THE 3RD
INTERNATIONAL
SYMPOSIUM ON
ANTHROPOCENE
STUDIES

RE(DE)FINING THE GREAT ACCELERATION

SEP 30 - OCT 1, 2025
@KAIST N26-101 AUDITORIUM

Program Book

Organized by:
Center for Anthropocene Studies (CAS), KAIST
Disaster Prevention Research Institute (DPRI), Kyoto University

Sponsored by:
National Research Foundation of Korea
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KAIST Graduate School of Science and Technology Policy

Day 1
September 30 (Tue)

KAIST N26-101 Auditorium

9:30	Registration	
10:00	Welcoming Remarks	
	Moderator Buhm Soon Park (KAIST)	
	Welcoming Remarks Kenji Tanaka (Professor, Kyoto University) Jan Zalasiewicz (Professor Emeritus, University of Leicester)	
10:20	Keynote Speeches -The Great Acceleration and the Anthropocene	
	Moderator Seokkyun Woo (KAIST)	
	Great Acceleration?! – Signature of the Anthropocene or Open Research Program	**Jürgen Renn** and **Jochen Büttner** (Max Planck Institute of Geoanthropology)
	Accelerated and Compressed: Challenges of East Asian Modernity in the Anthropocene	**Buhm Soon Park** (KAIST)
12:00	Lunch	
13:00	Session 1 – Provincializing the Anthropocene	
	Moderator Jongsik Christian Yi (KAIST)	
	Provincialization as a Practice of Planetary Thinking	**Jihye Kim** (KAIST)
	Ferality and Dark Tourism: Patch-Based Learning in the Anthropocene	**Saerom Ahn, Jihye Kim, Hanbyeol Jang, Buhm Soon Park** (KAIST)
	Damming Landscapes of East Asia: The Vertical Politics of Dams in the Anthropocene	**Hanbyeol Jang** (KAIST), **Sunmin Kim** (Kyoto University)
	Energy Futures under Digital Dominion: Strategic Data Centers, Energy Data, and the Struggle for Equitable Transitions	**Dasom Lee** (KAIST)
15:00	Coffee Break	
15:30	Session 2 – Expanding Anthropocene Studies	
	Moderator Hanah Sung (KAIST)	
	Bibliometric Analysis of Anthropocene Studies: Multidisciplinary Dynamics	**Seokkyun Woo** (KAIST)
	Matters of Normative Science: Historical Understanding of the Anthropocene Controversy	**Kyungbin Koh** (KAIST), **Buhm Soon Park** (KAIST)
	Solar Geoengineering: The State of Research and Ongoing Debates	**Anthony Harding** (Georgia Institute of Technology)
	Electric Grid Vulnerability and Environmental Injustice: Evidence from High-Resolution Power Outage and Extreme Weather Events	**Brian An** (Georgia Institute of Technology)

Day 2
October 1 (Wed)

KAIST N26-101 Auditorium

10:00	**Session 3 – Accelerating Disasters**	
	Moderator Dasom Lee (KAIST)	
	Long-Term Hydrological Analysis in the Aral Sea Basin Considering the Development of Irrigated Cropland	**Kenji Tanaka** (Kyoto University)
	Observed Amplification of Flood Risk in Pakistan Driven by Changes in Inundation Extent and Human Settlement	**Hyungjun Kim** (KAIST), **Dasom Lee** (KAIST), **Sunmin Kim** (Kyoto University)
	Impact Assessment of Climate Change on Extreme Water Disaster in the Anthropocene: A Large Ensemble Approach	**Tomohiro Tanaka** (Kyoto University)
	Analyzing the Impact of Urbanization on Flood Vulnerability through Recent Floods and Socio-Economic Data	**Sunmin Kim** (Kyoto University), **Hyungjun Kim** (KAIST)
12:00	Lunch	
13:00	**Session 4 – Transforming Multispecies Relations**	
	Moderator Julia Adeney Thomas (University of Notre Dame)	
	From Commune to Factory Farms: The Great Accelerations of Industrial Human-Animal Relations and the Metabolic Rift in China	**Jongsik Christian Yi** (KAIST)
	Local Waters, Planetary Flights: Baikal Teal after the Cheonsu Bay Reclamation	**Hanah Sung** (KAIST)
	Multispecies Making of the Anthropocene Landscape, the Cheorwon DMZ, 1920-2010	**Myung-Ae Choi** (Yonsei University)
14:20	Coffee Break	
15:00	**Keynote Speeches – Futures of the Anthropocene**	
	Moderator Hyungjun Kim (KAIST)	
	Anthropocene Economics: Growth, Degrowth or Redundancy	**Julia Adeney Thomas** (University of Notre Dame)
	The Anatomy of the Anthropocene	**Jan Zalasiewicz** (University of Leicester)
16:30	**Roundtable – The Great Acceleration as Method**	
	Moderator Buhm Soon Park (KAIST)	
	Panel Jürgen Renn and Jochen Büttner (MPI) Julia Adeney Thomas (University of Notre Dame) Jan Zalasiewicz (University of Leicester) Sunmin Kim (Kyoto University) Hyungjun Kim (KAIST)	

