Tsarist Empire and the Soviet Union.

Archipelagos of warmth. Soviet mining on Svalbard and the challenge of Arctic cold, 1931–1950
Felix Frey, University of Bern

When Soviet workers arrived on the Norwegian island of Svalbard in 1931, their main task was to mine coal for the burgeoning industries in the USSR's northwest. However, much more basic human needs characterized the mining operation on site: The Svalbard workers suffered from their ill-prepared arrival in an area of extreme cold. The opposition of body heat and Arctic cold soon became a matter of life and death.
Drawing on Soviet archival material and published sources, the paper analyzes how different historical actors navigated within the tension field of polar coldness and body heat. The mining company Arktikugol's success as well as the 1500–2000 workers' living conditions depended on their resourceful interaction with the Arctic environment. Under Norwegian jurisdiction, watchtowers and fences could not keep the miners in check as they often did in the Soviet Arctic. Unsurprisingly, the workers soon resorted to remigration to the Soviet mainland as a tactic of changing their thermal surrounding. Arktikugol' in turn established 'archipelagos of warmth' on Svalbard to avoid its economic collapse: Banyas and greenhouses, special clothing and swimming pools, even the reward of holidays in faraway spa towns aimed at keeping the workers in place.
The paper studies how regimes of warmth and cold established on Svalbard throughout the 1930s contributed to a reduction of work conflicts and led to the miners' longer stays on the island. Furthermore, it shows how the environmental factor of coldness in combination with the Norwegian jurisdiction forced Soviet administrators to refrain from head-on repression and employ other, i.e. thermal approaches to stabilize its workforce.

Coldness as imagination and resource in a Cold War bastion of late Soviet Union: "Coldness talk" in a closed city of Severodvinsk
Ekaterina Emeliantseva Koller, University of Zurich

In the case of Severodvinsk, a major hub in the Soviet military-industrial complex constructing nuclear submarines, the "cold climate" became one of the central elements of self-identification. The construction of an exceptional place via "exceptional natural environment" culminated in granting the city the status of a Far North area. The "cold climate" discourse provided space for negotiation between different actors and shaped the fabric of the Severodvinsk community and the symbolic space of the city.
Up to the 1960s, the city was divided into a privileged and a non-privileged zone. The exceptional climatic space was confined to weapon-production sites only. In a process of negotiating coldness, the citizens of Severodvinsk constantly challenged and redefined community boundaries and the boundaries of exceptional space. Bargaining for coldness became a strategy of non-privileged citizens to acquire their share in a prospering Cold War utopia. With the widening access to Far North bonuses, the whole city was included into a privileged zone embarking on a strategy of

venerating coldness. The harsh climate narrative became a part of the foundation myth of the city and a complementary and compensatory element of patriotic arms race rhetoric. In the process of negotiating coldness, the Stalinist rhetoric of the northern conquest could fit into the Cold War defence discourse via climatic exceptionalism and reach a new level of ideological commitment, buttressed by the Soviet government's consumerist politics.

Comment: Marc Elie, Le Centre d'études des mondes russe, caucasien et centre-européen (CERCEC)

Session 8B
Flood policy and practice

Chair: Eva Jakobsson, University of Stavanger

Past flooding, present solutions: The use of history in flood risk management in England since c.1750

John Morgan, University of Manchester

This paper traces the use of historical knowledge in flood management institutions across the last 250 years. Drawing on the extensive archives of England's Internal Drainage Boards (local bodies tasked with managing lowland rivers and their floodplains from the eighteenth century onwards) we identify the long-standing use of historical knowledge in IDBs' identification of hazards and management of risk. The use of such knowledge declined significantly only in the last twenty years. We show how historical knowledge was once central in determining where and when England's rivers should and should not flood, and how the framing of that knowledge changed in response to industrialisation, urbanisation, and various acute subsistence crises (i.e. during war). We show that past practice has been a guide for present action for much of the history of IDBs, yet that as new kinds of environmental expertise developed in the twentieth century, local experience and tacit knowledge was side-lined. The paper thus explores the intersections between environment, landscape, economy, institutions and knowledge.

This research forms part of an AHRC three-year grant to examine historical precedents in flood risk management at the local level as a potential model for future practice through an examination of localised flood risk, community resilience, and governance in four counties of England. Thus, we end our paper with a reflection on our current role as historians working with local drainage authorities, and the value of historical knowledge in an age of big data, remote sensing and GIS modelling.

Land or water? How changes in the flood protection philosophy in the late 20th century led to a blurring of boundaries

Melanie Salvisberg, University of Bern

In Switzerland – as in many other European countries – most rivers and creeks were channelled during the 19th and early 20th centuries. The goal of the river corrections was not only to protect the valleys from flooding, but also to gain new land. This led to a massive reduction of riverine zones and separation of these zones from the neighboring wetlands.

Since the engineers promised that the hydraulic measures would prevent flooding completely, people built houses, roads, and railroads close to the watercourses and started to plant crops on the newly won farmland. This only changed in the last decades of the 20th century: as a result of the increasing environmental awareness and a series of severe floods, the flood protection philosophy began to change. Instead of hard engineering, the watercourses should be ecologically improved and enlarged, and passive protection measures such as land-use planning should be preferred. Accordingly, the boundaries between land and water blurred again. An important aspect of the new protection strategy was the multifunctionality of the measures: for example, riparian areas – often

farmland – were then used as flood retention plains. The implementation required close cooperation by all involved parties, which proved to be challenging.
Using the example of the Gürbe River (Switzerland), this paper aims to discuss the changes in flood protection philosophy from the 19th century to present and to examine their impact on the demarcation between land and water by answering the following questions: why were the rivers channelled in the 19th century? What were the impacts of the river training works on the land use and the environment? How did the change in flood protection philosophy affect the appearance of the water bodies and the use of their surroundings? What conflicts arose due to the newly blurred boundaries?

Containing vs accepting floods: Concepts of river management in modern Japan
Julia Mariko Jacoby, University of Freiburg

Natural disasters blur the boundaries between humans and nature: Affected people perceive and interpret disruptive natural events as disasters. Natural disasters can be blamed on overwhelming forces of nature as well as human errors or technical failures, and these interpretations often appear convoluted. Perception of disaster has changed historically and differed according the concepts of nature prevailing in a society. In this paper, discourse on floods and river management in Modern Japan offers insight into competing and intermingled concepts of nature resulting from the country's adaption of Western thought and technology in the late 19th and early 20th century.
Following the Meiji Restauration, Japanese officials had high hopes for modern Western technologies to prevent floods. These technologies facilitated alterations of rivers while often continuing Edo period strategies. However, they could not prevent severe floods in the 1880s and 1890s that resulted in the development of soil erosion control, drawing on both Western and Early Modern Japanese sources. Following severe typhoon-induced floods in the mid-20th century, Japan embraced comprehensive river control modeled after the American Tennessee Valley Authority, but not without controversy.
In this paper, three kinds of boundaries are addressed: Firstly, the boundaries drawn by hydraulic engineers between river and land. Conflicting concepts of river management either aimed at keeping the river from flooding or accepted controlled overflow. Secondly, the creation of the increasingly sharp boundary between the wooded mountains and agricultural lowlands. This divide also resulted in two differing, sometimes conflicting disciplines of flood control. Thirdly, the paper analyses how boundaries between traditional and Western knowledge were drawn and blurred. Although Western knowledge was adapted to neatly fit traditional forms of river control, it was framed as foreign: either as a desirable model or an undesirable destroyer of Japanese nature.

Doing it outdoors! Reconnecting pasts and futures in environmental water histories by working with practitioners, managers and publics
Leona Skelton, Northumbria University

'Past Floods Matter' is an Arts and Humanities Research Council project (Nov 2017-Oct 2020) which works closely and productively with the Environment Agency (EA), the Association of Drainage Authorities, Rivers Trusts, councils, water utilities and environmental charities. As Co-Investigator for

Cumbria, one of four English case studies, I'm exploring the feasibility of the EA's new Water Level Management Boards, contextualising them historically using archival and oral history research into Internal Drainage Boards' management of rivers and their floodplains from c.1750 to 1975. I attend catchment community meetings and steering committees, and interview flood professionals and innumerable publics. This paper shares valuable insights into successful methodologies for developing strong, mutually beneficial partnerships with external organisations from the outset of writing funding proposals. It explains how partnerships facilitate vital reconnections between past and present governance frameworks and flood mitigation methods. I also reflect on the challenges of accessing closed or so-called 'hard to reach' publics and of embracing passionate debates and disagreements about local flood mitigation policy, methods and governance.

The paper also reflects on my previous partnership work in relation to Kielder Reservoir, Northumberland, and the River Tyne catchment as part of AHRC-funded projects, 'Local Places, Global Processes' and 'The Power and the Water'. It concludes that regardless of the national and regional differences between respective university managers' value of Impact Case Studies, Public History or public engagement activities, working with external organisations substantially improves the quality of environmental history research and its applicability and relevance beyond academia. Translating and rewriting my research in different formats for particular partners and publics has maximised the boundaries of my ideas, deepened my insights and enabled me to write more inclusive, nuanced and useful research rooted in my case studies' local particularisms.

Session 8C
Towards the ecological turn in Scandinavia, 1950s–1970s

Chair & Organizer: David Larsson Heidenblad, Lund University

Session abstract:
In the summer of 1972, the United Nations arranged its first global conference on the Human Environment in Stockholm, Sweden. By that time, knowledge of an ongoing environmental crisis was commonplace in Scandinavia. However, it had not been for long. As late as in the mid-1960s an intense concern for the global environment was unusual, even amongst conservationists and scientists. How did this dramatic change happen? What were the consequences? Which historical trajectories led up to, and beyond, the ecological turn?
This session brings together a new generation of scholars exploring these issues in a Scandinavian setting. The papers discuss how environmental actors and knowledges circulated, within societies and beyond borders. Empirically, the session stretches from the anti-nuclear strands of the peace movement in the 1950s to environmental activism in the 1970s. Moreover, the session seeks to build a foundation for new transnational and comparative research on this topic.
The Scandinavian societies of the era was in many ways similar, yet markedly different. Social Democracy, for example, was stronger in Sweden than in Denmark and Norway. Political relationships to NATO and the EEC differed. The conditions of energy policy, as regarding oil, nuclear power, and hydroelectric power, differed as well. In addition, the burgeoning field of environmental policy gave birth to many co-operative initiatives between Scandinavian scientists and politicians, for example during the European Conservation Year 1970.

Environmental humanities in the 1960s: The history of a rejected research application
David Larsson Heidenblad, Lund University

Historian's accounts of the ecological turn, have tended to focus on scientists, activists, and politicians. Humanistic scholars, however, are by and large absent. In this paper I will seek to address this imbalance by exploring how the Swedish historian Birgitta Odén, together with political scientists and economists, sought to establish an interdisciplinary environmental research programme in 1968.
The group understood the environmental crisis as a major societal challenge. It could not, they declared, be reduced to a set of technical and scientific problems. The group's proposed research programme, "Environment, Natural Resources and Society", was conceived in close collaboration with the Swedish Defense Research Institute. During the planning phase leading politicians and scientists were involved. Yet, the grand plans never materialized. The programme never received any substantial funding.
The paper will highlight how Birgitta Odén sought – and failed – to render history politically useful. Moreover, it will engage in a larger discussion of societal discoveries of knowledge. What happens when knowledge ceases to be the exclusive property of small groups of people and starts to circulate in society at large?

Something new, something old, something borrowed, and something blue: Environmentalism in the 1970s Denmark

Asger Hougaard, University of Bergen

In 1969, the environmental movement NOAH was founded in Copenhagen. The formation of NOAH has been described as central to the "making of the new environmentalism in Denmark". But the environmental discourses of the early Danish environmental movement did not appear as lightning from a clear sky in 1969. Based on magazines, books, public debate, internal archive material from NOAH and interviews with former activists, the paper will present new research and perspectives on the ecological turn in Denmark. Residing at the core of the paper are the questions: What was new? What was old? What was borrowed? And what was the colour of the environmental politics?

The history of environmental discourses and the environmental movement will be connected to broader political developments in Denmark before and after 1969. Moreover, the paper will demonstrate entanglements with the environmental debate in Sweden, the US, and Great Britain, as well as situate it in regards to older local traditions that played a decisive role in the shaping of the "new" environmentalism of the 1970s environmental movement. The paper sets out to show the Danish environmental movement was an intricate mix of the new, the old, the borrowed, and the different symbolic colours of environmental concern.

Session 8D
Crossing boundaries in human–animal relations

Chair: Andrew Flack, University of Bristol

The baboon in the bedroom: Unnatural histories of the simian 'other'
Sandra Swart, Stellenbosch University

Winston Churchill once noted, in explaining why context is key, that "A baboon in a forest is a matter of legitimate speculation; a baboon in a zoo is an object of public curiosity; but a baboon in your wife's bed is a cause of the gravest concern." It is this latter scenario that engages us in this paper, as it straddles environmental history, ethnozoology and human-animal history to discuss the unsettling aspect of baboon sexuality in the human imagination over time. The paper starts by looking at historical anxieties over purported bestiality with simians, especially driven by crude populist social Darwinism and colonial fantasies. The paper then explores the persistence of drawing on the simian as sexual aid - from the medical use of "monkey glands" in the laboratories of post-revolutionary Russia to the street 'muti' markets of modern southern Africa. It tries to understand why the baboon, in particular, has been understood as a symbol of sexuality and how this has impacted on humans (particularly changing understandings of gender) and how it has impacted on the material life of baboons, over time. Here queer theory meets environmental history in an unexpected place, by offering us useful ways to reconsider the banality of binaries that simply do not exist in the rigid synchronic form imagined by 'natural history'. As Churchill intimated, context is key and understandings of baboons have varied ideographically over time. The importance of the analysis of historical ideas of animal sexuality lies in what they can tell us about our own shifting stories of ourselves. We must tell a more--than-human history, in order to tell a human one.

Russian imperial family and domestic dogs: Erosion of borders
Olga Solodyankina, Cherepovets State University

The study examines themes related to the representation of the imperial family (from Peter I to Alexander II). Pets, namely dogs, are the prism through which you can analyze the ideas about power, about the population of the country and about themselves, which existed among the members of the imperial family.
The life of dogs in the imperial family was only partially dog-like, including biting different people and the bite of the emperor's dog was perceived as a reward. The life of these dogs was in many ways like human life and even as directly imperial life. Their behavior was humanized, the emperor and the empresses carried the transfer of expectations from people to dogs: the ideal behavior included obedience, and the dogs could demonstrate this obedience, unlike the confidants, who could cause to the sovereign's anger because of their disobedience. The dogs influenced the structures of the everyday life of the members of the imperial family (regime of walks, their distance, organizing trips to other cities, etc.).
The distribution of the puppies of the imperial dogs was a sort of award; the aristocrats practically could become relatives of the imperial family through the dogs. The best artists made portraits of

emperors and empresses with their dogs, and porcelain figurines of the dogs themselves. Gradually memorial practices similar to human ones appeared. In the park of the royal residence, a memorial cemetery was arranged for dogs with architectural forms of work by outstanding masters and epitaphs of authorship by emperors and empresses. Judging by the texts of the epitaphs, the dogs were very close to their owners. The interaction of dogs and people in the imperial family allows us to better understand the emotional world of a person, where the border between a human being and a dog is almost eroding.

Hybrid ties between human and nonhuman animals in the formation of Brazilian society: A history to be told

Ana Lucia Camphora, Helio Alonso College

This paper seeks to shed light on the historical approach concerning the animal condition in the Colonial and Post-Colonial Brazil from selected fragments of historical narratives from the early decades of the 16th century, when the first European domestic animals landed in that South America territory, to the 19th century. A vast panorama of ties between humans and nonhuman animals reveals the crossing boundaries between European, native people, African slaves, European domestic animals, and Brazil's wildlife. As an essential component in the formation of Brazilian society, these interactions where humans and nonhumans were both partners and adversaries invigorate queries and seek answers regarding a context of wide-ranging cultural and environmental exploitation.

Fragments of texts from diaries, letters and other sources reveal how nonhuman animals were intensively involved in events and used in a myriad of often-contradictory ways. They appear as things, as food, occasionally as beings capable of expressing feelings and human-like behaviour, as sources of spiritual power for native groups, as medicine available for all those were living in the tropical environment, as cargo and transportation, as elements in play, sport, and domestic leisure. The action of certain animals or even their mere presence could be taken as an expression of the devil's force or the power of God. Also as symbols and metaphors for Brazilian society itself, alluding to a wild New World to be conquered, and as assets of the Portuguese Crown as well as threats to both to human survival and settlers' property. This variegated testimony indicates a pathway towards an integrated perspective able to afford us a greater understanding of these relationships and its probable current repercussions.

"Vermin": Predator eradication as an expression of white supremacy in colonial Namibia, 1921–1952

John Heydinger, University of Minnesota / Macquarie University

This paper examines the multispecies effects of racial supremacy with particular focus on the experiences of Namibia's Kaokoveld Herero communities. During the early colonial era, Kaokoveld Hereros were consigned to a 'native reserve' within the Territory's northern hinterlands. Because of the important role of livestock, particularly cattle, in Herero life, colonial policies restricting movement and livestock ownership threatened Herero livelihoods and social structures. An important threat to Herero livestock ownership were depredations from predators. By contrasting

colonial policies enabling white settlers to persecute carnivores while inhibiting Hereros from the same, this paper shows that predator distributions were transformed by policies founded primarily upon racial supremacy. By historicizing predator-human interactions, particularly focusing on African wild dogs (Lycaon pictus) and African lions (Panthera leo), this research uncovers political and technological drivers of transformed predator geographies. The near-total eradication of wild dogs, when contrasted with the persistence of lions, is revealed to be an outcome of interwoven species' ecology and geography, and colonial government policies which anticipate ongoing asymmetries within Namibia. How these two species interacted with and were targeted by people across different political and geographic designations deepens our understanding of the relationship between politics and the more-than-human world. Archival and published documents, and ethnographic research are used to center Herero-experiences as part of an ongoing project tying lion conservation to environmental justice.

Session 8E
Environmental colonialism

Chair: Wilko Graf von Hardenberg, Max Planck Institute for the History of Science

A roving eye: Tudor England's view of Ireland
Tara Rider, Stony Brook University

Ireland presents a particular case where landscape and cultural identity became both deeply entwined as a singular entity in the minds of sixteenth century Englishmen and complicated by the peoples of Ireland. The many different physical manifestations of the Irish landscape within the boundaries of this small island became interwoven with its many peoples, complicating efforts to see the Irish as a single people and bolstering commonplace assumptions about the ways landscape shaped character. In the case of Ireland, colonial tropes about savagery and civility as well as femininity and masculinity became complicated.
English colonial discourse suggested that Ireland was a tabula rasa where its outer layer – the landscape – was unchanging; while people lived and died, the land endured. The need to extend English power through physical space made Ireland's land irresistible. While this island was easily invaded, it was much harder to conquer. The porous nature of the land – both physically and metaphorically – forced the English colonizers to attempt to pierce the rocks, crevices, and bogs as they sought to subdue the land and conquer the Irish people.
While this island was seen as beautiful by many sixteenth century Englishmen, Ireland was also seen as an uncultivated – and thus virginial – land, needing to be tamed and cleansed. The land's very verdancy could be construed as "greensickness" or the virgin's disease. According to Johannes Lange, who would publish Medicinalium epistolarum miscellanea (1554), the best cure for greensickness was that of copulation. Seen as a diseased land, the wildness of Ireland's land and people could thus be tamed by becoming entwined with masculine England, allowing for the creation of a colony. The intersection of geography and gender in Ireland demonstrates the way in which both land and people, subjected to colonization, had colonial practices inscribed both physically and psychologically on them.

From equine frontier to sylvan polity: The environmental legacy of the Mongol Empire in Early Modern Korea, 1270–1700
John Lee, University of Manchester

How did the Mongol Empire change the environmental history of Eurasia? The largest land empire in world history has received surprisingly scant attention from environmental historians. My paper focuses on the environmental legacy of the Mongol Empire in its easternmost Eurasian conquest, the Korean peninsula. The era of Mongol Yuan domination of Korea, from 1271 to 1368, lasted less than a century. The relatively short span, however, would witness the integration of the Korean peninsula into the Mongol imperial ecumene, with immense implications for Korea's Chosŏn dynasty (1392-1910) long after the Mongols departed.

I argue that the Yuan pattern of resource utilization in Korea, namely their extensive ranching and forestry practices, left significant institutional and environmental legacies that persisted for centuries. Mongolian horses that the Yuan imported into the peninsula mixed with native Korean strains to produce the Cheju horse, mainstay of Chosŏn transportation and cavalry. Yuan exploitation of Korean coastal forests forced early Chosŏn officials to reckon with the limited supply of domestic timber. The same southwestern pine stands sourced by the Mongols for naval fleets would be subsequently protected by early Chosŏn bureaucrats, laying the seeds of the longest continuous state forestry system in world history.
By extracting new flows of sylvan resources and instituting new mechanisms for corralling animal power, the Mongol Empire established the basis from which the Chosŏn dynasty would launch centralized control of Korea, particularly in the southwestern borderlands of the Korean peninsula. I thus present here a pre-industrial case of long-term institutional and environmental change initiated by a steppe empire and continued within the territorial bounds of a centralized, early modern polity. Moreover, I offer a new avenue of research into the environmental history of the Mongol Empire through the longue durée examination of post-Mongol successor states.

Environmental colonialism in the interwar period: The reclamation and social engineering project in a southern Macedonian lake, 1913–1940

George L. Vlachos, European University Institute

This paper will present the environmental transformation of Giannitsa Lake located in the Greek "frontier" province of southern Macedonia, vis-à-vis the social impact that it had on the populations that resided in the surrounding areas.
While still under Ottoman control, the lake's turbulent history began as early as the first decade of the twentieth century when it turned into a theater of undercover warfare between competing nationalists, struggling for territorial control. This explained the distrust that the locals exhibited toward the newly-sent Greek state experts and nationalist agents when the lake was ceded to the Greek state in 1913. As the first attempts to render the local peasantry sympathetic to the nation – both in economic and cultural terms – failed, it became clear that drastic measures would be in order.
On the occasion of the Minor Asia Catastrophe of 1922 and the ensued population exchange between Greece and Turkey, the Greek state decided that the lake should be drained in order for tens of thousands of Orthodox refugees to resettle in the area and cultivate the land, in an attempt to commodify agricultural production. Thus started a monumental engineering project, not only in terms of the environmental imprint that it left behind but also in regards to the acute changes it brought to the ethnic composition of the nearby settlements.
In its core lied the belief -at the time held by many agronomists who represented the interests of the Greek state in Macedonia- that the deeply rooted Ottoman and Slavic systems of production in the villages around the lake reproduced allegiances to certain national narratives, thus making the subduing of such structures necessary.

Session 8F
Landscapes of war

Chair: Santiago Gorostiza, ICTA – Universitat Autònoma de Barcelona

Unlocking the "closed border zone": Presences and absences of the military past of the coastal landscape of the southeastern Baltic Sea
Kristīne Krumberga, University of Latvia

Coasts as areas between land and sea also represent the territorial contours of state where political and military control is enacted in their own particular way. During the 20th century in the context of the Cold War for almost 50 years, the Baltic Sea coast in Latvia was turned into militarized border zone, metaphorically named as the Iron Curtain, with limited public access and seemingly absent social and economic life. However, more nuanced exploration of the historical development of the coastal landscape in the southwestern part of Latvia gives a new insight to the common public imagery. In this study, I focus on how the material and physical qualities of dunes evoke broader social, economic, military and environmental significances and how they interact over time creating hybrid and interconnected geographies of border as dynamic and living space. The study uncovers shifting relationships between different logics, views, events and attributed significances to dunes that range from seeing dunes as aggregations of natural resources to be extracted for the use of industrial production or elevated areas convenient for military surveillance to appreciation of dunes as ecological rarity and platforms for aesthetic enjoyment. The various historical and current approaches to coastal dunes exemplify how dunes are mobilized to serve as physical and imaginary guardians of the territorial existence of state and hence, state power.

Crossing ecosystem boundaries due to conflicts over political boundaries: Introduction of *Telekia speciosa* to the Julian Alps during World War I
Žiga Zwitter, University of Ljubljana

Our paper addresses changing ecological and political boundaries by discussing long-term environmental legacies of a war, emphasizing impacts of resource use on environment and biocultural diversity. During WWI numbers of involved horses exceeded any previous war. From 1915 until 1917 fights between Austria-Hungary and Italy included the Isonzo Front. A section of this front was supplied through the Alpine basin Bohinj. At the boundary between the bottom of the basin and Alpine slopes, huge accumulation of military horses importantly impacted on grassland environments. Our analysis of data kept at the Kriegsarchiv in Vienna revealed that malnutrition of horses represented an important challenge in Bohinj and at the Isonzo front in general in 1916 and 1917. According to official statistics 30 415 horses of the Austrian Isonzo Army died between February and September 1917 only of malnutrition or they were slaughtered out of necessity. According to the war standards feed for horses performing heavy physical activities included hay and our study of records kept in the archives of the district administrative authority proved that regional but also ex-regional hay was imported to Bohinj. Sod devastation through military horses (overgrazing, trampling) was also recorded. Together with imported hay and/or zoochory

(unprecedented numbers of ex-regional horses) it enabled the establishment of the species Heartleaf Oxeye (Telekia speciosa) in meadows at the boundary linking the bottom of the basin with the slopes leading to the front line. Our analysis of a late medieval rent-roll has shown that, by that time, some of these meadows had been four centuries old. Heartleaf Oxeye got naturalized there. Later, boundaries of meadows have shifted – many of them have been abandoned and at present Heartleaf Oxeye is common in abandoned partly shaded wet meadows, in riparian zones and along forest edges.

Fields into factories: The shifting of boundaries by the expansion of Britain's military-industrial capacity during World War II

Gary Willis, University of Bristol

The central research question of my PhD (I will be half-way through it by the time of the conference) relates to the impact on Britain's rural landscape of the expansion of its war-time industry from 1936 onwards, as war with Nazi Germany became increasingly likely. Over 1,000 new industrial sites were built to manufacture war-related equipment, munitions and other materials across Britain, the vast majority of them on what would now be called "greenfield" sites, some in the middle of rural areas, but others on the periphery of urban areas. My research shows that relatively few sites were returned to their pre-war use in the post-war period, with some sites retaining a military-industrial function, whereas others transitioned into civilian manufacturing uses. Consequently landscape militarisation boundaries were extended in certain areas of Britain, and the boundary lines between urban and rural areas were altered. I believe therefore that my presentation would speak to several of the key themes identified as priorities for the conference, namely the industrial impact on the environment, the environmental legacy of war, and also boundaries in time: new chronologies in environmental history. In the latter case, my PhD argues from an environmental history perspective that a new chronology be accepted for a long Second World War, beginning in 1936 when significant areas of land across Britain started to be used for building new military-industrial sites and airfields – and ending in 1946, with decisions about the post-war use of sites still being made.

Session 8G
Socio-ecological perspectives on forest transitions

Organizer: Simone Gingrich, University of Natural Resources and Life Sciences
Chair: Péter Szabó, Czech Academy of Sciences

Abstract session:
Forests are an important issue in environmental history, because their use and management has changed over time depending on societal resource use, technologies, norms and legal frameworks, and resulted in diverse ecological forest conditions. An important concept in the environmental history of forests is the forest transition, describing the shift from net deforestation to net reforestation in a given country. In this session, we adopt a socio-ecological, biophysical perspective on forest change, viewing forest transitions as part of "socio-ecological transitions", i.e. broad shifts of land and energy use during industrialization. Only in this context can reforestation be explained during times of increasing population numbers, affluence and resource use. We aim at a biophysical understanding of forest transitions, both in terms of forest change and by identifying the particular changes in energy and land use that enabled reforestation processes.
We assemble contributions studying forest transitions from a biophysical, socio-ecological perspective, and shedding light on the diverse socio-ecological processes enabling forest transitions in different countries. Based on a variety of biophysical indicators for different case studies, including e.g. woodfuel consumption, agricultural nutrient fluxes, or agroecological energy efficiency, we discuss differences among and within countries regarding spatial and temporal trajectories of forest transitions, their ecological impacts and socio-economic driving forces. The ultimate aim is to also identify generalizable trajectories on the interaction of industrialization processes and land-use change.

