



IASC 2026

BULLETIN



[IASC] · INTERNATIONAL ARCTIC SCIENCE COMMITTEE

The International Arctic Science Committee (IASC) is a non-governmental, international scientific organization. IASC's mission is to encourage and facilitate cooperation in all aspects of Arctic research, in all countries engaged in Arctic research and in all areas of the Arctic. Overall, IASC promotes and supports leading-edge interdisciplinary research in order to foster a greater scientific understanding of the Arctic region and its role in the Earth system.

To achieve this mission IASC:

- Initiates, coordinates, and promotes scientific activities at a circumpolar or international level;
- Provides mechanisms and instruments to support science development;
- Provides objective and independent scientific advice on issues of science in the Arctic and communicates scientific information to the public;
- Seeks to ensure that scientific data and information from the Arctic are safeguarded, freely exchangeable and accessible;
- Promotes international access to all geographic areas and the sharing of knowledge, logistics and other resources;
- Provides for the freedom and ethical conduct of science;
- Promotes and involves the next generation of scientists working in the Arctic; and
- Promotes polar cooperation through interaction with relevant science organizations.



IASC 2026

BULLETIN

[IMPRINT]

International Arctic Science Committee

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COVER PHOTO: ROMAN POHORSKY (Extreme Environments Research Laboratory - EPFL)
The newly designed Automated Vertical Aerosol sampling by Tethered-balloon
for Atmospheric Research (AVATAR) deployed in southern Greenland

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[President's Foreword]

IASC is a non-governmental, international scientific organisation, operating among its 25 member countries. It works on a consensus basis to encourage and facilitate international cooperation in all aspects of Arctic research, across all countries engaged in Arctic research, and in all areas of the Arctic region. New members are always welcome and none more so than our newest member, Türkiye, which joined in March 2025.

Last year we celebrated IASC's 35th anniversary and took the opportunity to thank and acknowledge the many thousands of researchers who have worked with IASC to share knowledge, exchange skills and build new partnerships.

There is no doubt that over the last year the eyes of the world have turned to the Arctic. It means that IASC's fundamental principles of scientific freedom; of research independence; and of peaceful international cooperation have never been more important. Yet they have never been more threatened. We must remain clear-sighted about the serious challenges facing meaningful large-scale international research and cooperation in the Arctic, not least because of the creation of distrust in scientific evidence, the denial of established climate facts and serious geopolitical issues. Russia's continuing actions in Ukraine and most recently the unlooked-for approaches of the United States towards Greenland offer stark challenges to our international focus.

Our role in this newly uncertain world must be to robustly defend IASC's principles and values, strive to build understanding and break down barriers, and

enable researchers and knowledge holders to make a positive impact together for the people of the Arctic and the world as a whole. I know that the members of the Executive Committee, the Council, the Working Groups and the wider community will not shrink from those tasks.

So, it is very timely that at our ASSW meeting in Aarhus this year we will publish the reports from the International Conference on Arctic Research Planning (ICARP) process, the fourth since 1995. Those reports set out the priorities for Arctic research for the next decade. They are the result of the work of hundreds of members of the Research Priority Teams and extensive public consultation among the 26 ICARP IV international partner organisations and beyond. As well as the nearly 1200 international scientists and researchers, Indigenous Knowledge holders, and community members from across the Arctic and beyond who gathered at the University of Colorado Boulder in the United States for the ICARP IV Summit last year.

This Summit brought together representatives of Arctic Indigenous Peoples in equal and respectful partnership with scientists, researchers, educators, and many others. The ICARP IV Summit Statement and the Statement from the Indigenous Participants marked critical and positive steps in the shaping of Arctic research and its future priorities.

The priorities set out within the ICARP IV reports have been shaped by early career researchers, amongst many others. Over the last year IASC has continued to invest heavily in the next generations of researchers. We have been able to support ten Fellowships, working in partnership with and with thanks to with the Prince Albert II of Monaco Foundation. Congratulations to all the successful Fellows and best wishes for the year ahead. I look forward to meeting many of you at our meetings in Aarhus.