Keynote Speeches

The Great Accleration and the Anthropocene

Great Accelertion?! – Signature of the Anthropocene or Open Research Program

Jürgen Renn
Jochen Büttner
(Max Planck Institute of Geoanthropology)

We address methodological problems with the concept of the Great Acceleration as it is being discussed. As a consequence, the claim that around 1950, human activities have dramatically accelerated, and that this drove changes in the structure and functioning of the Earth System away from the Holocene envelope, purportedly observable at the same time, cannot be justified as usual in the literature. Instead, we elaborate on another claim, implicit in the Great Acceleration concept, namely that the trajectory of the coupled human-Earth system can be adequately described in a relatively low-dimensional state space of variables capturing its essential characteristics. Instead of a mere kinematic description, however, we outline a research program that addresses the macro-dynamics of the complex human-Earth system. As a first step in this direction, we present a scaling analysis of the socio-economic variables with respect to population, and discuss the implications of some striking results for the proposed research program. We find that structural properties of the technosphere, such as its fractal dimension, are particularly important for capturing its macro-dynamics. From this perspective, the Great Acceleration turns from an alleged signature of the Anthropocene into the subject of a research program in geoanthropology with an open outcome, dedicated to studying the dynamics of the human-Earth system.

Jürgen Renn is a historian of science, and the Founding Director for the Max Planck Institute of Geoanthropology since 2022. His research focuses on the long-term evolution of knowledge in consideration of the historical dynamics that led to the global changes encapsulated by the concept of the Anthropocene. He investigates, together with his team, the structural changes in the technosphere that have given rise to the Anthropocene. His numerous publications include *The Evolution of Knowledge: Rethinking Science for the Anthropocene* (2020).

Jochen Büttner is a senior researcher at the Max Planck Institute of Geoanthropology in Jena, focusing on the intersection of history, technology, and artificial intelligence. Trained as a physicist with a PhD in the history of science, he worked at the Max Planck Institute for the History of Science in Berlin where he explored the role of practical knowledge and increasingly applied computational methods. He was a Research Associate at the Berlin Institute for the Foundations of Data and Learning (BIFOLD), developing and exploring machine learning and AI for historical sciences and archaeology. His work includes using ML and Explainable AI to analyze large historical corpora, such as early modern astronomy texts, to understand knowledge evolution. At MPI GEA, he works in the Department of Structural Changes of the Technosphere and coordinates the development of an AI Research Assistant for Geoanthropology, bringing his expertise in AI applications for historical and archaeological data analysis to understand long-term human-Earth system interactions.

Accelerated and Compressed: Challenges of East Asian Modernity in the Anthropocene

Buhm Soon Park
(KAIST)

In his book, *The Great Derangement: Climate Change and the Unthinkable* (2016), Amitav Ghosh has made the case for "Asia's centrality" to global warming in terms of "its causes, its philosophical and historical implications, and . . . a global response to it. In this paper, I aim to offer a similar yet distinct claim for Asia's centrality to interpreting the meanings of the Great Acceleration from the perspective of its consequences – i.e., sociocultural changes and disasters. This is an attempt to explore the possibility of theoretically linking the Great Acceleration and East Asian modernity, which has taken multiple forms of modernity – e.g., colonial modernity, postcolonial neotraditionalist modernity, state-capitalist modernity, cosmopolitan modernity under neoliberal economic globalism, and reflexive modernity attentive to risk society – not only across different countries but also within each national society, and especially within a highly compressed time period.

Buhm Soon Park is a KAIST Endowed Chair Professor at the Graduate School of Science and Technology Policy and serves as Director of the Center for Anthropocene Studies. His primary interest lies in the historical study of scientific concepts, disciplines, institutes, and policies from a global and comparative perspective. His current research focuses on the Great Acceleration in the Anthropocene, examining its regional and temporal unevenness as well as its common and overarching trends.

Session 1

Provincializing the Anthropocene

Provincialization as a Practice of Planetary Thinking

Jihye Kim
(KAIST)

The planet is not sensed all at once but through the intersections and flows of multiple images, knowledges, and places. A local (or region) forms a fractal of both repetition and difference with the planetary. This study examines a case from Gangwon Province, South Korea, to trace how colonialism, modernization, and the Anthropocene intersect within the cycles of infrastructure development and closure. Through this process, the Anthropocene leaves some excesses that cannot be fully reduced to global data. The task of political ecology, I argue, is to register these excesses within the Anthropocene itself.

Dr. Jihye Kim holds a PhD in Environmental Studies from Seoul National University. Her doctoral dissertation examined the politics and knowledge practices surrounding marine debris. She continues to work across Environmental Sociology, Political Ecology, STS, and Anthropology. Her research combines ethnographic and theoretical approaches to explore the intersections of ecological politics, knowledge, and practice.