A socioecological reading of the forest transition in the United States
Andreas Magerl, University of Natural Resources and Life Sciences
Simone Gingrich, University of Natural Resources and Life Sciences

Reforestation has been widely acknowledged as one of the key measures of global climate change mitigation, given the fact that growing forests sequester carbon that would otherwise accumulate in the atmosphere. In this context, environmental history can offer relevant insights by studying historical forest transitions, i.e. shifts from net deforestation to reforestation, in the context of other industrialization processes.
This contribution offers a socio-ecological analysis of the forest transition in the United States. During the 19th and early 20th centuries, the material and energetic basis of the U.S. changed fundamentally, with important implications for land use. Large-scale deforestation took place until the early 1920ies in the context of frontier settlement expansion and large-scale wood consumption. Since then, processes like increasing use of fossil fuels and agricultural intensification led to a decrease of pressures on forests. Relative stabilisation of forest area and timber stand volume followed throughout the rest of the century. Since the end of the 1990ies, regrowth of forest area and timber stands can be observed. We present a consistent assessment of biomass carbon stocks in

the United States for a time series spanning over 135 years (1880-2015), based on various national and international statistics and inventories on forestry and agriculture. In order to understand the biophysical driving forces of these changes, we link carbon stocks with data on socioeconomic carbon emissions, including e.g. fuelwood extraction, fossil fuel consumption, and foreign trade. The aim is to assess the net climate change mitigation effect of the forest transition in the United States.

Forest transition and carbon cycles in France (1800–2018): A socio-ecological metabolism perspective

Julia Le Noë, Sorbonne University

France experienced a forest transition at the turn of the 19th century, i.e., a shift from a shrinking to an expanding forests. Because forest regrowth induces carbon (C) storage in biomass and soil, such a transition is generally seen as a positive feedback of economic development on the atmospheric C balance. However, to truly assess the impact of a forest transition on the global climate system, we require a broader perspective to investigate the potential hidden greenhouse gas emissions that supported the forest transition. In this context, our aim is to develop an accounting method to calculate the C net emission of the forest transition in France from the early 19th century to the present while understanding the historical drivers of this transition.
The expansion of forest area could be explained by permissive and pro-active factors. On the one side, the progressive replacement of woodfuel by coal all along the 19th century reduced the pressure on forest land while the diminution of agricultural land surfaces allowed by intensification after WWII freed up more space for forest expansion. Furthermore, the ever-increasing import of wood diminished the pressure on domestic timber extraction. These evolving configurations generated new greenhouse gas emissions which have to be accounted as part of the forest transition. On the other side, interventionist state policy introduced a new forest management with a shift from a multi-use forest by rural population to an industrial management of forest corresponding to an alliance of the state and urban industrial capitalists. Over the last four decades, a rapid increase in the rate of timber extraction from French forests is occurring whose effects on the C balance are under debate.

New evidence on Spain's forest transition (1860–2010). Land-use and wood stocks change at a regional scale

Iñaki Iriarte-Goñi, Universidad de Zaragoza
Juan Infante-Amate, Universidad Pablo de Olavide de Sevilla

Works analyzing the evolution of forests in Spain in the long run and at a national scale, have pointed out the existence of a process of deforestation that began in the first decades of the nineteenth century and lasted for just over one hundred years until approximately the 1950s. Subsequently, the process begins to reverse and since the seventies there was a clear recovery of the forest area. In general terms, this double process can described as forest transition. However, Spain is a very diverse country and it seems unlikely that the transition process shown by the national figures will adequately reflect the rhythms and specific characteristics of the different regions. On the other hand, a part of the international literature that analyzes forest transitions

criticizes that forest recovery is measured only in terms of area and raises the need to look for complementary indicators. In this work, we present a novel database on land-use (measured in area) and wood stock (measured in C) of different forest types as well as in main woody crops at a regional scale for the period 1860-2010. Firstly, we analyze the evolution of the different types of forest areas in the long term in different Spanish bioclimatic regions, looking for different rhythms and different intensities that forest transition process could have presented in each one of them. Secondly, we made a first approach to the evolution of wood stock at a regional level, also including woody crops, looking for a complementary indicator and exploring the information that we can obtain with it. Thirdly, we analyze the main drivers of land-use and wood stock changes with a particular attention to energy transition and how the increasing use of modern energies has impacted in forest changes in the last 150 years.

What drove the forest transition in Austria? A counterfactual analysis

Simone Gingrich, University of Natural Resources and Life Sciences (BOKU)
Christian Lauk, University of Natural Resources and Life Sciences (BOKU)

Forest transitions are shifts from net deforestation to reforestation which often occur in the course of industrialization. The territory of Austria in its current boundaries experienced a forest transition in the 19th century. In the mid-19th century, Austrian forests stagnated, and forests have continuously recovered since the late 19th century, both in terms of area and in terms of biomass stocks. The period of the forest transition was characterized by population growth, growing affluence and growing resource consumption. The forest transition, we argue, was therefore possible only because of shifts in production and consumption, including woodfuel substitution by coal, agricultural intensification, and an increase in trade.

In this presentation, we make use of extensive datasets on land and energy use in Austria during the 19th and 20th centuries to analyze the effect of different biophysical driving forces of the Austrian forest transition. In a counterfactual approach, we study the impacts on forest change caused by the hypothetical absence of particular changes in resource use. We develop different simple and transparent counterfactual scenarios (e.g., no shift to fossil fuels, no agricultural intensification, no trade) to assess the relative importance of the different processes for explaining the forest transition. We link the quantification of resource use to GHG emissions in the actual data and counterfactual scenarios to elucidate the net climate-change mitigation effect of the Austrian forest transition.

Session 8H
Crossing boundaries: New frontiers of resource extraction (20th–21st century)

Chair & Organizer: Ole Sparenberg, Karlsruhe Institute of Technology

Session abstract:
The most recent commodity-price boom and generally increasing demand for energy and mineral resources in the 21st ct. have triggered a rush to exploit new, still untapped deposits in the last regions of the earth that have so far only been marginally touched by the extractive industries. Such areas which have recently aroused interest include the deep seabed, the Arctic, and even celestial bodies like the asteroids. Most of these projects have a pre-history, and the 1970s, in particular, represented a decade in which governments and corporations tried in various ways to cross boundaries to gain access to new resources. In the case of the deep-seabed or the Antarctic, mining plans have not become a reality so far despite intensive research and development in the 1970s. Mining in Arctic regions, however, expanded considerably throughout the 20th ct. and especially in the post-war era.
Situated itself on the border between environmental history and the history of technology, this session will analyse the motives and expectations – including sometimes utopian views – of actors and stakeholders which made them try to push the boundaries of resource extraction. In addition, the relationship between resource extraction and the environment is examined from two sides: On the one hand there is the – real or to-be-expected – impact on the environment which does not stop at political borders; on the other hand, extreme environments put up resistance to activities like mining and related infrastructure construction thereby shaping these activities and demanding very specific technological solutions.
The papers refer to boundaries in several ways: All three papers tell stories about crossing boundaries into environments that were perceived as unfamiliar or even hostile by humans. Political borders also play a role either because the mining took place in a region where borders have shifted during the 20th ct. and where the environmental impacts of mining transgress nation states; or where territorial ownership is ill- or undefined.
Finally, all three papers also take into consideration recent and future developments.

Gondwana's promises: German geologists in Antarctica between basic science and resource exploration in the late 1970s

Christian Kehrt, Technical University Braunschweig

This paper will focus on resource oriented polar research in the late 1970s and early 1980s. I will argue that this is a crucial period of transition in polar science, when Antarctica, as the "continent defined by and for science" (Elzinga) was intrinsically linked with economic interests and global environmental concerns. In the 1970s the US research vessel "Glomar Challenger" provided evidence for basic scientific theo-ries such as Alfred Wegener's assumption of an "Urkontinent" called" Pangea", Alexander DuToits idea of "Gondwana" and the later theory of plate tectonics. In this context the geological formation of Antarctica and its basic role in earth history was of interest

also for resource driven research. In 1975 the US estimated 7,5 billion tons of oil and 3.2 billion Nm3 Gas in and around Antarctica. Suddenly the basic scientific motivation to systematically investigate the formation of continents and map the earth's geological structure was also a major assumption that promised huge reserves of mineral resources.
While initially geological research and questions of mineral resource protection were not on the agenda of the IGY, nor part of the Antarctic Treaty System, these issues were intensively discussed in the 1970s. At that time, the "limits of growth" and the so called "oil shock" were motivating new strategies for resource exploration. Countries like Germany (1979) with only small natural reserves and soon later India and China (1983), increased their engagement in polar science for geopolitical reasons. Antarctica was conceived as a transnational resource space that motivated new actors to engage in Antarctic science and to develop resource related political strategies. This shift towards a more resource oriented research agenda will be examined in the case of the so far not considered Federal Institute for Geosciences and Natural Resources (Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover). This institute, financed by the German Department of Commerce, is a major player in non-living resource oriented research in the polar regions. I will ask what political reasons were linked with this rather basic geological research in Antarctia, look closely at the conflicting interests related to environmental protection and resource exploration in Antarctica and ask what kinds of international cooperation and negotiations were necessary to realize these new research interests. In this context the so called GANOVEX Expeditions (German Antarctic North Victorialand Expedition) will be relevant. They started in 1979 and aimed to erase the last geological spots on the geological map of Antarctica and thus proof that Germany can attain consultative status in the Antarctic Treaty System.
This paper is based on archival material form the Bundesarchiv in Koblenz, the Alfred-Wegener-Institute in Bremerhaven, the Archive of the Deutsche Forschungsgemeinschaft and Interviews with polar scientists.

Cities, places and people in industrialized post-Soviet Arctic borderlands: The case of Pechenga district, north-west Russia

Peter Haugseth, UiT The Arctic University of Norway

The way geo-economical visions, environmental issues and now international policies are influencing the Pechenga district (Russia) situated closely to the Norwegian border makes it an interesting study of contemporary arctic and sub- arctic life. The district being far away from its national centre, situated in the arctic tundra of the extreme north, being an archetypical instance of a "closed" post-Soviet Cold War Arctic industrial dystopic context haunted by its geopolitical and military-strategic history. The ideal, predictable communist industrial economical heritage, is fare gone and replaced by unpredictable post- Soviet capitalist marked economy/ mechanisms destined by the Oligarchs. Recently new forms of region building and city twinning, established by Norwegian-Russian agreement have imposed innovative post-Cold War integration tools known from Central European policy-making and that of the EU and created some initial enthusiasm and more open and flexible interaction across East- West borders.
In such mixed and shifting contexts mentioned above the following presentation will base its investigation of how the northern people of Russia themselves in Pechenga district, navigate in their everyday life in the Arctic periphery of Russia. Based on interviews and fieldwork "on and off" in the

district from 2009 and onwards it is suggested that flexiblities are built into narratives produced during interviews in the land/city/borderscape, these narratives do reflect the landscape but do also have unpredictable outcomes (Brambilla, 2015).

Mining technologies and (not) mining in Antarctica
Lize-Marié van der Watt, KTH Royal Institute of Technology

In 1988 a convention was signed to regulate the exploitation of minerals in Antarctica – a continent that has not yet seen any mining operations. Three years later, the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) collapsed, to be replaced by a Protocol on Environmental Protection that banned all activities related to mineral resources other than scientific activities. In this paper, I am particularly interested in how actors perceived of the role mining technologies would play in the extreme and remote environment of Antarctica. Following a brief historical background to how the potential for extracting mineral resources in has featured in twentieth century Antarctica history, I focus on the 1970s and into the early 1990s, when negotiations for a mineral extraction regime in Antarctica was underway. I ask how Parties to the Antarctic Treaty, but also other actors such as environmentalists and engineers envisioned the technological possibilities for mining in Antarctica, and used it in their arguing for or against mining on the continent. Actors with different views vis-à-vis mining in Antarctica drew selectively on Arctic examples, for example, arguing how cold weather mining technologies can have either destructive or remedial effects on polar environments. I also explore at how the fact that there had been no systematic prospecting for minerals in Antarctica, never mind extraction, played into the debates. Finally, I look at how technology features in current reports on mining in Antarctica – reports that often, wrongly, claim that the moratorium on mining will be lifted in 2048.

Metals from the ocean: Deep-sea mining and the abyssal plains, 1965–2019
Ole Sparenberg, Karlsruhe Institute of Technology

Manganese (or polymetallic) nodules are minerals containing significant amounts of nickel, copper, and cobalt and can be found in high quantities on the surface of abyssal plains at water depths of c. 3.500 to 6.500 m especially in the Pacific Ocean. They have been known to scientists since the late 19th ct., but it was not until the 1960s that the nodules were considered as an economically viable source of ores. Numerous research and exploration activities by state agencies and multi-national consortia during the 1970s culminated in successful mining tests in 1978. However, commercial interest waned again afterwards, and by the mid-1980s, deep-sea mining projects had come to a standstill. The project of mining manganese nodules and other minerals in the deep sea only experienced a revival in the 21st ct. Now, more than fifty years after the idea first came up, deep-sea mining on a commercial scale might start in a few years.
At 4 km water depth, the deep-sea floor is a unique and so far often overlooked environment and deep-sea mining would have been or will be the first large-scale anthropogenic intervention to cross the borders into this space. As an environment very different from any continental landscape, the abyssal plains presented unique challenges to exploration and mining and required the development of new technologies. On the other hand, resource extraction will lead to large-scale disturbance in an environment where the ecosystem is particularly slow to recover from any impact. Also, the legal

situation also represents a particular case because the deep-sea floor is an internationalised space outside national borders.

This presentation will look at the stakeholders' motives and expectations when trying to push the borders of resource extraction into the deep ocean as well as their perceptions of this environment. Furthermore, the effects of this extreme environment on technology and the impact of mining on this environment will be analysed.

Session 8I
Landscapes transformed

Chair: Markéta Šantrůčková, Silva Tarouca Research Institute for Landscape and Ornamental Gardening

Heritage of lost landscapes in Czechia
Tomáš Burda, Charles University Prague

The boundaries are significant phenomena not only from the point of view of spatial division but also when dividing particular time periods. The boundary between present and past is rather vague and often visible in the landscape, especially when significantly changed due to a wide range of both societal and nature processes. The remnants of vanished landscapes emerging from past are unique sources of knowledge and make possible to reveal and explain the heritage.
A long-term project backed by Ministry of Culture "Heritage of lost landscapes in the territory of Czechia " started at the Faculty of Science, Charles University, Prague, in the last year. Its aim is to identify, document, reconstruct and present the heritage of landscapes that were lost during the period of dynamic societal changes since the end of the 18th century, with emphasis on: 1) utilization of historical sources and modern technologies for identification, documentation, reconstruction of cultural heritage and values of various types of landscapes; 2) on the example of lost landscapes present diversity of cultural landscape heritage and contribute to the establishment of conditions for its systematic protection, presentation and utilization in education and regional development.
Heritage means a process of active and intentional (re)presentation of the past, the aim of which is to express the identity of those, who (re)present. Heritage is thus being formed out of certain reasons and for certain purpose. This applies to landscape heritage as well. Neither landscape, nor its heritage are unalterable, both have multihistoric character and are subject of (re)construction, (trans)formation, (re)interpretation, (re)presentation, or aestheticization and commodification. Heritage of cultural landscape is a source of knowledge about history of society as well as nature. It is also an important part of the process of formation of regional identities and self-consciousness of local communities.
Landscapes represent certain values and people, who live in them, should have active interest in condition and management of their heritage. Thus the project will put stress on publicity of the theme, participative approach and presentation of the results to public. The main result of the project will consist of the information system on lost landscapes including freely accessible digital atlas and internet map application. This contribution explains the initial results from 8 model areas from forty ones planned for investigation.

The role of irrigation on the regional divergences of Spanish agricultural production: Analysis during the second globalization
Ana Serrano, Universidad de Zaragoza
Ignacio Cazcarro, Universidad de Zaragoza
Miguel Martín-Retortillo, Universidad de Alcalá

From the second half of the twentieth century, the Spanish agricultural sector experienced a sustained growth in production, which involved the convergence to Western European levels after years of delay in terms of agricultural production and productivity. This growth was not homogenous among regions, instead, important divergences are observed, mostly associated to the main crops cultivated in each area. More concretely, production moved to the warm and sunny provinces in the south and east of the country that tended to produce high valued crops oriented to foreign markets as fruits, vegetables and olive oil. Scientific literature has pointed to several factors influencing this process. Some of them are technological innovations, the internationalization of the Spanish agriculture, the internal development of Spain and its subsequent dietary changes, and the development of irrigation.

In this framework, the main objective of this paper is to analyse the influence of irrigation in the Spanish agricultural production, deepening into the generation of regional divergences during the second half of the twentieth century. Irrigation was essential, since it allowed growing Mediterranean water intensive crops in the most arid areas of the country. Thus, we will try to establish the quantitative long term relationship between the regional irrigated area and the regional agricultural production. We will use panel data econometrics to evaluate the specific impact of irrigation, also controlling for other geographical, technological, institutional, economic and social transformations occurred during the period of analysis. The level of disaggregation, in terms of production and regions, will allow to evaluate the robustness of our findings, as well as to define specific regional and crop patterns. This study will also allow to shed light on the environmental impacts of the intense and regionally-divergent development of water infrastructures in Spain.

Landscape planning in Israel: Between the natural and the cultural scenery

Tal Alon-Mozes, Technion, Israel Institute of Technology

From the early Zionist settlement of Palestine (late 19th century), landscape planning in the region consisted of not only territorial planning but also of symbolic image and scenery planning. This paper examines how Israel's planning authorities relate to the image of the landscape as a planning subject. Based on the interpretation of plans and designed landscapes, analysis of parliament records and media coverage, the paper follows the change in the visual landscape planning along the twentieth century.

In general, one can divide visual landscape planning in Israel into three partly overlapping periods. During the pre-state period, the image of the country was intended to represent both the connection to the nation's biblical past and the modern era. These contradictory images were fostered by the adoption of the traditional Palestinian landscapes on the one hand, and the erasure of these landscapes in favour of images of advancement and modernity on the other hand. The bare landscape was recruited to glorify settling narratives as with the Kibbutz planning.

During the early state period (mid-twentieth century), the natural landscape won prestige, and early parks were designed to appear natural. The appreciation of the local landscape crossed parliamentary barriers, as manifested by the 1963 National Parks and Nature Reserves law and the approval of the 1981 'National Outline for National Parks and Nature Reserves', which also included Landscape Reserves. This trend reflected the emergence of the global environmental era and the regret of the local planning community regarding the hectic development of the previous decades.

Since the early 2000s, the Israeli landscape has moved from the domain of nature to that of culture. The contemporary National Outline expresses this transition, reflecting global discourse on cultural landscapes and local nationalistic trends.

Coffee planters and the origins of conservation in colonial Ceylon

Arjun Guneratne, Macalester College

Our knowledge of the natural history of Sri Lanka owes much to the work of British coffee (and later tea) planters. Beginning in the 1840s, the establishment of coffee plantations led to the decimation of the forests of the mountainous interior of the island, transforming both the island's ecosystem and its economy. These planters as a class, in addition to being agents of environmental change, also played an important role both in developing our knowledge of the island's fauna and flora and in early conservation movements. Many of them were major naturalists in their own right; others were members of networks that funneled specimens and observational data to students of natural history. This paper examines their role in wildlife preservation and the establishment of protected areas in Sri Lanka. Hunting was their major recreational activity and collecting natural history specimens followed naturally from it for some. They lobbied (successfully) for the first game law in 1909 not through remorse for their own role in the destruction of the island's wildlife (the "penitent butchers" argument for the origins of wildlife conservation) but to keep the native peasantry from competing for the same species that British hunters sought and which had been drastically reduced by the depredations of both groups. Their ideas about indigenous hunting practices constructed village hunters as the opposite of British sportsmen and informed the activities of the organization they had established to protect their interests, the Ceylon Game and Fauna Protection Society. This paper discusses hunting as a marker of British identity and status in colonial Sri Lanka and argues that their particular way of engaging with nature, through hunting and the pursuit of natural history, motivated their desire to preserve what was left of the island's natural environment.

Session 8J
Creating gender boundaries: Encounters, identity, and environment

Organizer: Katie Holmes, La Trobe University
Chair: Alexandra Vlachos, University of Western Australia / Australian National University

Session abstract
Ideas about gender are developed in and through interactions with different environments. They frequently draw on oppositional understandings of masculinity and femininity, many of which are in turn projected onto the more-than-human world. These papers explore the different ways ideas about gender have been created in a range of environmental contexts: a Greenpeace voyage, sub-tropical central Queensland and the arid environment of the Victorian Mallee region. All papers consider the ways in which gendered meanings shaped the narratives generated about these environments and were in turn harnessed for additional purposes: the narratives of Greenpeace expeditions; government propaganda; the racial purity of the white Australian nation. In these contexts, ideas about gender simultaneously reinforced the boundaries between masculinity and femininity, and the human and the non-human world, at the same time as they blurred their distinctions.
This panel brings together historians from Canada and Australia. We represent a range of career stages from Professor and Associate Professor to emerging scholar. Our chair, Dr Alexandra Vlachos, is an emerging scholar originally from Bern but currently a Visiting Research Fellow at the University of Western Australia and will next year be at the Australian National University.

To save a whale: The gendering of Greenpeace 1975–1977
Joanna Dean, Carleton University

In the summer of 1975, Greenpeace launched a halibut schooner, the Phyllis Cormack, to confront the Russian whaling fleet off the coast of California. Aboard the schooner was a crew of young men, most of them Canadians, with a few Americans and Europeans, and two women, Carlie Truman, a scuba diver, and Taeko Miwa, the Japanese translator. This paper explores how gender shaped accounts of the voyage. It draws upon Bob Hunter's published and unpublished writing, and sets his Greenpeace reporting in the context of his early Maileresque novel, Erebus (1968), which was nominated for Canada's Governor General's Literary Award, and subsequent unpublished filmscripts. Drawing upon ecofeminist analysis and animal studies, it considers how the macho culture of the early Greenpeace shaped the encounters with, as well as perceptions and depictions of, the cetaceans that Greenpeace had set out to save.

Sustaining gendered boundaries: Settlers in Queensland's Callide Valley in the 1930s
Margaret Cook, University of Queensland

This paper offers a reading against the masculine narrative of settler societies to explore gender in a specific spatial and temporal case study – the Callide Valley in central Queensland, Australia, in the

1930s. An area of one million acres, the land was carved up for settlement in the 1920s, with assurances of 'unlimited possibilities' and 'immense opportunity' for those willing to work, destined for development as dairy and cotton farms in a sub-tropical environment, characterised by flood and drought. Government propaganda focused on the ideal male settler and assigned gendered spheres of labour focussed on male agricultural productivity, with women relegated to a supportive domestic role. These contrived boundaries proved a false construct as the reality disproved notions of gender norms with family survival and the agricultural industry dependent on women's work beyond the home. Women worked as cotton pickers, dairy farmers and agricultural labourers, sometimes without the assistance of the male 'breadwinner'. But rather than challenge the patriarchal myths that underpinned the closer settlement legal and administrative system, female labour helped sustain them.

Mallee masculinity: Race, place and gender in the Mallee lands of south east Australia
Katie Holmes, La Trobe University, Melbourne

The Victorian Mallee spans an area in the north west of the state of Victoria, comprising 4.5 million acres. This semi-arid region was 'opened-up' for white settlement in the late 1890s and early 1900s. 'Settlement' involved extensive clearing of the eucalyptus dumosa, or mallee, which covered the area. Fields of wheat were subsequently planted across the flat, nutrient poor soil. The devastating 'Federation drought' of the late 1890s saw many newly-arrived settlers leave, and a narrative develop about the kind of farming the Mallee entailed. Cultivation of this region began to be characterised as 'one of the most strenuous and resolute battles with Nature', requiring 'the exercise of wise judgements, great fore-sight, boundless resource, and infinite adaptability.' The 'Mallee-made man' was to be as tough and resilient as the environment which produced him. The boundaries between the two were simultaneously blurred and reinforced.
In the context of the settler state, the mythology of the Mallee-made man was forged through race, place and gender. It has been consistently evoked to suggest that the specific environment of the Mallee worked to produce a special type of 'home grown' masculinity. At the same time, the State also sought to provide a particular type of man to work the Mallee lands. White, and preferably English, the 'man on the land' was seen as embodying the potential for national economic prosperity through primary production, and social stability through heterosexual coupling and family building. He would also ensure racial integrity by maintaining the whiteness of white Australia. Male corporeality has thus been associated with the working and peopling of the Mallee lands in multivalent ways.

On horses and women: Fights for gender equality and animal rights in nineteenth-century Riga
Ulrike Plath, Tallinn University / Estonian Academy of Sciences

Riga, the capital of historical Livonia and metropole of the Baltic provinces, was in many respects the most modern city within the whole Russian Empire during the second part of the nineteenth century. It was here, were the first animal rights in Eastern Europe were expressed and the first animal shelter was established. Interestingly enough, women had the most practial and radical ideas about animal protection and animal rights in Riga – fighting not only for the animals, but also for

their own position within the moderizing society. In the paper I will discuss a) the problems of and with animals in Riga, 2) how animal rights were argumented and 3) and how they were used in the emancipation movement of the late 19th century.

Session 8K

Roundtable. Capitalism and communism revisited: Environmentalism and environmental policy during the Cold War and beyond

Organizer: John McNeill, Georgetown University
Chair: Astrid Mignon Kirchhof, Humboldt University of Berlin

Bart Elmore, Ohio State University
Marco Armiero, KTH Royal Institute of Technology
Jan-Henrik Meyer, Max Planck Institute for European Legal History
Kateryna Karpenko, Kharkiv National Medical University

The rise of environmentalism as a social movement, and the formation of environmental policy as a state initiative coincided with the Cold War (c. 1946–1991). However, this is not coincidental. The capitalist and Communist camps shared many priorities. And variation within those two camps was often as great as variation between them. Our aim is to contribute to current debates about the implications for nature of the two foremost political and economic orders of the twentieth century. Among the motivations for this comparison was the observation that in recent years citizens worldwide started thinking of a third way beyond the twentieth century's two dominant political-ideological systems. Although the Socialist world lost its relevance for many years after the Iron Curtain fell, many critiques lately offer eco socialist claims to improve the quality of life for everyone. They ask for life in harmony with nature and environmental justice, and connect these ideas with eco socialist stances against global capitalism. They demand a Socialist (not Communist) theory of nature-society relations, because on that score the economic system of Communist states hardly differed from that of capitalist states—both systems promoted economic accumulation, Taylorist work organization, and an exploitative understanding of nature. We would like to discuss – amongst others - three hypotheses, which we hope will trigger further research and debates in terms of environmentalism beyond the two dominating systems of the twentieth century. First, society needs to empower itself. While capitalism expanded the power of capital, Communism empowered the state. In the power triangle of capital-state- society, it is society that needs empowerment. Freedom of speech seems to be a necessary condition for the protection of environment. Even though environmental movements are not always successful, they seem to be a precondition to effective critique of environmental exploitation and the necessary changes in politics that any reduction in environmental exploitation requires. Second, the value and practicality of common goods needs rethinking. A traditional liberal critique claims that economies built on common property will suffer because public goods will not be maintained. Research on common property has shown that collective properties have been maintained over long periods of time and can be the base of innovative technological processes. Traditional commons such as pastures and forests, fish stocks, irrigation systems, roads, buildings, and so forth over centuries were collectively used and sustainably maintained by communities. Where communities have agreed upon rules for regulating common property use and access, they have found it feasible to maintain common property and prevent environmental overexploitation. Third, both planned and liberal economies have shown strong tendencies toward the exploitation of nature and the prioritization of economic growth over ecological stability. Both systems have major demonstrated defects when it comes to the

exploitation of both nature and human beings. The world needs answers— and therefore questions and research—concerning strategies for both greater global equality and nature protection. Is it possible to create an economy that respects society, democracy, and nature?

