



ASSW 2021 is here !!!

ASSW2021 is just around the corner and this issue of the Newsletter is mainly focuses on the ASSW sessions and workshops with a strong involvement of T-MOSAic researchers. For more information, please visit www.assw2021.pt and enjoy a great meeting. Check also the promotion video [here](#).



SPECIAL ISSUES

Special T-MOSAic Issue of Arctic Science

The T-MOSAic special issue of "Arctic Science" is open for submissions until March 2022. Please visit the T-MOSAic website for updated information or contact the secretariat: <https://www.t-mosaic.com/>



Special T-MOSAic Issue on Arctic Terrestrial Pollution

The Environmental Pollution Journal (IF: 6.792) is open for submissions. This special issue publication aims to provide original research on Arctic Terrestrial Pollution (including Coastal Areas). This special issue will be edit by João Canário (University of Lisbon, Portugal), Katrin Vorkamp (Aarhus University, Denmark), Mark Mallory (University of Acadia, Canada) and Scott Zolkos (Woods Hole Research Center, USA).



Special T-MOSAic Issue on Polar and Alpine Microbiology

The Arctic Microbiomes AG is editing a special issue in journal "Frontiers in Microbiology". On the topic Digitizing Frozen Earth - Revealing Microbial Diversity and Physiology in the Cryobiosphere through 'Omics' Tools, Volume II", this SI is now open online and ready for submissions until August 14th, 2021. The editors of this SI include Anne Jungblut, Jérôme Comte and Birgit Sattler.





Sunday, March 21

RATIC meets T-MOSAIC: Sharing Best Practices in Research on Infrastructures in the Arctic
3:30 PM (GMT)

Contact: Jana Peirce (jlpeirce@alaska.edu)

The Rapid Arctic Transitions due to Infrastructure and Climate (RATIC) initiative has been providing a forum for scientists to share knowledge across disciplines since 2014 on topics related to Arctic infrastructure and climate change. In 2019, the RATIC initiative became the T-MOSAIC Arctic Infrastructure Action Group. The RATIC/T-MOSAIC workshop at ASSW 2021 will be a 3-hour online meeting for participants to share progress and insights on RATIC-related research from around the Arctic. The meeting is open to all and we encourage attendance by physical and social science researchers, including APECS members, Indigenous scholars, and representatives of Arctic communities and industry involved in research and adaptation projects. This will be followed by an in-person workshop in Tromsø at ASSW 2022 where we will continue to collaborate on activities prioritized at past RATIC workshops including:

1. A framework for Arctic infrastructure mapping and monitoring,
2. Strategies and best practices for codesign and co-development of research with industry and Arctic communities, and
3. Observations from the recent MOSAIC Expedition that may improve our understanding of how polar sea ice, ocean and atmospheric changes are impacting Arctic coastal and near-coastal communities and infrastructure.



Wednesday, March 24

ID:06 - Arctic Ecosystem Changes, Pollutant Issues and their Impact on Wildlife and Northern Communities

8:00 - 10:00 AM (GMT)

Conveners: Martin Pilote (Centre for Northern Studies, Martin Jusek (University of Lisbon) and João Canário (University of Lisbon)

The Arctic and subarctic regions are experiencing the influence of regional and global anthropogenic activities, and unprecedented warming has been causing significant changes in the structure and functioning of both terrestrial and aquatic ecosystems. These changes have major implications on the remobilization of contaminants, biogeochemical transformations, transport and deposition, and the consequent bioaccumulation in the food chains with direct impacts not only on wildlife, but also on the northern communities who live in close connection with their own environment. This session aims to present and discuss new crucial scientific knowledge related with the interaction between contaminants,

microbes and nutrients in the atmosphere, biosphere, cryosphere and the hydrosphere and to debate their impact on the arctic and sub-arctic ecosystems, native communities, and public health. This session is also included on the T-MOSAIC, Northern Community Issues Action Group activities.

Oral Presentations

08:00 - Introduction by the conveners

08:05 - Advancing models to link changes in dissolved organic matter and UV light attenuation and the ecosystem responses in browning lakes, Rachel M. Pilla and Raoul-Marie Couture

08:20 - Who is methylating mercury in permafrost thaw lakes?, Martin Jusek, Holger Hintelmann, Martin Pilote, Jérôme Comte and João Canário

08:35 - Influence of thawing permafrost on the fate of Hg and trace metals in thermokarst ponds, eastern Canadian subarctic region (Nunavik), Martin Pilote, João Canário, Patrice Turcotte, Christian Gagnon and Daniel Houle

08:50 - Microplastic pollution estimation in the surface water of the Barents and Norwegian Seas in Norwegian and Russian marine expeditions, Svetlana Pakhomova, Evgeny Yakushev, Sørensen Kai, Eduard Spivak, Amy Lusher and Bert van Bavel

09:05 - Distribution of floating marine macro-litter in relation to oceanographic characteristics in the Russian Arctic Seas in October 2020, Maria Pogojeva, Igor Zhdanov, Anfisa Berezina, Artem Lapenkov, Denis Kosmach, Alexander Osadchiev, Georg Hanke, Igor Semiletov, Evgeniy Yakushev and N.N.Zubov

09:20 - Anti-biotic resistance genes in arctic aquatic environments, MaryThaler, Juliette Provencher and Alex Culley

09:35 - Open discussion on orals and posters

E-Posters in this session

☉ Comparison of ion runoff during the ice-covered period and summer according to actual data and long-term change in ion runoff of Lena River Delta, Natalia Alekseeva, Irina Fedorova, Denis Aibulatov, Aleksandra Shadrina, Miron Makushin and Anastasia Kirillova

☉ Modeling the influence of biogeochemical and ecosystem processes on microplastic transport in the Arctic seas on the example of Oslofjord, Anfisa Berezina and Evgeniy Yakushev

ID:34 - Implications of Permafrost Thaw at Multiple Scales: Effects on Hydrology and Biogeochemistry (1 and 2 of 3)

(1) 10:30 - 12:30 AM and (2) 16:30-18:30 (GMT)

Conveners: Lara Hughes-Allen (Université Paris Saclay), Frédéric Bouchard (Université Paris Saclay) and Ylva Sjöberg (University of Copenhagen)

Permafrost thaw due to continued climate change and anthropogenic influences has significant impact on local and regional hydrology and biogeochemistry. The release of previously sequestered organic matter via greenhouse gas emissions has implications for global climate projections, and changing permafrost landscape dynamics has wide reaching impacts on water quality and aquatic ecosystem equilibrium. Due to the complex interplay between climate, permafrost, and people, there is strong need for cross-discipline collaboration and input from local populations. We welcome studies which focus on the interactions between climate change and permafrost dynamics and the effects of these interactions on biogeochemical and hydrological systems at different temporal and spatial scales.