Feraliy and Dark Tourism: Patch-Based Learning in the Anthropocene

Saerom Ahn
Jihye Kim
Hanbyeol Jang
Buhm Soon Park
(KAIST)

There is a pressing need to develop pedagogical frameworks that can respond to the damaged, uneven, and entangled conditions of the Anthropocene. We propose "patch-based learning" as a pedagogical approach and explore its potential through dark tourism in Yongsan in central Seoul, South Korea—a site marked by layered histories of militarization, displacement, and environmental degradation. By attending to ferality and Anthropocenic traces, we examine how this site can be read as a constellation of Anthropocene patches and discuss the pedagogical significance of such a reading. We argue that patch-based learning offers a way to engage with the ruptures, leaks, and feral dynamics that characterize planetary landscapes in the Anthropocene.

Saerom Ahn examines how environmental discourses and practices take shape, focusing on the tensions within them. Her work covers environmental movements, education, and conservation practices in Korea's historical context. She is currently researching the spectacular politics of nonhuman beings and the disasters of waste infrastructure, addressing complex issues that demand critical rethinking in the Anthropocene.

Jihye Kim- See p. 4

Hanbyeol Jang - See p. 6

Buhm Soon Park - See p. 3

Damming Landscapes of East Asia: The Vertical Politics of Dams in the Anthropocene

Hanbyeol Jang
(KAIST)
Sunmin Kim
(Kyoto University)

This paper examines the vertical politics of dams in East Asia within the broader framework of the Anthropocene. Moving beyond the Euro-American focus of existing scholarship, the study foregrounds the hydro-political trajectories of dam development. Dams in East Asia were not merely infrastructures of water management and energy production; they became critical instruments of modernization, territorial integration, and geopolitical competition. The paper argues that damming in East Asia exemplifies "vertical politics"—the ways states mobilize rivers, reservoirs, and volumes of water to assert nationalism, foster industrialization, and transform human–environmental relations. By tracing the layered legacies of colonial engineering and postcolonial modernization under different political systems, this study challenges linear narratives of the Great Acceleration. Instead, it provincializes the Anthropocene, showing how planetary environmental change stems from historically contingent infrastructures embedded in uneven political and economic relations. East Asia, as a site of rapid dam-building during the Great Acceleration, provides a critical vantage point for rethinking the Anthropocene.

Hanbyeol Jang is a human geographer whose research explores the socio-environmental transformations of the Anthropocene, with a particular focus on East Asia's historical and geopolitical contexts. His work examines the entangled relationships between humans and nonhumans, resources and power, and the local and the planetary.
He received his Ph.D. from Temple University, where his dissertation investigated whales as geopolitical actors in East Asian maritime spaces. Through this lens, he revealed how nature, science, and the state intersect in legitimizing or marginalizing specific political discourses.
He is currently a postdoctoral researcher at the Center for Anthropocene Studies at KAIST, where he conducts research on boundary zones where nature, energy, and infrastructure intersect. His work focuses on documenting and interpreting landscapes shaped by Anthropocenic transitions in sites such as mining regions, dams, and reservoirs.

Sunmin Kim- See p. 15

Energy Futures under Digital Dominion: Strategic Data Centers, Energy Data, and the Struggle for Equitable Transitions

Dasom Lee
(KAIST)

This presentation explores how digital infrastructures—particularly energy data and data centers—are reshaping the future of energy transitions. Energy data, often celebrated for enabling grid stability, renewable integration, and efficiency, simultaneously generates new challenges. Privacy risks, sustainability burdens, and inequitable access exemplify how energy data contributes to spatial, temporal, and domain-based problem shifting, displacing harms rather than resolving them. Meanwhile, data centers, far from being neutral or sustainable infrastructures, have become strategic actors in energy systems. Their demands for constant uptime, low latency, and rapid scalability reinforce fossil fuel dependence, channel renewable energy through credit systems that externalize costs to public utilities, and intensify geographic inequalities. These practices prioritize digital expansion over environmental justice and public accountability. Taken together, these dynamics illustrate what we call "future essentialism": the scripting of an inevitable trajectory of boundless digital growth that narrows possibilities for equitable energy futures. To challenge this, the presentation brings responsible innovation and problem shifting into dialogue, combining normative reflection with concrete policy tools. Reclaiming equitable energy transitions requires democratizing oversight of data governance, integrating data centers into energy regulation, and foregrounding justice and accountability alongside decarbonization.

Dasom Lee is Associate Professor in the Graduate School of Science and Technology Policy at KAIST. Her scholarship spans Science and Technology Studies (STS) and transition studies, with particular concern for the responsible innovation of cyber-physical systems and their social and environmental sustainability in the energy and transport domains. Dasom also serves as Associate Editor of Engaging Science, Technology, and Society—the open-access journal of the Society for Social Studies of Science (4S)—and of the ACM Journal on Responsible Computing. She is also a member of the Editorial Board of Humanities and Social Sciences Communications. Further details may be found at www.dasomlee.com.