17:30 -19:00 Poster Prize reception and Local products fair

17:30-19:30 Excursion. Edgelands: The Coasts of Tallinn. Gathering at Linnahall.

19:00-21:00 Movie night: "Nightingales in Berlin" with David Rothenberg, producer, and Ville Tanttu, director. Q&A with the filmmakers. Kino SuperNova, Nova building, room N-406, 4th floor.

Chair: Kadri Tüür, Tallinn University / KAJAK
About the film: https://www.nightingalesinberlin.com/film

19:00-20:00 ESEH Board meeting, room M-649

SATURDAY, 24 AUGUST

09:00-16:00 Book display for the Silent Book auction in A-046. Go and make your silent bids!

09:00-10:30 Parallel Session 9

Session 9A
Religion and environment

Chair: Kati Lindström, KTH Royal Institute of Technology

Sacred oak groves in the national epic "Kalevipoeg" and the Estonian civil religion
Ott Heinapuu, Tallinn University

Although sacred oak groves are rare among the numerous sacred natural sites of Estonia, references to oak groves are dominant as the typical image of ancient Estonian sanctuaries in the literate Estonian culture from the 19th century onward. The symbol of the sacred oak grove is literary in origin, deriving from Romantic-era European, especially German, examples.
One source of the spread of the idea of ancient oak groves has been the Estonian national epic Kalevipoeg by Friedrich Reinhold Kreutzwald, first published as a full edition in 1862. A close analysis of the text of the epic shows that most references to sacred oak groves and oaks in the epic are rhetorical in nature, featuring as poetic devices, figures of speech or abstract symbols signifying the idea of an ancient golden era. Only in two instances can they be considered as pointers to concrete landscapes that can be located with any precision. Drawing on the concept of civil religion as a set of values, symbols and rituals as the foundation of a nation's semiotic cohesion, the article will also outline the role of the sacred oak grove in the symbols and rituals of contemporary Estonian civil religion arguing that the oak grove has become a sacred site of Estonian civil religion.

Return of nature deities in Bolivian politics
Henriette Eva Stierlin, University of Zürich

The return of the pre-Columbian symbols in the Bolivian politics and ideology is not only an expression of the indigenous rights and the decolonisation of the political ideology, but it is also belongs to a change in the relationship between the Andean communities and their environment, in the use of the natural resources, Andean cosmogony, food production and water rights. Decolonisation as a state concept in Bolivia allowed a change in the Constitution about rights to beliefs as the de-secularisation of the State and the resurge of Andean nature deities, indigenous community production and food sovereignty in the frame of the "Suma camana", delimitation and recognition of indigenous territories with their original indigenous use of land and natural resources, etc.
The article deals with the complex structure of indigenous politics in the last 10 years and the unique example of Bolivia about the way how Bolivian society and indigenous Andean communities relate to nature, through analysis of written and audio-visual news.

Religion, environment, and society: Religious pluralism in Istanbul during the Great Plague of 1661

M. Fatih Calisir, Kirklareli University

"It being observed amongst the Turks, when above a thousand in a day are carried forth dead by that gate [of Adrinople], that then prayers are to be made to almighty God to withdraw that heavy judgment. At which time the Greek and Armenian Patriarchs are likewise desired to offer up their Devotions, and intercede with God for mitigation of the Pestilence; and the same Day in a field called Okmaidan, do all assemble, though divided apart, to pray against the common Calamity, it not seeming vain to them, that everyone should call upon his God."

These are the lines that Sir Paul Rycaut, an English consul in the Ottoman Empire, wrote in his The History of the Turkish Empire, from the Year 1623, to the Year 1677 (London, 1687) when he describes the events during the Great Plague of Istanbul in 1661. It was not the first and the last time that the Muslim and non-Muslim population of the Ottoman Empire, who faced a devastating disaster, gathered and prayed together. Based on this and other cases derived from western and Ottoman narrative sources, this paper aims to demonstrate how environmental factors, particularly natural disasters, helped and shaped (or re-shaped) practices of religious pluralism in the Ottoman capital.

Session 9B

"When the rivers run dry": A cross-continental journey of historical droughts, impacts and human response I

Chair & Organizer: Andrea Kiss, Vienna University of Technology

Session abstract:
Drought is one of the most important large-scale natural hazards threatening traditional society in the medieval and early modern period. Long-term reconstruction of historical droughts – primarily based on documentary evidence, combined with instrumental and palaeoclimate data – is the subject of four papers covering Northern, Western and East-Central Europe, and reaching as far as South Africa where, in contrast to Europe, documentary evidence is available only from the nineteenth century onwards.
Recent extreme droughts in South Africa demonstrate the importance of research into past drought frequency and severity. Using documentary data and instrumental rainfall observations for the late nineteenth and twentieth centuries, this paper creates a long-term rainfall index for central South Africa and hence provides the information necessary for a contextualization of the recent drought in that area. The results are compared to other rainfall series for southern Africa.
Combining documentary, dendrochronological and instrumental evidence, the next paper presents a drought series for Poland stretching back to the Middle Ages and focuses on drought frequency and intensity. The twentieth-century droughts are further analysed and compared with the historical drought events, using SPI indices.
Summer droughts in Sweden from 1400 to 1800 are discussed in the next paper: the droughts, reconstructed primarily based on contemporary historical documents, caused harvest failures and socio-economic problems. Particularly severe drought impacts marked the mid-sixteenth and mid-seventeenth centuries, when the influence of the North Atlantic Oscillation on summer rainfall is also investigated.
Applying the newly-developed grape harvest date series from Beaune in France, the last paper of the session deals with the detection and analysis of the most extreme drought events over a 664-year period. In the presentation, a special emphasis is laid on the greatest drought events and related early vintage dates including the two most outstanding droughts of the study period: 1473 and 1540.

Contemporary drought in perspective: Combining documentary evidence and instrumental data to assess the severity of the 2015–16 drought in northern South Africa

David Nash, University of Brighton
Clare Kelso, University of Johannesburg

The rainy season of 2015-16 was a particularly dry one over large areas of the summer rainfall zone of southern Africa, with drought conditions related to El Niño prevailing from October 2015 into early 2016. Rainfall levels were, in places, less than 65% of the 1982–2011 average, with many areas experiencing their driest rainy season of the last 35 years. The densely-populated Gauteng province and adjacent areas of Mpumalanga were severely drought affected, with a number of municipalities requesting disaster management assistance from national government. This drought, and the more

recent one impacting the Cape Town area, have raised questions of how unusual such dry periods are in the historical record. In this study, we combine instrumental rainfall data for the area encompassing Gauteng and southern Mpumalanga with documentary evidence from the late-19th century to address this question. With the exception of Joubert Park meteorological station in central Johannesburg, which has precipitation data back to 1889, rainfall series for the study area are restricted to the 20th and 21st centuries. We use statistical techniques to quality control and analyse the available data, and demonstrate that 2015-16 was one of the top 15 driest rainy seasons of the instrumental period, but certainly not the driest. Historical newspapers are used to provide insights into periods of drought prior to the instrumental period. We analyse titles including The Transvaal Argus and Commercial Gazette, Transvaal Advertiser, The Standard and Transvaal Mining Chronicle, Transvaal Observer, Diggers' News and Witwatersrand Advertiser, Eastern Star and The Star using standard historical climatology approaches, to reconstruct regional rainfall variability back to the 1876-77 rainy season. Only one severe drought season (1881–82) stands out during this period. We conclude by comparing our results against other rainfall series for the southern African subcontinent, to place our drought series in regional context.

Droughts in the area of Poland in recent centuries

Rajmund Przybylak, Nicolaus Copernicus University
Piotr Oliński, Nicolaus Copernicus University
Marcin Koprowski, Nicolaus Copernicus University
Janusz Filipiak, Nicolaus Copernicus University
Aleksandra Pospieszyńska, Nicolaus Copernicus University
Waldemar Chorążyczewski, Nicolaus Copernicus University
Radosław Puchałka, Nicolaus Copernicus University
Henryk P. Dąbrowski, Nicolaus Copernicus University

The paper presents the main features of droughts in Poland in recent centuries, including their frequency of occurrence and intensity. For this purpose both proxy data (documentary and dendrochronological) and instrumental measurements of precipitation were used. The reconstruction of droughts based on proxy data was combined with that obtained based on instrumental data. Examples of megadroughts were also chosen and described using all available sources. More than one hundred droughts were found in documentary sources from the 12th to the end of the 18th century, including 13 megadroughts. A greater-than-average number of droughts was noted in the 1470s, 1530s, 1550s, 1580s, 1630s, 1650s, 1680s and 1740s. Twenty-two local chronologies of trees (pine and oak) from Poland were taken into account for detecting negative and positive pointer years (exceptionally narrow and exceptionally wide rings, respectively). The longest chronology covers the years 996–1986. In total, 508 negative and 470 positive years were recorded. The occurrence of negative pointer years was compared with droughts delimited based on documentary and instrumental data. A good correspondence was found between the occurrence of negative pointer years and droughts. The delimitation of droughts based on instrumental data was conducted using the Standard Precipitation Index (SPI) for 1-, 3-, 6-, 12- and 24-month time scales. Three categories of droughts were analysed: meteorological (SPI1), agricultural (SPI3 and SPI6) and hydrological (SPI12 and SPI24). Preliminary analysis based on precipitation data from Toruń reveals the lack of tendency for droughts to occur in the period 1871–2015. In total we delimited 163

meteorological droughts and, depending on the use of 3- or 6-month time scales, 114 or 78 agricultural droughts, respectively. In this period six deep hydrological droughts (megadroughts, SPI<-2) were distinguished in the periods: 03.1900–05.1903, 10.1920–11.1922, 11.1931–11.1934, 04.1951–08.1953, 02.1982–06.1985 and 04.1989–02.1992.

Documentary evidence of droughts in Sweden between the Middle Ages and c1800
Dag Retsö, University of Stockholm

The presentation explores documentary evidence of meteorological, hydrological and socioeconomic droughts in Sweden in the pre-instrumental period (1400–1800). The database has been developed based on contemporary sources such as private and official correspondence letters, diaries, chronicles and annals, almanac notes, manorial accounts, and weather data compilations.
The survey shows that two sub-periods can be considered as particularly struck by summer droughts with concomitant harvest failures, food crises and great social impacts in Sweden: the 1550s and the mid-1600s, in particular 1652, known as “the Great drought year” in contemporary documents, and 1657. A number of data for dry summers are also found for the middle and late 15th century. The drought chronology is related to the climatic variability in northern Europe caused by atmospheric circulation patterns over the North Atlantic area (the North Atlantic Oscillation, NAO). Although there seems to be no determinant influence by NAO on local summer conditions, especially in the inter-annually and seasonally very variable Baltic Sea area, the evidence does suggest a connection between dry periods and positive NAO values. Further research into documentary data from Sweden and the Baltic region on wind conditions and storms, especially for the Middle Ages, could further illuminate the issue.

The 664 years long series of grape harvest dates from Beaune (France) 1354–2018 as a mirror of outstanding droughts and global warming
Thomas Labbé, University of Bourgogne
Christian Pfister, University of Bern

Records of grape harvest dates (GHD) are the longest continuous series of phenological data in Europe. However, most scholars drew such evidence from uncritical nineteenth century publications instead of going back to the archives. The data of the long series from the vine region of Beaune (France) were drawn from the archives and calibrated with the Paris temperature series 1659-2018. The Beaune GHD series is also well correlated with tree-ring evidence and long term documentary proxy series over the period 1354 to 1658. The most severe droughts in the last 664 years in Western Europe standing out in the series – 1393, 1420, 1473, 1540, 1556, 1616, 1719 – will be briefly presented and compared. It turned out that the two most outstanding heat and drought years 1473 and 1540 were not necessarily the earliest in the ranking of GHD, because grape development slows down or even stops during very long rainless periods and extreme maximum temperatures. The climatic rupture of 1988 divides the Beaune series in two parts. Grapes were on average picked on 29th September from 1354 to 1987. In contrast, vintages were 12 days earlier during the period of rapid Global Warming from 1988 to 2018. The series visualizes, that outstanding

extreme heat and drought events were outliers within the climatic context of the Little Ice Age and the short twentieth century up to 1987, while they became almost the norm in the current decade.

Session 9C

Special session. The Happy historian: How to survive and even thrive in the "academic Anthropocene"

Facilitator:
Sandra Swart, Stellenbosch University

This is a crash course in "life hacking" for the academic historian who is trying to survive in global warming's equivalent at the university: the rising waters of tenure insecurity, the increasing heat on publishing, and the freak storms of austerity measures in the corporate academe.
The workshop is intended for a small, interactive group and will include:
1. How to think in ink - publishing made more efficient.
2. How to manage (and protect!) your "writing time".
3. How to manage toxic interference.
The workshop is intended to offer one of the most useful hours at the conference because it focuses on the thing historians care about most - "time". Only this time it is *your* time.

Session 9D
Animals crossing borders

Chair: Dolly Jørgensen, University of Stavanger

Fencing out nativeness? Western Australia's State Barrier fence in historical perspective
Alexandra Vlachos, Australian National University

Visible from space, Western Australia's massive State Barrier Fence forms a 1,170km long, human-made boundary that in parts defines the eastern border of the state's wheat-growing country. Established between 1902 and 1907 and intended to keep the introduced rabbits out of the crops, it continues to separate paddocks from the outback and the "productive" settler landscape from the woodlands. While the rabbits happily continued to live either side of the fence, the artificial border cleaved a complex ecosystem and initiated a grim ritual: particularly in times of drought, migrating native animals perish in great numbers along its length. The 1970s alone claimed the lives of over 90,000 emus. Marsupials, often entangled by one leg only, may remain alive for days or weeks, before they die.
However, because dingoes can attack stock and the controversial fence does "keep the dogs out", the WA government proposed its extension in 2010, intending to close the gap in the central part of the fence, and to extend it to the south coast. Despite the protest of conservationists, the government went as far as classifying the dingo as "non-fauna" in 2019, further politicizing an already controversial animal to please farmers. Yet, the dingo is integral to Aboriginal Dreaming stories and an important regulator of native wildlife, as well as the main predator of highly problematic feral cats.
Defining its western border, the fence also complicates the protection and management of the Great Western Woodlands – one of the world's largest remaining Mediterranean woodlands and an important refugee for native species extinct or endangered in the wheatbelt. The history of the fence reveals a set of ecological and social issues arising from fragmented landscapes and human-made boundaries, especially in times of shifting politics and increasing environmental awareness and ecological knowledge.

The muskrat's new frontier: The challenge of an American animal empire in Europe
Peter Coates, University of Bristol

In 1905, a Czech nobleman who had been hunting in Alaska returned to his estate in Bohemia with five specimens of a valuable North American furbearer, the muskrat. This was the first of a series of transplants from the muskrat's homeland to various European countries, including France (1920), Russia (1928-32) and Britain (1928). Subsequent introductions (often in the form of 'open colonies' rather than fenced enclosures) took place within Europe, including Estonia (1947, based on Soviet stock), Lithuania (1954), Latvia (1961) and Norway. Additional transplants took place within Europe (e.g. Czech stock was transferred to Finland in the 1920s and Finnish muskrats, in turn, provided some of Russia's initial fur industry stock). Wherever it was brought in for farming, this gnawing and burrowing, semi-aquatic rodent readily escaped confinement to establish feral populations, also

spreading of its own accord into neighbouring countries where it had not been introduced (e.g. from Bohemia to Germany and Poland in 1914 and 1920 respectively, and from Germany to Denmark in 1989).
Working with the notions of animal (nonhuman) empire, mobile nature, biosecurity and vacant niche theory, this paper investigates the role of political borders and of physical, ecological and climatological boundaries in shaping this creature of empire's rate and patterns of naturalization and expansion within Europe. It then examines how these borders and boundaries have influenced efforts to manage an energetically colonizing creature that, in the words of a German zoologist, failed to 'respect the boundaries intended for them' (1933). Finally, with reference to barriers of a geographical, political and environmental nature, it explains why, despite decades of forcible decolonization efforts in so-called 'muskrat country', muskrat control remains an expensive problem for environmental managers across Europe, whereas, in Britain and Ireland, the 'American invaders' were eliminated within a decade.

Bison pathways: Crossing and confronting social, ecological and political boundaries on the road to conservation at Yellowstone National Park
Randall Wilson, Gettysburg College

Historical migrations of plains bison have always transgressed the 19th century political jurisdictions imposed by the westward colonial expansion of American society, including the establishment of the nation's first national park at Yellowstone. But efforts to conserve and re-establish Yellowstone's native bison populations triggered the construction of new social and political barriers by opponents, while at the same time producing new opportunities and incentives for transboundary cross-fertilization in ecological and cultural terms among advocates, including environmental scientists and indigenous peoples. This project critically examines the history of bison conservation in Yellowstone National Park as a study in boundary crossings and conflicts across spatial, historical and multi-faceted conceptual dimensions. Findings underscore the profound ways in which the different geographical spaces bison occupy are demarcated by diverse social, cultural, political and ecological boundaries that range in scale from transnational landscapes to the microbial.

"Shapeless masses": The transportation of skins for Victorian taxidermy re-creation
Alice Would, University of Bristol / University of Exeter

'The whole skin was then rolled as tightly as possible round the head, and carefully tied at both ends of the bale. In this condition it was placed in a great barrel which was then completely filled with liquor' (Rowland Ward, A Naturalist's Life Study). This paper traces the movement of skins between different material states, and different geographical nodes in the British Empire. Skins were transported within Victorian hunting parties as a collective, mobile, menagerie, before entering a global network of trade on trains and ships. These skins, on reaching Britain, were re-made into animal shapes in the form of taxidermy creatures. This paper explores how these skins were suspended between life and death; no longer alive and not yet alive-looking. They were folded up, stacked, and carried around like material possessions. The Victorian taxidermist Rowland Ward described how once-living animals were transformed into 'shapeless masses.' However, this

treatment (often involving arsenic and other substances toxic to life) preserved the skin and ensured it retained the potential to look animal once again. They were stripped of form and meaning temporarily so they could eventually be re-created.

Nevertheless, in particularly tropical and humid environments, bodies could begin to decay within a day. Even if the greatest care was exercised to remove fat and flesh, flies could often find a way into folds in the skin. The second part of this paper explores how these smaller (living) animals had the potential to further disrupt the larger (dead) animal body. Transit could accidentally be a transformative process: often entire shipments were destroyed by insect life. This paper looks beyond the museum focus of much current history scholarship. It explores how 'potential taxidermy' disturbed the boundary between the animal and the object, and life and death, as it journeyed across land and sea.

Session 9E
Issues of environmental justice

Chair: Hrvoje Petrić, University of Zagreb

An approach to the allocation of nature: The political ecology of Lusatia
Marcel Langer, The Sorbian Institute

Generally, this talk will look at the materialisation of power relations in the landscape of Lusatia, a region within the territory of the national and Slavic minority of the Sorbs. Therefore chosen actor practices and strategies of nature allocation will be presented to understand the situation of majority-minority societies in this specific region. Focussing on the social conditions of nature and environmental conflicts, Lusatia can be characterized by different land consuming forms of production like the extraction of lignite and granite. This led to the devastation of around 130 – mostly Sorbian – villages in the region. In some cases relocations and resettlements could be prevented due to societal resistance while playing the Sorbian card. Do processes like this have an equitable meaning of conservation of Sorbian culture and territory? Observing the current debate about fossil-fuel phase-out in Germany and its groundbreaking meaning for the region itself, it is necessary to understand the negotiations of social and ecological structural change in todays and pasts processes. Furthermore the project asks about strategies of resilience to preserve and empower the Sorbian heritage. The presented focus on processes of nature allocation and the social conditions of nature are part of the preliminary results of an ongoing third-party funded project at the Sorbian Institute.

Toxic poisoning performed: El Teatro Campesino and the farmworkers struggle for justice
Erik Wallenberg, The City University of New York

El Teatro Campesino (ETC), the theater group of the National Farm Workers Association, performed shows about pesticide and herbicide poisoning of farmworkers in the fields, and consumers in their homes. Moving beyond these domestic concerns, ETC brought attention to the extensive use of chemical weapons by the U.S. military on the people of Southeast Asia and connected it to the corporate farming practices that dumped pesticides and herbicides on farmworkers in fields across America. I look at the stories ETC told, the messages they put forward, and the ways they portrayed the relationship between people and the broader environment, focused on toxic exposure, human health, and the environment. Examining the performances and the extensive poster art created by the theater in the 1960s and 1970s shows how they attempted to bring a popular understanding of the farmworkers struggle for environmental justice to a larger audience. At the same time, these performances and the accompanying poster art show the farmworker's changing ideas about the relationship between humans and the environment. Looking at the work of ETC offers an illuminating case study of how the public health crisis of toxic poisoning was examined by those being poisoned. As the cultural and propagandistic arm of the farmworkers, we also see how the theater attempted to convey this changing understanding to a larger audience. For environmental historians, I aim to bring new sources to the discussion of how people understand their relationship

to the natural world and the different methods and mediums they use to convey those ideas. With a focus on performance and the attendant visual culture that theater groups employ, I want to think through how we employ this evidence to understand the farmworkers changing understanding of their conditions of labor and the environment where they lived and worked.

Session 9F
Envirotech histories of the Ottoman and post-Ottoman world

Organizer: Camille Cole, Yale University
Chair: Onur Inal, University of Hamburg

Session abstract:
How do environmental and technological histories intertwine in the Ottoman and post-Ottoman world? Environmental history and the history of technology are often interested in different questions and phenomena. Recently, however, scholars have combined these two terrains to address "envirotech" histories, blurring the "illusory boundary" between nature and technology to explore how their interaction produces hybrid "natural" formations.
This panel offers a new perspective on envirotech history by presenting papers that also span a conventional temporal boundary: the shift from an Ottoman to a post-Ottoman Middle East. Understanding both the temporal and disciplinary boundaries as generative, our panel asks how different "technologies" were conceived in the late Ottoman and post-Ottoman world, and by whom. How did these technologies shape "modern" environments, and how did these environments, in turn, produce new technologies?
The papers range geographically from Egypt to Iraq to Turkey, and temporally from the 1890s to the present day. The papers on Ottoman Egypt and Iraq engage the conceptual scope of the connection between environment and technology. "Shibbolethic Science" considers how agricultural experts and race scientists theorized the laboring bodies of Egyptian peasants as both organic and mechanical, while "Paper Technologies" addresses how the introduction of tapu sened (title deeds) crystallized relationships between people and the land in southern Iraq. The remaining papers explore the effects of imported ideas, finance, and technology throughout the twentieth century in Anatolia. "Ecologies by Design" considers the reconfiguration of ecological and economic landscapes through the importation of European agricultural technologies in early twentieth-century Turkey. "A People Freed from Need" considers how late twentieth-century international development experts sought to answer questions of security and sustainability in Southeastern Anatolia with the construction of massive dams. Together, these papers examine the broad socio-technological transformation of Middle Eastern environments in the late Ottoman Empire and its successor states.

Shibbolethic science: Bodies as technology in the Egyptian sugar cane industry (1890–1910)
Taylor Moore, Rutgers University

In March of 1897, German sugar scientist, Walter Tiemann, broke ground on his experimental cane fields in Sheikh el-Fadl, Upper Egypt. He was presented with a difficult task—to find a strain and/or method of growing sugar cane that would produce an abundant yield despite the primitive planting practices of the Egyptian fellahin (peasantry). Modern machinery eliminated the need for human labor in many aspects of the sugar refining process, with the exception of cane cultivation and menial jobs within the sugar factory. Although agricultural scientists and Egyptian sugar capitalists believed the peasantry's "old shibboleths and traditional customs" harmed productivity in the cane fields, the fellahin's laboring bodies—mythologized as born from the mud of the Nile itself—could

not be replaced. Race scientists argued that atavistic traits from Pharaonic times resulted in "mechanical" bodies with tacit knowledge that made them the ultimate labor force. This paper explores how agriculture experts and race scientists theorized the bodies of the Egyptian fellahin as "organic machines" and ancient technologies to justify their role as laborers in both field and factory. Using the case study of the sugar industry, it interrogates the ways in which the body of the Egyptian fellah metaphorically and materially straddled the boundaries between 'environment' and 'technology' in turn-of-the-century Egypt.

Paper technologies: Land deeds and land theft in late Ottoman Basra
Camille Cole, Yale University

In 1899, Züheyrzade Ahmed Paşa, a notable of Basra, took out tapu seneds (title deeds) for date groves inherited from his father on the Shatt al-Arab river in what is now southern Iraq. A few years later, several groups totalling more than 100 local landowners accused Ahmed Paşa of using both bureaucratic and physical methods to "encroach" (tecavüz) on lands that did not belong to him. Most importantly, they charged that he had illicitly acquired fraudulent and vague seneds. Abiding by the letter of his deeds, he was nonetheless able to incorporate large swathes (8-10 hours, allegedly) of marshland into his estates. Moreover, once investigations into the encroachments began, Züheyrzade leaned into administrators' anxieties about the new paper technologies to cast doubt on the ability of the local government to property adjudicate his case. This paper argues that with the (partial) introduction of the tapu sened in Basra, changes in the paper technologies of governance meant changes in the social and ecological relationships crystallized by those technologies. The form and content of these documents, as well as the administrative contexts in which they were issued, differed from the other bureaucratic technologies available to prospective landowners at the time. The simultaneous partial implementation of multiple systems of land regulation in Basra created gaps and inconsistencies in the approach to land, which Ahmed Paşa was able to exploit. His mis-use of the new technology illuminated those gaps and highlighted the significance of changing paper technologies to the material and social experience of land.

Ecologies by design: Creating an agro-industrial complex in Central Anatolia, 1903–1928
Sean Lawrence, University of California Santa Cruz

In 1903, European and Ottoman investors began negotiations to irrigate the Konya plain in central Anatolia as part of the Anatolian Railway network. Here as elsewhere in Anatolia, consortia of investors like the Chemin de Fer de L'Anatolienne, Ziraat Bankası, and the Liste Civile of Sultan Abdulhamid II sought to reap great profits from fertile-but-arid spaces by means of imported technologies meant to boost production. These technologies took several forms including rail transport, perennial irrigation, mechanized tilling, and artificial fertilizers. The result was a completely altered but interlocking system of movement, labor, water, soil, and biota. Thousands of immigrants were encouraged to settle in the region to act as both laborers and consumers in service of this transformed economic landscape. As planned, Central Anatolia witnessed a surge in food crops, cereals especially, during the early twentieth century. Yet the swift increase also evinced a paradigm shift in agricultural implements. More and more of Anatolia's harvest was folded into an

agricultural system in which the human and non-human ecologies of places like Konya were reengineered to require the perpetual import of productive technologies. This paper argues that negotiations over import of these technologies and the resulting shifts in crop production demonstrate that these technologies were not merely intended to increase crop yields or ease their transport but to superimpose a new ecological and economic landscape over the existing one. In effect and by design, the spoils of an agricultural system predicated on European technology produced an agro-industrial complex within which relations of space, labor, and local environments were reconfigured in self-reinforcing and self-replicating ways.