The ICARP IV reports are important for IASC's future direction and for the wider Arctic research community. They are also a vital stepping stone into the development of the Fifth International Polar Year (IPY-5) in 2032-2033, giving a fantastic head-start to the thinking about Arctic science and knowledge priorities and opportunities within this once-in-a-generation undertaking.

PHOTO: IASC President Henry Burgess, Photo Courtesy Henry Burgess



Working with the IPY-5 Executive Committee, over the course of the last year we have launched the national IPY-5 committee process; issued the call for an International Coordination Office; and begun creating the guidelines for participants to seek official IPY endorsement of their initiatives. This coming year will undoubtedly be a pivotal and exciting one in the development of the Fifth International Polar Year.

I am still reminded that the the IPY-5 will be only the second since IASC came into being, but I am confident that IASC will continue to take a high-profile role and make a very significant contribution to the leadership of this vitally important initiative.

Finally, a heartfelt thank you to the Executive Committee, the Secretariat team in Akureyri and the dispersed Secretariat, including the Working Group Secretaries, and the many others in the Council and

Working Groups who have worked so effectively and enthusiastically to advance IASC's aims and objectives over the last year. Thank you also to Rannís, the Icelandic Centre for Research, for their generous and supportive hosting of the IASC Secretariat in Akureyri, which has now been extended to at least 2031.

I come to the end of my term as IASC President and my eight years on the Executive Committee at our meeting in Aarhus. Thank you to the many people who have supported me in my roles. It has been an honour and a privilege to work with you for the good of our organisation and for the importance and impact of international Arctic science. I look forward to doing the same for the new leadership team in the vital years ahead.

Henry Burgess President, IASC

PHOTO: EVGENII SALGANIK
Polarstern from above in the Central Arctic Ocean

PHOTO: IREK SOBOTA (N.Copernicus Polar Station Spitsbergen and Polar Research Center)
Arctic vegetation in Svalbard



1. IASC INTERNAL DEVELOPMENT

1. IASC Internal Development

IASC Organization

The International Arctic Science Committee (IASC) is a non-governmental organization that encourages and facilitates cooperation in all aspects of Arctic research, in all countries engaged in Arctic research, and in all areas of the Arctic region. To fulfill its mission, IASC promotes and supports leading-edge interdisciplinary research in

order to foster a greater scientific understanding of the Arctic region and its role in the Earth system. IASC was established in 1990 and began operations in 1991. It currently comprises 25 member countries. IASC member organizations are national science organizations that cover all fields of Arctic research.



PHOTO: IASC Council at ASSW 2025 in Boulder, Colorado (US)

COUNTRY	MEMBER ORGANIZATION	IASC COUNCIL MEMBER
Austria	Austrian Polar Research Institute (APRI)	Wolfgang Schöner
Belgium	Belgian National Committee on Antarctic Research (BNCAR)	Philippe Huybrechts
Canada	Polar Knowledge Canada	David Hik
China	Chinese Arctic and Antarctic Administration	Huigen Yang
Czech Republic	Centre for Polar Ecology	Josef Elster
Denmark	Agency for Science, Technology, and Innovation	Lise Lotte Sørensen
Finland	Council of Finnish Academies	Paula Kankaanpää
France	National Center for Scientific Research (CNRS)	Jérôme Fort
Germany	German Research Foundation	Günther Heinemann
Iceland	The Icelandic Centre for Research (RANNÍS)	Egill Thor Nielsson
India	National Centre for Polar and Ocean Research (NCPOR)	Thamban Meloth
Italy	National Research Council of Italy (CNR)	Carlo Barbante
Japan	Science Council of Japan, National Institute of Polar Research (NiPR)	Hiroyuki Enomoto, Vice-President
Republic of Korea	Korea National Committee on Polar Research (KOPRI)	Hyoung Chul Shin
The Netherlands	Dutch Research Council	Daan Blok
Norway	Research Council of Norway	Jon L. Fuglestad
Poland	Polish Academy of Sciences, Committee on Polar Research	Monika Kędra
Portugal	Portuguese Foundation for Science and Technology	João Canario, Vice-President
Russian Federation	Russian Academy of Sciences	Vladimir Pavlenko
Spain	Spanish Polar Committee (CPE)	Antonio Quesada
Sweden	Swedish Research Council	Sara Moa
Switzerland	Swiss Committee on Polar and High Altitude Research	Gabriela Schaeppman-Strub, Vice-President
Türkiye	TÜBİTAK Marmara Research Center Polar Research Institute (TÜBİTAK MAM PRI)	Burcu Özsoy
United Kingdom	Natural Environment Research Council (NERC)	Henry Burgess, President
USA	Polar Research Board	Matthew Druckenmiller, Vice-President