Oral Presentations

10:30 - Introduction by the conveners

10:35 - Importance of dissolved organic matter (DOM) characterization from permafrost thermokarst lakes, Diogo Folhas, Armando C. Duarte, Martin Pilote, Warwick F. Vincent, Pedro Freitas, Gonçalo Vieira, Artur M. S. Silva, Regina M. B. O. Duarte and João Canário

10:50 - Annual ecosystem carbon budgets across an abrupt permafrost thaw gradient in Northern Norway, Inge Althuizen, Casper Christiansen, Anders Michelsen, Sebastian Westermann, Norbert Pirk, David Risk and Hanna Lee

11:05 - Quantifying and characterising organic carbon in newly-developed soils following glacier retreat in northern latitudes, Saule Akhmetkaliyeva, Robert Sparkes, Leon Clarke, Andrew Dean and Simon Cook

11:20 - Degradation of particulate organic carbon in the Kolyma River, Kirsi Keskitalo, Lisa Bröder, Dirk Jong, Nikita Zimov, Anya Davydova, Sergey Davydov, Tommaso Tesi, Paul Mann, Negar Haghipour, Timothy Eglinton and Jorien Vonk

11:35 - Nitrogen sources and dynamics in High-Arctic streams, Ada Pastor and Tenna Riis

11:50 - A 14,000- year record of permafrost and carbon dynamics from Lake Malaya Chabyda, Central Yakutia (Eastern Siberia), Lara Hughes-Allen, Frédéric Bouchard, Christine Hatté, Hanno Meyer, Lyudmila Pestryakova, Bernhard Diekmann and Dmitry Subetto

12:05 - Open discussion on orals and posters

BREAK

16:30 - Introduction by the conveners

16:35 - Long-term hydrometeorological changes in basin underlain by continuous permafrost in the High Arctic (Brattegge river, SW Spitsbergen), Łukasz Stachnik, Krzysztof Migala, Mirosław Wąsik, Henryk Marszałek, Marek Kasprzak, Aleksandra Wołoszyn and Elżbieta Łepkowska

16:50 - Long-term warming & precipitation experiments in the High Arctic Canada, Ji Young Jung, Min Jung Kwon, Kyung-Soon Jang, Junhwa Chi, Sungjin Nam, Mincheol Kim, Hojeong Kang, Juyoung Seo, Jeongeun Yun and Yoo Kyung Lee

17:05 - Comparing streamflow analysis and remote sensing observations to assess climate change impact on permafrost degradation, Flore Sergeant, René Therrien, Ludovic Oudin, Anne Jost, François Anctil and Romain Jolivet

17:20 - Hydrochemistry of the small streams in Arctic tundra, L.S. Lebedeva, V.V. Shamov, A.M. Tarbeeva and N.A. Pavlova

17:35 - Lena River biogeochemistry in a wet and a dry year, Pier Paul Overduin and Anne Morgenstern

17:50 - Open discussion on orals and posters

E-Posters in this session

- ☉ Source-to-mainstem: geohydrochemical chain from catchment deposits to stream waters, Brøggerdalen, NW Spitsbergen, Zbigniew Zwoliński, Małgorzata Mazurek, Joanna Gudowicz and Przemysław Niedzielski
- ☉ Carbon dioxide and methane fluxes measurement in the High Arctic tundra ecosystems in Cambridge Bay, Canada, Namyi Chae, Juyeol Yun, Taejin Choi, Johann Wanger and Bang yong Lee
- ☉ Environmental controls on organic carbon stocks stored in different tundra vegetation types in the High Arctic of Svalbard, Anna Zielonka, Jacob C. Yde and Marek Drewnik
- ☉ Hydrochemical features of thermokarst lakes of southern and central Yamal (Russian Arctic), Irina Fedorova, Roman Zdrovennov and Valerii Kadutskii

- Low-molecular-weight organic acids of peat soils in the tundra zone of European North-East, Olesya Kubik, Elena Shamrikova, Alexander Pastukhov, Dmitriy Kaverin and Vasilij Punegov
- Modelling pan-Arctic lateral carbon transport from abrupt permafrost thaw, Philip Pika, Wim J. van Hoek, Arthur H.W. Beusen, Alexander F. Bouwman, Jack J. Middelburg and Jorien Vonk
- Monitoring the optical properties of small thermokarst lakes through synergistic Unmanned Aerial Vehicle and satellite data analysis, Pedro Freitas, Gonçalo Vieira, Carla Mora, João Canário, Diogo Folhas and Warwick F. Vincent
- Suprapermafrost taliks in the small river watershed in Eastern Siberia, L.S. Lebedeva, V.S. Efremov, N.E. Baishev, V.V. Ogonerov, K.I. Bazhin and I.I. Khristoforov
- The extent of Alaskan arctic coastal wetlands in response to changing sea level, Matthias Fuchs, Claire Treat, Guido Grosse, Ingmar Nitze, Miriam C. Jones, Katey Walter Anthony, Benjamin M. Jones, Jonathan A. O'Donnell and Steve Frohling
- Transcriptional response of methanogenic communities to permafrost thaw, Nu Ri Myeong and Mincheol Kim

ID:35 - Learning from Indigenous Methodologies in Collaborative Arctic Science

4:30 - 6:30 PM (GMT)

Conveners: Megan Sheremata (University of Toronto), Victoria Qutuuq Buschman (University of Washington) and Stanislav Ksenofontov (Ammosov North-Eastern Federal University)

Arctic Indigenous Peoples have called on scientists to revise research methodologies to reflect the importance of Indigenous perspectives of scientific research that takes place on their homelands and in their communities. There remains a persistent need for decolonizing and collaborative methodologies to supplant top-down approaches in Arctic research, and to discuss how natural scientists - who may be Indigenous scientists or allies - can learn from and apply Indigenous methodologies in research. This session will include presentations and a panel discussion on Indigenous methodologies in research involving the natural sciences, including approaches to building respectful and accountable research relationships at all stages of the research process. We invite Indigenous and non-Indigenous scholars, community researchers, local leaders, youth, knowledge-holders, and specialists from a variety of backgrounds, geographies, disciplines, and career stages. Limited funding will be available for presenters who are Indigenous community members and/or Indigenous scholars either leading or co-presenting in this session.