Session 2

Expanding Anthropocene Studies

Bibliometric Analysis of Anthropocene Studies: Multidisciplinary Dynamics

Seokkyun Woo
(KAIST)

Science often involves the formation of new intellectual communities, where groups of scholars come together around emerging questions or objects of inquiry. Canonical examples may be characterized by specialization and differentiation from existing disciplines. Yet, fields may also coalesce around shared practical problems, drawing in multiple disciplinary traditions without necessarily resolving into a unified paradigm. Using the Anthropocene as a strategic site, this paper provides a descriptive account of how different disciplines have rallied under a common umbrella concept of the Anthropocene. Based on more than 25,000 publications that explicitly mention the Anthropocene in their titles, abstracts, or in journals dedicated to the topic, we show that this emerging field has become diversified in terms of disciplinary composition over time. Initially dominated by geology, the field has attracted contributions from a wide range of disciplines across the natural and social sciences as well as the humanities over time. Despite this expansion, our analysis suggests that the Anthropocene has not yet produced a robust interdisciplinary mode of research. Instead, most publications remain disciplinary, rendering Anthropocene to function less as a site of integration than as a shared label that different communities can adopt for their own purposes. Our findings first highlight how a field can grow by attracting diverse actors without generating a strong interdisciplinary integration. Second, by examining the timing of the exponential rise in Anthropocene research, this finding may suggest that the effectiveness of the concept as a boundary object may lie not in its ability to structure shared practices.

Seokkyun Woo is an Assistant Professor at the Graduate School of Science and Technology Policy (STP) at the Korea Advanced Institute of Science and Technology (KAIST). Prior to joining KAIST, he was a Postdoctoral Fellow at the Center for Science of Science and Innovation (CSSI) at the Kellogg School of Management. He holds a Ph.D. in Public Policy and an M.S. in Statistics from the Georgia Institute of Technology. His research examines how the work organizations of science and innovation are structured and how they, in turn, influence the rate and direction of research activities with the goal of providing effective science and technology policy. His research attempts to integrate perspectives from various disciplines, including the sociology of work, the sociology of science, and public policy. In addition, he is interested in the cultural evolution of science and inventions by leveraging large-scale digitized historical archives and advanced computational methods.

Matters of Normative Science: Historical Understanding of the Anthropocene Controversy

Kyungbin Koh
Buhm Soon Park
(KAIST)

This paper argues that the controversy over formalizing the Anthropocene did not stem primarily from disagreements over empirical adequacy, but rather from unresolved matters of *normative science* that underlie the classification of geological time. In contrast to positive science, which concerns observation and measurement of natural phenomena, normative science is introduced here as the processes through which empirical findings are organized, institutionalized, and communicated, making science operable as a shared, community-based practice. Situating the Anthropocene controversy within the broader history of stratigraphy since the 19th-century Devonian controversy, this paper illustrates that the stratigraphic knowledge has repeatedly been forged through normative processes during moments of epistemic change. Calling for collective scientific deliberation, it identifies unresolved normative questions in formalizing the Anthropocene: How much geological evidence and temporal span is required to justify a new epoch? Can novel markers such as plutonium-239 fallout or proxies for Earth System changes be treated as equivalent to conventional biostratigraphic or chemostratigraphic signals? How much diachroneity is tolerable within the standard of global synchroneity?

Kyungbin Koh is a PhD student in Science and Technology Policy at KAIST. Her research explores how historical insights can inform contemporary practices of scientific knowledge-making and policy. She received her BS in Transdisciplinary Studies in chemical biology and her MS in Science and Technology Policy at KAIST, where she examined the history of stratigraphic norms to contextualize current debates over formalizing the Anthropocene as a new geological epoch. For her PhD, she is investigating how biofoundry infrastructures and standards in synthetic biology have been historically shaped, as part of her broader aim to bring historical perspectives to science and technology policy.

Buhm Soon Park - See p. 3

Solar Geoengineering: The State of Research and Ongoing Debates

Anthony Harding
(Georgia Institute of Technology)

Solar geoengineering refers to a set of proposed technologies that could deliberately reflect of sunlight with the aim of cooling the planet. Once a speculative idea, it is now the subject of growing active scientific and interdisciplinary study and growing political debate. This talk will provide an overview of current state of research, including what is known and, crucially, what remains uncertain.

Beyond the technological questions of can it be done, solar geoengineering raises profound economic, ethical, and governance challenges. Who decides if, when, and how such technologies might be deployed? What risks of moral hazard might arise if attention shifts away from emissions reduction effots? And how do issues of global justice, power, and governance shape the debate? Drawing on scientific understanding, economic perspectives, and the ethical, political, and governance debates that shape the field, I will situate solar geoengineering in the broader landscape of climate policy, highlighting its potential and active debates.

Tony Harding is an Assistant Professor in the Carter School of Public Policy at Georgia Institute of Technology. Tony's research focuses on environmental economics, particularly at the intersection of innovative technologies—such as solar geoengineering—and climate policy, using economic theory and applied econometrics. His work has been published in both interdisciplinary and economics journals such as PNAS, Nature Communications, and Energy Economics. Tony is also exploring topics such as the energy implications of AI adoption.