IASC Council

The IASC Council is comprised of representatives from national scientific organizations from all IASC member countries. The IASC Council typically meets once a year during Arctic Science Summit Week (ASSW). Council members provide input regarding a wide range of scientific and technical topics and provide access to a large number of scientists and administrators through their national committees.

The IASC Council is responsible for:

- Developing policies and guidelines for cooperative Arctic research;
- Establishing Working Groups and Action Groups that address and act on timely topics in Arctic science;
- Recommending, in cooperation with the Working Groups, implementation plans for IASC programs and activities;
- Making decisions regarding the participation of national scientific organizations from non-Arctic countries; and,
- Organizing Arctic science conferences.

IASC Executive Committee

The IASC Executive Committee operates as a board of directors and manages IASC's activities between Council meetings. The Executive Committee consists of five elected officials: the President, four Vice-Presidents, and the Executive Secretary (ex officio).

The current IASC Executive Committee members are:

Henry Burgess, President

João Canario, Vice-President

Matthew Druckenmiller, Vice-President

Hiroyuki Enomoto, Vice-President

Gabriela Schaeppman-Strub, Vice-President

Gerlis Fugmann, IASC Executive Secretary

IASC Secretariat

The IASC Secretariat is responsible for the daily operations of IASC including:

- Communicating with Council members;
- Implementing the decisions of the IASC Council and Executive Committee;
- Communicating with other organizations including the Arctic Council and its subsidiary bodies and the International Science Council (ISC);
- Providing support for the IASC Working Groups and Action Groups;
- Publishing the IASC Bulletin and IASC communication materials as required;
- Maintaining the IASC website, preparing the IASC newsletter, and facilitating outreach; and,
- Administering IASC finances.

The central IASC Secretariat is supplemented by the dispersed Secretariat, drawing support from individuals and institutions in a range of IASC member countries, especially addressing the support for the growing number of activities undertaken by the IASC Working Groups and early career researcher development.