Oral Presentations

16:30 - Introduction by the conveners

16:35 - Forwarding meaningful Indigenous partnerships in Arctic Conservation, Victoria Qutuuq Buschman, Enooyaq Sudlovenick, Margaret Rudolf, Katarina Inga, Robert Way, Tayana Arakchaa, Sascha Schiøtt and Robert Comeau

16:50 - Practicing from Indigeneity: Blending Indigenous and science methodologies, Margaret Anamaq Rudolf

17:05 - Collaborative research: Indigenous methodologies in Arctic sciences, Stanislav Ksenofontov

17:20 - Towards a holistic evaluation of food security challenges: The work of the Indigenous Food Security Working Group, Food Security Working Group Members

17:35 - Multiple evidence base in practice: research outcomes and challenges. Presentation of preliminary findings from systematic review article, Maret J. Heatta

17:50 - Building lasting research relationships, Megan Sheremata, Lucassie Arragutainaq, Joel Health, William Gough and Gita Ljubicic

18:05 - Open discussion on orals and posters

E-Posters in this session

- 🌐 Qikiqtait: Progress on a protected area for the Belcher Islands Archipelago, Mick Appaqaq
- 🌐 SIKU: The Indigenous Knowledge Social Network, a summary of progress a year since public launch, Candice Pedersen
- 🌐 Reflections from Inuit and non-Indigenous researchers in practising decolonizing Arctic science, Katherine Wilson, Andrew Arreak, Shelly Elverum, Trevor Bell and Gita Ljubicic
- 🌐 What does food sovereignty have to do with understanding the Arctic?, Carolina Behe



Thursday, March 25

ID:19 - Northern Roads and Railways: Social and Environmental Effects of Transport Infrastructure (I) **8:00 – 10:00 AM (GMT)**

Conveners: Olga Povoroznyuk (University of Vienna), Warwick F. Vincent (Centre for Northern Studies & Laval University) and Fabrice Calmels (Yukon University Whitehorse)

As the Circumpolar North comes into increasing global focus, new transportation projects are being imagined and built across the Arctic and Subarctic. Land-based transport and its related infrastructure cause tremendous changes in socio-ecological systems, including new forms of mobility and connectivity that affect the circulation of people, goods, resources and information. Transport infrastructure also affects the natural environment by altering landscape and ecological processes and expanding the human footprint into remote, formerly pristine ecosystems. Rapid climate change is bringing new challenges for construction and maintenance of transport systems, requiring new adaptive solutions. This session invites presentations that consider the complex entanglements between humans, environment and transportation infrastructure (roads, railways, pipelines and coastal facilities), including perspectives from the social and natural sciences, engineering and transportation studies.

Oral Presentations

08:00 - Introduction by the conveners

08:05 - Cumulative impacts of a road and climate change to the vegetation and terrain of an ice-wedge polygon landscape, Prudhoe Bay oilfield, Alaska, 1949–2019, Donald A. Walker, Martha K. Reynolds, Mikhail Z. Kanevskiy, Yuri Shur, Vladimir E. Romanovsky, Benjamin M. Jones, Marcel Buchhorn, M. Torre Jorgenson, Jozef Šibík, Amy L. Breen, Emily Watson-Cook and Jana L. Peirce

08:20 - Roads and railroads in the North: What do they do for local communities?, Peter Schweitzer

08:35 - Roads and railroads of the Russian North: Social dimensions of infrastructure projects, Olga Povoroznyuk

08:50 - Geohazards caused by massive ice below the Dempster Highway, YT: an overview and some possible adaptation approaches, Fabrice Calmels, Louis-Philippe Roy, Pamela Godin, Cyrielle Laurent and Muhammad Idrees

09:05 - Tracing footprints of human-nature relations: case-study of informal roads in changing Siberian taiga, Vera Kuklina

09:20 - Small vessels in social and economic development of the Russian Arctic, Marina Nenasheva

09:35 - Open discussion on orals and posters

E-Posters in this session

- Changes of river ice characteristics in the North-East of Russia, Anastasia Zemlianskova, Olga Makarieva and Natalia Nesterova
- Transport accessibility problems of the isolated settlements in Russian European Arctic Zone, Alexey A. Pankratov, Svetlana V. Badina and Kirill V. Yankov

ID:34 - Implications of Permafrost Thaw at Multiple Scales: Effects on Hydrology and Biogeochemistry (3)

8:00 - 10:00 (GMT)

Conveners: Lara Hughes-Allen (Université Paris Saclay), Frédéric Bouchard (Université Paris Saclay) and Ylva Sjöberg (University of Copenhagen)

Permafrost thaw due to continued climate change and anthropogenic influences has significant impact on local and regional hydrology and biogeochemistry. The release of previously sequestered organic matter via greenhouse gas emissions has implications for global climate projections, and changing permafrost landscape dynamics has wide reaching impacts on water quality and aquatic ecosystem equilibrium. Due to the complex interplay between climate, permafrost, and people, there is strong need for cross-discipline collaboration and input from local populations. We welcome studies which focus on the interactions between climate change and permafrost dynamics and the effects of these interactions on biogeochemical and hydrological systems at different temporal and spatial scales.

Oral Presentations

08:00 - Introduction by the conveners

08:05 - Efficient representation of overwinter freeze-thaw events, Élise Devoie, Aaron Berg, James R. Craig, Renato Pardo and William L. Quinton

08:20 - Cold and colder: extreme seasonality in thermokarst lake viral communities, Valérie Langlois, Warwick F. Vincent and Alexander I. Culley

08:35 - Ultra-high resolution assessment of potential impacts of vegetation shadows on satellite-derived spectral signals from small thermokarst lakes, Pedro Freitas, Gonçalo Vieira, Carla Mora, João Canário, Diogo Folhas and Warwick F. Vincent

08:50 - Thawing permafrost: an overlooked source of seeds for Arctic cloud formation, Jessie Creamean, Thomas Hill, Paul DeMott, Jun Uetake, Sonia Kreidenweis and Thomas Douglas

09:05 - Iron speciation at the permafrost-active layer boundary, Amanda Barker, Grace McInturff, Robyn Snow, Thomas Douglas, Shawn Gallaher and Joseph Smith