Tony received his Ph.D. in Economics from Georgia Institute of Technology in 2020. He was a postdoctoral fellow at the Harvard Kennedy School from 2021 to 2023. Since 2023, Tony has served as an Assistant Professor at the Carter School of Public Policy at Georgia Institute of Technology.

Electric Grid Vulnerability and Environmental Injustice: Evidence from High-Resolution Power Outage and Extreme Weather Events

Brian An
(Georgia Institute of Technology)

As climate-driven extremes intensify, understanding disparities in electric grid disruptions is critical for resilience and justice. We construct a novel dataset of daily, zip code–level power outages across California, Georgia, and Texas spanning 19 months (April 2023–November 2024). Using outage intensity—a measure combining duration and affected customers—we evaluate the role of extreme weather, restoration protocols, demographics, built environment, and geography. Results show that heavy precipitation, cyclones, strong winds, wildfires, and anomalous heat and cold significantly increase outage severity. Population density and public safety facilities are associated with faster restoration. Importantly, communities with higher shares of Black and Hispanic residents experience more intense and longer-lasting outages, even after accounting for weather, infrastructure, and geography. Further analyses indicate that these disparities are not explained by differential exposure to hazard-prone geographies or by historical divestment, but rather by inequities in power restoration practices: minority and low-income communities concentrated in dense areas face amplified risks rather than protection. A two-stage selection model disentangling outage occurrence from restoration duration confirms that Black and Hispanic communities wait longer for power restoration. These findings highlight that grid vulnerability is shaped not only by environmental hazards but also by inequities in operational practices. Our study underscores the need for transparency in outage data, integration of equity into resilience planning, and targeted investments such as distributed generation and microgrids in vulnerable communities. Without such reforms, the grid of the future may be technically stronger yet socially more unequally burdened.

Brian An, PhD, is an assistant professor at Georgia Tech's Jimmy and Rosalynn Carter School of Public Policy, where he directs the MSPP program and co-directs the Center for Urban Research. His research examines how policies and planning shape sustainable, equitable, and resilient urban infrastructure, with work spanning housing, energy, environment, and public finance. He has consulted for organizations including the United Nations, World Bank Group, Oak Ridge National Laboratory, and the Atlanta Mayor's Office, and his work has been featured in outlets such as the U.S. President's 2024 Economic Report, Fortune, and NPR. Dr. An also holds appointments in Georgia Tech's School of City and Regional Planning and at KAIST and earned his MS in Foreign Service from Georgetown University and PhD in Public Policy and Management from University of Southern California. In the academic year 2025-26, Dr. An is working at KAIST STP as a global science and technology policy fellow.

Session 3

Accelerating Disasters

Long-Term Hydrological Analysis in the Aral Sea Basin Considering the Development of Irrigated Cropland

Kenji Tanaka
(Kyoto University)

The Aral Sea Basin is a landlocked watershed in Central Asia that has drastically shrunk due to extensive irrigation projects that diverted its primary inflows. This presentation will explore a historical analysis of the basin's hydrologic system, with a particular focus on the impacts of cropland irrigation.

Kenji Tanaka is a professor at the Disaster Prevention Research Institute, Kyoto University, and serves as the Director of the Water Resources Research Center within the institute. His research focuses on the management of water utilization systems, with particular emphasis on the conservation and enhancement of water environments through the application of the land surface model SIBUC.

Observed Amplification of Flood Risk in Pakistan Driven by Changes in Inundation Extent and Human Settlement

Hyungjun Kim (KAIST)
Dasom Lee (KAIST)
Sunmin Kim (Kyoto University)

Pakistan's long history of flooding, combined with rapid urban expansion, has amplified both human and economic vulnerabilities, which was most tragically demonstrated by the catastrophic floods in 2022. In the context of climate change, understanding how flood patterns are evolving and how they interact with urban growth is critical. To address this, we present the Flood-focused Extent of Water for Pakistan (FEW-Pakistan) dataset: a 35-year (1988–2022), high-resolution flood record derived from Landsat imagery. Our methodology integrates the Normalized Difference Water Index with Otsu's thresholding, while employing the Normalized Difference Snow Index to minimize snow-water misclassification. By combining these flood maps with the Global Human Settlement Layer, we quantify population exposure and track how urban expansion has shaped flood impacts over time. Results reveal a pronounced intensification of flooding during the past decade, with the share of urban populations exposed annually rising from below 10% to more than 13%, while rural exposure peaks around 8%. Strikingly, about 70% of the observed variability in exposure can be explained by the compound effect of urban population growth and expanding inundation. These insights highlight the escalating flood risks in rapidly urbanizing regions and emphasize the urgent need for adaptation and mitigation strategies tailored to such dynamic socio-environmental contexts.