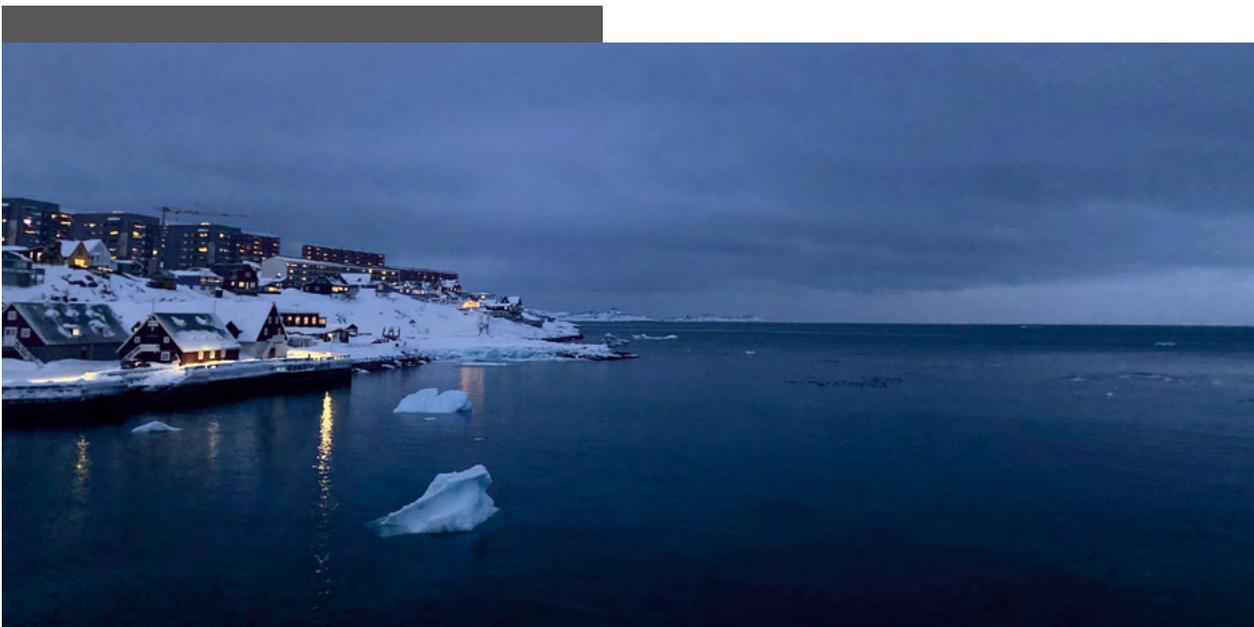


PHOTO: FEDERICA SCARPA
Old Harbour, Nuuk, Kalaallit Nunaat

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Türkiye: IASC's 25th Member Country

IASC Council welcomed Türkiye as the 25th IASC Member country at Arctic Science Summit Week 2025 in Boulder, Colorado, US. Türkiye is represented in IASC through the TÜBİTAK Polar Research Institute (KARE), with Burcu Özsoy serving as IASC Council member.

Turkish polar research traces its roots to the mapping efforts of High Admiral Piri Reis. In 1513, Piri Reis included Tierra del Fuego, the closest land to Antarctica, on his map, followed by a map of Greenland in 1528. This legacy set the foundation for polar research in Türkiye, which gained momentum with individual efforts in the 20th century and institutional initiatives in the 21st century. Türkiye contributed to international Arctic research during the 2nd and 3rd International Polar Years (1932–1933, 1957–1958) and began Antarctic research in the 1960s through international collaborations. In 1995, Türkiye became a party to the Antarctic Treaty, committing to peace and science in Antarctica. Until 2015, Turkish researchers participated in the expeditions of various countries and conducted research at international stations. In 2015, Türkiye launched its first national-level polar research initiative with the establishment of Istanbul Technical University's Polar Research Center (PolReC). The same year, Türkiye joined the Scientific Committee on Antarctic Research (SCAR) as an associate member, and in 2016, a joint Antarctic research expedition took place in partnership with Ukraine. Under the auspices of the Presidency of Türkiye, the first Turkish Antarctic Expedition (TAE-I) was organised in 2017, leading to the development of the Turkish National Polar Science Program (2018-2022). That year, Türkiye also signed the Protocol on Environmental Protection to the Antarctic Treaty and gained observer status in the Council of Managers of National Antarctic Programs (COMNAP). In 2019, Türkiye expanded its polar studies with the first Turkish Arctic Scientific Expedition (TASE-I), focusing on exploring the consequences of climate change in the Arctic region.



TÜBİTAK Polar Research Institute

Inheriting the legacy of ITU PolReC, the Polar Research Institute (KARE) was established in 2019 within the Scientific and Technological Research Council of Türkiye (TÜBİTAK) to ensure the coordination and logistics of national polar expeditions. The mission of the TÜBİTAK KARE is to provide support and funding for research in polar regions, to operate polar research infrastructure, to plan and coordinate logistics, and to facilitate communication among relevant organisations. The institute also supports bilateral international collaborations, develops and implements the national polar strategy in cooperation with stakeholders, raises awareness of polar regions at the national scale, materialises national and international scientific diplomacy on polar regions, and enhances the scientific involvement of Türkiye in the international community. The vision of the TÜBİTAK KARE is to serve as a hub for scientific research and technological development in polar studies, while raising awareness and providing training/education on polar regions and climate change.