09:20 - Open discussion on orals and posters

E-Posters in this session

- Source-to-mainstem: geohydrochemical chain from catchment deposits to stream waters, Brøggerdalen, NW Spitsbergen, Zbigniew Zwoliński, Małgorzata Mazurek, Joanna Gudowicz and Przemysław Niedzielski
- Carbon dioxide and methane fluxes measurement in the High Arctic tundra ecosystems in Cambridge Bay, Canada, Namyi Chae, Juyeol Yun, Taejin Choi, Johann Wanger and Bang yong Lee
- Environmental controls on organic carbon stocks stored in different tundra vegetation types in the High Arctic of Svalbard, Anna Zielonka, Jacob C. Yde and Marek Drewnik

- Hydrochemical features of thermokarst lakes of southern and central Yamal (Russian Arctic), Irina Fedorova, Roman Zdorovenov and Valerii Kadutskii
- Low-molecular-weight organic acids of peat soils in the tundra zone of European North-East, Olesya Kubik, Elena Shamrikova, Alexander Pastukhov, Dmitriy Kaverin and Vasiliy Punegov
- Modelling pan-Arctic lateral carbon transport from abrupt permafrost thaw, Philip Pika, Wim J. van Hoek, Arthur H.W. Beusen, Alexander F. Bouwman, Jack J. Middelburg and Jorien Vonk
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- The extent of Alaskan arctic coastal wetlands in response to changing sea level, Matthias Fuchs, Claire Treat, Guido Grosse, Ingmar Nitze, Miriam C. Jones, Katey Walter Anthony, Benjamin M. Jones, Jonathan A. O'Donnell and Steve Frolking
- Transcriptional response of methanogenic communities to permafrost thaw, Nu Ri Myeong and Mincheol Kim

ID:02 - Changing Arctic Coasts

(1) 3:30 - 5:30 PM (GMT) and (2) 6:00 – 8:00 PM (GMT)

Conveners: Hugues Lantuit (Alfred Wegener Institute), Leneisja Jungsberg (Nordregio) and Benjamin Jones (University of Alaska Fairbanks)

The Arctic coast is undergoing dramatic physical, biogeochemical and socio-economical changes. Environmental factors such as warming air temperatures, declining sea ice, permafrost thaw and increased forcing events (storminess) are critical drivers accelerating these changes. Increasing erosion rates lead to the release of large amounts of organic matter and contaminants to the nearshore zone and the upper shelf, transforming the ecosystem and altering trophic systems. It is also putting new pressures on Arctic coastal dynamics with the loss of landscapes and cultural heritage sites as well as damages on infrastructure creating stress and uncertainty in local communities. The aim of this session is to bring together researchers, indigenous partners and community members who are studying, predicting, modelling and living with these dramatic coastal and nearshore changes across the Arctic. This session will ultimately provide critical information to support future planning, mitigation and adaptation measures of these changing permafrost coastal landscapes. This session is co-organized by the EU H2020 Nunataryuk and the NSF PerCS-Net project and is a contribution to the coastal processes action group of T-MOSAIC.

Oral Presentations

15:30 - Introduction by the conveners

15:35 - Abiotic environment characterization and influencing factors of microphytobenthic community abundance, Claude-Eric Souquieres, Jana Kvíderová and Josef Elstera

15:50 - Assessment of intra-seasonal permafrost bluff dynamics in the Beaufort Sea Coast using TerraSAR-X imagery, Gonçalo Vieira, Carla Mora, Pedro Pina, Dustin Whalen, Anna Irrgang, Annett Bartsch and Hugues Lantuit

16:05 - Beaufort Sea coastal dynamics - complex issues, complex impacts and solutions, Dustin Whalen, Paul Fraser, Michael Lim, Goncalo Vieira, Pedro Pina, Tianna Ruben-Gordon, Kendyce Cockney and Shawn Stuckey

16:20 - Coastal communities' adapting to permafrost thaw in Northwest Greenland, Leneisja Jungsberg, Justine Ramage and Shinan Wang

16:35 - Impact of river forcing on simulated ocean-sea ice coupling in the Arctic Mackenzie Shelf (South-Eastern Beaufort Sea), Clément Bertin, Dimitris Menemenlis, Dustin Carroll, Hong Zhang, Bertrand Decharme and Vincent Le Fouest

16:50 - Multi-disciplinary site investigations for improved infrastructure design North Greenland, Thomas Ingeman-Nielsen, Rafael Caduff, Niels Foged, Kåre Hendriksen, Eva Mätzler, Thomas G. Petersen, Johanna Scheer and Soňa Tomašková

17:05 Open discussion on orals and posters

BREAK

18:00 - Introduction by the conveners

18:05 - Protection of Arctic coastlines by nearshore and shorefast ice, Lucia Hosekova, Jim Thomson, Erick Rogers and Emily Eidam

18:20 - Record high Pacific Arctic seawater temperatures and delayed sea ice advance in response to episodic atmospheric blocking, Tsubasa Kodaira, Takuji Waseda, Takehiko Nose and Jun Inoue

18:35 - Release of bioavailable dissolved organic matter into the Arctic coastal zone: Simulating coastal permafrost soil erosion, Anders Dalhoff Bruhn Jensen, Colin A. Stedmon, Johanna Sjöstedt, Atsushi Matsuoka, Jérôme Comte, George Tanski and Niek Speetjens

18:50 - Sea spray deposition in Svalbard snow – depending dependence on topography ? Lessons learned from two projects in the Hornsund area, Krystyna Kozioł, Adam Nawrot, F. Pawlak, Ł. Stachnik, A. Uszczyk, M. Frankowski and Ż. Polkowska

19:05 - Sea-level rise floodmapping using hydrodynamic and bathtub water-level models over UAV and LiDAR DSMs in Tuktoyaktuk, Northwest Territories, Canada, Daniel Pinheiro, Gonçalo Vieira, Dustin Whalen, Pedro Pina, João Canário, Pedro Freitas and Shawn Stuckey

19:20 - Projections of Arctic coastal erosion and consequent carbon fluxes, David Marcolino Nielsen, Patrick Pieper, Victor Brovkin, Paul Overduin, Johanna Baehr and Mikhail Dobrynin