Prof. Hyungjun Kim's research centers on understanding the fundamental processes and mechanisms behind global environmental changes, with a particular focus on global hydrology. His work aims to enhance our understanding of the intricate connections between climate and society within the Earth System. By bridging the gap between scientific research and societal needs, Prof. Kim strives to provide essential knowledge and insights to address the climate-water-food-energy nexus. Since 2021, he has served as a faculty member at the Moon Soul Graduate School of Future Strategy at KAIST. Additionally, Prof. Kim has taken on active leadership roles in various international research projects, including those affiliated with the World Climate Research Programme and UNESCO.

Dasom Lee - See p. 7

Sunmin Kim - See p. 15

Impact Assessment of Climate Change on Extreme Water Disaster in the Anthropocene: A Large Ensemble Approach

Tomohiro Tanaka
(Kyoto University)

Climate change impact on extreme floods is not clearly understood at regional or catchment scales. This talk will introduce a large ensemble approach in the impact assessment for various case studies in Japan and southeast Asia, followed by some way forwards for adaptation studies.

Tomohiro Tanaka is an associate professor in the Disaster Prevention Research Institute, Kyoto University. He received a doctoral degree in engineering in 2016 from Kyoto University. His interests cover: climate change impact assessment, flood frequency analysis, rainfall-runoff and inundation modeling, socioeconomic modeling of flood disaster impact.

Analyzing the Impact of Urbanization on Flood Vulnerability through Recent Floods and Socio-Economic Data

Sunmin Kim (Kyoto University)
Hyungjun Kim (KAIST)

This study examines the impact of urbanization on flood vulnerability by integrating global flood datasets with socio-economic indicators such as exposed population, displacement vulnerability, and GDP per capita.

Sunmin Kim is an Associate Professor at the Graduate School of Engineering, Kyoto University. Originally from Korea, he earned his Doctor of Engineering degree from Kyoto University in 2006. His research interests include hydrological modeling and forecasting, integrated water resources management, and the assessment of climate change impacts on hydrologic systems.

Hyungjun Kim - See p. 13

Session 4

Transforming Multispecies Relations

From Commune to Factory Farms: The Great Accelerations of Industrial Human-Animal Relations and the Metabolic Rift in China

Jongsik Christian Yi
(KAIST)

This paper delves into the transition from communal animal farming, prevalent during the Maoist era (1949–1976), to the emergence of capitalistic factory farms in post-Maoist China of the 1980s. It frames this shift as a move from energy-self-sufficiency to energy-intensive forms of animal husbandry. In the Maoist era, commune farms in rural China had to "self-reliantly" grapple with extreme poverty due to limited external material support. This was because the state prioritized extracting surplus from the countryside and redirecting it to the urban and industrial sectors. A grassroots energy cycle emerged, connecting people, animals, plants, and microorganisms within the commune. However, with the onset of the "reform and open" era in the 1980s, the Chinese government aimed to attract international investment and promised economic prosperity. This led to the delayed yet rapid industrialization of animal husbandry, driven by increased demand for meat and aspirations for middle-class status among the population. Consequently, improvised animal feed made of native greens was replaced by mass-produced commercial fodder; animal feces were dumped into nearby streams or rivers instead of being carefully preserved and used as manure; and the role of pigs and cattle shifted from being versatile farm workers to primarily being sources of meat. Drawing on Marx's concept of "metabolic rift," this historical process reflects the accelerated industrial utilization of energy and nonhuman resources across Asia and beyond.

Jongsik Christian Yi received his B.A. and M.A. in History from Korea University and earned his Ph.D. in the History of Science from Harvard University in 2022. He was an assistant professor in the Division of the Humanities and Social Sciences at Pohang University of Science and Technology (POSTECH) before joining the Graduate School of Science and Technology Policy (STP) at the Korea Advanced Institute of Science and Technology (KAIST) in 2025. His work examines how science, technology, and medicine mediate human interactions with nonhuman entities in the environments that we share. He is the author of *More-Than People's Communes: Veterinary Workers and Nonhuman Animals in Mao-Era China* (under contract with the University of Chicago Press). Yi's scholarly articles have appeared, or are forthcoming, in *The Journal of Asian Studies, The Bulletin of the History of Medicine, Historical Studies in the Natural Sciences, The Journal of the History of Biology*, among others. He has also translated into Korean Loren Graham's *Lysenko's Ghost*, Victor Seow's *Carbon Technocracy*, and Sigrid Schmalzer's *Red Revolution, Green Revolution.*

Local Waters, Planetary Flights: Baikal Teal after the Cheonsu Bay Reclamation

Hanah Sung
(KAIST)