Turkish Polar Science Strategy

In 2017, Türkiye introduced its first strategy document on polar research, the "National Polar Science Programme", which outlined objectives for the period between 2018-2022. During this period, Türkiye conducted its polar activities in line with the targets and priority research themes specified in the program. For future national polar research activities, Türkiye has developed the



Turkish Polar Science Strategy, covering a broader period from 2023 to 2035. This new strategy is built upon the data collected from national and international research initiatives, along with the studies of other polar programs to understand the current trends and future directions in polar research. The mission of the 2023-2035 Turkish Polar Science Strategy is “to consistently develop scientific research and science diplomacy activities with a governance-based approach in order to strengthen a sustainable world, which is the common vision of humanity, through polar research”, while the vision was defined as “to be among the leading countries in polar research with its unique scientific studies that draw its strength from its well-equipped infrastructure, expert human resources, and cooperation network”.

International Cooperation

Cooperation in harsh conditions of the polar regions provides certain advantages including increased synergies between researchers, broader research aspects, and reduced logistical costs and environmental impacts. Even though Türkiye announced its first official polar program in 2017, numerous Turkish researchers have been active in polar regions for decades through international collaborations. Thus, international collaboration has always been essential for both scientific and logistical success in polar research. After the establishment of the Turkish Polar Program, international cooperation became a priority, and Türkiye also created opportunities for international scientists to participate in its polar expeditions. To date, TÜBİTAK KARE has signed 15 international cooperation agreements (MoUs and Lols), with more agreements

in the process of signing. These agreements have facilitated joint research efforts in polar regions, allowing Türkiye to host scientists from Argentina, Brazil, Bulgaria, Chile, Czechia and Ecuador in Arctic.

Education & Outreach

Since its early involvement in polar research, Türkiye has emphasised education and public awareness of polar regions and global climate change. TÜBİTAK KARE organises outreach activities in various cities, believing that education is key to connecting society with polar research and climate issues, while also inspiring future researchers. Since 2017, the Turkish Polar Sciences Symposiums have served as a platform for sharing research findings and assessing scientific expeditions. To engage youth with polar experts, Polar Festivals have been held since 2020. The festivals welcomed thousands of visitors with science seminars, documentary screenings, photography exhibitions, and student presentations. The EDUCATE project, funded by MSCA’s “Researchers’ Night 2022,” helped raise awareness by connecting scientists and the public, reaching 50,000 participants in two cities. To foster interest in polar sciences, TÜBİTAK has organised annual research competitions for high school students since 2022, with winners visiting the Arctic and Antarctica to test their projects in polar regions. An online polar encyclopaedia project has been launched to standardise Turkish polar terminology, featuring over 500 articles across various scientific disciplines. Additionally, three documentaries have been produced during the Arctic and Antarctic expeditions of Türkiye to further raise awareness of polar research and climate change.

PHOTO: Second Turkish Arctic Scientific Expedition (TASE-II)

International Science Initiative in the Russian Arctic (ISIRA)

The International Science Initiative in the Russian Arctic (ISIRA) is a Russian and international cooperative initiative to assist Arctic science and sustainable development in the Russian Arctic.

ISIRA's objectives include:

- Initiating planning of multinational research programs that address specific key scientific problems in the Russian Arctic;
- Providing a forum for linking on-going or planned bilateral projects;
- Facilitating improved scientific access to the Russian Arctic;
- Advising on funding and implementation of projects.

The Activities include:

- Reporting on international science activities and initiatives in the Russian Arctic;
- Providing up-to-date information on policies, regulations and logistics within the Russian Arctic;
- Supporting Russian and international early career scientists.