19:35 - Open discussion on orals and posters

E-Posters in this session

- A shelf in disequilibrium: how Arctic continental shelves may respond to climate-driven changes in sea states, John Malito, Emily Eidam and Jaap Nienhuis
- Fluxes investigation of organic matter in the delta of the Mackenzie River with satellite imagery, Bryère Philippe, Doxaran David, Maury Juliette, Amaaouch Sonia, Mangin Antoine, Juhls Bennet, Atsushi Matsuoka and Babin Marcel
- Morphodynamics and sedimentary processes in Arctic transitional environments: Dicksonfjorden, Svalbard, Dohyeong Kim, Joohe Jo, Seung-il Nam and Kyungsik Choi
- Remote sensing analysis of recent coastal change and its controlling factor in Tuktoyaktuk Peninsula (Beaufort Sea Coast, Canada), Bernardo Costa, Gonçalo Vieira and Dustin Whalen
- Remote sensing analysis of recent coastal change and its controlling factors in the Darnley Bay region (Beaufort Sea Coast, Canada), Rodrigue Tanguy, Gonçalo Vieira, Gonçalo Prates, Dustin Whalen and Pedro Pina
- Synergistic use of remote sensing and field observations for assessing recent changes along the Canadian Beaufort coast, Gonçalo Vieira, Pedro Pina, Dustin Whalen, Carla Mora, João Canário, Pedro Freitas, Daniel Pinheiro, Anna Irrgang, Annett Bartsch and Hugues Lantuit

ID:12 - Microbiomes and Biogeochemical Processes along Geographic and Environmental Gradients in the Circumpolar North (1&2 of 3)

(1) 11:30 AM - 1:30 PM (GMT) and (2) 3:30 – 5:30 PM (GMT)

Conveners: Anne D. Jungblut (Natural History Museum - London), Jérôme Comte (Institut National de la Recherche Scientifique – Canada) and Klemens Weisleitner (University of Innsbruck)

Arctic ecosystems are underpinned by communities of diverse microscopic lifeforms, collectively referred to as microbiomes. These occur as interacting networks that control biogeochemical processes such as greenhouse gas production and nutrient cycling, and they contribute to the base of food webs and affect populations changes at higher trophic levels. Genomic analysis has shown that microbiomes contain assemblages of viruses, archaea, bacteria and microbial eukaryotes that are metabolically as well as taxonomically diverse with new emerging taxa, but still little is known about the extent of that diversity, network relationships, spatial and temporal variation, and coupling to biogeochemical and ecosystem processes. The session organized by T-MOSAiC Arctic Microbiome Action Group invites contributions on bacteria, archaea, viruses, fungi and other microbial eukaryotes from any Arctic environments. The aim of this session is to encourage broad and comparative research across spatial and environmental gradients as well as connectivity between terrestrial and marine habitats in the circumpolar North using omics and other approaches. This may include studies on microbiomes along geographic and environmental gradients, seasonal and temporal drivers of diversity patterns, responses to environmental stress, as well as metabolic and physiological responses to environmental change with implications to biogeochemical and ecosystem processes.

Oral Presentations

11:30 - Introduction by the conveners

11:35 - A 20-year record that links the planktonic microbiome of Toolik Lake to seasonal cycles of stratification, Natasha R. Christman, George W. Kling, Jason A. Dobkowski and Byron C. Crump

11:50 - Microbial monitoring of a three-year permafrost collapse in Greenland, Maria Scheel, Athanasios Zervas, Carsten S. Jacobsen and Torben R. Christensen

12:05 - Microbial iron cycling detection, ecology, and role in the Arctic tundra, Alexander B. Michaud, Remi Masse, Nicholas R. Record and David Emerson

12:20 - Species diversity of fungi in peat plateaus in mountainous landscapes of the Arctic, Vera A. Kovaleva

12:35 - Hydroecological and biogeochemical assessments of rainfall washoff on retrogressive thaw slump scars along the soil-slump-lake continuum, Thomas Reid, Renee McFadyen, Peter DiCenzo, Joanne Parrot, Lee Grapentine, Jane Kirk and Ian G. Droppo

12:50 - Terrestrial inputs shape coastal microbial communities in a High Arctic fjord (Isfjorden, Svalbard), Lisa-Marie Delpech, Tobias R. Vonnahme, Maeve McGovern, Rolf Gradinger, Kim Præbel and Amanda Poste

13:05 - Open discussion on orals and posters

BREAK

15:30 - Introduction by the conveners

15:35 - The biogeochemical variability of Arctic thermokarst ponds is reflected by stochastic and niche-driven microbial community assembly processes, Alizée Le Moigne, Maciej Bartosiewicz, Gabriela Schaepman-Strub, Samuel Abiven and Jakob Pernthaler

15:50 - Dissolved organic matter composition and energetic shifts in Arctic stream waters with landcover change, Samuel Cottingham

16:05 - Functional vs. taxonomic microbial diversity along lake glacier chronosequences: what is the better predictor for greenhouse gas production?, Jing Wei, Laurent Fontaine, Nicolas Valiente, Peter Dörsch, Dag O. Hessen and Alexander Eiler

16:20 - Variations in cryoconite holes and phototrophs across an outlet glacier in southwest Greenland, Nozomu Takeuchi, Koki Ishiwatari, Akane Watanabe and Takahiro Segawa

16:35 - Salinity and dissolved organic carbon drive microbial community structure in a subarctic river system and its transition zone to the sea, Marie-Amélie Blais, Alex Matveev, Connie Lovejoy and Warwick F. Vincent

16:50 - Insights into metal tolerant bacterial diversity associated with a glacio-marine system in Ny-Ålesund, Arctic, Femi Anna Thomas and K. P. Krishnan

17:05 - Open discussion on orals and posters

E-Posters in this session

- ☉ Diversity and metabolic profiles of prokaryotic communities in extra-terrestrial analogues on Earth: perennially ice-covered Antarctic lake brines, Papale Maria
- ☉ In-silico analysis of functional annotations in cold active BgalEL from an Arctic psychrotrophic bacterium *Enterobacter ludwigii*, Aneesa P A, Jesmi Yousuf, K P Krishnan and A A M Hatha
- ☉ Arctic tundra microbiomes in relation to relative humidity and soil properties, Lotte De Maeyer, Christophe V.W. Seppey, Bjorn Tytgat, Mette M. Svenning and Elie Verleyen
- ☉ Changes in microbial diversity and ecology in Arctic freshwater biofilms across a broad latitudinal gradient (56-83°N), Patrick M. Hooper, Christopher J. Owen, David Bass, Edward J. Feil, Warwick F. Vincent and Anne D. Jungblut

ID:68 - Progress Towards Realizing Data Sharing for the Arctic Region and Beyond

(I) 11:30 AM - 1:30 PM (GMT) and (II) 3:30 – 5:30 PM (GMT)