The Korean Peninsula is not only a human habitat but also a planetary passage for migratory birds. Yet it is less well recognized that reclaimed lands on the west coast have become crucial wintering sites for migratory birds in South Korea since the late twentieth century. Scholars who have connected reclamation with the Anthropocene have pointed out that reclamation narratives efface nonhuman presence by framing coastal areas as "Barren Land." Building on this perspective, this study develops and complicates the discussion by foregrounding the Baikal Teal (Sibirionetta formosa) as a nonhuman protagonist that suddenly appeared in large flocks after the large-scale Cheonsu Bay reclamation. Initiated in 1980 and completed in 1995, this massive landscape shift converted tidal flats into a large-scale infrastructure for rice farming, thereby altering local waters and reshaping migratory bird routes. Notably, the Baikal Teal, a species on the verge of extinction in Asia during the 1960s and 1970s, found new hope for survival in the abundant fallen rice grains of Cheonsu Bay. The species saw its numbers soar in the early 2000s, elevating Cheonsu Bay into a nationally significant migratory bird habitat. However, a second shift followed: the spread of intensive rice farming diminished these grain residues, forcing the Baikal Teal to shift to alternative sites. This study argues that the Cheonsu Bay reclamation has generated new forms of human–bird entanglements in South Korea. Even today, the Baikal Teal remains a prominent species deeply implicated in Korean society, whether through avian influenza outbreaks or other forms of disaster.

Hanah Sung is a Research Professor at the Center for Anthropocene Studies at KAIST. She earned her Ph.D. in Science and Technology Studies from Seoul National University, where she examined how ornithological monitoring practices—as both modern technologies and alternative ways of approaching "Nature" at the same time—have reconfigured multispecies entanglements in South Korea. Her research particularly focuses on human–bird relations, exploring how avian data transforms understandings of co-existence and introduces planetary perspectives to human-centered societies. Her current work investigates the socio-material practices that render rice fields—one of the defining landscapes of the Anthropocene—into wildlife habitats in South Korea and, more broadly, across East Asia.

Multispecies Making of the Anthropocene Landscape, the Cheorwon DMZ, 1920-2010

Myung-Ae Choi
(Yonsei University)

The Korean Demilitarized Zone (DMZ) is often regarded as an ecological paradise accidentally created by war and nature. This paper unpacks the popular imagination of the DMZ as "the treasure house of ecology" by tracing the historical changes of the landscape between 1920 and 2010. It offers a more nuanced understanding of the DMZ in relation not only to its geopolitical conditions but also to a series of more-than-human social relations in the proposed geological epoch of the Anthropocene. For this, I turn to recent work by geographers and anthropologists on the Anthropocene landscape, which seeks to understand the Anthropocene through ethnographic studies of specific landscapes shaped by, and shaping, multispecies histories. Our analysis focuses on Cheorwon, South Korea. Located at the centre of the Korean Peninsula, Cheorwon straddles the DMZ, North Korea, and South Korea. The region has undergone significant political, economic and environmental changes over the past century, serving as a site for colonial rice plantations, the battlefields of the Korean War, and post-war abandonment and restoration, and a habitat for endangered cranes. We begin by examining how Cheorwon's landscape has evolved over time, focussing on the dynamic interactions between people, rice, and cranes. I then relate these historical transformations to broader shifts within the Anthropocene. I argue that the DMZ is not merely an accidental ecological haven but should be understood as a Korean Anthropocene landscape, shaped (by the dynamic more-than-human interactions) in the context of Japanese colonialism, Cold War militarism, and post-war developmentalism.

Myung-Ae Choi is an environmental social scientist looking at the cultural, political, and technological aspects of nature conservation in South Korea and the broader East Asia. To do this, she draws on an interdisciplinary range of work including multispecies anthropology, more-than-human geographies, political ecology and Science and Technology Studies. Myung-Ae's current research examines the crane conservation in and around the Korean Demilitarized Zone (DMZ) through the themes of the Anthropocene. She also looked whale and dolphin tourism, wetland conservation, and countryside walking through South Korean case studies. Myung-Ae is Assistant Professor in Cultural Anthropology at Yonsei University based in Seoul.

Keynote Speeches

Futures of the Anthropocene

Anthropocene Economics: Growth, Degrowth or Redundancy

Julia Adeney Thomas
(University of Notre Dame)

Within a few short decades in the mid-twentieth century, skyrocketing growth in production, consumption, waste, and human population catapulted the Earth System beyond Holocene norms. It's no wonder then that degrowth might seem the answer to the Anthropocene, even a way of returning to the Holocene. However, the concept of degrowth fails to grasp the altered nature of the Earth System, now dominated by what Peter Haff dubbed the "technosphere." In essence, this technosphere supports human populations by ruthlessly colonizing future resources, drawing down more each year than natural cycles can replenish. Without it, billions would die. Yet it also further destabilizes the Earth System and impels us ever closer to dangerous thresholds and tipping points. In this situation, both growth and degrowth are likely to be deadly. This presentation explores alternatives to the growth-degrowth dichotomy by looking at historical examples of redundant localized systems of sustenance. This approach with its greater flexibility and fewer sunk costs may provide a better way of coping with planetary instability and help us weather coming storms.