Deliverables are:

- Comprehensive national inventories of past, ongoing and planned international and bilateral science projects and initiatives in the Russian Arctic;
- Reports of annual ISIRA meetings, including presentations of IASC supported early career scientists;
- Information on scientific access to the Russian Arctic.

More information:

<https://iasc.info/our-work/isira>

Международная научная инициатива в Российской Арктике (ИСИРА)

Международная научная инициатива в Российской Арктике (ISIRA / ИСИРА) — это совместная российская и международная инициатива с целью содействия научному сотрудничеству и устойчивому развитию в российской Арктике.

Цели ISIRA включают:

- Инициирование и планирование международных исследовательских программ для решения ключевых задач в российской Арктике;
- Создание форума для обеспечения взаимодействия по текущим или планируемым двусторонним проектам;
- Содействие улучшению доступа научных групп к исследованию российской Арктики;
- Консультирование по вопросам финансирования и организации проектных исследований.

Деятельность включает в себя:

- Освещение международной научной деятельности и инициатив в Российской Арктике;
- Предоставление актуальной информации о политике, правилах и логистике в Российской Арктике;
- Поддержка российских и международных ученых, начинающих карьеру.

Результатами являются:

- Полный национальный перечень прошлых, текущих и планируемых международных и двусторонних научных проектов и инициатив в Российской Арктике;
- Отчеты о ежегодных встречах ISIRA, включая презентации молодых ученых, получивших поддержку IASC;
- Информация о доступе ученых в российскую Арктику.

Более подробная информация:

<https://iasc.info/our-work/isira>

MEMBERS OF ISIRA	COUNTRY
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Annett Bartsch	Austria
Hanna Lappalainen	Finland
Juha Pekka Lunkka	Finland
Heidemarie Kassens	Germany
Yoshihiro Iijima	Japan
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Boris Morgunov	Russia
Vladimir Kotlyakov	Russia
Anna-Maria Perttu	Sweden
Gabriela Schaeppman-Strub	Switzerland
Gareth Rees	United Kingdom
Vladimir Romanovsky	United States
Yulia Zaika	Russia

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Аннет Бартш	Австрия
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Хайдемари Кассенс	Германия
Йошихиро Иидзима	Япония
Луиза Киль Йенсен	Норвегия
Тадеуш Пастусяк	Польша
Борис Моргунов	Россия
Владимир Котляков	Россия
Анна-Мария Пертту	Швеция
Габриэла Шаепман-Штруб	Швейцария
Гарет Рис	Великобритания
Владимир Романовский	Соединенные Штаты
Юлия Заика	Россия



In memory of Sergey Mikhailovich Pryamikov

On March 23, 2023, **Sergey Mikhailovich Pryamikov** (16 March 1946 — 23 March 2023), Head of the AARI External Relations Department, passed away at the age of 78 after a long and serious illness. Sergey has been a long-standing member of ISIRA Group, one of the major parts of the Russian membership and we will greatly miss his expertise, experience and wisdom in polar matters. Though Sergey may no longer be with us in body, his spirit will continue to inspire and uplift us.

В память о Прямикове Сергее Михайловиче

23 марта 2023 года в возрасте 78 лет после продолжительной и тяжелой болезни скончался **Сергей Михайлович Прямиков** (16 марта 1946 — 23 марта 2023), руководитель департамента внешних связей ААНИИ. Сергей Михайлович долгое время был членом группы ИСИРА, одним из важнейших участников российского состава группы, и нам будет очень не хватать его компетентности, опыта и мудрости в полярных вопросах. Хотя Сергея Михайловича больше нет с нами, его дух будет продолжать вдохновлять и вести нас вперед.

PHOTO: IREK SOBOTA (N.Copernicus Polar Station Spitsbergen and Polar Research Center) Iceberg in Svalbard



PHOTO: EVGENII SALGANIK (Norwegian University of Science and Technology
Trollsteinen, Svalbard, Norway)

Standing Committee on Indigenous Involvement (SCII)

The **IASC-Standing Committee on Indigenous Involvement (SCII)** was established during the Arctic Science Summit Week (ASSW) in Edinburgh, Scotland, in March 2024. Its creation follows recommendations from the IASC Action Group on Indigenous Involvement (IASC AGII) 2017-2020. Standing Committees are long-term bodies established by the IASC Council to address strategic issues of lasting relevance to the organization and all its activities.