A people freed from need: Security, sustainability and the state in southeastern Anatolia
Dale Stahl, University of Colorado Denver

The Southeast Anatolia Project, known by its Turkish acronym of GAP (Güneydoğu Anadolu Projesi), is one of the largest regional development projects in the world. The development program's most prominent work is a series of massive hydroelectric dams and irrigation projects on the Euphrates and Tigris Rivers. However, the project extends far beyond water infrastructure in its remaking of the economic life and environment of six Turkish provinces. Scholars have noted how the GAP became the "economic" solution to the problems of Kurdish resistance in Anatolia. However, the development project was not solely a Turkish one. International agencies financed many projects. To obtain this funding, the GAP administration sought to frame the technology of the dam as the answer to larger international questions of security and sustainability. This paper will examine memoirs, parliamentary reports and official publications to trace how the Turkish government adapted to changing globalized discourses on security and sustainability. It will detail how the technology of the large dam came to be seen as a solution to these problems, despite significant research on the environmental and social problems caused by such massive environmental engineering.

Session 9G
Lost in the woods: Territorial governance and forest use

Organizer: Marina Loskutova, National Research University Higher School of Economics
Chair: Anna Sténs, Umeå University

Session abstract:
The panel seeks to bring together a set of papers that jointly examine the multiple perceptions and use of forested areas of North-Eastern Europe and Northern America in the period immediately preceding the rise of modern states with their regimes of territorial governance characterised by interconnectedness, uniformity, well-defined state and administrative boundaries, and modern property rights. The abundance of forests in these regions, combined with their low population density and poor transportation and communication networks, evidently worked against an early imposition of the state regulations concerning access to forested areas and the modes of forest exploitation. However, it does not mean that early modern European empires, whether land-based empires in the European periphery, or as European overseas colonial expansion, did not attempt to make forested areas 'transparent' and to regulate multiple ways of exploiting forest resources. The papers will examine the limits and the outcomes of these attempts, as well as they will highlight the role of competing actors – the central and local administration, and local communities in the process of redefining the meaning of forested landscapes, access rights and the modes of forest exploitation.

"Black Forest": Resources, boundaries and constraints for local communities in the Russian North in the 17th century
Margarita Dadykina, National Research University Higher School of Economics

The paper discusses the ways in which local communities in early modern Russia used non-private forests. On the one hand, forest was an unfriendly territory with many kinds of dangerous but on the other hand a forest was a "territory of freedom" for different groups of local people as it could not be subjected to the governmental control. In Russian inventories of the early modern time, forests are not counted for a long time as something to be described and accounted for. Peasants fled to the forests from the supervision of the authorities, especially at the time when the state authorities enumerated the taxpayers, creating the appearance of empty yards. Monks also went into the forests, trying to avoid the bustling world and to find grace. The forest in the north-Russian landscape acted as the natural boundary of the settlements. On the other hand, the forest was a kind of "pantry resource", from food, to construction and energy (wood). With the development of the early forms of the industry (salt production, early metallurgy), the wood becomes an important factor in the development of a number of local communities. At the same time, the natural cycles related to forests and other features of the environment (rivers, climate, landscape) imposed inevitable restrictions on the use of forest resources. The paper will consider some examples of the interaction between humans and forest, the patterns of adaptation to the limitations / opportunities that the forest created for human communities.

The Russian state and the limits of bureaucratic control in forest use at the turn of the 18th–19th centuries

Marina Loskutova, National Research University Higher School of Economics

Historians habitually portray the history of forestry and forest use in Russia as the history of increasing state regulation and management. This narrative owes a great deal to a limited range of sources at our disposal. For the imperial period, historians have to rely mostly on the archival collections and published reports created by various governmental agencies involved in managing the state-owned forests, while other principal actors, such as peasant communities, private forest owners and timber merchants, did not leave a well-documented record. A skewed perspective resulting from available documents nicely fits prevalent scholarly expectations concerning a pervasive presence of state regulation in Russian economy and society. This paper, however, will argue the opposite point by demonstrating an extremely limited potential of the governmental agencies to penetrate a complex web of locally conditioned socio-economic relations concerned with forest use. It will specifically focus on the last decades of the eighteenth – the early years of the nineteenth century, that is the period which is considered a key moment in the process of state centralisation in most of continental Europe, including the Russian empire. The paper will examine several strategic areas related to forest management in which the Russian state administration attempted to increase its presence in this period: the production and floating of ship timber for the Russian Navy; timber export to Europe from the Baltic and the White-sea areas; the production and floating of timber for industrial and urban consumption in Russian central and north-western provinces. It will seek highlight a continuing reliance of the central government and its forestry administration on traditional locally-based forms of forest use despite a plethora of bureaucratic regulations intended to make forests 'legible' for the state.

Die Indischen Wälder: Germany and the birth of the Indian Forest Department (1855–1910)

Jameson Karns, University of California Berkeley

"Of the wheels of public service that turn under the Indian Government, there is none more important than the Department of Woods and Forests," wrote Rudyard Kipling in his publication In the Rukh. Kipling's story narratives how a young Mowgli acquaints himself with, "the gigantic German who was the head of the Woods and Forests of all India, Head Ranger from Burma to Bombay." The story is Kipling's attempt to share with his audiences the history of Colonial forestry in South Asia. After a series of failed attempts to develop a Forestry Department in what is now southern Myanmar, Lord Dalhousie began a search for a foreign naturalist to answer the "quandary that no Englishman can." Dietrich Brandis, a botanist from Bonn, Germany answered the solicitation. Brandis imported his knowledge of the Humboldtian natural sciences to found the Indian Forest Department. Despite his success, Brandis was ill prepared for the position. Hurdles such as forest fires, teak harvesting, and training forestry officers were amongst the issues that the German scientist struggled to grasp. In an attempt to answer these conundrums, Brandis began hiring a number of foresters from his homeland. My research seeks to identify the multinational influences and sciences that Dietrich Brandis and others summoned to form the Indian Forest Department.

My name is Jameson Karns and I am a doctoral student at the University of California, Berkeley where I specialize in Environmental History. I've spent the last three years uncovering archival

material in: Germany, United Kingdom, India, and Myanmar. South Asian Historiography often omits the legacies of Central European stakeholders. My hope is to revisit this narrative through the German development of the Indian Forest Department.

Indigenous knowledge and practices in British colonial and postcolonial forestry networks

Shoko Mizuno, Komazawa University

This paper examines the arguments regarding indigenous land use such as shifting cultivation in British colonial and postcolonial forestry networks. In the first part of this paper, I demonstrate that new forestry practices were generated in the colonial sites through interaction with local ecologies and people. For example, the 'taungya system' was devised as a tool for the reforestation of degraded areas, as well as controlling shifting cultivation in parts of British India by the early 20th century. Although professional forestry in the tropical colonies had generally restricted local people's shifting cultivation and access to the reserved forests, this management system allowed indigenous communities to practice agriculture in forests for a few years on condition that they provide labour for forest plantations. I also pay attention to the process by which taungya system was incorporated into the empire forestry, through examination of the discussion at the Empire Forestry Conferences.

After the Second World War, Empire forestry networks had been reconfigured to Commonwealth forestry networks. At the same time, postcolonial organisations such as the FAO began to build relationships with newly independent countries (e.g. India) and commit themselves to establishing state forestry in those countries. I explore how these 'hybrid' forest practices, which were produced by the encounter between European forestry models and people who used forests in colonial regions, were circulated, accepted or rejected in these multiple forestry networks by analysing regional and international forestry conferences.

Session 9H

Oils: A thousand years of trading, transporting, and transforming soap's raw materials

Organizer: Nancy Shoemaker, University of Connecticut
Chair: Jim Clifford, University of Saskatchewan

Session abstract:
This session tracks the growth of soap manufacturing and trade from the medieval period up to the present. It highlights two interdependent aspects of soap production. First, these four papers explore the ways in which the cultivation, exploitation, and exchange of different kinds of oils – mainly olive, whale, palm, and coconut oil – became building blocks enabling soap's rise as a consumer product. Second, the demand for oil and soap is implicated in European imperial expansion. Flourishing originally in the eastern Mediterranean and North Africa, the earliest large scale trade in soap and its raw materials was regional in scope. From these eastern Mediterranean roots, soap manufacturing developed into a major industry in early modern Britain and France and emerged as a fully global enterprise in the nineteenth century, as European supply chains reached deep into the world's oceans, Africa, Asia, and Oceania. Soap's long history as a trade item and its important role as a promulgator of the whaling industry and tropical plantations are not well-known. Whereas the global trades in such goods as sugar, coffee, tea, and tobacco have inspired multiple commodity studies, oils are taken for granted. When people hear the word "oil," they immediately think of petroleum and not the diversity of vegetable and animal oils that have enriched human life. And while much has been written about soap consumption – with soap's contribution to Victorian cleanliness regimes or how advertisers invented self-loathing to spur on soap sales – an environmental history of soap has yet to be written.

The soap trade in the Medieval Islamic Mediterranean: Transit, textiles, and hygiene
Jessica Goldberg, University of California, Los Angeles

Textiles were the most important manufacture and trade objects of the medieval world, and in the medieval Islamic Mediterranean, the custom of wearing multiple light layers of clothing helped spur large-scale trade in olive-oil-based soap (the washing of one's person was done with soda ash, not soap). In this paper, I explore the geography of the soap trade in the eleventh and twelfth centuries, and the kinds of product differentiation in the market. Though the evidence is limited, soap production can best be understood by comparison to other products. Like a number of other bulk products, soap tended to circulate in the eastern Mediterranean, but not beyond. Soap joined other olive products from the Levant and Tunisia in traveling in bulk to Egypt, but Andalusi olive products did not yet compete in the eastern Mediterranean markets. Throughout the period, moreover, there is no evidence for luxury soap production. The packaging of different grades of olive oil – bulk in animal skins and higher grades in clay or glass bottles – makes clear that medieval markets had product differentiation in olive products, but merchants never mention the qualities of soap being shipped. Equally, although many kinds of Syrian production for the Egyptian market were geared at the more luxurious ends of the market to compete with North African mass production, Tunisian and

Syrian soap tended to be priced similarly. We see that while all the elements of luxury bar soap were in use in the period, they had yet to come together. I examine both economic and environmental reasons they remained separate.

The soap boiler's dilemma: Oil qualities, soap manufacturing, and the global expansion of seventeenth-century England

Nancy Shoemaker, University of Connecticut

Early modern England experienced an escalation in soap production driven by several factors, most conspicuously (1) a wish to emulate the luxury bar soaps made in the Levant and (2) the rise of the textile industry. To make Levantine-style soap, English soap boilers needed raw materials from the Mediterranean: olive oil and soda ash. Olive oil was an expensive import compared to the more accessible tallow, flaxseed oil, and much-despised, smelly fish oil generated by Atlantic fisheries. My paper evaluates the new oil choices facing the artisanal soap boiling industry at the start of the seventeenth century and traces how soap manufacturers familiarized themselves with the raw materials of their trade. Weighing cost, availability, each oil's inherent properties, and the distinctive attributes that different oils endowed in soap, soap boilers became leading advocates of early British expansion and beneficiaries of two royally charted trading companies, the Levant Company and the Spitsbergen Whaling Company. As English soap boilers increasingly looked outside the nation for their oil supplies, they proliferated a diversity of consumer products from harsh laundry soap ("Black Soap") to fragrant soap balls gentle on the skin. The distinctions between products depended not on technological innovation but on the nature of the raw materials employed and the global expansion that made access to these raw materials possible.

The terroir of oil and soap: Imagined landscapes from the Pacific to the Mediterranean

Kate Stevens, University of Waikato

The nineteenth and twentieth centuries saw the increasing movement of coconut oil and copra from the tropics to industrializing Europe, as a key ingredient in the burgeoning soap industry. As soap production grew, it became increasingly global and placeless in nature: the raw materials such as copra and palm oil were easily substitutable and invisible to the consumer. From the late nineteenth, the soap produced in the factories of Marseille thus bore little resemblance to the regional traditions of soap-making. Similarly, the production of scented coconut oil in the Pacific – using the same raw ingredient – was commercialized and industrialized, albeit on a smaller scale. Yet such stories are often hidden. This paper looks at the way that 20th and 21st century marketing for soaps and oils in Europe and the Pacific have reclaimed regional histories for products that emerged out of, or were fundamentally transformed by, colonialism and industrialisation. In particular, I examine how the concept of terroir of the local environment is deployed to retell the histories of these commodities in ways that obscures their place in global trade and interconnection between North and South.

Session 9I
International treaties and policies as environmental instruments

Chair: Jan-Henrik Meyer, Max Planck Institute for European Legal History

Challenging the boundaries of environmental history: The hidden environmental chapter of the League of Nations
Omer Aloni, Tel Aviv University / University of Potsdam

For almost half of a century, the archives of the League of Nations in Geneva kept nearly abandoned by historians. Geneva's reputation as the failure capital of early internationalism led scholars to focus on other institutions of the interwar period. However, global challenges of the current polarized changing world and the obstacles international law is facing as a new turbulent era emerges have revived the study of the League, which enjoys nowadays a vivid renaissance.
In the middle of these flourishing studies lie questions that explore the importance of the League to both global history and current international dilemmas, as scholars reevaluate the League's influence on the international arena even beyond 1945 and the establishment of the League's successor, the United Nations.
I suggest a new perspective on the idea of international governance in times of inequality by turning to analysis of international environmental law. As I am focusing on the deep involvement of the League in trying to solve various global environmental problems in the 1920s and 1930s, I also show how the League changed the rules of the game. I argue that the League's environmental regime – which was completely hidden by now from historiography of international law – made both international law and global governance much more balanced, open, and equal then they used to be prior to the establishment of the League.
Archival research in the Palais des Nations reveals some surprising – and relevant – correspondences and ideas of the unique role of NGOs, civil society groups, and non-state actors in vigorous campaigns and intensive international efforts for the protection of nature and environment, and for the preservation of a variety of natural resources in the 1920s and 1930s.
When the League intensively struggled against increasing whaling (and a coming extinction of whales), strove against spreading deforestation, and fought to protect the sea from oil pollution, it also enabled and even invited non-traditional players to step in and participate in the crafting of legal arrangements. Instead of a picture of traditional powers making the major decisions of diplomacy, the League opened the floor for far less familiar nations such as China, Brazil, and Romania, which became relevant and legitimate players.

Pass the salt: The contentious role of desalination in achieving sustainable development
Elizabeth Hameeteman, Boston University

The notion of a human right to water signifies the growing significance of water resources to the increasing disparities related to its distribution around the world. In the United States, an increasing number of low income and/or minority communities lack access to water, which results, in part, from its fragmented legal framework governing water issues. The long-term drought in California,

mass water shutoffs in Detroit, the contamination of the Flint public water supply, and the controversy over the Dakota Access Pipeline brought heightened public attention to these matters. Increasingly, advocates and activists put their water-related claims in a human rights framework and also achieve successes in rights-based water advocacy. However, even though the idea of a right to water has made its way into its discourse, rights-based advocacy remains daunting for a variety of reasons. Little work has thoroughly examined the central role of varying discourses like these in how exactly U.S. foreign aid assistance is – and should – be conducted. Without an adequate analysis of the domestic discourses imbued in these efforts, and the way legal standards in development projects have been formed and then translated abroad, we undervalue the significance of the effects of such efforts in not responding flexibly to the approaches and stated priorities of aid-receiving countries. In my paper, I examine how U.S. foreign relations in general, and water allocation policies in particular, have reflected the legal foundations, expansive engineering ambitions, and competing narratives translated into spheres abroad. By doing so, this reveals the extent to which a domestic discourse toward water is imbued in American foreign policy, the outcome of these policies on the ground, and the legal constructs that allow them to happen.

Towards an environmental history of the Marshall Plan

Robert Groß, Innsbruck University / University of Natural Resources and Life Sciences (BOKU)
Dominik Wiedenhofer, University of Natural Resources and Life Sciences (BOKU)

The European Recovery Program (ERP), also known as Marshall Plan has been studied over decades from perspectives of economic-, social- and cultural history, or as a program that emphasized the shift in U.S.-foreign policies and catalyzed the Cold War. However, scholars overlooked one aspect of the ERP so far that is the biophysical impact the program had on the environment. In our paper we propose three different starting points for such a research. Firstly, taking stock of models provided by earth system science, we can observe that the post-WWII shift in human-nature relations that has been described as the “Great Acceleration” took off in parallel to the massive shipping of raw materials, fuel, machinery and technical expertise worth US $ 13 billion into 16 war-damaged European nations. Secondly, the outlet of the ERP forced European nations to organize themselves in novel transnational institutions e.g. OEEC and UNECE, whose aim was not only to coordinate the reconstruction of war-damaged provisioning systems but also the transformation of mobility and energy infrastructure according to the U.S. model of a “fossil democracy”. The latter translated, thirdly, into production practices by obliging receiving governments to install a system of counterpart-funds providing incentives for efficiency increases in industries that either produced exportable consumer goods, or extracted exportable resources including energy.
Considering these three levels, we suggest that by means of the ERP provisioning system boundaries were scaled up by material infrastructure. Based on the analysis of original material from the National Archives in Washington DC, we will discuss how this built an important cornerstone of a novel dynamic in Western Europe that has later been termed the “Great Acceleration”.

Session 9J
Green activism and popular media

Chair: Joanna Dean, Carleton University

Imaginative mobility and the rise of environmentalism: Political ecology, Japanese anime and the affirmation of a mass ecological conscience
Federico Paolini, Università della Campania L. Vanvitelli

The hypothesis that underlies this paper is that there can be a link between the success of cartoons and the affirmation of mass environmentalism (Sartori 1997; Urry 2000; Murray 2011). This study moves from the idea of mobility turn and from the fact that there are many forms of imaginative mobility: one of these concerns the ecological ideas for which we can imagine a path that goes from the United States (Carson, Ehrlich, Meadows, Commoner ...) to Japan (the leading country in the production of cartoons) and from Japan to the rest of the world in the form of animated stories. The link is less occult and abstruse than one can imagine. In the sense that the imaginary of the children (and young people in general) of the '70s and '80s was deeply colonized by the television series aired at that time. It does not seem foolish to say that the proximity to the environmental problems of those generations (much more sensitive than their parents, grown in the myth of economic miracles) is not due to the real knowledge of the terms of the environmental issue, as to the fascination exercised on them by those cartoon universes populated by colorful heroes, robots and anthropized animals. In particular, the narrative rhetoric of Japanese 'anime' is pervaded by the constant references to nature and the pressing need to protect it. For children and adolescents of the '70s and '80s (the first to have experienced a widespread wellbeing), adhesion to organized environmentalism appears connected to the emergence of a vague ecological sentiment conveyed by the visual mass culture (the Japanese anime, but, more generally, the television offer of that time: think of the documentaries broadcasted by national broadcasters such as the BBC). The objective of this paper is to suggest a different perspective to examine a complex, neuralgic and divisive topic such as the environment (and its political declination, the environmentalism), inserting them into a global cultural and social context.

The consequences of nuclear energy: The military–environmental boundary
Nuno Luis Madureira, ISCTE University Institute of Lisbon

This paper explains how the environmental awareness of nuclear energy grew out from its strict application by the military in atomic bombs production. By the time Hiroshima and Nagasaki bombs were deployed little was known about its radioactive effects. Moreover, governments initially avoided to disclose information that might create the perception that an atomic bomb was like a chemical weapon, with enduring effects over a territory. Unexpected outcomes of atomic tests enabled the constitution of a worldwide network of scientific and military institutions devoted to the control and measurement of radioactive fallout. Thanks to this, but also to independent university laboratories, it became clear how radioactive isotopes circulated in the planet earth, from the stratosphere and the troposphere, towards its deposition in soil and in sea, and the final entryway

into food chains up to the absorption by humans. Drawing upon the British-American emergence of radioactivity as an environmental issue, it is demonstrated that nuclear fallout has become a nightmare problem for governments by 1959–1961. Radioactivity broad study brought new issues, such as the long term biological consequences of radio exposure and enhanced dangers, such as the discovery that short lived radioactive isotopes could nonetheless have an environmental impact. Finally it is shown that the radioactive issue was poorly explored by anti-nuclear movements, which remained much more focused on the devasting burst effects of hydrogen (H-) bombs. In other words, the peace movement of the 1960s was unable to transform itself in a broader environmental movement.

Session 9K
Roundtable. Environmentalism under authoritarian regimes

Organizer: Viktor Pál, National Research University Higher School of Economics
Chair: Richard Tucker, University of Michigan

Stephen Brain, Mississippi State University
Michel Dupuy, L'Institut d'histoire moderne et contemporaine
Jiří Janáč, Charles University in Prague
Viktor Pál, National Research University Higher School of Economics

Since the early 2000s, authoritarianism has risen as an increasingly powerful global phenomenon. This shift has not only social and political implications, but environmental: authoritarian leaders seek to recast the relationship between society and the government in every aspect of public life, including environmental policy. When historians of technology or the environment have investigated the environmental consequences of authoritarian regimes, they have frequently argued that authoritarian regimes have been unable to produce positive environmental results or adjust successfully to global structural change, if they have shown any concern for the environment at all. Put another way, the scholarly consensus holds that authoritarian regimes on both the left and the right generally have demonstrated an anti-environmentalist bias, and when opposed by environmentalist social movements, have succeeded in silencing those voices.
This roundtable gathers selected authors of the edited volume "Environmentalism under Authoritarian Regimes" published by Routledge to investigate the scholarly debate about the social and political preconditions necessary for effective environmental protection by analyzing those environmentalist initiatives (interpreted broadly) that authoritarian regimes pursued, and by providing explanations for both the successes and failures that such regimes encountered.
Scholars present in this roundtable argue that in instances when environmentalist policies offer the possibility of bolstering a country's domestic (nationalist) appeal or its international prestige, authoritarian regimes can endorse and have endorsed environmental protective measures. Furthermore, when the perceived political advantages of environmentalist policies are sufficiently strong, authoritarian regimes have a competitive advantage over Western democracies in environmental protection due to their effective and centralized decision-making mechanisms, which enable them to target technological and environmental issues promptly. Due to the topicality of this roundtable session, active participation and lively general debate is expected.

10:30-11:00 Coffee break

11:00-12:30 Parallel Session 10

Session 10A
What makes a steppe?

Chair & Organizer: Maya K. Peterson, University of California, Santa Cruz

Session abstract:
The word "steppe" conjures up a vast, arid, treeless and windswept plain covering a large swath of Eurasia, an endless grassland uninterrupted by natural boundaries and from whose depths bands of nomadic horsemen periodically emerged to terrorize settled societies. Since the nineteenth century, it has also come to be thought of as a quintessentially "Russian" landscape, perhaps more "Russian" even than vast forests of birch and pine. But what, exactly, is a steppe? And how have the peoples of the Russian Empire, Soviet Union, and their successor states thought, written about, and inhabited this important ecological space? The papers in this panel, covering steppes from as far west as Ukraine and as far south as Tajikistan, and exploring transnational connections between the Eurasian steppes and the North American Great Plains, demonstrate that there is more to the steppe than is often assumed. While some parts of the steppes were part of the fertile "black earth region," the attempted cultivation of others ended in an ecological disaster similar to the Dust Bowl. At some times steppes were perceived as landscapes in need of improvement or even erasure – demanding irrigation in order to make them useful for agriculture, or in other cases containing wetlands that needed to be drained – while at other times they have been the object of protection and preservation. The steppes were often defined in contrast to forests, and yet Russian and Soviet scientists identified the "forest-steppe" as an important ecological zone. Lastly, one of the most iconic symbols of the American West – the tumbleweed – is, in fact, an "uninvited guest" from the steppes of Eurasia, where its presence is far more benign. Together, we hope these papers and the ensuing discussion will help us to rethink from scientific, historical, and cultural perspectives how we might define a steppe.

Thinking the Soviet steppe. A case from Central Asia
Christine Bichsel, University of Fribourg

The steppe represents a vast ecological space on the globe, but also a key symbolic reference for cultural, economic and political history. This paper focuses on the steppe in the former Soviet Union. It seeks to explore how the idea of a steppe came into being in Russian and Soviet thought, how scientific and popular discourses established ecological, political, but also cultural boundaries to delimit it from other ecological spaces such as the forest, and how steppe discourses changed with environmental transformation. Thereby, the paper aims to shed light on the key processes of emergence and transformation of the idea of the steppe over time. It will approach this aim both through the analysis of scientific literature on the steppe, and of a specific case study of a steppe in the former Soviet Union. On the one hand, it will draw on selected historical publications in Russian Geography and related sciences on the steppe. On the other hand, it will analyse archival and published sources on the history of the Hungry Steppe as an area of large-scale irrigation

development in Soviet Central Asia. Methodologically, the paper will use discourse analysis as an analytical strategy. The paper will contribute to the emerging literature on the Soviet steppe through a historical analysis of the idea of this environmental and spatial category, as well as its boundaries.

An unexpected guest from the Eurasian steppe in the American West: Tumbleweed/ Perekati-Pole
David Moon, Nazarbayev University

In southeastern Colorado, in the drought year of 2014, Crowley County Commissioner Allumbaugh was overwhelmed by tumbleweeds. Attempting to plow them under had been "like trying to round up balloons." He was almost as frustrated by people who dismissed them as a "harmless bit of nostalgia of a wide-open West". After playing the cowboy ballad "Tumbling Tumbleweeds", performed by Gene Autry, for a visiting reporter, he explained: "What we have is not funny." This paper starts by considering tumbleweed's hybridity as both a nuisance for farmers, using up scarce moisture, and an icon of the American West. And yet is not always recalled that this noxious weed is an invasive species. It arrived by accident with Mennonite immigrants from the steppes of today's southern Ukraine who settled in Bonhomme County in the Dakota territory in around 1873–4. From there, spreading its seeds while tumbling in the wind and hitching rides in railroad cars, it spread uncontrollably to the great annoyance of county commissioners charged with removing such unexpected guests, but to the delight of aficionados of popular culture eulogizing the west of their imaginations. The final part of the paper, drawing on sources from the Russian Empire, considers the less dramatic image of perekati pole in its steppe homeland where, like most invasive species, it is less of a nuisance. Only in years of severe drought does it misbehave to the same degree as its American progeny. In such years in the 1830s, a German traveler who visited the tumbleweed's and the Mennonites' home in the southern steppes described how: "it is not an uncommon sight to see some twelve or twenty rolled into one mass, and scouring over the plain like a huge giant in his seven league boots."

Forest in the steppe: Plans for the Dnipro wetlands reclamation
Anna Olenenko, Khortytsia National Academy

The Dnipro wetlands represented an overly moistened terrace of the river valley with a dense forest cover. Extensive spring floods of the river made it possible to create unique microclimate in the dry steppe. Wetlands in the steppes were an "oasis in the desert" that the local population used for subsidiary farming.
With the development of agriculture in the steppe, imperial and then Soviet government tried to include wetlands into the economy, offering different plans for its reclamation. In case of Soviet times the main idea was to transform wetlands into collective farm lands. Plans were different – from simple use as pasture to draining, conversion into the fields and cultivation rice, kenaf, hemp. The main purpose of these plans, which will be discussed in the paper, were "to recapture uncomfortable lands from nature" and make them profitable.
However, none of the plans was implemented. The Soviet authorities had found another solution. All the steppe Dnipro wetlands were flooded by waters of Kakhovka Reservoir, which was created during the implementation of the Stalin's plan for the transformation of nature. In our opinion, it

contradicted the main idea of Stalin's plan, which assumed the creation of protection forests, including on the banks of the rivers, as V. Dokuchaev emphasized at the end of the 19th century. So, in the middle of the 20th century, on the one hand, the creation of forest shelterbelts for the protection of the steppe was announced, and on the other hand, natural forests shelterbelts – Dnipro wetlands – were destroyed, while the writers, who sang new man-made forests in the steppe, received Stalin's awards.