Conveners: Peter L. Pulsifer (Carleton University), Kirsten Elger (GFZ German Research Centre for Geosciences) and Mareike Wiczorek (Alfred Wegener Institute)

Since the Fourth International Polar Year (2007-2009) the Polar Data Management Community has been collaborating to realize enhanced data management and long-term stewardship for the Arctic region. New human and technical resources and the recognition of the value of Indigenous data increase our abilities to discover, access, combine, and reuse the best data in an ethically open way for e.g. research, community well-being, and decision making. This session calls for papers on all aspects of data practice and theory. There is specific interest in papers reporting on initiatives that demonstrate FAIR data sharing and/or use of the CARE principles (<https://www.gida-global.org/care>) in particular: i) Community or Indigenous-driven projects; ii) Demonstrations from collaborative research initiatives (i.e. MOSAiC, T-MOSAiC, CCADI etc.); iii) Cutting edge methods, technology, policy or theory that address data challenges and interoperability in particular; iv) Results from early career researchers.

Oral Presentations

11:30 - Introduction by the conveners

11:35 - SIOS Data Management System for a regional observing system in and around Svalbard, Dariusz Ignatiuk, Øystein Godøy, Lara Ferrighi, Inger Jennings, Heikki Lihavainen, Christiane Hübne and Shridhar Jawak

11:50 - Shared Arctic variable framework links global and Arctic observing system priorities and requirements, Polina Mikhaylyukova, Marina Semenova, Anna Gebruk and German Titov

12:05 - The EMERGE Database: An interdisciplinary data management solution for ecosystems biology and environmental research, Suzanne B. Hodgkins, Benjamin Bolduc, Ruth K. Varner, Patrick M. Crill, Carmody K. McCalley, Jeffrey P. Chanton, Gene W. Tyson, William J. Riley, Michael Palace, Melissa B. Duhaime, Moira A. Hough, Scott R. Saleska, Matthew B. Sullivan, Virginia I. Rich, EMERGE Biology Integration Institute Team, IsoGenie Project Team and A2A Project Team

12:20 - SIOS's response to COVID-19 and the strategy for future, Shridhar Jawak, Veijo Pohjola, Inger Jennings, Christiane Hübner, Dariusz Ignatiuk, Øystein Godøy, Heikki Lihavainen, Bo N. Andersen and Kim Holmén

12:35 - Merged Observatory Data for Arctic Air Temperature (MODAAT): Under the hood of an interoperable system to mobilize automated weather station data, Etienne Godin and Warwick F. Vincent

12:50 - Streamlining disparate research data and analysis – The ocean acidification use case for the Canadian Consortium for Arctic Data Interoperability, Claire Herbert, Tim Papakyriakou, Peter Pulsifer, Amos Hayes, Rebecca Ingram, Adam Stone, Miyen-Ebi Victory Iyakoregha, Gabrielle Alix, Emmanuel Igbeinkutu and Tahiana Ratsimbazafy

13:05 - Open discussion on orals and posters

BREAK

15:30 - Introduction by the conveners

15:35 - A new and simple protocol for data collection on permafrost thaw during the period of TMOSAIC (Terrestrial Multidisciplinary distributed Observatories for the Study of Arctic Connections), Julia Boike, Sarah Chadburn, Julia Martin, Simon Zwieback and T-MOSAIC action group on permafrost

15:50 - Building globally interoperable data infrastructure: Contributions from the Arctic data community, Peter Pulsifer, Amos Hayes, Gabrielle Alix, Herman Anker, David Arthurs, Nick Brown, Shannon Christoffersen, Byron Chu, Etienne Godin, Claire Herbert, Emmanuel Igbeinkutu, Rebekah Ingram, Piers Kreps, Tahiana Ratsimbazafy, Ravi Sankar, Samir Sellars, Greg Vey and Graham Wilkes

16:05 - Communication and knowledge transfer in the Canadian Consortium for Arctic Data Interoperability (CCADI), Rebekah R. Ingram

16:20 - Towards a collective vision for interoperable Canadian permafrost data management, Nick Brown, Stephan Gruber, Ashley Rudy, Brendan O'Neil, Sharon Smith and Panya Lipovsky

16:35 - Analysis of Arctic Data Center Metadata using FAIR principles shows increased quality across multiple metrics, Christopher W. Beltz

16:50 - Open discussion on orals and posters

E-Posters in this session

- ESA CCI Permafrost continues ESA GlobPermafrost product visualization and publication using GIS and WebGIS technology, Antonie Haas, Birgit Heim, Annett Bartsch, Andreas Walter, Isabel Herrarte, Schäfer-Neth and Frank Martin Seifert
- Progress of the Russian Arctic Vegetation Archive (AVA-RU), Vitalii Zemlianskii, Ksenia Ermokhina, Anna Lapina, Elena Troeva, Natalia Koroleva, Maria Kurysheva, Denis Korolev and Gabriela Schaepman-Strub
- QGreenland: Lessons from developing an open source Greenland GIS package, Twila Moon, Trey Stafford, Matt Fisher and Lynne Harden
- Two decades of mooring data across the Canadian Arctic available through the ArcticNet and Amundsen Science program, Tahiana Ratsimbazafy, Amélie Desmarais, Thibaud Dezutter, Anissa Merzouk, Shawn Paul Meredyk, Simon Morisset and Alexandre Forest



Friday, March 26

ID:100 - Past Climates and Environments of the Arctic

11:30 AM – 1:30 PM (GMT)

Conveners: Bianca Perren (British Antarctic Survey), Kwangchul Jang (Korea Polar Research Institute), Joshua Evans (University of New-Brunswick) and Jennifer Wesselbaum (University of New-Brunswick)

Oral Presentations

11:30 - Introduction by the conveners

11:35 - Holocene rise and fall of the north water polynya: a climate-sensitive Arctic sea-ice ecosystem, Sofia Ribeiro Sofia Ribeiro, Audrey Limoges, William T. Colgan, Kaarina Weckström, Rebecca Jackson, Guillaume Massé and Thomas A. Davidson

11:50 - Genetic signatures from glass houses deposited millennia ago: applying a new biological lens to multi-proxy paleoenvironmental reconstructions in the north water polynya (Pikialasorsuaq) with targeted sedaDNA metabarcoding of Arctic diatoms, Joshua R. Evans, Gary W. Saunders, Sofia Ribeiro, Sara Harðardóttir and Audrey Limoges