Julia Adeney Thomas is Professor of History at the University of Notre Dame. As an intellectual historian of Japan, Thomas writes about concepts of nature and the Anthropocene, political thought, historiography, and photography as a political practice. Her publications include *Reconfiguring Modernity: Concepts of Nature in Japanese Political Ideology* (winner of the AHA John K. Fairbank Prize) (2001), *Rethinking Historical Distance* (2013), and *Visualizing Fascism: The Twentieth-century Rise of the Global Right* (2020).

The Anatomy of the Anthropocene

Jan Zalasiewicz
(University of Leicester)

Formalization of the Anthropocene on the Geological Time Scale was rejected in 2024 by the InternationalUnion of Geological Sciences. But the term and concept continue to be used and its processes are, in reality, changing Earth's geology, bringing in changes that are significant in a deep time perspective, and that will have permanent repercussions on our planet – and for all human generations to come.

These include physical changes most strikingly represented by the explosive growth of the 'urban stratum', the refashioning of sand, clay and limestone into our buildings, foundations and transport systems. Chemical changes include the reshaping of the Earth's natural carbon, phosphorus and nitrogen cycles, with their associated climate and biological impacts. Biological changes include the ongoing mass extinction event and the effect of invasive species, while human-made 'anthroturbation' is as extraordinary as anything in the fossil record. Indeed, some of the planetary changes, such as the rapid growth of the technosphere, are wholly new within Earth's 4.5 billion-year history.

The combined transformation is of a scale to leave a signal, in strata now forming, that will persist for many millions of years, but that have already taken the planet outside of the baseline conditions of the Holocene Epoch, and in several respects out of those of the Quaternary Ice Ages as a whole. This talk anatomises the developing Anthropocene as a planetary phenomenon, to help provide context for wider perspectives and implications

Jan Zalasiewicz is Professor Emeritus of Palaeobiology at the University of Leicester, and was Chair of the Anthropocene Working Group of the International Commission on Stratigraphy. He is a field geologist and paleontologist who has studied rocks and fossils ranging across more than half a billion years of geological time. He is the author of *The Earth after Us* (2008) and *Rocks: A Very Short Introduction* (2016), and a co-author of *The Anthropocene: A Multidisciplinary Approach* (2020), along with Julia Adeney Thomas and Mark Williams.

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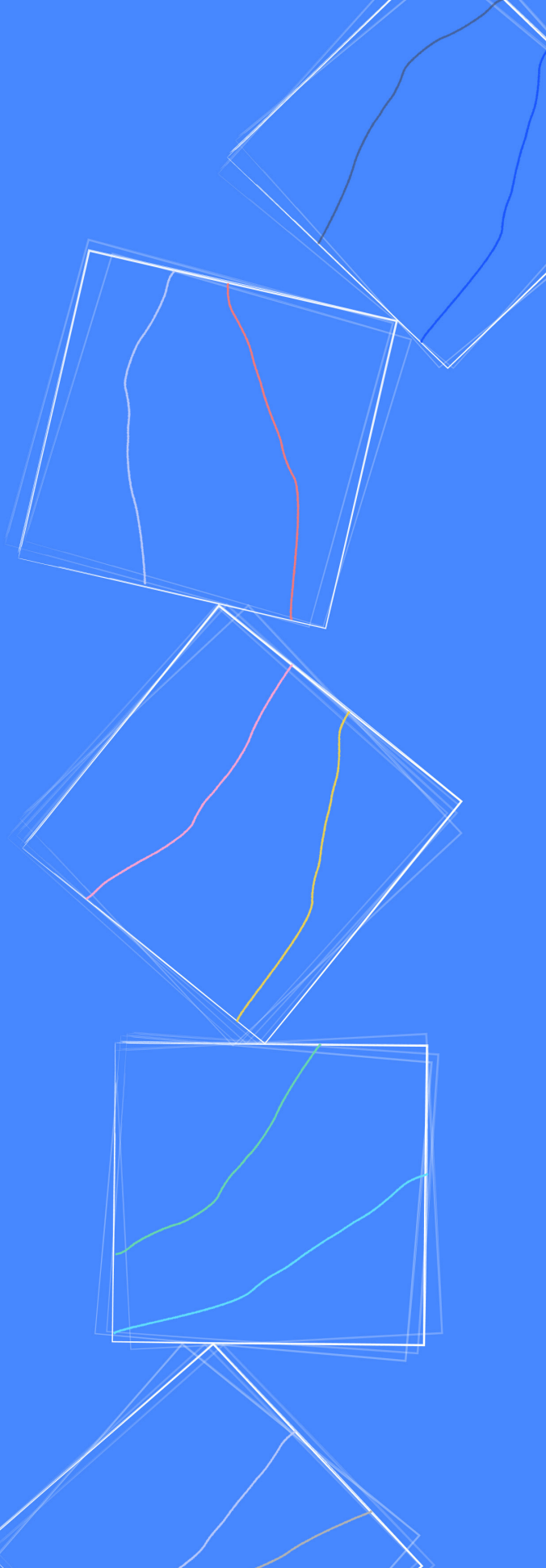

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