Life in the khanate of lizards and stones: Literary and scientific narratives of loss and hope

Flora J. Roberts, Leiden University / University of Tübingen

Since its establishment in the 1920s, mountainous Tajikistan has suffered from a paucity of agricultural land, exacerbated by constant directives from Moscow to grow ever more cotton. A variety of complex ecosystems have succumbed to the imperatives of cotton production, from riparian forests, saxaul groves and arid grasslands, but those who saw Russian history as the inexorable struggle against the steppe tended to efface such differences, for ends literary or political. In surveying the site for the Kairakkum reservoir, where the Russian engineers saw only a worthless desert (pustina) in the future floodplain, the locals also saw jangal (riparian forest). The Dilzarzin Steppe was once a metonymy for suffering in the Soviet SSR, but this toponym can no longer be found on the map of Tajikistan, replaced by the geometric cotton fields of new Mastchoh, so called after the inhabitants of the previous, mountainous Mastchoh were forcibly settled here. Professor Khabilov, a local biologist, has for the past three decades struggled to raise awareness of, and preserve, the sole remaining area of primordial steppeland in Tajikistan, threatened by further expansion of the cotton monoculture.

In this paper, I analyse portrayals of the steppe in Soviet literature (Tajik, Uzbek and Russian language), often commissioned in support of ambitious projects of environmental transformation, and place these in dialogue with descriptions provided in memoirs and interviews by ordinary citizens sent, often against their will, to cultivate the steppe. Lastly, I consider the twenty-first century campaign to preserve the steppeland ecosystem on the north shore of the Kairakkum reservoir in Tajikistan, and how it might leverage the legacy and tropes of the Soviet period to its advantage.

Session 10B

"When the rivers run dry": A cross-continental journey of historical droughts, impacts and human response. Part II

Organizer: Andrea Kiss, Vienna University of Technology
Chair: Christian Pfister, University of Bern

Session abstract:

As a continuation of our cross-continental journey of historical drought extremes, in this session medieval and early modern droughts and their major socio-economic aspects are discussed in an East-Central and Western European context. Particular attention is paid to the varying impact of drought on crop cultivation, as indicated by the grain price, under the conditions of the continental climate of East-Central Europe and the maritime climate of the western part of the continent.

Applying an almost millennial scale, a documentary-based drought series for the Czech Lands, including SPI indices for the last 500 years is presented in the first paper. The spatial extent of extreme droughts is analysed by using other central European drought reconstructions. The socio-economic impacts of droughts are considered particularly with regard to the grain price.

The next paper turns to Western Europe, to medieval and early modern England. Using direct weather information and proxy data in documentary sources, spring and summer droughts are identified for the period 1200 to 1700. The focus of the paper lies on the impact of severe droughts, especially on the agricultural and pastoral economy and on health; drought and heat played a major role in medieval plague waves and contributed to a rise in infections with malaria.

The third paper takes us to the east, to Hungary and East Central Europe: on the one hand, based on documentary and on tree-ring evidence, medieval droughts are described and detectable impacts are discussed. On the other hand, the potential relationship between locust invasions and multiannual/decadal dry periods as well as nomad and Turkish attacks and annual/seasonal information on droughts are presented, utilising the results of drought- and flood-related investigations as well as the hydroclimatic evidence of tree-ring and stalagmite records.

Extreme droughts and human responses to them in the Czech Lands

Rudolf Brázdil, Masaryk University
Ladislava Řezníčková, Masaryk University
Petr Dobrovolný, Masaryk University / Global Change Research Institute
Miroslav Trnka, Global Change Research Institute, Czech Academy of Sciences

The Czech Lands (recently the Czech Republic) are particularly rich in documentary sources that help elucidate droughts in the 12th–18th centuries (the pre-instrumental period). Although droughts appear less frequently before AD 1501, the various documentary evidence of the individual and institutional character was used to create series of seasonal and summer half-year drought indices (Standardised Precipitation Index, Standardised Precipitation Evapotranspiration Index, Palmer's Z-index) for the Czech Lands for the 1501–2017 period. Based on calculation of return period for series of drought indices, extreme droughts were selected for inclusion herein if all three indices indicated a return period of ≥20 years. The extreme droughts in the pre-instrumental period (before AD 1804)

were characterised by significantly lower (negative) values of drought indices, higher temperatures and lower precipitation totals compared to other years of the period studies. The sea-level pressure patterns associated with extreme droughts were characterised by significantly higher air pressure over Europe and significantly lower air pressure over parts of the Atlantic Ocean. Extreme droughts with a return period ≥50 years, which occurred in AD 1536, 1540, 1590, 1616, 1631, 1727 and 1728, were described in detail with respect to the course and human impacts of individual droughts. A number of selected extreme droughts were reflected in other central European drought reconstructions from other documentary data or tree-rings. Finally, impacts extreme droughts on social life and responses to them were summarised with particular attention to year-by-year fluctuations in basic grain prices and possible effects of drought episodes.

A place in the sun? Droughts in England 1200–1700

Kathleen Pribyl, University of East Anglia

The extremely dry and warm conditions of the summer season 2018 in England gave rise to comparisons with the drought of 1976. However, beyond this popular benchmark of English droughts, a study of past weather events reveals a number of very dry springs and summers that warrant further analysis. Using narrative information and proxy data from written records this paper investigates extreme summer droughts and their impacts under the conditions of natural climate variability and before the provision of modern infrastructure in England between 1200 and 1700. Earlier records are available for England, but only deliver snapshots of single extreme events; in the post-1200 period information is for the most part dense. From the late thirteenth to the first half of the fifteenth century an almost continuous index of grain harvest duration gives information on late summer rainfall. The focus of the paper lies on identifying the meteorological, hydrological and agricultural aspects of late medieval and early modern droughts and to highlight the structural impacts of drought on the agricultural and pastoral economy, transport, energy supply and health. In particular the occurrence of malaria, plague and water borne diseases was linked to drought episodes in pre-industrial England. Of further interest are strategies for mitigating the drought impacts, which are discernible at a local level in the agricultural and energy sectors as well as in municipal administration.

Consequence or coincidence? Droughts, “pagan“ attacks and locust invasions in Medieval Hungary in an Eastern and Central European context

Andrea Kiss, Vienna University of Technology

The presentation is aimed to discuss medieval droughts and some of their major socio-economic, environmental consequences in medieval Hungary, in a broader geographical context. As the mid-14th century biographer of King Louis I, John Küküllei described, drought was one of the most important causes of famine in Hungary. Low water levels of major rivers not only weakened the natural military defence of the country, but prolonged droughts in the areas east to Hungary might have been, at least partly, also responsible for the “nomadic” attacks against Hungary. Dry spells were also blamed for locust invasions: this fact has particular importance, as the Carpathian Basin played a key role in the Central European locust invasion routes.

In the medieval period only in a few cases direct information is available regarding droughts or dry spells, primarily related to major (hydrological, agricultural) drought events such as, for example, the early 1360s, early/mid-1440s, 1470s, early 1490s and mid-1500s. Indirect data are known from contemporary reports regarding the socio-economic consequences of more severe water shortages overlapping the droughts in neighbouring countries, as well as from high-resolution palaeoclimate evidence such as stalagmite and tree-ring based hydroclimate reconstructions. Based on these additional data, potential drought years were identified, for example, in the mid-13th, early and late 14th centuries and in the 1420s.

With providing further evidence on military attacks of mainly Pecheneg, Cuman, Tatar and particularly Turkish troops, and based on the dates and extension of known medieval locust invasions, the second part of the presentation surveys the possible relationship between droughts and invasions in a broader, Eastern and Central European context. Based on the comparison between reported droughts, flood-rich periods, stalagmite record and the locust invasions a multidecadal relationship can be detected. When detectable, some connections can be traced between annual/multiannual variabilities and individual “pagan” raids.

Session 10C
Evaluating post-WWII sustainability

Chair: Otto Latva, University of Turku

Studying entangled histories of raw materials trade and sustainability trade-offs
Frank Veraart, Eindhoven University of Technology (TUE)
Harry Lintsen, Eindhoven University of Technology (TUE)
Jan-Pieter Smits, Eindhoven University of Technology (TUE)
Erik van de Vleuten, Eindhoven University of Technology (TUE)

According to the well-known Brundtland definition sustainability is both inter-generational and transnational effort. Future generation's needs to be secured and global inequalities relieved.
In our book Well-being, sustainability and social development, The Netherlands 1850–2050 we analyzed the history of the Netherlands from the perspective of well-being and sustainability. We pioneered a new mixed method combining a contemporary qualitative sustainability monitoring approach with a historical socio-technical analysis.
In the paper we will present this new mixed method approach and its application in historical analysis of sustainability history of the Netherlands. As a starting point of our method we applied a monitor well-being, a new instrument developed and accepted by the European Statisticians to give an overview of sustainability issues. In our study we have applied this to four reference dates (1850, 1910, 1970 and 2010) to get an overview of major changes in sustainability issues. Secondly, we gathered for these reference years statistical data of all material flows in the Netherlands. Thirdly, we analyzed the institutional context of the changes in well-being of the major material flows (i.e. bio-materials, minerals and fossil fuels). In the analysis we focused on the trade-off processes between well-being and sustainability. This approach led to a new picture of Dutch history since 1850. We will conclude our paper by presenting and discussing our new research agenda. We will present how we want to apply the mixed method approach to the entangled histories of raw materials trade and sustainability trade-offs between the global north and south.

Diverging roads? Comparing environmental histories of Estonia and Finland during the Cold War
Hannes Palang, Tallinn University
Simo Laakkonen, University of Turku

The importance to study and understand the environmental history of wars has been increasingly acknowledged. Above all in Europe world wars have had a deep impact on the environmental history of the continent. Most studies have, however, focused on the local or national level so far. Our attempt is to take methodologically one step forward and cross boundaries in order to make a comparative study between two countries. Before the Second World War Estonia and Finland were in many ways rather similar societies. The outcome of the Second World War changed, however, both societies fundamentally but in a different way. Estonia was overrun by different armies and occupied by the Red Army and it was transformed into a Soviet socialist republic. Finland faced three separate wars during WWII but it succeeded to remain a capitalist and democratic country. The war

affected, however, also Finland in numerous ways. How did the diverging outcome of WWII affect the environmental history of these two countries during the Cold War? The proposed paper aims to explore this question by comparing post-war socio-environmental developments in the Estonian and Finnish rural landscapes. The proposed paper will focus on three subthemes. Firstly post-war demographic patterns in Estonian and Finnish countryside and their impact on rural landscapes will be explored. Secondly emergence of different patterns of forest management and their impact on the ecological state of forests will be addressed. Thirdly the impact of post-war changes on the state of wildlife, above all populations of big predators, will be compared in these two countries. The study is based on qualitative methods and materials but when available statistical data will be utilized. The proposed paper argues that the prevailing rather black-and-white manner to compare the environmental impacts of capitalist-democratic and socialist societies needs to be re-evaluated. The basic differences in societal and natural conditions of these two countries will naturally be addressed.

The boundaries of science in transdisciplinary research: Environmental history in collaborative learning processes

Janina Priebe, Umeå University
Anna Sténs, Umeå University
Erland Mårald, Umeå University

In this paper, we review the challenges and outcomes of previous "collaborative research" on forestry and climate change in the Nordic countries and give examples on boundary work within our own interdisciplinary project "Bring down the sky to the earth: how to use forests to open up for constructive climate change pathways in local contexts", starting in early 2019.

Since the 1990s, literature on participatory processes in forest planning and community-based management has mainly focused on projects in the developing countries. In the Nordic countries, a surge of publications concerned with collaborative processes have been produced over the last ten years. In these cases, transdisciplinary research aims to increase the legitimacy and transparency of environmental decision-making by bringing together a variety of knowledge producers that may not be acknowledged in traditional policy processes.

With a few exceptions, environmental historians are not represented in these projects and historical perspectives are rarely used. However, in our current project, researchers from environmental history will together with political and forest scientists use a transtemporal perspective to enhance local collaboration, empowerment and sustainable resource management.

This raises practical and theoretical questions about how to use environmental history to challenge present understandings and to open up for alternative futures. More importantly, it also raises questions about what happens when historians go from only describing and critically interpreting the past to trying to influence people, policies and practices in the present.

Session 10D

Roundtable. Natural and human economies: Negotiating boundaries in human–insect relations

Chair & Organizer: Anastasia Fedotova, Institute for the History of Science and Technology, Russian Academy of Science

Staffan Müller-Wille, University of Exeter
Dominik Hünniger, University of Hamburg
Ana Isabel Queiroz, IHC, NOVA-FCSH Lisboa
Kerstin Pannhorst, Max Planck Institute for the History of Science
Alejandro Martinez, Universidad Nacional de La Plata

The roundtable will be devoted to economically and medically significant insect species as research objects, and how research on these species crosses the boundaries drawn between human economy and the economy of nature. The topic is deliberately conceived as a very broad one that could potentially be of interest to an array of disciplinary fields beyond the history of science and technology, such as environmental or economic history or the anthropology of human-animal relations. In general, with very few exceptions such as bees or silkworm, insects only catch the attention of researchers when perceived as a threat to the prosperity and well-being of human. It makes sense that medically and economically significant insect species have enjoyed better chances to become privileged research objects; however, there are numerous examples also when some of these species remained under-researched for a long time.

The historiography of insects has predominantly focused on the conceptual and technological means invested in their eradication. In our panel we want to discuss ways in which such a linear perspective on “applied entomology” can be overcome. The object of applied entomology, we contend, is constituted by dynamic multi-species interactions that undercut any clear-cut analysis in terms of costs and benefits and have fostered a perspective that, on the one hand, turns non-human animals into economic subjects while, on the other hand, aligning human economic activities with biological needs. The models entomologists have developed to understand the dynamics of human-insect interactions, and the enviro-technical interventions that have been based on these models, therefore have always entwined ecological and economical thought and action, contrasting with their divorce in neo-classical economics. Geographic location and environmental conditions, for example, exercise a powerful influence upon what counts as a biological threat posed by insects, and thus might affect the making of specific institutional, regional or national traditions and ‘schools’ within specific fields of study. Moreover, local agents (farmers, craftsmen, hunters, healers, etc.) could possess more nuanced experience in dealing with particular insect species than the entomologists. Growing awareness of the economic importance of such species by the state would thus have pressured metropolitan scholars into changing social and institutional arrangements to tap into these knowledge sources at the periphery, forcing them to leave their familiar environment, relocate to new, often challenging and potentially dangerous milieus, and transcend cultural and linguistic gathering knowledge to be reported back and systematized.

Session 10E
Migrating to new environments

Chair: Linda Kaljundi, Tallinn University

Skilled peasants: Migration of Italian workers specialized in land reclamation works between Italian regions and from the motherland to the colonies in order to build new territories (1880–1940)

Elisabetta Novello, University of Padua

Abandoning one's social and economic reality to emigrate is never a simple choice. You may believe that it is still easier to emigrate and go to perform the same work already known rather than totally change job or even worse to emigrate in search of a still unknown employment.
Unemployment, poverty, of course, help overcome any reticence.
At the end of the nineteenth century many farmers of the Veneto region began to leave their land not only to destinations overseas, but also to other Italian regions that then began to reclaim swamp areas. On the one hand the search for new lands for agriculture, on the other the need to sanitize an unhealthy territory that was to be, in the shortest possible time, according to the new national economic plan, crossed by the railway.
“Skilled labourers”, or better to say peasants used to working for hours in the mud, used to move throughout the day wheelbarrows full of land through precarious wooden planks, resigned to living in precarious conditions, physically and psychologically prepared to withstand fevers and climates particularly moist.
Thousands of peasant families migrated from Veneto to Emilia Romagna, Lazio, Sardinia, Sicily, Puglia, but also to the Marche, Abruzzo, Basilicata.
In the same expert peasants were also identified the settlers of the new Italian Empire: many of them were sent to Libya and Greece.
In Italy, as in colonial possessions, in the fascist period, new rural villages were built, new settlements within those vast area planning interventions that envisaged urban or rural systems functionally integrated into the territory.
Many interviews were collected by these skilled migrants who tell of their perception of the new territories and the new villages in which they have worked and lived with their families. These sources are very important for the reconstruction of the evolution of the marginal territories and of the role played by men.

Climatic boundaries at sea: A case study of Australia’s first fleet migrants

Harriet Mercer, University of Oxford

Australia’s First Fleet migrants – the first European settlers to reach Australia’s east coast – did not simply leave their home climate and arrive in that of their southern hemisphere destination. The First Fleet steered out of Portsmouth, through the English Channel and passed France, Spain and Portugal before making a brief stop at Tenerife off the coast of North Africa. From Tenerife, the Fleet sailed southwest across the Atlantic to Rio de Janeiro and then onward to the Cape of Good Hope.

After the Cape the ships met the strong westerly winds of the 'roaring forties', which propelled them toward Australia's southeast corner. In the nine months it took to reach Australia, the eleven ships of the First Fleet moved through a number of real and imagined climatic boundaries of the sea. For many of the forced and free migrants on board, it was their first experience of foreign climates.
This paper argues that this global voyage through climates from England to Australia shaped migrants' interpretation of the climate at the final destination. Connections, Roland Wenzlhuemer recently observed, are frequently conceptualised by historians in terms of endpoints: in terms of the people, place or things that are connected rather than the connection itself. Wenzlhuemer uses the case study of an early twentieth century Atlantic steam ship passage to demonstrate the value of studying the connections themselves. Wenzlhuemer's insights about the mediating connections provided by the ship passage are especially relevant to the late eighteenth and early nineteenth century when ship passages took months rather than weeks. Nine months is a short time in global and terra-centric histories but it is a long time in the confined space of a transiting ship - a long time for ideas about climate to be circulated and exchanged, and then applied in a colonial setting.

Forests in immigrants' life: Exploring Finnish Canadians' relationship with forests
Jaana Laine, University of Helsinki

One theme of the ongoing discussion on the Finnish culture and identity has been the human-forest relationship; the meaning and importance of forests in the Finnish society, economy and culture. Forests and human-forest relationship are appreciated as one of the most characteristic parts of the Finnish history and the national consciousness.
This applies also to those Finnish citizens, who immigrated to Canada and elsewhere during the 19th and 20th centuries. They have upheld and transmitted cultural values to their descendants. One cultural aspect has been human-forest relationship, which has shaped immigrants' lives in various ways; housing, living and labor activities, but also their identity and values.
The aim of this research is twofold. Firstly, it asks, what kind is the human-forest relationship of the Finnish Canadians and their descendants living in Thunder Bay area, Ontario. In what ways have forests been part of Finnish Canadians cultural heritage and formed the life stories and identities of different generations, and furthermore, their integration into a Canadian society.
Secondly, this research widens often mainly historically or ethnologically understood human-forest relationship and scrutinizes the discovered relationship in the context of Ecosystem services (ES) and Cultural ecosystem services (CES). The utilization of ES/CES allows us to connect human-forest relationship to the tangible and intangible benefits of forests and to sustainable forestry.
Research material consists of questionnaires/interviews to be collected in Thunder Bay in the winter of 2019. Analysis is based on qualitative methods with ATLAS.ti -program. Other archival sources available in Thunder Bay or Migration institute Finland (Turku), literature and statistics are also utilized.
The research produces wide ranges of results. Firstly, it will add knowledge on forests' importance in immigrants' life. Secondly, it will elaborate the connection between human-forest relationship and ES/CES.

Portable natures, or cultivating the outskirts: Italian truck farmers and migrant foodways in New York City, 1890–1940

Gilberto Mazzoli, European University Institute (EUI), Florence

During the Age of Mass-Migration more than 4 millions of Italians reached the United States. The experience of Italians in United States cities has been largely explored during the XX century and produced a large amount of academic literature. However, the study of migrants adjustment practices connected to nature (Hondagneu-Sotelo, 2014; Fisher, 2015; Armiero, 2010, 2017) and with the production of food (Gabaccia, 1998; Diner, 2001; Cinotto, 2012, 2013) are a quite recent concern. Migrants' visions of nature influenced their practices and attitudes toward nature, helping them to adjust to a different urban context and manage the sense of displacement provoked by their encounter with a U.S. metropolis at the turn of the 20th century.

Urban agriculture has been a major connotation of Italians' everyday life strategies in American cities. Firstly, this adjustment involved a different way of reading the city and its resources: an empty backyard could have seen as useful to grow vegetables, and waste and garbage could have worked as fertilizer (Armiero, 2017). Secondly, the practice of urban farming produced food that served two purposes: self-provisioning and commercial trade (Cinotto, 2013). Thirdly, it will be interesting to see the implications that food produced and consumed in the "New World" has had on the body and the health of the migrants. Lastly, exploring migrants' urban agriculture, could be helpful to reflect on the growth of the city, on its ecological boundaries and impact, and on differences in land use.

Italians of New York City, for instance, since their early days in the tenements to their latter experiences in the outskirts, often cultivated vacant lots in order to provide their families with fresh vegetables. This paper will explore the role played by migrants, mostly Italians, in reshaping the urban nature of New York City with their agricultural knowledges and practices, and with their ecologies and materialities of food production and local food trade. It will also address migrants' attitudes toward nature through the exploration of the Italian experience in other North-American cities.

Session 10F
The troubled ecological boundaries of a deindustrialized world

Organizers: Renaud Bécot, University of Lyon
Alexandre Elsig, Swiss National Science Foundation
Chair: Pavla Šimková, Ludwig Maximilian University of Munich / Rachel Carson Center for Environment and Society

Session abstract:
For more than two decades, plant closures are in the spotlight in most of the European and North American countries. Far from meaning the end of polluting activities, deindustrialization is a phenomenon that contributes profoundly to reshape the ecological boundaries of contemporary societies. In industrialized countries, it leads to a transfer or to the containment of productive activities in peripheral territories. Within old industrial districts, company closures are impelling actors to assume a part of the management of the toxic legacies that question the boundaries between private property and public domain, while the spill of toxic substances blurs boundaries between human bodies and the ecosystem in which they live. Finally, the industrial approach to reduce production costs or to contain social and environmental regulations advocates the relocation of toxic production toward the Global South.
In order to launch a stimulating discussion, this session will suggest two new perspectives in comparison to previous deindustrialization studies. In the first place, this call for papers welcomes papers focusing on the 20th and 21th centuries, but also encourages papers focusing on previous centuries. Indeed, deindustrialization is not only a contemporary phenomenon, as it is consubstantial to industrialization. Coal mines that were classified as less productive were abandoned even before the 19th century, leaving their ecological footprint on the territories. Secondly, “deindustrialization is not a story of a single emblematic place (...), it was a much broader, more fundamental historical transformation”. Social and environmental consequences of deindustrialization are global: it is not a phenomenon limited to industrialized countries. The extension of the perimeter of the capitalist economy by toxic offshoring leads to the displacement of the ecological impact of the territories enrolled in these productive activities.
Papers could address four main issues by questioning the different boundaries that are troubled by deindustrialization:

- Firstly, deindustrialization conflicts are challenging environmental history narratives because they often make visible a long-term contamination of ecosystems and bodies. Toxic substances may act as a telltale of long-term interpenetration between humans and non-humans. If these mobilizations take advantage of the rupture of the “implicit moral pact” which bounded (former) employees to their employers, they are not only ephemeral mobilizations arising at the time of the crisis. Indeed, workers and inhabitants are frequently leading long-term conflicts. On the one hand, recognition of the occupational origin of pathologies is often a lengthy procedure and it can even be lengthened by controversies over the medical and scientific knowledge used by each group of actors. On the other hand, the duration of these mobilizations is also a cause for raising concerns about the relevance of specific modes of production and consumption.

- Productive conversion of territories also shifts ecological boundaries, especially when concerned societies are engaging themselves in "ecological remediation". Some territories may choose to radically erase their industrial past, in order to valuate elements of nature for tourism or for real estate transactions. This move is symbolized by the proliferation of building on American brownfield lands or European so-called “eco-neighborhoods”. In other places, the industrial past and its environmental heritage are turned into a resource allowing the territory to distinguish itself from other regions and based on cultural practices such as patrimonialization. Like the fascination for (post)colonial ruins , this attraction for the industrial heritage must be questioned regarding its political and economic effects. Indeed, these cultural practices can sometimes lead to hide health and environmental impacts on former workers and on the ecosystem.
- The closure of plants in industrialized countries never means a decline in global production, but rather a shift between continents. The production from closed factories is often transferred to countries in the Global South, whose environmental regulations can be more easily sidestepped by major companies. Several historians opened new historiographic paths to study this phenomenon, such as Christopher Sellers and Joseph Melling when they proposed the notion of “industrial hazard regimes”, while others analyzed these relocations as a “toxic colonialism”.
- The abandonment of former industrial locations raises the question of their conversion, their remediation and their sanitation costs. It eventually addresses the question of historical responsibilities for the pollution. This history can then be either used or neglected by the stakeholders, which raise the question of the social role (and possible instrumentalization) of historians. The latter must also often deal with a local memory bruised by the recent economic failure. In some cases, public and industrial actors may decide to turn these spaces into landfills for storing or recycling waste from the industrial period. The management of these polluted soils questions the boundaries of environmental justice, as it must be emphasized that the treatment of the industrial heritage often leads to exposing specific social groups to toxic effects.

Notes for an environmental history of deindustrialization

Alexandre Elsig, Swiss National Science Foundation
Renaud Bécot, University of Lyon

This paper will be an historiographical introduction to this session. We will first propose a brief summary of the works done by social historians since two decades. We will then emphasize on the recent contributions of environmental historians to this field. We will eventually point out working prospects in which environmental historians could have an important part to understand the shift of ecological boundaries in the wake of deindustrialization.

Deindustrialization studies have become a dynamic field of research in the wake of the book directed by Jefferson Cowie and Joseph Heathcott in 2003. Depending on the national contexts, different academic traditions have captured these issues. In 2017, an edited volume provided a progress report on the work carried out by English-written historiography. Authors mainly came from a social history background, while incorporating a very significant part of environmental historians. In the meantime, a large group of French economic historians published a collection of

studies regarding economic origins of the decline of former European industrial districts. Their interest for environmental history was much lower, although these authors were interested in the way in which elements of nature could be valued by the actors in order to engage an economic conversion of their territories. This approach is shared by authors of collective volumes bringing together researchers working on cross-border regions.
Historians' concerns for these issues are also testified through a large set of monographs and case studies regarding specific territories or distinct industrial sectors. Based on the achievements done by social historians for twenty years, this session invites to think about how deindustrialization troubles all the borders that were seen as stabilized during the industrial era: administrative borders which prove to be inappropriate to manage toxic legacies or industrial relocations; but also ecological boundaries which are reshaped by the interruption or the displacement of productive activities. By shedding light on these changes, we want to explore the relevance of an environmental approach to deindustrialization.

When an environmental conflict reactivates past protests: The case of asbestos contamination in Aulnay-sous-Bois (Seine-Saint-Denis, France)
Anne Marchand, Giscop93 / University of Paris 13

In 1995, in Aulnay-sous-Bois near Paris (Seine-Saint-Denis, France), Pierre Léonard is diagnosed a mesothelioma at 48 by his pulmonologist – a cancer of the pleura specific to an asbestos exposure. Pierre Léonard's family manages in a few months, thanks to great tenacity and various tricks, to identify the source of the contamination, a small asbestos grinding plant located at the heart of a residential area and whose production has officially stopped since 1975.
Then begins a mobilization based on two main claims, to obtain a deconstruction / decontamination according to best standards and to lead to a census of all the people contaminated by this past activity. This mobilization, which is stil ongoing today, has taken different forms and associated a variety of stakeholders. It takes place in an area that has been industrial for a long time and has been strongly affected by deindustrialization since the 1970s.
Based on an archival and interview survey, the investigation questions the invisible temporalities of this environmental conflict. It examines how what seemed at first to be a sudden and local mobilization actually reactivates past protests and and is, in fact, part of a wider dynamic, that has begun decades earlier, at the European and even international level.