12:05 - Northeast Greenland polynyas: a Holocene perspective from the Sirius water, Rebecca Jackson, Anna Bang Kvorning, Marit-Solveig Seidenkrantz, Christof Pearce and Sofia Ribeiro

12:20 - Tracking the Atlantic multidecadal oscillation with highly resolved paleoclimate records, Francois Lapointe, Raymond S Bradley and Michael Retelle

12:35 - Historical representations of winter on the coast of Nunatsiavut (Canada), from 1770 to 1950, Marie-Michèle Ouellet-Bernier, Anne de Vernal and Daniel Chartier

12:50 - Marked 20th-century regional warming in the Hudson Bay Lowlands shown in a Holocene lake record, Kathryn E. Hargan, Kathleen M. Rühland, Sarah A. Finkelstein, Andrew M. Paterson, April S. Dalton, Wendel Keller and John P. Smol

13:05 - Open discussion on orals and posters

E-Posters in this session

- Structure of microbial communities in lake sediments of the High Arctic, Anne-Marie Lapointe, Yohanna Klanten, Alexander Culley, Catherine Girard and Dermot Antoniadis
- Application of neodymium isotopes for the reconstruction of glacial environmental changes in northern Svalbard over the last 16.5 kyr, Kwangchul Jang, Youngkyu Ahn, Young Jin Joe, Carmen A. Braun, Young Ji Joo, Jung-Hyun
- Kim, Germain Bayon, Matthias Forwick, Christoph Vogt and Seung-II Nam
- Climate-related sedimentary changes of Wijdefjorden, Northern Svalbard, since the last deglaciation, Youngkyu Ahn, Young Jin Joe, Kwangchul Jang, Young Ji Joo, Yeong Ju Son, Matthias Forwick, Sungmin Hong and Seung-II Nam
- Source of sedimentary organic carbon in Wijdefjorden in the Svalbard Archipelago, Dahae Kim, Jung-Hyun Kim and Seung-II Nam
- Environmental changes and depositional processes in Woodfjorden of Northern Svalbard since the last deglaciation, Young Ji Joo, Trude Hansen, Forwick and Seung-II Nam
- Post-Yonger Dryas depositional environment of the Little-Storfjorden in the southern Spitsbergen, Svalbard, Young Jin Joe
- Northern biome changes synthesized from taxonomically harmonized and temporally standardized fossil pollen record since the Last Glacial Maximum in comparison to GCM simulations, Chenzhi Li,

Anne Dallmeyer, Xianyong Cao, Andrej Andreev, Thomas Böhmer, Alexander Karl Postl, Mareike Wieczorek and Ulrike Herzsich

- Spatial distribution of microcharcoal and black carbon on the Greenland ice sheet, Sandra O. Brugger, Nathan J. Chellman, Callie McConnell and Joseph R. McConnell
- Limnological responses to anthropogenic climate forcing across the Arctic, Bianca Perren, John Smol and Kathleen Rühland

Keynote Talk - Arctic Connections: Lands, Seas, Culture and Last Ice

Warwick F. Vincent (Centre for Northern Studies, Université Laval - Canada)

2:30 – 3:30 PM (GMT)

Arctic Connections: Lands, Seas, Culture and Last Ice

DESCRIPTION

The oldest, thickest sea ice in the Arctic Ocean occurs along the northern edge of Greenland and the Canadian Arctic Archipelago. Ocean currents transport sea ice into this coastal zone from as far away as the Laptev Sea, and summer ice is projected to persist longer in this area than elsewhere in the Arctic Ocean. This 'Last Ice Area' is thereby considered the ultimate refuge for ice-dependent species in the rapidly warming North, including the newly protected area Tuvaijuittuq, meaning 'lasting ice' in Inuktitut. There is a strong reciprocal coupling between the land and ocean in this region: the land barrier allows the accumulation of sea ice, while the local ice-dependent climate is critical to maintaining many of the land-associated features, including glaciers, ice shelves, ice-capped lakes and perennial snowbanks that feed water tracks across the polar desert landscape. The coastal zone passes across Canada's northernmost land conservation region, Quttinirpaaq National Park, where a strategic plan in development pays special attention to Inuit cultural values, and where a new project on 'Last Ice Microbiomes' connects the lands, ice and seas, and also links the IASC projects T-MOSAIC and MOSAIC. This area contains a remarkable diversity of ecosystems, but these habitats are changing rapidly in response to climate warming, underscoring the need for urgent climate action at global scale combined with a holistic Indigenous approach to assure their regional conservation.

ID:31 - Aerosol Observations in the Arctic from Ground-based and Satellite Systems during T-MOSAIC 3:30 – 5:30 PM (GMT)

Conveners: Mauro Mazzola (Institute of Polar Sciences-Italy), Carlos Toledano (Universidad de Valladolid) and Liviu Ivanescu (Université de Sherbrooke)

T-MOSAIC aims to coordinate with other Arctic programs (e.g., Year of Polar Prediction) to utilize resources from a network of observatories and suite of satellites. In the context of aerosol studies, in situ and remotely sensed data, including aerosol optical depth from Sun, Star and Moon photometers and profiling using lasers, are required to evaluate their impact on climate. Using these data in conjunction with chemical transport and climate models, aerosol radiative forcing can be assessed. The session emphasizes the need for such coordination, with a focus on how the Polar-AOD community can contribute to ongoing research related to atmospheric composition, including polar-night monitoring techniques, validation of satellite retrievals and transport models, and provides a forum for such a coordination in relation to 2019-2020 aerosol measurements in the Arctic and sub-Arctic. We will seek input from other groups and stake holders as to how to coordinate activities going forward.