California's energy transition and its raw materials: Another NIMBY case?
Christophe Roncato Tounsi, University Grenoble Alpes

When it comes to environmental regulations, California is most often presented as a leader. This has been true in history (first national parks, first environmental laws, etc.) and is still true today (Governor Jerry Brown has been hailed as as climate hero by some for his opposition to the Trump administration). In terms of energy, the Golden State boasts some of the world's biggest solar plants, wind plants, geothermal plants and never loses an opportunity to invest in the energy transition. In September of this year, Governor Brown signed a new legislation which sets the goal of 100% renewable energy by 2045.

Renewables are most often presented as clean and the energy transition as the solution to a sustainable future. Yet, the energy transition would not be possible without a number of rare metals and, within these rare metals, a number of rare earth elements (REEs). California has a vivid history of rare earth mining. The mine of Mountain Pass in the Mojave Desert, which thrived in the years 1965–1995 when it was the biggest world contributor of REEs, has since known ups and downs: the mine closed in 2002, was revived in the late 2000s, filed for bankruptcy in 2015 and mining resumed in January 2018.

Mountain Pass was closed in 2002 because it had become noncompetitive: China had developed its own industry and started producing REEs at a more competitive price ; some 60 leaks in Mountain Pass from 1984 to 1998 led to a reinforcement of environmental regulations and thus to higher extracting and processing costs. The history of Mountain Pass shows that extracting rare earth elements is likely to generate heavy pollution.

With China producing 97% of REEs under much looser environmental regulations and providing California with the necessary materials for its energy transition, we can wonder if this transition is not another “Not-in-My-Backyard case” and if California has only delocalized its pollution, tossing it over the border. This comes down to assessing the environmental and social impacts of the energy transition in California.

Session 10G
State forestry and sustainability from a transnational comparative perspective

Organizer: Iva Lucic, Stockholm University
Chair: Wim van Meurs, Radboud University

Session abstract:
State forestry and extraction of timber has been a permanent characteristic of modernizing European societies. Trends of (de)forestation differed from one country to the next and across different time periods. Nevertheless, the concept of sustainability has always been at the centre of policy debates. Forestry required long-term planning to guarantee the availability of timer for the national economy.
The papers in this session discuss sustainability as a scientific, political, and economic concept. Typically, the understanding of sustainability differed from the national stake holder to local communities. Moreover, forestry experts acted as advocates of contested readings of the concept. European trade and developments redefined and rescaled the concept of sustainability from early modern times onwards.
By comparing different settings of social, economic, and political modernization, the session identifies common characteristics of the interaction of state agencies, local communities and experts across Europe. The session includes case studies on Habsburg Bosnia, Sweden, the Netherlands, as far as national policies are concerned and the transnational transfer of knowledge by forestry experts.

State forestry in the Netherlands: Between profits and sustainability around 1900
Wim van Meurs, Radboud University

Around the turn of the 19th century, the Netherlands constituted a counterexample to the European trend of increasing deforestation due to the high demand for timber for modernisation endeavour such as railways, mining and housing. Up until the very end of the century, the Dutch government pursued a policy of divesting the few forests it still owned to the highest bidder. Prospects of profitability for the national household, rather than the warning by individual experts concerning the long-term sustainability of timber production and preservation of landscape led to the creation of a national forestry service in 1899.
The paper analyses and historicizes the concept of sustainability that is inherent to forestry from 19th century onwards. The newly-created service not only began a massive programme of (re)acquiring wasteland and (re)forestation, but it also held sway over land use and changes to the landscape by municipalities and large landowners. Research, however, has demonstrated that, until the 1930s, the service's understanding of sustainability was of an exclusively economic nature. Nature conservationists acted as interlocutors for the Ministry of Economics and the forestry service largely because their objectives (sustainable forest management) coincided, whilst their arguments concerning the inherent value of nature and authenticity remained alien to them until tourism and recreation became addition concerns (and sources of income).

Managing the timber frontier: International forestry congresses and the rescaling of sustainability in the Baltic and North Sea regions, 1870–1914

Christian Lotz, Herder Institute

From the mid-19th century onward, industrial growth and an increase in the population in many European countries increased the demand for timber. Although coal, iron, and other resources were used, the demand for timber particularly grew for the mining industry (pit props), for railways (sleepers), and for many branches of construction projects (houses, harbours, etc.). In the North Sea and Baltic Sea regions, the increasing demand drove the timber frontier further North and East. Facing such a rapid change, forestry experts held international congresses and exhibitions from 1873 onward to discuss the future outlook of forestry in Europe. At these meetings, William Schlich (Britain), Peter Lund Simmonds (Denmark), and others warned that an ongoing increase in timber consumption would lead to an exhaustion of European woodland. By contrast, Adolf von Guttenberg (Austria) and others argued that the railway-network would connect spaces throughout Europe and would thereby enable timber-trade between regions of shortage and regions of abundance. As a result, the debates at international congresses led to an ongoing process of rescaling sustainability. This process was characterized by a constantly shifting interplay of various factors: On the one hand were changing spatial and temporal frameworks within the forestry industry brought about by economic, technological and environmental circumstances (increasing demand, advancing timber frontier, expanding railway network). On the other hand, were the experts, who were striving to measure these shifts, to integrate them into their planning for future resource supply and, where necessary, to help shape them through projects and interventions

Self-management, globalisation, and sustainability: Forestry in Early Modern Sweden

Jakob Starlander, Swedish University of Agricultural Sciences

Swedish society underwent massive political, social, and economic changes during the seventeenth and eighteenth century, about which we know quite a lot. Despite this, we know relatively little about how basic uses of the landscape came to affect cooperation between considerable parts of the population during the period. The purpose of this paper is to analyse one aspect of these processes, namely how peasant resource utilization and extraction of forests changed during the seventeenth and eighteenth century in northern Scandinavia. The premise is that with increased understanding of how the forests have been used and how this changed, a more nuanced discussion of people's daily life in relation to local, regional, and national discussions on sustainability can be reached, including aspects of ownership, gender and division of labour, and ecological relationships.
Notwithstanding devastating conditions such as war, state and church control, and a very cold climate, the seventeenth century was a time of great economic conversion with obvious consequences for people's everyday life. A noticeable trend within peasant economy during the period was that outfields (Swe: "utmark") came to play an increasingly important role for their livelihood. This also meant that their economy became more and more integrated and complex while they simultaneously became more dependent on a global market for their production. Resource utilization of the forests was organized in such a manner that the taxpaying peasants

themselves organized the extraction and the users collectively agreed on the basic rules regarding the withdrawal, thus constantly creating and re-creating concepts of sustainability. The research questions that are asked are as follows: How did rules and norms around sustainability regulate peasants' resource extraction and how did this change during the seventeenth and eighteenth centuries? What was their significance for resource utilization, ownership and division of labour? How did the expansion of forestry and its sustainability affect the relationship to agriculture as the peasants were farmers at the same time?

Whose forests? Contested political and economic dimensions of sustainability in Bosnian forest management (1878–1918)

Iva Lucic, Stockholm University

The paper analyzes the contested nature of forest management and sustainability as an important component of it, in Bosnia and Herzegovina upon the Austrian-Hungarian occupation of the Ottoman province Bosnia and Herzegovina between 1878 and 1908. Bosnian forests covered 50 % of the territory and were of immense socio-economic importance for both state and society. Thus, the Austro-Hungarian administration in BiH, considered Bosnian forests the largest source of revenue and epicenter of its modernization project, envisioning a state-managed and commerce based forest industry that was to be realized with capital from private enterprises. At the same time, however, the local population's livelihood relied to a great degree on extensive forest use for daily sustainability. Thus, forestry became a highly-contested, illustrating how collisions and interplays between the Empire's transformative vision and its concrete implementation on people and environment materialized.

Based on internal debates in the Landesregierung and among the Austrian-Hungarian Delegates in Vienna as well as local reports on forestry in BiH, this paper discusses the political and economic conflicts regarding forest management that were negotiated via the concept of sustainability between the Bosnian Landesregierung, the Austro-Hungarian delegates in Vienna, the private enterprises and not least the local Bosnian population in regard to Bosnian forests. It approaches "sustainability" as a "frame" that was subject not only to multiple rival conceptions, but also to shifts in meaning over time and operated on different political scales, ranging from the imperial centre in Vienna all way down to the local realities, where "abstract concepts" had direct consequences for forest use regulation affecting local population and its livelihood.

Session 10H
Soil and economy in the historical perspective in pre-industrial Europe

Organizer: Tomasz Związek, Tadeusz Manteuffel Institute of History, Polish Academy of Sciences
Chair: Verena Winiwarter, University of Natural Resources and Life Sciences (BOKU)

Session abstract:
In 1634 Jędrzej Święcicki in his book called Topographia gave a very detailed description of the Mazovian land. He drew special attention to the Mazovian soils which, in his opinion, were very fertile and produced very fine the crop harvests. Also officials who were inspecting king's estates in Mazovia in the 1560s were very satisfied with the soil fertility. These opinions must surprize today's historians aware that Mazovian lands have mostly podzolic soils which, according to the classification in the modern paedological studies, are considered infertile. This example shows how our understanding and perception of the soils has changed during the last centuries. It also shows how we – modern scientists – project our present standards on the past, and how our knowledge of past times is insufficient and hard to cognise.
During our session we would like to consider the problem of connection between soils and economy in the historical perspective. We would like to examine how the soil was used by the inhabitants of rural settlements. We would also like to ask for how long the land was cultivated by peasants before exhaustion and for how long the fields were left to rest. We would like to see if there were any special strategies in fertilization of the fields and gardens in the Middle Ages and Early Modern Period. Finally, we would like to see how the question of the soils lifetime and quality can be used in the studies on economic history and historical demography.
We would like to ask these – and also other questions – to the researches of different disciplines such as history, archaeology, demography, cultural studies, etc.

Land assessment and soil classification in 17th century Sweden
Olof Karsvall, Swedish National Archives

In Sweden, a nationwide land survey was launched during the 1630s. As a result, a significant proportion of the land was measured, mapped and described. The arable land is the focus of these maps. The surveyors would, according to their instructions, comment the condition of the arable land, regarding the topsoil.
This paper presents an overview of arable and soil using data extracted from c. 10,000 large-scale maps from the period 1630–1655. The maps have previously been transcribed, which enables full-text search. Furthermore, all settlements have been geocoded, which means full-text searches can be analyzed spatially. The surveyors mainly refer to five soil types: black, clay, fine sandy, sandy and gravel. Different soils are sometimes mixed within a field, however, in most cases only one soil type is indicated a field; likely what the surveyor perceived as dominant.
The most common types are clay soil (lerjord) and sandy soil (sandjord), each indicated on about one third of all maps. Fine sandy soil (mojord) and gravel soil (örjord) are least common, appearing on less than 10 percent of the maps and are limited to fewer areas. The black soil (svartmylla in Swedish), which may be considered the most valuable, is mentioned on 16 percent of all maps. It

appears as expected in core arable areas, and also in the woodlands and peripheral areas, although more sparsely.
Two thirds of Sweden are covered by glacial till, so these arable fields were the best of the time. This paper further analyzes and discuss how soil quality varied between different regions. Questions asked include the accuracy of the surveyors, concerning this early evaluation of arable and soil in 17th century Sweden.

Soils and the rural economy of the ecclesiastical estates of Opatówek (Greater Poland) in the long term (1512–1616)

Tomasz Związek, Tadeusz Manteuffel Institute of History, Polish Academy of Sciences
Piotr Guzowski, University of Białystok / Tadeusz Manteuffel Institute of History, Polish Academy of Sciences

One of the biggest keys of estates of the archbishopric of Gniezno in Greater Poland was gathered around the town of Opatówek which is situated in the southern part of the 16th century Kalisz voivodeship. The town was one of the major municipalities in Kalisz district which was surrounded mostly by villages which were the part of this estate. Opatówek and its settlement hinterland was also a kind of buffer between the district capital city of Kalisz and very comminuted structure of the nobility settlements which were located along the road to the city of Sieradz which was the capital city of Sieradz voivodeship.
Because of its locality and the fact that it was owned by the Church, a vast number of written sources have survived in archives, which makes possible the analysis of the economic structure of its rural hinterland (20 villages). In our investigation we will use data from the oldest estate inventory from 1512 and others from 1548, 1592 and 1616/1617, and we will show how the agrarian economy was changing over the century. To better understand this process, we will also analyze the data from the Archaeological Survey of Poland which contains information from the field prospections where the late medieval and early modern ceramic vessels were found and recorded.
Our main aim is to investigate how the economy of the arable land was changing due to soils conditions, and environmental factors over the decades. Also, we want to ask some questions on the subject of the types of the spatial distribution of the crops types in the Opatówek estates. Finally, we would like to conduct the preliminary study of the exhaustion and fertilization of the arable land, gardens and pastures.

The virtuous cycle of return: Soil husbandry in the open fields of Medieval England

Richard Jones, University of Leicester

In the absence of geochemical knowledge, medieval farmers may never have spoken about the ‘virtuous cycle of return’ – the process by which the take up of nutrients from the soil in growing crops or raising animals was balanced by their replenishment primarily through manuring – but they understood its principles. Drawing on both archaeological and historical evidence, it is clear that peasants in medieval England possessed as sophisticated understanding of their soils and the need to maintain their qualities. This knowledge promoted particular practices. In particular, we can detect how soil type and crop requirements were aligned with the kinds of animal (and non-animal)

manures that were favoured. We see a recurrent connection between, on the one hand, heavy soils, wheat growing, and sheep; and on the other, light soils, barley, and cattle. Manure stands at the centre of these triangulations. In this paper, an explanation, based on the first principles of medieval natural science, is offered for why peasants adopted these soil-crop-animal regimes; and, ultimately, why it was so effective.

Demography of historical populations and environmental factors: Could we prove the connection?

Mikołaj Szołtysek, University of Warsaw
Radosław Poniat, University of Białystok
Bartosz Ogórek, Pedagogical University of Cracow

Although the impact of the environmental factors on the economic and the social life of the historical populations is a well known and widely discussed fact, it is shown usually with the use of the qualitative methods and on the single population level. Large scale quantitative studies of the subject are still quite rare and often based on the unreliable data. Recent development of the large scale historical databases like demographical NAPP and Mosaic projects, and environmental projects like HYDE allows historians to combine environmental and demographical data in the more extensive and rigorous fashion. Our goal is to test the potential impact of the environmental factors (especially the land use, soil quality, ruggedness) with the basic demographical indicators obtained from the combined NAPP and Mosaic databases. It will allow the statistical analysis of the connection between demographic behaviours of almost 300 historical populations from 17th–early 20th century Europe and their environmental conditions.

Session 10I

Environmental policies during the Cold War: Transcending boundaries in national, transnational, and global perspectives

Organizer: Sabina Kubekė, Herder Institute
Chair: Frank Uekötter, University of Birmingham

Session abstract:
The session focuses on different levels of environmental policies during the Cold War: global, transnational and national. The presentations will show different aspects of various environmental policies that were forming in that period. The aim of the presentations is to show that in a lot of cases boundaries between West and East, science and politics, the international and the national sphere were bridged in the context of environmental protection efforts. Specific case studies from Yugoslavia, East Germany, Poland and the international climate change negotiations will be presented.
While the presentation on international climate policy will take a global perspective showing how the climate issue crossed the borderline of pure scientific relevance and emerged as a policy area transcending the boundaries of the modern nation state, the case study of East Germany will explain how, on a national level, the issues of environmental protection reached the political agenda of East Germany. The often neglected cooperation between East and West during the Cold War will be discussed in presentations on Yugoslavia and Poland. Transnational scientific environmental cooperation in Poland during the communist period is an example of scientific knowledge being passed through networks to the national and local levels. Whereas the presentation on the case of tourism management in Yugoslavia will reveal not only Yugoslavia's specific form of "self-management" socialism and its vision of modernity, but also international attitudes towards environmental protection and mass tourism.

Bridging boundaries for planet Earth? The emergence of an international climate policy in the 1980s and 1990s
Pascal Pawlitta, Institute for Contemporary History, Munich

Today, human-induced alterations of the earth's climate are often described as the most pressing environmental threat of our time that needs to be addressed urgently by the international community. Until the early 1980s, however, the planet's climate system was merely subject to the academic interest of a relatively small group of specialized scientists. It was only when this increasingly international scientific community forecasted significant climatic changes caused by human activities and presented these hypothesis of an anthropogenic climate change to the wider public that possible human interferences with the climate system raised growing public and political awareness. Especially, in the countries of the Global North these scientific findings found fertile ground in a wider environmentalism. By the mid-1990s climate change was not only recognized as a substantial global environmental problem but was also addressed in multilateral institutions and agreements within the system of the United Nations.

Despite the growing interest in climate history this process of politicizing the climate issue in the late 20th century, meaning a transformation of scientific conclusions into a topic of international political concern, until now, remains a neglected area of historic studies. Based on archival materials from international climate change assessments and related intergovernmental negotiations the paper, therefore, aims to show how the global environmental issue of climate change crossed the boundary of pure scientific relevance, and hence emerged as a policy area transcending the boundaries of and between the modern nation states. Special attention will be drawn to the Intergovernmental Panel on Climate Change (IPCC), a hybrid science-policy organization for assessing the science, impacts and possible response strategies to climate change, as well as to the negotiations for a framework convention on climate change which was signed at the 1992 UN Conference on Environment and Development in Rio de Janeiro.

Poland and the international environmental cooperation during 1970–1980s
Sabina Kubekė, Herder Institute

There is a growing number of academic interest and projects aiming to show the networks of cooperation between the West and East blocks during the Cold War. Typically, such research is challenging the "silence" assumption claiming that due to political rivalry the two blocks in many aspects were isolated. However, concerns about the global environmental policies although rooted firstly in the local and national issues as well as interests, were bridging the political Cold War division especially in the 1970s. In this way, environmental threats were used as a vehicle for normalizing international relations during the Cold War.
In this context, a closer look at the Polish case and networks of cooperation in the environmental sciences during the communist period is particularly interesting. Firstly, until now the international cooperation during the communist times in Poland remains a neglected area of scientific studies. Secondly, as the limits of the international cooperation between the East and West blocks are usually drawn at the end of 1970s, the case of Poland could also serve as an example to show alive international networks also throughout 1980s when detenté was over.
Based on the archival materials of the existed networks between socialist Poland and the West on the environmental and energy issues, the paper aims to show the ways these international networks formed, the topics and issues discussed and the possible impacts they had on the national policies and local initiatives in socialist Poland. The two case studies of the involvement in the UNESCO Man and Biosphere Programme (MAB) as well the cooperation in the nuclear energy sector will be presented.

A seaside for the future: Yugoslav socialism and the Adriatic projects, 1967–1978
Josef Djordjevski, University of California, San Diego

By the early 1960s, the once poor and underdeveloped Yugoslav Adriatic coastline was experiencing dramatic changes brought on by the development of tourism and industry. The Yugoslav government, aware that there might be conflicts between industry, tourism, and the environment, sought to initiate a grandiose spatial planning campaign that would ensure a balance in development. Between 1967 and 1978, Yugoslavia engaged in the three "Adriatic Projects" that

were meant to bring the Adriatic coastline up to a higher economic standard in a sustainable way. The three projects were sponsored and co-funded by the UN and brought together international teams of experts to Yugoslavia's shores where plans were drawn up and mapped out in order to ensure "rational" spatial planning that would serve to benefit the entire coast as well as the socialist Yugoslav Federation itself. The projects, with all their international attention and support, had varying degrees of success. This paper argues that the Adriatic Projects set the stage for the transformation of the coastline into a seaside environment that reflected Yugoslavia's specific form of "self-management" socialism and its vision of modernity, but also international attitudes towards environmental protection and mass tourism that the Adriatic coast played a major part in.

Session 10J
Interpretative boundaries between ecocriticism and environmental history

Organizer: James Smith, Trinity College Dublin
Chair: Finn Arne Jørgensen, University of Stavanger

Session abstract:
Sara Pritchard (2013) has argued that "environmental historians have shown how human-natural interactions are fundamental to what are often seen as purely 'social' processes". Simon Estok (2018), conversely, has pointed to phenomena such as "ecophobia" that shape socio-technical and human-natural interactions, and yet emerge within the literary imagination. Environmental factors interact with literary culture to produce effects beyond the social, and the world of the text as understood by scholars of literature always has an effect beyond the purely cultural. The picture is complicated by the prismatic nature of texts, which cannot be classified neatly and take on new attributes depending on the methodological lens through which they are viewed. Environmental humanities takes these larger interactions and shapes broader research questions from them, but there is potential for an exchange of knowledge at the boundaries in and of these oft-merged methodologies.
The goal of this session is to explore the ambiguities and questions raised at the interdisciplinary border between ecocriticism and environmental history. The textual ecologies explored in its papers are not wholly literary, nor are they entirely a primary source. They are more polyvalent than a single discipline, and taking some time within a history context to focus on the interactions of these qualities is a profitable exercise. It highlights the functions of disciplines within the transdisciplinary environmental humanities, but also the possibilities for a more capacious history. The three speakers in this session will discuss the complexities of interpreting these conflicting requirements within their own research, and discuss the manner in which the two approaches can be hybridised to answer new questions.

The flattened object: Hybrid environmental deep mapping in an Omeka collection
James Smith, Trinity College Dublin

This paper explores the complexities of treating an extract from a book as a digital object within a larger collection of thematically diverse and yet ontologically identical Omeka items. When an environmental description of a place from a travelogue, for example, is understood within a larger cloud of collection items – oral histories, maps, images, archaeology, bio-regional data - then it becomes more than literature or history. It is a part of a metatext with hundreds or thousands of companions. It could be understood as a historical primary source or a subject of literary criticism in other circumstances, but what is it now? Only by exploring the boundaries between disciplines and tying a larger cultural collection together through linkages such as keywords, collections or named entities can the emergent properties of a larger whole be fully understood.
The presenter will use examples from his Irish Research Council-funded postdoctoral project, a water history deep mapping of Lough Derg in Ireland's County Donegal, a site of pilgrimage and complex environmental history. It is a place that has been written about extensively, both as history and as

poetry and literature. The paper will explore the overlapping of neat source categorisations in Omeka, a collection management tool that allows rich metadata description, but in which all research material exists within a sea of collection items, a capacious schema designed for the use of cultural collections and rich multi-form written and material heritage. What is environmental literature and what is environmental history within this world, and how can each approach be enriched by their digital humanities-assisted transactions?

Nature made absent? Considerations on doing environmental history with Arabic manuscripts
Torsten Wollina, Independent scholar

The paper investigates boundaries of environmental history and the history of technology with regard to the long-living and widespread Arabic manuscript tradition. On one hand, Arabic manuscripts have been used as sources for environmental history from a variety of angles. Eisenstein and Tlili have explored manifold literatures on animals. Mikhail's Nature and Empire in Ottoman Egypt has been pioneering in tracing human-natural interactions through the maritime exchange of natural resources. Wick unearthed the construction of spatial units through bureaucratic practices.
On the other hand, natural effects were impactful on the production, perusal, and preservation of the physical manuscripts. From innovations in paper production in the 9th/10th centuries to concerns of pest control to sites of textual enactment, nature is at the heart of the longevity of Arabic manuscript tradition or, rather, of several traditions. At the same time, the sheer materiality is downplayed or even made absent in the literary imagination of the tradition itself. In short, nature is accepted as a general fact of life whereas it is downplayed in the specific contexts of textual enactment.
The paper addresses the dialectic between the inherent materiality of knowledge production in the Arabic manuscript tradition and the technologies that evoke its dissociation from its environmental context. In this, the paper moves from manuscripts as textual sources to an a their materiality. Finally, it addresses the present-day dissociation that is amplified through encounters with disembodied remediations of the manuscripts themselves, be they digital images or microfilms or printed editions.

How to narrate the non-anthropocentric history of environments
Anna Barcz, Trinity College Dublin

The paper addresses the problem of narrating the Chernobyl catastrophe and how it has been changing due to the Anthropocene. The author is interested in the event's influence on the new, alternative historical narrative by referring to a very private and intimate experience of the catastrophe as presented in Christa Wolf's Accident: A Day's News (1987), Svetlana Alexievich's Chernobyl Prayer: A Chronicle of the Future (1997) and major literary texts created by contemporary Ukrainian writers. Literature and cultural memory narratives can be helpful in expressing the blurring boundary between what is private and what is public in the Anthropocene. Since the Anthropocene does not represent a mere geological period but a huge and necessary debate over the human

condition and environmental change, the style and methodology of historical narration have been changing as well.

Session 10K
Advertising Alpine landscapes. Environmental perceptions in Belle Époque tourism

Organizer: Katharina Scharf, University of Salzburg
Chair: Martin Knoll, University of Salzburg

Session abstract:
Today the Alps are a contested area, especially in matters of environmental debates. We are talking about mass tourism, overuse of natural resources, and "Disneyfication". In this session, we will focus on the origins of these developments in Alpine regions and investigate the changing imagery of Alpine landscapes due to tourism advertising and conflictual discourses.
Numerous Alpine regions experienced radical transformation processes in the 19th century in connection with the breakthrough of modern (mass) tourism. Concepts of regional boundaries changed due to shifts of the perception of "natural" landscapes. Cog railways and funiculars inaugurated new spaces and possibilities of experience in the Alps. New contact zones between local inhabitants, tourists, and wildlife caused conflicts among the different groups of interest. The question came to the fore: Who determines how Alpine landscapes should be used, developed, promoted, and perceived?
Tourism advertising served as an intermediary and catalyst agent, it changed and determined images and perceptions of Alpine landscapes. Accordingly, source types such as posters, brochures, travel guides or touristic pamphlets and their respective textual and iconographic programs, but also tourism related parliamentary material will be used as basis for environmental and cultural history approaches within this panel, facilitating analysis and discussion of conflicting ideas and images of "natural" landscapes, boundaries and rights to "use" the Alps.

Images of urbanity within a mountain range: Innsbruck as tourism environment and Alpine landscape

Hester Margreiter, University of Salzburg

Concepts of regional boundaries change due to shifts in the perception of landscapes and settlements, and in conjunction with technological advancements. My paper deals with the changing imagery of Innsbruck, an Alpine city in Austria. Medieval depictions describe Innsbruck as a city on the riverbanks of the Inn and situated within a valley. The increasing connotation of Innsbruck as an urban center located in the middle of the Alpine mountain ranges begins in the early 19th century, driven by a new perception of nature in romanticism and due to the early stages of alpinism.
The emergence of tourism as a broader phenomenon in the late 19th and early 20th century consolidated this perspective: The construction and promotion of a leisure-oriented funicular railway, linking the city to its northern mountain range, as well as the extension of regional train services to recreational villages on the plateau situated to the south of Innsbruck, provided convenient access to the surrounding mountains.
Tourism advertisements at the turn of the century promoted Innsbruck in combination with these areas on the outskirts of Innsbruck, although, regarding administrative boundaries, those were not

(yet) a part of the city. The advertising of the city and its surroundings was intertwined to promote both urban and rural flair. Subsequently, it enabled to associate Innsbruck also and increasingly with winter sport tourism.
My paper advocates a culturalized environmental history approach, making stock of source types such as tourism brochures, local advertisements, travel guides and touristic pamphlets, which show the development of structural advancements, cultural perceptions, and marketing narratives, supporting a perspective of Innsbruck which transgresses the boundaries of the city and supports its tourism development until today.

Making the High Alps accessible for tourists: Cog railways and their role for Belle Époque tourist advertising.

Christian Rohr, University of Bern

For a long time, the high Alps had been inaccessible for nearly anyone. Only shepherds reached the highest pastures; travellers faced treeless landscapes, when crossing Alpine pass routes. During the 18th century, a fundamental change in the perception of the Alps took place: Alpine peaks, glaciers and rocks became something sublime. Artists started to depict Alpine sceneries, and a few bourgeois tourists started to climb up even the highest mountains of the Alps; nevertheless, for the majority the boundaries between the foothills and the high Alpine ranges still remained.
In the second third of the 19th century, the Alpine countries became reachable by train. Starting with Thomas Cook's travel agency, mass tourism reached the Alps in the 1860s. From the end of the 1870s onwards, a new tourist attraction became popular: cog railways, bringing rapidly increasing numbers of tourists up the mountains. "Normal" tourists were now able to transcend the boundary reaching high Alpine viewpoints and even peaks. For the first time, they could admire Alpine sceneries not only from the valleys, but also from high altitude. Pass routes were now surmounted not with an arduous walk or on horseback, but in a relatively comfortable train. Alpine travel became an exciting amusement.
It is obvious that the new cog railways became an important motif for tourist advertisements. During the Belle Époque, renowned artists such as Anton Reckziegel designed posters in great numbers. These posters advertising the new Alpine cog railways were affixed in railway stations and hotels. This paper is dedicated to this important pictorial source type to be used for environmental history approaches. It will be analysed how the cog railways became an essential part of Alpine landscapes and how bourgeois mass tourists became now able to approach the high mountains. The posters themselves mirror a new perception of Alpine landscapes.

Boundless tourism in the Alps? Natural landscapes in Salzburg and Savoy between development and preservation

Katharina Scharf, University of Salzburg

In what ways did Belle Époque tourism change Alpine landscapes and environmental perceptions? The years between roughly 1860 and 1914 were the first take-off-period of modern tourism, which fundamentally altered many Alpine regions.

A seemingly unlimited tourism development of the Alps and competing claims among interest groups resulted in a multifaceted conflict that is still ongoing today. Basically, the core question seems to be: Who owns the Alps? Who determines how Alpine landscapes are used, developed, promoted and perceived? The Alpine clubs, the tourism advertising, the hotel industry, the transportation companies, the forestry administrations, farmers, huntsmen, and/or tourists?
My paper suggests a comparative cultural history approach to investigate these conflicting ideas and images as documented in historical records such as the records of the Austrian Landtag or the French Conseils Généraux. Analysing these records also raises the question which type of nature is advertised? Pastures and cows, national parks, well-kept lake landscapes with train stations or Alpine "wilderness" – what types of landscape are conceived to be the "real", "natural" Alpine landscapes? What kind of nature or landscape deserves to be protected or preserved and what kind needs to be opened up and developed?
My project investigates these contested Alpine spaces and landscapes using a transnational and comparative approach, using methods of discourse analysis and visual history. The Austrian Bundesland Salzburg and the French Départments Savoie and Haute-Savoie are tourism regions with strong conservation and preservation movements in the 19th and 20th century. Therefore, they offer adequate case studies to analyse the tourism related regional transformation processes as well as the involved tourism promoters and opponents, and the respective discourses. Thus, the regional perspective of the project adds to the environmental history of tourism.

Comment: Robert Groß, Innsbruck University

12:30–14:00 Lunch

14:00–15:30 Keynote

Alf Hornborg, Lund University

The power of signs: Environmental history as the interfusion of meanings and metabolism

We do not need to revisit the histories of "idealism" and "materialism" in Western thought to recognize how difficult it is to simultaneously acknowledge the semiotic and the material aspects of social and natural processes. The interaction of subjective and objective factors tends to be so difficult to handle that many academic approaches simply choose to disregard one or the other perspective. Several disciplines in the human sciences are internally divided by this difference in focus, and some have experienced historical oscillations between periods in which one or the other is dominant. An obvious and paradigmatic case is economics. For the past 150 years, economics has been dominated by a preoccupation with human desires and preferences – as measurable in terms of "willingness to pay" – rather than with the management of limited biophysical resources such as land, labor, materials, and energy. Farfrom "materialist" in outlook, neoclassical economic theory is so detached from the physical constraints of the biosphere that it is continuously being challenged by the heterodox schools of Marxist and ecological economics. Similar tensions divide fields like anthropology, where the obsession with human experience, symbolic systems, and identity tends to delegate concerns with the material conditions for sustainability to the margins. Recent attempts to escape from such anthropocentrism – under the banners of "posthumanism," "the new materialism," and "object-oriented ontology" – have also failed to address the specifically human impact on the world. A transdisciplinary field such as environmental history is well positioned to transcend this tenacious dualism and the inclination toward one-sided perspectives. It can neither limit itself to the history of human ideas about the environment nor to the biophysical transformations of landscapes but must examine how the production of cultural meanings intervenes in the material constitution of the biosphere. This meansrecognizing how even the ostensibly "materialist" concerns of economics hinge on the logicof a peculiar human sign system – that of general-purpose money. After a mere three centuries of global market expansion, this logic is transforming and jeopardizing the Earth System. We urgently need to understand the specific semiotic vehicles through which human meanings intervene in the biosphere, in order to be able to domesticate and restrain the currently disastrous trajectory of global metabolism.

Short bio:
Alf Hornborg is an anthropologist and professor of human ecology at Lund University. He is the author of The Power of the Machine (2001), Global Ecology and Unequal Exchange (2011), Global Magic (2016), and Nature, Society and Justice in the Anthropocene (2019). His research has a special emphasis on how cultural ideas constrain human approaches to economy, technology and ecology.

Chair: Riin Magnus, University of Tartu

15:30–16:00 Coffee break

Book launch coffee break at Researchers' Forum in Astra building.
Combined Academic Publishers presents "Cultivating Nature" by Sarah Hamilton

16:00–17:30 Parallel Session 11

Session 11A – cancelled

Session 11B
Environmental contexts of famines in Northern Europe

Organizer: Timo Myllyntaus, Turku School of Economics
Chair: Julia Lajus, National Research University Higher School of Economics

Session abstract:
Famines are serious food crises generally attributed to disturbances in the food supply to large population groups in considerably large geographic areas. Historically, famines have often been connected to environmental phenomena, such as droughts, rains, floods, insects and plant diseases, which may have diminished the harvests' quantity and/or quality.
Environmental factors have as a rule been regarded as triggers or catalysts, which ignite and/or escalate sequences of food supply, which gradually tend to worsen to the level on which inhabitants of the area start to suffer from hunger and diseases.
This session examines environmental contexts in which food crises broke out and worsened to famines and severe epidemics. The geographical focus of the session is on Iceland, Finland and Baltic provinces before industrialisation. In the past, these regions used to be self-sufficient in food production, which, however, was quite sensitive to environmental disturbances. Their dependence on domestic foodstuffs was greater than that of many other countries because they were isolated from exporters of food due to their remote northern location and frozen harbours during cold winters. As a result, their possibilities to solve food deficits by importing were often small in late autumn after harvest failures. This vulnerability materialised quite often: food shortages and famines probably occurred in Finland and Iceland more than in other European countries.
The countries under study developed various survival strategies and storage arrangements. However, those tend to have gaps and flaws. Even when they managed to prevent some shortages, they might make the food supply vulnerable to some other threats.
In the case of emergency, these countries met difficulties to get their requests for help through and make foreigners to understand the urgency of their food crises. Foreigners' ignorance on severe circumstances in the far north also prevented to get help. Communication between most northern Europe and countries in the centre of the continent was not very frequent because of various reasons.

The effects of the volcanic eruption of Laki in Iceland, 1783–1785
Ólöf Garðarsdóttir, University of Iceland

The paper deals with the effects of the so-called Skaftáreldar, an extensive volcanic eruption in the Laki-craters in southern Iceland. The eruption started in June 1783 lasted for more than a year and

had wide-ranging impact on the climate not only in Iceland but over most of the Northern hemisphere. Following the eruption, the Icelandic population declined by 20 per cent (the population was around 50,000 by June 1783 had declined to 40,000 two years later). Iceland was part of the Danish kingdom at the time, and eventually aid was sent to the population from authorities in Copenhagen. Because of complications in communications, the aid arrived late. News about the eruption did not reach Denmark until August or September and initially, Danish authorities did not realize how serious the situation was. A ship was then sent to Iceland with representatives who were supposed to investigate the situation. Because of unfavourable weather conditions, the ship could not take harbour in Iceland and the representatives spend the winter in Norway. The ship did not reach Iceland until April 1784. Despite scarce information about the situation, funds were raised in Copenhagen in the beginning of the year 1784. One year after the start of the eruption Danish authorities realized how serious the situation was, and various royal decrees concerning measures were published in the coming months. Despite the fact that the catastrophe severely hit the most districts in Iceland, aid from overseas was almost exclusively directed towards the population in southern Iceland.

Earlier research indicates that the excessive death rate in the aftermath of the Laki-eruption can be explained by three main factors: First: Famine was a direct consequence of the loss of livestock. More than 70 per cent of all domestic animals died as a direct consequence of toxic symptoms caused by the volcanic ash. Secondly: In the first summer of the eruption, an ill-definable epidemic raged in Iceland and took many lives. Thirdly: A year after the eruption a smallpox-epidemic elevated mortality rates enormously.

Here qualitative and quantitative sources are used to shed light on the magnitude of the famine in relation to other causes of death and to the situation in general. I will focus on one a few parishes in the Northern part of country (where the ash had the most detriment effects on the livestock) and compare them with the situation in a few parishes the southern part of the country, i.e. in the immediate vicinity of the volcano. On the basis of qualitative source material dating from the time of the eruption, I will examine the situation of the population living in the vicinity of Laki and that sought refuge in the districts west of the Laki.

Unbearable weather extremes: Meteorological conditions before and during the Finnish famine, 1867–1868

Timo Myllyntaus, Turku School of Economics

Finland is one of the European countries where seasonal variations of weather are the greatest. It is situated in the north – between the 60th and 70th latitude. No other country grows most of its grain so north. During a year, temperature may vary within more than 70 Celsius degrees, between less than 40 minus degrees in winter to above 30 plus degrees in summer. Throughout history, Finns have adapted to such great temperature variations, even though up to the mid-20th century, they lived in rather primitive conditions. For example, still in the 1860s almost half of the rural population lived in windowless and chimneyless log cabins.

Although Finns regard substantial weather variations as normal, in 1867–1868 some of these fluctuations were, however, so exceptional that Finns found them unbearable. This paper examines what kinds of weather extremes surpassed Finns' threshold of tolerance. Furthermore, it seeks answers to the following questions: What times of the year does the frost hit humans most severely?

How can a long winter harm people? Why didn't Finns, the nation of 1.8 million, prepare themselves to meet exceptional weather? Could the technology fix have saved Finns from the menace of extreme weather phenomena?
Roughly, every tenth Finn died in two famine years of 1867–1868. During those two years, in total 207,494 inhabitants perished, whereas just three years earlier, in 1864–1865 only 88,718 Finns had died. Did weather extremes cause the rise of mortality in three years by the factor of 2.4? Or whether had these extremes just triggered the catastrophic societal chain reaction, which led the dead rate more than double in a short time? The hypothesis is that the blow of these abnormal weather phenomena was extraordinarily strong, while socio-economic structures of Finnish society were too weak to sort out disturbances caused by natural circumstances.

Estonian and Finnish Famines of the 1860s in the foreign eyes
Kari Alenius, University of Oulu
Antti K.O. Häkkinen, University of Helsinki

All the countries around the Baltic Sea suffered with exceptionally unfavorable weather conditions at the end of the 1860s, resulting in more or less severe crop failures and food shortages. Finland headed for a famine and lost nearly eight percent of her population in hunger and diseases. Also Estonia suffered the consequences of the food shortage, like all the countries in the area. The famine was one of the latest peacetime crises in modernizing Northern Europe, attracting media attention and producing charity activities all over the world. The adverse natural conditions, and in the case of Finland, the unfavorable Northern environmental conditions in general, were understood as the basic reason behind the crises, but in the publicity all kind of charitable, economic, religious, cultural and political motives and aims were intertwined.
The goal of this presentation is by using the contemporary international (digitalized) newspapers to analyze:
A) How the crises In the Northern Baltic Provinces (Estland and Livland) and Finland were overall reported in the press,
B) How the natural environment/human relation was conceptualized,
C) How the reasons of the hunger were analyzed in these cases and
D) Which kind of various above-mentioned motives can be read in the texts. The hypothesis is that momentarily the world-wide publicity focused on the area of the Baltic Sea opening new perspectives to study national and international relations and processes.

Cultural heritage of Finnish famines: Paavo the peasant and jokes of Laihia's thriftiness
Jan Kunnas, Independent Scholar

The town of Laihia in Ostrobothnia, Finland, is associated with extreme thriftiness. In November 2017 the jokes of Laihia´s thriftiness was accepted as part of a Finnish living cultural heritage, as a part of our oral tradition of proverbs, riddles, songs and jokes. Indeed, at least a thousand jokes of Laihia´s thriftiness have been found. The origin of Laihia's reputation of thriftiness dates most likely back to the 1866-1868 famine years, when beggars from other municipalities were told that we take care of our own poor, whereas begging outsiders had to pass Laihia without getting anything to eat.

The town of Saarijärvi in Central Finland on the other hand is associated with the finest fictional character in Finnish literature. In one of his best known works, Finland´s national poet Johan Ludvig Runeberg in the early 19th century portrayed Paavo the Peasant from Saarijärvi who responded to his life of abject poverty with heroic stoicism aka Finnish sisu. When frost takes his crop, he tells his wife to mix in the bread a half of bark, while he digs twice as many ditches to keep water and frost away. Even when his efforts finally pay off with a good harvest, he tells his wife to mix in the bread a half of bark still, for all frost-nipped stands our neighbor's grain field.

The harsh environmental conditions of agrarian Finland led to contrasting local survival strategies, which are still remembered and justified. I will compare these two famine related storylines that respective regions nowadays take prides in, although their origins are very different. I will argue that both fit well into our times. Laihia´s thriftiness has now transformed into a pride of making the best out of scarce resources, reusing and recycling, fittingly to the quest for a circular economy. Paavo the Peasant again reminds us about the value of hard work and taking care of those less fortunate.

Session 11C

Eternity costs and wicked legacies: Unacknowledged constraints to a sustainability transformation?

Organizer: Verena Winiwarter, University of Natural Resources and Life Sciences (BOKU)
Chair: Péter Szabó, Institute of Botany, Academy of Sciences of the Czech Republic

Session abstract:
The fossil-fuel based way of living has enabled society to gain unprecedented control over materials and develop multiple technologies. Its side effects are likewise unprecedented. A sustainability transformation envisaged as the way out of this conundrum is operationalized in the "SDGs" of the UN Agenda 2030 on a global level. Goal 3.9 specifically addresses the toxic legacies, but as a health issue, while Goal 6.3 spells out the water-related perspective calling for an end to dumping and intending to minimize release of hazardous chemicals and materials. While the SDGs entail that the negative impacts of urban activities and of hazardous chemicals should be reduced, the document is devoid of any systematic treatment of the legacies of the industrial mode of living which have developed since the 1850s at the very latest. But they abound, and are more than just toxic chemicals. Underground cavities from past mining processes, filling with toxic water and endangering groundwater reserves, but also state shifts in terrestrial ecosystems due to past interventions such as drainage and river regulation are burdens for a sustainable future seldom acknowledged. Environmental historians have expertise in not just identifying such legacies but also investigating the social and economic rationales that framed their creation and thus can offer experiences for precautionary future action.

"Eternity is a lot of future": The wicked legacies of mining
Verena Winiwarter, University of Natural Resources and Life Sciences (BOKU)

From Giant Mine in Yellowknife, Canada to the many underground tunnels of the German Ruhr Region's now closed coal mines, from the uranium-laden mine waste heaps of South Africa's gold mines to the remnants of Church Rock Spill in New Mexico, mines have long afterlives. Using the concept of Wicked Legacies, this paper presents the first worldwide overview of different types of mining afterlives and discusses the threats they pose to local and regional sustainable development. Social and economic issues blend with technical and ecological issues to increase the wickedness of a legacy. Companies often file for bankruptcy in cases when the mine has been exploited and the huge amounts of toxic tailings together with unstable geologies are just some of the socio-economic and socio-ecological challenges the legacies of mining pose. Many mines will have to be managed and monitored forever, in the sense of "as long as humans do want to live in the vicinity". Neither the sustainability sciences nor economy offer concepts for dealing with eternity, the SDGs are missing out on the long-term burden of mines. This presentation suggests to use environmental histories as part of the coping process for such locations.

Ephemeral benefits, eternal costs? The legacy of Soviet nuclear Industries in Aqtau, Kazakhstan
Stefan Guth, University of Tuebingen

Nuclear technologies and nuclear ecologies unfold on vastly incommensurable timescales, with important consequences for how the expected short-term benefits and long-term legacies of atomic energy are weighed against each other. This paper looks at the city of Aqtau on the desert peninsula of Mangistau, a former centre of Soviet uranium mining and the site of the world's first industrial-scale breeder reactor and largest nuclear-powered water desalination plant ever built. Once celebrated as an example of nature improvement where the peaceful atom transformed the desert into a garden, after 1991, the remains of Aqtau's nuclear complex have bequeathed upon independent Kazakhstan a difficult legacy of environmental degradation composed of abandoned open-pit uranium mines, tailings reservoirs and a reactor which proves exceedingly difficult to decommission. But none of this has deterred Kazakhstan's political leadership from staking its prestige on a reinvigorated nuclear programme, based on uranium mining and, prospectively, the deployment of new NPPs, one of which is to be built in Aqtau. Drawing on the concepts of technopolitics, sociotechnical imaginaries and socionatural sites, I argue that if we are to understand how such problematic arrangements are produced and re-produced, we need to investigate not only their costs to future generations, but also their expected benefits to historical and present actors – both in terms of resource procurement and technological advancement and with regard to the display of incumbent political power and social order.

Hydromorphological changes in riverine landscapes as long-term legacies
Martin Schmid, University of Natural Resources and Life Sciences (BOKU)

Human interventions into riverine landscape have a millennia-long history. At least since the 1990s, environmental historians have written extensively on the common history of human societies and riverine dynamics. What has been less studied, are the long-term legacies of past manipulations of rivers and floodplains. For that, we need a broadening of our perspective, from the view from the river, a 'liquid history' (as Peter Coates has put it) to a view from the riverbed, a history that includes the agency of solids and organic matter in rivers. Long-term legacies particularly emerge from the riverbed. 'Sediment management' has become a main challenge along many industrialized rivers of the world, it deals with the long-term (un)intended consequences of past interventions. Hybrid socionatural 'stocks', infrastructures like dams, weirs and harbours have been created to meet societal purposes under historically specific ecological, cultural and socio-economic conditions, but they are inherited to later generations. Most infrastructures inherited from the fossil-nuclear era, are clearly obstacles for a sustainability transformation. Nevertheless, some of them, like flood protection facilities in densely settled urban areas, might turn out as being so indispensable that also future generations will simply have no choice but to perform the labour necessary for their maintenance.

Session 11D
Moving beyond mammals: Histories of insects and fish

Chair: Sandra Swart, Stellenbosch University

Humans vs mosquitoes: Examining the ecological, spatial and temporal boundaries of the Anthropocene
Dan Tamir, University of Zurich

Neither sharks nor snakes: despite modern medical and technological advances, tiny mosquitoes are still the most dangerous animal to human beings: the annual death toll from mosquito borne diseases is estimated around 550,000 people a year. While most of these deaths take place in Africa, mosquitoes deliver diseases in all continents; they do not only ignore human made borders, but their distribution seems to grow due to climatic changes and modern, global transportation. Altogether, mosquitoes inhabit human environments for millennia, all around the world. The long ubiquity of mosquitoes in human life make the relations between these two species an excellent case study for questioning related boundaries.
This paper will present three such questions. Spatially, mosquitoes reach new places thanks to human transportation and human induced climatic change, constantly changing the borders of their distribution and the boundaries between local and global. What are the human mechanisms which allow it? Do mosquitoes also affect humans in this aspect?
Temporally, humans and mosquitoes have been living together for eons, but it is modern scientific discoveries which revealed mosquitoes' deadliness – differentiating between a long history of symbiosis and a short history of a global campaign of the former against the latter. What role do mosquitoes, our long time companions, play in the Anthropocene?
Ecologically, some mosquitoes are vectors of diseases and hence targets for extermination. Campaigns for eradication of mosquitoes and the pathogens they carry questions the boundaries between pests (to be exterminated) and endangered species (to be conserved). How can we differentiate between eradicatable «bad» animals and desired «good» ones? Furthermore: can we even put a boundary between the human body and the mosquito's body?

Human–ant negotiated landscapes in nineteenth-century Brazil
Diogo de Carvalho Cabral, University of London

Endemic to the Neotropics, leaf-cutting ants (genus Atta) are top-caliber herbivores in forest, savanna and grassland ecosystems. Until the mid-twentieth century, when more effective methods of chemical control were invented, much of human crops in the neo-European tropics ended up not in human living environments, but in underground ant nests. In Brazil, the leafcutters helped shape the agricultural landscapes throughout the colonial era. Leafcutters have influenced the introduction of new crop species, the farming methods, and even the food habits of neo-Europeans. Although with scattered precedents in the eighteenth century, municipal bylaws ('posturas' in Portuguese) concerning the extermination of leaf-cutting ant nests in both common and private lands boomed after the political independence in 1822, when Brazil became an empire. Even the nests located

within private property became regulated by posturas, which stipulated fines and sometimes explicitly arrogated public authorities the right to enter land holdings without the owner's consent to check for anthills. Focusing on the Southeastern Brazilian highlands - the once predominantly forested region that supported most of the country's population and economic growth in the nineteenth century - I aim to make sense of these legal developments as symptoms of changes in the way humans negotiated their spatial coexistence with leaf cutters. Combining underground nesting, surface foraging, and aerial dispersal, the leafcutter spatiality challenged the simpler geographies of human land tenure, making it difficult for individual landholders to manage – what they saw as – an agricultural pest. I argue that this can be characterized as a socio-ecological scale mismatch, i.e., a situation in which the spatial scale of non-human dynamics and the scale of human land management do not align appropriately, fostering socio-ecological change.

Salmon and servants: Is there a historical truth behind the ecological myth?
Rob Lenders, Radboud University Nijmegen

The anecdote that, in the past, maid servants had stipulated in their lease contracts that they had to eat salmon no more than 2 or 3 times a week is well known. The story was very widespread in Europe, from southern France to northern Germany, and was sold as "true" from the 16th until deep into the 20th century. The earliest period to which the story refers is the 12th century. Many historians and fish ecologists regard the anecdote as a myth, a morality: "Man, be warned! Your behavior has far-reaching consequences". Therewith, the anecdote also testifies to the fact that salmon decline started already centuries ago. However, despite extensive research by various scholars, no written evidence for the story has ever been found, with the possible exception of an 18th-century lease contract from Brittany.
Recently it has become evident that water mills should be considered a most-likely cause for early salmon decline in Europe. The mills and their associated dams blocked access to spawning grounds and led to far-reaching geomorphological changes in the landscape, with large areas of spawning grounds being lost due to erosion and, in particular, sedimentation. Perhaps it is less known that these water mills were also centers of salmon fishing. The catch of adult salmon will undoubtedly have contributed to population decline, but large-scale catches of juvenile salmon has possibly been even more dramatic. Young salmon, drifting downstream to sea, are far less attractive for consumption than fully-grown, fat adult salmon migrating upstream to their spawning grounds, and it is perhaps precisely the compulsory, frequent consumption of these young salmon that has led to the protests of maid servants and other low-skilled workers in previous centuries. This paper explores this possible historical reality behind the ecological myth.

The marine wild world in a box without boundaries: The aquariums as observatories of living species (1900–1930s)
Inês Amorim, University of Porto, CITCEM / FLUP

During the 1870s, marine ecology and oceanography developments were a result of the foundations of marine biological stations, voyages of marine research and plankton behavior. The report written by the naturalist Charles Atwood Kofoid (zoology, plankton studies, 1865-1947) that traveled to

Europe during 1908 and 1909, is a large picture of the mainly Maritime Stations of Europe with a close relationship with public and modern aquariums. He begins with the celebrated Stazione Zoologica of Naples, followed by the laboratories of France (and Monaco), Great Britain, Germany, Austria-Hungary, Scandinavia, Holland, Belgium, Spain, Finland, Russia and Bulgaria. The enthusiasm for these biological stations was rooted on the perspective of a regular financing system and of the existence of research facilities that could did much more to shape marine science than single spectacular expeditions or university professors doing part-time and seasonal work at the seaside or in ocean-going vessels.

However, a closer look at these aquariums shows the diversity of their roles. Some of them seems settled on an old paradigm, as simple 'boxes of fish' or as places of public exhibition. In a former way, the prevailing view into the twentieth century held that animals in captivity behaved just as they would be in the wild, ignoring animal behaviour and its evolutionary adaptation to captivity.

Using Kofoid and the zoologist M. Oxner (1879-1944) reports, our presentation is centered on the history of aquarium management sustainability and when, why and how they leave to be seen as "boxes" to open places where the life gains autonomy compared with the classical naturalist classification, which implies a big difference between living beings and life.

Session 11E
Beyond the light of the sun: Environmental histories of darkness and light

Organizer: Andrew Flack, University of Bristol
Chair: Dolly Jørgensen, University of Stavanger

Session abstract:
Frederick Jackson Turner famously declared that the American frontier closed in 1890. In the years since, a compelling case has been made that the 'frontier' – or borderland between the familiar and the unfamiliar, the wild and the domesticated – as a concept applicable in a variety of spatial and temporal contexts was and is both everywhere and forever in flux. One such borderland, or diffuse frontier, however , might be said to be that characterised simply by the absence of light. Unsurprisingly, given the largely diurnal nature of our species, much environmental history scholarship to-date has tended to focus on daytime environments. And yet, dark environments are not, and have never been, empty. Nor are they 'dead' ahistorical spaces. Sara Pritchard recently advocated that environmental historians must turn their eyes toward the gloom in order to contemplate 'the trouble with darkness'. Indeed, historical geographers such as Tim Edensor and historians such as William O'Dea, Graeme Gooday, Charles Bazerman, Karen Sayer, Wolfgang Schivelbusch and Chris Otter, have thought – in various spaces, places, and times – about spaces and places characterised by the absence of natural light and the colonisation of the darkness by humans and by anthropogenic light itself. Many of these studies have tended to focus on urban or 'domestic' spaces, where the invasion of light was part and parcel of a growing capitalist system intent upon converting unproductive spaces into productive ones. In this panel, we will broaden and deepen these conversations. We will face the 'trouble with darkness', specifically through focusing on the histories of the boundaries between darkness and light, between day and night. Consideration of a wider array of environments characterised by darkness (places and spaces in the domestic sphere as well as 'wild environments' such as the polar night and the subterranean world) – and the species that dwell within them – presents opportunities to unravel a range of intersections and entanglements, not only between human and animal but also between human, environment and technology.

The power of the Antarctic night: Lessons from efforts to overwinter at New Zealand's Vanda Station in the late 1960s and early 1970s
Adrian Howkins, University of Bristol

In operation for a 25-year period from the late 1960s to the mid 1990s, New Zealand's Vanda Station in the McMurdo Dry Valleys become something of an iconic Antarctic research station. In addition to its role in helping to facilitate scientific research in this unique ice-free region, Vanda station quickly developed a reputation for its hospitality and as a symbol of a distinctly Antarctic culture. The station was originally intended to stay open all year round, meaning that it would be inhabited throughout the 24-hour darkness of the polar winter. In the event, however, Vanda Station only operated for three winter seasons: 1969, 1970 and 1974. After the winter of 1974 Vanda became a summer-only station, and nobody has spent a complete winter in the McMurdo Dry Valleys since then. This paper

considers what can be learned from these efforts to overwinter at Vanda Station. In relation to Antarctic history, attempts to occupy the McMurdo Dry Valleys throughout the year can tell us much about the ongoing connection between political claims and efforts to 'conquer' Antarctic nature; it also says a lot about the logistical challenges of doing this. More broadly, this episode from the history of Antarctica highlights the frequent association of darkness with environmental extremes and makes a case for paying more attention to darkness and dark places within the field of environmental history.