Oral Presentations (*with presenting author only*)

- 15:30** - Introduction by the conveners
- 15:35** - Advances in Polar night AOD retrieval, Mauro Mazzola
- 15:50** - Long range transported aerosol events over Ny-Ålesund (Svalbard) in 2020 observed with Sun-sky-Moon photometry, Sara Herrero
- 16:05** - Aerosol properties derived by Lidar and star photometer at Ny-Ålesund during the winter 2019/20, Christoph Ritter
- 16:20** - Monitoring of long-range transported smoke in polar regions with remote sensing instruments, Ramiro González
- 16:35** - Preliminary results on the third lunar/stellar AOD intercomparison campaign at Lindenberg's MOL-RAO Observatory, África Barreto
- 16:50** - Analysis of gravity wave periodicities in starphotometry AOD data, Liviu Ivanescu
- 17:05** - Open discussion on orals and posters

E-Posters in this session

- 🌐 New methodology to calculate AOD from lunar photometer, R. Román
- 🌐 In situ eBC vertical profiles in the Arctic troposphere: a comprehensive analysis of 9 years (2011-2019) of tethered balloons experiments, David Cappelletti

ID:12 - Microbiomes and Biogeochemical Processes along Geographic and Environmental Gradients in the Circumpolar North (3)

3:30 – 5:30 PM (GMT)

Conveners: Anne D. Jungblut (Natural History Museum - London), Jérôme Comte (Institut National de la Recherche Scientifique – Canada) and Klemens Weisleitner (University of Innsbruck)

Arctic ecosystems are underpinned by communities of diverse microscopic lifeforms, collectively referred to as microbiomes. These occur as interacting networks that control biogeochemical processes such as greenhouse gas production and nutrient cycling, and they contribute to the base of food webs and affect populations changes at higher trophic levels. Genomic analysis has shown that microbiomes contain assemblages of viruses, archaea, bacteria and microbial eukaryotes that are metabolically as well as taxonomically diverse with new emerging taxa, but still little is known about the extent of that diversity, network relationships, spatial and temporal variation, and coupling to biogeochemical and ecosystem processes. The session organized by T-MOSaIC Arctic Microbiome Action Group invites contributions on bacteria, archaea, viruses, fungi and other microbial eukaryotes from any Arctic environments. The aim of this session is to encourage broad and comparative research across spatial and environmental gradients as well as connectivity between terrestrial and marine habitats in the circumpolar North using omics and other approaches. This may include studies on microbiomes along geographic and environmental gradients, seasonal and temporal drivers of diversity patterns, responses to environmental stress, as well as metabolic and physiological responses to environmental change with implications to biogeochemical and ecosystem processes.

Oral Presentations

- 15:30** - Introduction by the conveners
- 15:35** - Rare bacterial taxa shape the bacterioplankton community structure in the fjords of west and northern Svalbard, Arctic, Siddharthan Venkatachalam and K.P. Krishnan
- 15:50** - Degradation of terrigenous dissolved organic matter in Arctic coastal waters: importance of the priming effect and identification of microbial actors, Lucas Tisserand and Fabien Joux

16:05 - Seasonal shifts in microbial dormancy and activity in Beaufort Sea coastal lagoons, Natasha A. Griffin, Kristina D. Baker, James W. McClelland and Byron C. Crump

16:20 - Antibiotic resistance in cryoheric habitats, Daniel Gattinger, Klemens Weisleitner and Birgit Sattler

16:35 - Repertoire of membrane transporters encoded in the Arctic picophytoplankton *Micromonas polaris* (Mamiellophyceae, Chlorophyta) genomes, Margot Tragin, Victoria Jackson, Connie Lovejoy and Adam Monier

16:50 - Open discussion on orals and posters

E-Posters in this session

- Diversity and metabolic profiles of prokaryotic communities in extra-terrestrial analogues on Earth: perennially ice-covered Antarctic lake brines, Papale Maria
- In-silico analysis of functional annotations in cold active BgalEL from an Arctic psychrotrophic bacterium *Enterobacter ludwigii*, Aneesa P A, Jesmi Yousuf, K P Krishnan and A A M Hatha
- Arctic tundra microbiomes in relation to relative humidity and soil properties, Lotte De Maeyer, Christophe V.W. Seppey, Bjorn Tytgat, Mette M. Svenning and Elie Verleyen
- Changes in microbial diversity and ecology in Arctic freshwater biofilms across a broad latitudinal gradient (56-83°N), Patrick M. Hooper, Christopher J. Owen, David Bass, Edward J. Feil, Warwick F. Vincent and Anne D. Jungblut

OTHER ACTION GROUP ACTIVITIES

Arctic Infrastructure AG

The RATIC/Arctic Infrastructure Action Group is organizing symposia on the subject **Northern Roads and Railways: Social and Environmental Effects of Transport Infrastructure** (convened by Olga Povoroznyuk, Warwick F. Vincent and Fabrice Calmels). The first symposium was held at Arctic Change in December 2020, and these presentations are now available as online videos:

Session 1: <https://vimeo.com/488141252>

1- [*\(Rail\)roads and Arctic Communities: A Social Science Overview*](#)

Presenter: Peter Schweitzer

2- [*The Social Impacts of Road and Railroad Projects: Cases from the Russian North*](#)

Presenter: Olga Povoroznyuk

3- [*Arctic Crossings: Hierarchies of transportation infrastructure in the Arctic and their social and environmental implications*](#)

Presenter: Vera Kuklina



4- [Reindeer, Railways, and the Embodied Limits of Cultural Politics in Sámiiland](#)

Presenter: Natalia Magnani

5- [The Yamal Obstkaya-Bovanenkovo railway and Nenets reindeer herders: three decades of shared territory](#)

Presenter: Timo Kumpula

Session 2: <https://vimeo.com/488143072>

1- [Progress in detection and monitoring of transportation infrastructure in the Arctic based on satellite data](#)

Presenter: Annett Bartsch

2- [Environmental and Economic Consequences of Operation of the Western Section of the Baikal-Amur Railway in Conditions of Climate Warming and Multidirectional Permafrost Dynamics](#)

Presenter: Dmitrii Sergeev

3- [Geohazards caused by massive ice below the Dempster Highway, YT: an overview and some possible adaptation approaches](#)

Presenter: Fabrice Calmels

4- [Environmental consequences of Arctic roads across lake and river landscapes](#)

Presenter: Warwick F. Vincent



RATIC Monthly Science Talks: 3rd Thursdays (18-19:30 GMT), Online

New Arctic infrastructure science talk series: Each month features two 20-minute presentations followed by Q&A. There is no March talk due to ASSW. The next talk will be 15 April (18:00-19:30 GMT). RSVP jlpeirce@alaska.edu to receive the call link, find out about future topics, or suggest one.

ICASS XL 15-19 June 2021, Archangelsk, Russia, & Online

Science session: "The Promise of Arctic Infrastructural Development: Connectivity, Mobility, Prosperity"

Science session: "Informal Infrastructures in Remote Communities of the Arctic and Beyond"

Co-Chairs:

Peter Schweitzer (University of Vienna, Austria)

Skip Walker (University of Alaska Fairbanks, USA)

Coordinator: Jana Peirce (University of Alaska Fairbanks, USA).