Earth, fire, water, air: Environmental histories of the underground

Carry van Lieshout, University of Cambridge

Being underground creates a visceral awareness of the subterranean environment. Miners are surrounded by rock, clay, or coal; human survival depends on careful management of water flows and the circulation of air; exploration often constrained by the temporary lighting. By combining fieldwork based on sensory practices with archival research, the paper integrates the experiences of people who created and worked in Derbyshire's lead mines in the 17th to 19th centuries with those of recreational explorers today. Archival documentation on the lead mines includes a wealth of information on how miners navigated the underground world, how they mapped and described their unfamiliar environments in bodily metaphors (Piper, 2007), and on their spiritual conception of encountering evidence of previous presences – both human and non-human (Szerszynski, 2017). Present-day cavers and recreational explorers have used combinations of film, written stories, and mapping to record their experiences and sensations, and have contributed to the creation of post-extractive spaces as heritage sites.

This paper considers (post-)extractive spaces as hybrid geographies with new configurations of 'valuable' and 'waste' earthly materials, and examines the changing practices related to the perception of the inner earth (Whatmore, 2008). It focuses specifically on lead mining 'soughs' - underground channels driven to drain water out of mines to allow further mineral extraction. Drawing on a high profile conflict between English entrepreneur Richard Arkwright and politician Francis Hurt in the early nineteenth century, the paper highlight soughs as spaces through which to examine both the hydrological changes and legal disputes that resulted from the drainage of the lead mining landscapes, and to illustrate how political and financial wrangling above the surface extended into the subterranean but was reliant on the voices and eye witness testimony of those working underground.

What is it like to be a blind fish? Imagining life in the darkness

Andrew Flack, University of Bristol

In the late 1830s, and during a torchlit voyage beneath the surface of the earth among the vast vaults of Mammoth Cave, Kentucky, a group of travellers came across an underground river. Later named the river Styx, the flowing water contained a vast number of translucent fishes darting about 'like lightning' beneath the surface. On closer inspection, it appeared that they had no, or at least highly atrophied, eyes. In 1874, philosopher Thomas Nagel published his famous paper, 'What is it like to be a bat?' in which he considered the subjective experiences of organisms – bats in particular – who occupy the world in ways that are radically different from our own (normatively speaking).

This paper begins with, and then diverts from, Nagel's original rumination. Building, too, on recent developments in histories of the senses and the emotions, I consider the ways in which the lives of blind cave creatures were understood in the years after their discovery by western scientists in the late 1830s. What does it mean to be a dark-dweller? How does wildlife thrive in the absence of light? And what do these discourses reveal about predominant attitudes towards the prominence of vision in modernity and the associated dynamic relationship between the state of human, animal, and monster?

Finding non-human animals in the history of illumination: Energy boundaries in the English home, 1815–1900

Karen Sayer, Leeds Trinity University

As M. E. Falkus has suggested, '[s]o basic and unremarkable an activity as domestic lighting has left few records and excited little contemporary comment.' (The Early Development of the British Gas Industry 1790–1815' The Economic History Review 1982, pp. 218-19) Nevertheless, such histories have been and are being teased out – his reading of the effort to improve the quality of light at the turn of the late eighteenth to the early nineteenth century is one example. Existing historical accounts of the histories of darkness and light have demonstrated that because lighting was entangled with social role, politics and ideology, we find everyday social assumptions focused on illumination captured in passing in many sources. What remains under explored in the history of lighting are the histories not just of the animal energies that lay behind illumination, but the ways in which the energies derived from animal bodies generated particular boundaries through the creation of forms of human-interpreted socio-cultural environments, human labour, and social meaning. In nineteenth-century British literature, for instance, a supposedly elite man might be considered inebriated, uncouth and rude if he couldn't tell that his hostess's candles were "wax; they don't require snuffing" (Anne Bronte, The Tennant of Wildfell Hall (1848) p. 275). Artificial lights, we find, not only task-lit the urban middle class home, they also illuminated the social performances of class, gender, 'civilization' and nationhood. But, reading across a range of such sources we also discover that the energy landscapes associated with the history of illumination were complex. The lamp and the candle remained popular through the century, and multiple energies were consumed, despite the adoption of new lighting technologies and the introduction of gas and electricity. This paper will attempt to map the non-human animal elements of energy within the home, as inflected by purpose, location and class in the long nineteenth century.

Session 11G

Special session. ”Thanks, but no thanks”: An experimental session on how recurrent failures make us successful anyway, and vice versa

Facilitators:
Roberta Biasillo, KTH Environmental Humanities Laboratory
Daniele Valisena, KTH Environmental Humanities Laboratory

Session abstract:
The academic job market keeps getting tighter for historians (see recent AHA job reports) and failure is one of the few certainties in our academic lives. From early career positions’ rejections to constant struggles with peer reviewers, fiascos are life-long travel companions of any researcher. Overcoming the sense of failure is high in several universities' agenda, and this means that we are addressing much more than a personal status.
Failures are often invisible: our CVs and institutional bios do not reflect the bulk of our academic efforts — they do not mention failed exams, unsuccessful PhD and fellowship applications, or papers never accepted for publication. At conferences, we talk about the one project that worked, not about the many that failed.
To try to reverse such a trend, this experimental session invites young and established scholars to “kill our darlings”, our glittered as much as rare successes; to “stay with the failure” and reveal the blank lines of our CVs, share our beloved and never selected research project.
But also academic success happens at the expenses of something else. We are always searching for a brand-new concept, while being interested in research practices, for pushing forward the boundaries of a field or even establishing a new discipline, while campaigning for multi/trans/post-disciplinarity. We long for a project to be granted rather than for granting our project.
Personal stories about failures – due both to rejection and to selection – on the academic job market reminds us that failure is not a reflection of who we are as persons and might inspire ourselves or a colleague to shake off a rejection and start again.

Join us if you feel to share your three-minute story of failure (possibly in a funny, ironic and constructive way) and methods that have helped you deal with a frustrated yourself and academic pressure.
Do we need to feel ashamed of ourselves for our professional disasters? Do we need to hide and dismiss our divergent personal and professional trajectories in order to fulfill and nurture an abstract model of scholar? “Thanks, but no thanks”.

Session 11H
Mining and mineral exploitation

Chair: Finn Arne Jørgensen, University of Stavanger

Prospecting the last frontier: Chilean and Japanese perspectives on exploiting Antarctic minerals
Kati Lindström, KTH Royal Institute of Technology

This paper offers an insight into how Chilean and Japanese governments positioned themselves at the Convention for the Regulation of Antarctic Mineral Resource Activities (CRAMRA) negotiations. It argues that the geopolitics of these negotiations went beyond issues of territorial sovereignty. It is hardly surprising that a claimant country like Chile would campaign for environmental protection and against mineral exploitation, in order to prevent other countries engaging in mining or prospecting in what they consider their national territory. The Japanese position, however, is less intuitive. Japan has never made a territorial claim on Antarctica on the basis of Shirase Nobu expedition (1910–1912). Following the San Francisco Peace Treaty (1951) where it renounced all possible territorial claims to Antarctica and in the complicated political situation of the Cold War, Japan carefully avoided any activities and statements that could be interpreted as an attempt to claim sovereignty. Nevertheless, in its careful way, Japan was an ardent proponent of mineral exploitation on and around the White Continent – the last frontier for the hydrocarbon industry. Archive materials show that Japan seriously considered the possibility that national oil companies operating in Antarctica could at some future point reduce the country's asphyxiating dependence on Chinese oil. With the end of Cold War at sight and considering the difficulties in exploiting the hydrocarbon reserves in Antarctica, these ideas lost traction towards the end of the negotiation process and made transition to Protocol on Environmental Protection to the Antarctic Treaty, or Madrid Protocol, relatively easy. The paper is a part of the larger project Greening the Poles: Science, the Environment, and the Creation of the Modern Arctic and Antarctic and presents a preliminary analysis of the materials gathered in the archives of foreign ministries in Japan and Chile.

Mining as an envirotechnical system
Lena Asrih, Deutsches Bergbau-Museum Bochum
Nikolai Ingenerf, Deutsches Bergbau-Museum Bochum
Torsten Meyer, Deutsches Bergbau-Museum Bochum

Mining often is described as a frontier zone where boundaries between humans and nature are negotiated day by day and meter by meter. Our paper focuses on the narrow entanglement of technology and nature when it comes to the extraction of georesources. According to the concept of envirotechnical systems, we analyze the emergence of specific mining knowledge and technology by focusing on the influence of nature on its design and use. Therefore, we consider mining as an envirotechnical system embedded in a larger socio-natural system ("sozio-naturales Großsystem", Jahn et al.). The boundaries of this envirotechnical system are determined by the interacting factors technology and nature. More than in most other comparable cases, mining technology shapes and is

shaped by nature (Pritchard). Furthermore, mining created specific knowledge cultures and forms of knowledge concerning the interaction between nature and technology.
Our examples point out ecological determinations for the development and use of technologies in a historical perspective: The handling of mine water in medieval ore mines will be presented as well as the use and transportation of backfill material both in deep mining and open pit mining. Mining laws and Bergakademien (mining academies) indicate a specific knowledge formalization in the field of mining and point out its systemic character.
By combining perspectives from the History of Science, History of Technology and Environmental History, we examine ecological determinations and systemic characteristics in a field of specific knowledge production.

Session 11I
Nature out of bounds: Representations of the remote and inaccessible

Organizer: Kadri Tüür, Tallinn University
Chair: Anna Antonova, University of Leeds

Session abstract:
The proposed panel addresses the boundaries in/of environmental history from both methodological and content-related angles. Our main sources come from nature writing and cartography, and we look for ways of integrating literary studies and map-making into a wider field of environmental humanities. The questions of representation, aesthetics, poetics, and sensory experience of restricted and protected spaces are relevant when we study cultural human–environment relations.
Parts of the Baltic and North Sea coasts and in the Arctic north designated for conservation and/or militarisation represent different kinds of boundary areas and we'll be exploring these, taking into account natural, trans-species, and political aspects. Coastlines are ecological boundaries, but also contact zones for various species and various survival strategies; experiencing its spaces, particularly those difficult to reach, depends to some extent on textual and aesthetic practices. Modern mapping of Arctic wilderness also calls for an embodied imagination of the remote. In this session, we will explore the ways that these practices of representation have informed and continue to inform our understanding of nature out of bounds.

Coastal nature reserves in Estonian nature writing
Kadri Tüür, Tallinn University / *KAJAK*

The presentation gives an insight into the development of two Estonian nature reserves, located in the coastal area – Vilsandi and Matsalu – via nature writing. Both areas are important bird migration stopover and breeding sites. Nature writing that has been created in and about these sites and their inhabitants (winged and non-winged) amounts to tens of books in different languages (mainly in Estonian and German).
Three threads of thought entangle in nature writing concerning these protected coastal areas: the ideas about nature protection; the ideas about other species, and big politics. For half a century, Vilsandi nature reserve was situated at the westernmost border of the Soviet Union, and thus a peculiar no-go enclave was created there under the aegis of nature protection. Matsalu nature reserve was not politicised (or: militarised) to the same degree, but as it is a difficult coastal landscape with thick reed beds and floodplains, nature writing is often a sole means of getting a glimpse of the life in this area.
I will employ geocritical theory in order to detect whether works by different authors present the perspective of a local or an outsider. I also ask, which references are made to the (often contested) history of these places when writing about natural environment.

Where the land ends: Literary texts as "place-holders"

Katie Ritson, Rachel Carson Center for Environment and Society / Ludwig Maximilian University of Munich

For periods of their history, parts of the North Sea and Baltic coasts have been difficult or impossible for humans to access, sometimes for physical reasons (tidal flats, moving islands) but also via geopolitical developments that have rendered certain areas of the coast out of bounds to particular sections of the population because of military or environmental concerns. In this paper, I will look at the aesthetics of such inaccessible landscapes in literary depictions, tracking the ways in which humans have understood their relationship to places they can no longer inhabit or visit.
Two place-based case studies will show how the shifting physical and geopolitical realities of the North Frisian coastline and Baltic coasts have been made material in literary form, and how these literary imaginations have fed back into perceptions of the landscape and its more-than-human inhabitants. In an era of hard borders and rising seawater levels, literary texts are a way of maintaining and mediating our relationship with places we cannot access physically. Understanding how landscapes have been constructed and reflected by imaginative and aesthetic practices is an integral part of interdisciplinary environmental history.

Cacophonies of hope: Seagulls in Finnish nature poetry

Karoliina Lummaa, University of Turku

In Finnish nature poetry, the sights and sounds of gulls in seashore has been a constant motif since the 1950's Modernism. For poets Jouni Tossavainen (2007), Caj Westerberg (1991), Timo Haajanen (1991), and Lassi Nummi (1949), the presence of gulls is physically and experientially disorienting, as the birds capture attention with their other-earthly avian features and simultaneously entangle with sights, sounds and smells of the sea.
Read in the context of climate change and growing anthropogenic hazards to marine life (chemicalization, ocean acidification, loss of fish and crustaceans, plastic waste), the constant and overwhelming presence of seagulls in Finnish nature poetry and environmental imagination gives rise to a new kind of hope. Whereas many of the arctic bird species may be lost, many types of gulls will remain. It is perhaps possible to think with chaotic and mundane nonhuman crowds instead of cherished, charismatic individuals or species, and bring forth a new type of environmental imaginary based on perseverance and resilience instead of fragility and fear of loss.

Putting the cartography before the source: Re/producing the past and present Arctic through the map

Roger Norum, University of Oulu
Jonathan Carruthers-Jones, University of Leeds

This talk presents an investigation into contemporary and historical mapmaking in northern wild spaces. In recent history, the mapping of wilderness in the "remote" North has almost invariably been based on remotely sensed visual data from satellites, with occasionally added infusions of biodiversity data. This has led to a concentration of visually represented human impacts – which are

easily mapped using reflected light – while neglecting the particular ecological components of wildness, which are more markedly difficult to assess at scale. And yet, recent scholarship has suggested that a wilderness experience is a multi-sensory and subjective component.

We begin the talk with an historical overview of the writing of Arctic maps, using the case of Abisko National Park, in Northern Sweden, then speaking about recent efforts to creatively integrate human experiential and phenomenological data related to being in wilderness. The talk thus speaks to both an inclusion of the cartographic imagination into discussions on nature reading and nature writing, a process through which engineers, cartographers, scholars and laypeople can write human experience, perception and memory into cartographic production. Within contemporary processes of colonisation, de-colonisation, and scramble (Craciun 2009) for a post-colonial Arctic (Huggan and Jensen 2016), past and present cartographic anxieties speak to a need to de-colonise not just texts and maps but processes and epistemologies of writing. This multi-disciplinary talk thus explores the current uses and future potentialities of participatory, sensory and immersive technologies in the study of humans, environments and sustainabilities – and their representations.

Session 11J
Environmental change and Soviet Estonian literature

Organizer: Elle-Mari Talivee, Under and Tuglas Literature Centre of the Estonian Academy of Sciences
Chair: Ene-Reet Soovik, University of Tartu

Session abstract:
The focus of the proposed session is on the transformation of the environment in Estonia after World War II, under the conditions of the ensued Soviet occupation and the reflections of these processes in literature. The landscape changes that followed the developments in the Soviet collectivization and the regime's emphasis on accelerated development of some types of industry were twofold – there were areas that fell out of active use, while the exploitation of others intensified and was ideologically lauded. Both agriculture and industry were governed by the pathos of (Soviet) humans conquering nature and triumphing over it, proceeding from Michurin's dictum about not waiting for favours from nature.
The transformations were accompanied by respective landscape representations in literature and visual arts, which were heavily influenced by Soviet ideology. At the same time, it has been suggested that circular referencing occurs between actual landscapes and their representations which contribute to how the former are perceived and developed. The proposed presentations discuss the dialogue between the environment and its representations by highlighting three types of Estonian landscape – the mire landscapes, the mining landscapes, as well as industrial cityscapes with surroundings – and their depictions in literature and film.
The background of the presenters in geography and literature directs the papers towards observing intersections of these disciplines with environmental history and also enquiring whether literature, particularly that of a totalitarian regime, can be employed as a source for environmental history.

Draining the mire and bringing in the light: Mire practices and their literary representations in Soviet Estonia
Piret Pungas-Kohv, Estonian Fund for Nature
Ene-Reet Soovik, University of Tartu

Images used in Estonia's self-representation as a nation frequently make use of the country's nature, often symbolized by the mire. Today, mires comprise approximately 6% of Estonia's territory and are generally valued as landscapes commonly perceived as undisturbed pristine wilderness, serving as an attraction for internal and external tourism in designated protected areas. However, the attitudes of the inhabitants of the country to mire landscapes have been transforming through ages and include various practices. The dominant ones have been ranging from avoidance, through occasional and seasonal use, to industrial peat-cutting and extensive melioration and drainage and, finally, to protection and current wetlands restoration schemes. The prevailing attitudes towards mires also surface in Estonian folklore as well as in later literary representations of mires.
The presentation will observe the mire practices in Soviet Estonia after World War II. The melioration of mires became increasingly intensified starting from the 1940s, and reached its high

point in the 1960s–70s, bringing along major landscape changes in several regions. These practices also provide the context for literary works of the period, in which the draining of mires emerges as materially and practically beneficial, but simultaneously also symbolises the victory of the Soviet system over nature. A particularly telling example in this regard is Hans Leberecht's Stalin-prize-winning work Light at Koordi (1949). In the ideological discourse of the early Soviet period of collectivization, the mire emerges as a charged trope with undeniably negative connotations. The presentation will look into the discursive peculiarities of early Soviet literary mire representations in Estonia, while also observing depictions of daily occasional mire practices that at times occur side by side with explicit propaganda. All in all, though, the Soviet-time massive melioration works had a less pronounced presence in literature than in reality.

Industrial mining landscapes in Soviet Estonian fiction
Anu Printsmann, Tallinn University

In the Soviet Union, both extractive as well as manufacturing industries were aggressively developed with no necessary consideration for the effects on the environment. It is in this framework that the industrial oil shale mining and processing that had begun in North-Eastern Estonia in the final years of WWI was continued. In 1945, the construction of a new oil shale processing complex in Kohtla-Järve was started upon the decision of the State Defence Committee under the slogan "Gas for Leningrad". After the gas pipeline was opened in 1948, the region was given the nickname "the Don Basin in Estonia". In 1959 the Baltic Thermal Power Station, operating on oil shale, was opened, which gave rise to the era of industrial-scale energy production in Estonia that was to take its toll on environment.
Although the oil shale industry had a definite role in propaganda, there are not many mining novels in Estonian literature. The presentation focuses on the depiction of mining landscapes in Raimond Kauver's novel The Seventh West (1965), for the preparation of which the author worked in the mines for a while, and introduces the drama A Month and a Half (1966) and the novel School Fees (1967) by a miner's son Villem Gross for a comparative perspective. Depiction of the Stakhanovite movement and labour heroism as well as meeting the quota set by the planned economy still leaves space in the works to observe everyday realities and the emerging environmental issues, commenting on which had, to a degree, become possible under the conditions of the Khrushchev Thaw. The period's attitudes and/or possibilities for voicing these are discussed with the hindsight knowledge that the Ida-Viru mining region would be close to the brink of an ecological catastrophe by the late 1980s.

An industrial border city in fiction and film: Transformations of the environment over time
Elle-Mari Talivee, Under and Tuglas Literature Centre of the Estonian Academy of Sciences

Narva, Estonia's third largest city that is situated on the country's border with Russia, has a 150-year-long industrial heritage reflected in the cityscape and its surroundings as the landscape embodies human endeavours of making use of nature. The city's Kreenholm Manufacturing Company was the largest textile factory in Europe at the turn of the 19th and 20th centuries; after WWII, the oil shale and other natural resources found around Narva, as well as the region's hydroenergy sources, laid

the foundations for several other branches of industry, including secret Soviet military enterprises. The city that had been razed in WWII was rebuilt to house the workers from all over the Soviet Union who settled in the city to work in the new industries.
The presentation will observe how the changes in the city of Narva and its surroundings have been represented in the fiction, life writing and films of the Soviet period, while using the first Estonian industrial novel Iron Hands (1898) by Eduard Vilde as a reference point for comparison. The discussed texts highlight the perception of changes as the environment is being transformed and register the shifts in the use of areas changed by war. The films observed include the feature film In Sunshine and in Rain (1960) that depicts the construction of a power plant at the time of the building of a dam on the Narva River, and contains footage, shot on location, of almost all types of industrial enterprises and landscape phenomena deriving from that period (the thermal power station, the water reservoir, the oil shale mine). The recent documentary The Russians on the Crow Island (2012), however, depicts humans as prisoners of the derelict industrial environment after the closing down of the textile factory in 2010.

17:30-18:00 Silent Book Auction, Researchers' Forum in Astra building

19:00-24:00 Final Ceremony. Closing Reception at Maarjamäe Castle, Estonian History Museum

Arrival since 18:00, exhibition is open for the conference delegates between 18:00–20:00. There will be guided tours to the students' pop-up exhibition on Estonian oil-shale industry at 18:00, 18:30 and 20.00.
Greeting drink served from 19:00.
David Rothenberg's concert 20:30–21:15.

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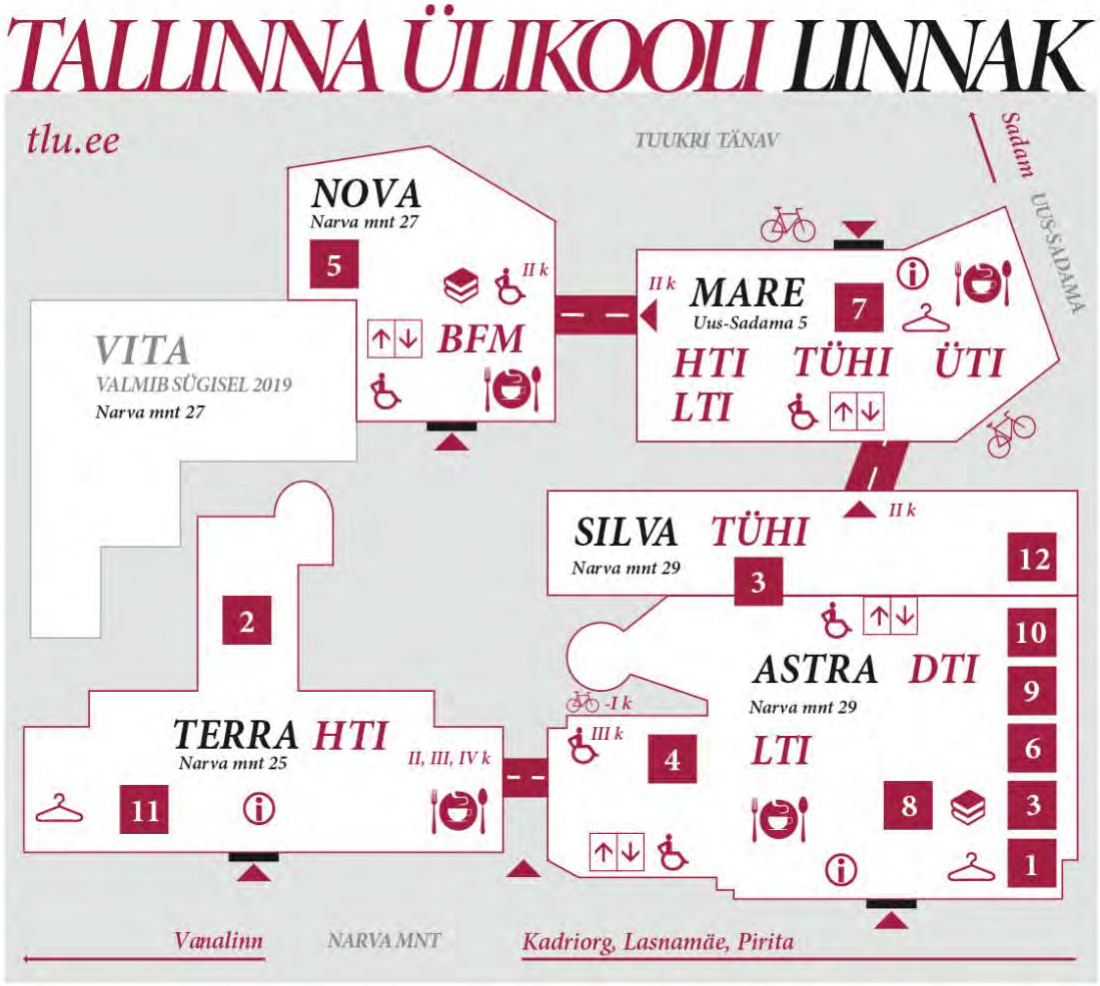
Map of Tallinn University Campus



1 AUDITORIUM MAXIMUM *ASTRA 0 K*
2 AULA *TERRA III K*
3 AVATUD AKADEEMIA, EXU *ASTRA I-II K*
RAHVUSVAHELISTE EKSAMITE KESKUS *SILVA III K*
4 EUROOPA SAAL *ASTRA I-II K*
5 KINO SUPERNOVA *NOVA IV K*
6 KONVERENTSIKESKUS *ASTRA II K*
7 TALLINNA SAAL *MARE II K*
8 TEADLASTE FOORUM *ASTRA I K*
9 TLÜ MEENED JA RAAMATUD *ASTRA I K*
10 ÕPIKESKUS, RAAMATUKOGU *ASTRA II-IV K*
11 ÕPPEOSAKOND *TERRA II K*
12 ÜLIÕPILASKOND *SILVA I K*

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BFM BALTI FILMI-, MEEDIA-, KUNSTIDE JA KOMMUNIKATSIOONI INSTITUUT *NOVA I-V K*
DTI DIGITEHNOLOOGIATE INSTITUUT *ASTRA IV K*
TÜHI HUMANITAARTEADUSTE INSTITUUT *SILVA IV-V K, MARE III K*
LTI LOODUS- JA TERVISETEADUSTE INSTITUUT *ASTRA V K, MARE V K*
ÜTI ÜHISKONNATEADUSTE INSTITUUT *MARE V K*

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INFOLAUD
GARDEROOB
JALGRATTAPARKLA
GALERIID
INVALIFT
RAAMATUKOGU

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MARE	M
NOVA	N
SILVA	S
TERRA	T
VITA	V

List of conference rooms according to sessions

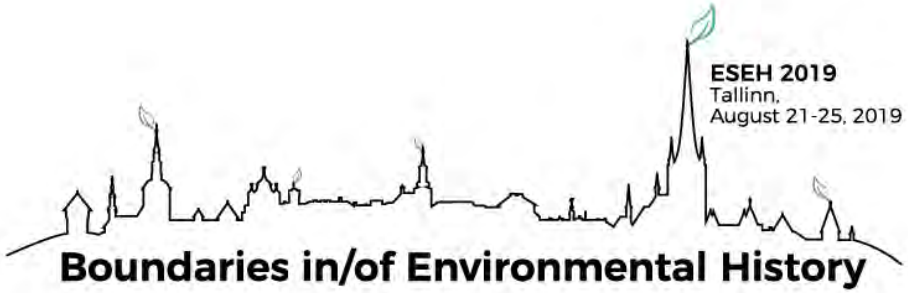
Registration desk: Researchers' Forum in the Astra building (hallway by the entrance)

Session A: room S-240
Session B: room M-225
Session C: room S-238
Session D: room A-325
Session E: room M-213
Session F: room A-402
Session G: room A-121
Session H: room S-236
Session I: room A-224
Session J: room M-340

Keynotes: A-002 and A-222

Lunches and Coffee Breaks: Mare Atrium and Astra Researchers' Forum

Poster session: Researchers' Forum in the Astra Building


ESEH 2019
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Boundaries in/of Environmental History