During the first meeting of the IASC SCII the following priorities were agreed upon by all members:

- Developing Terms of Reference (ToR) that align with Indigenous Ways of Doing, Knowing and Being.
- Supporting Indigenous Early Career Researchers, including engagement with the Arctic ICARP IV
- Establishing communication and outreach plans to encourage Indigenous Peoples and Indigenous Communities to share their voices and concerns.
- Creating ethical principles and research protocol frameworks that respect Indigenous values and preferences.
- Supporting Indigenous Fellowships and awards to recognize Indigenous Researchers.
- Promoting the use and sharing of Indigenous languages in all committee activities.

Additional areas of interest to foster and support Indigenous involvement throughout all IASC activities

The IASC SCII is exploring pragmatic ideas to foster and support Indigenous involvement across all IASC activities. This includes initiatives to:

- Enhance cross-disciplinary collaboration between Indigenous Knowledge holders and researchers.
- Identify funding opportunities to support Indigenous-led research projects.
- Strengthen partnerships with Indigenous organizations and Arctic communities.

Co-Chair / IASC Indigenous Fellow (2024)	Anita Lafferty Canada University of Alberta
Co-Chair	Laila Susanne Vars Norway Sámi allaskuvla- Sámi University of Applied Sciences
Member	Rauna Kuokkanen Finland University of Lapland
Member	Hannu Autto Finland University of Helsinki
Member	Virginie Vaté-Klein France Centre national de la recherche scientifique (CNRS)
Member	Torjer Andreas Olsen Norway UiT The Arctic University of Norway
Member	Christina Storm Mienna Sweden Umeå university
Member	Laura Zimin United States University of Alaska Fairbanks
Member	Nagruk Harcharek United States The Voice of the Arctic Iñupiat
IASC Fellow 2025	Charlotta Svonni Sweden Várdduo - Center for Sámi Research in Sweden
Secretary	Federica Scarpa Iceland IASC Secretariat

PHOTO: ANDRÉ MOREAU
Bowhead Whale near Pond Inlet, Nunavut



2. IASC WORKING GROUPS

2. IASC WORKING GROUPS

Encouraging and supporting international science-led programs

IASC is engaged in all fields of Arctic research. Its main scientific working bodies consist of five Working Groups (WGs): Atmosphere, Cryosphere, Marine, Social & Human, and Terrestrial. The primary function of the WGs is to encourage and support science-led international programs by offering opportunities for planning and coordination, and by facilitating communication and access to facilities. Each WG is composed of up to two scientists from each IASC member country, appointed by the national adhering bodies.

All five IASC WGs are guided by scientific Work Plans which concisely articulate, with scientifically-driven high-level specifics not programmatic detail, how they will achieve IASC's vision over the coming years. These plans are meant to help Arctic scientists get involved in IASC activities, and it is expected that they will evolve in

the coming years as the WGs continue with their work. These scientific foci are included in the WG sections which follow, and the full plans are on the IASC website (iasc.info).

The WG members are experts in their field that have an international reputation and are from different scientific disciplines so that the full range of Arctic research is represented within the WGs. Though the WGs are somewhat disciplinary, they also address crosscutting science questions by initiating activities that involve at least two WGs. To this end, WGs are required to work together to use at least 40% of their funds in collaboration with paired funds from at least one other WG. In particular, IASC encourages projects which bridge the social and natural/physical sciences. IASC hopes that this will lead to closer cooperation, coordination, and teamwork across Arctic science disciplines.

More info: <https://iasc.info/our-work/working-groups>

IASC Cross-Cutting Activities

Recent Activities (in chronological order)

For updated information, please check the IASC website: iasc.info

QuiESCENT (Quantifying the Indirect Effect: from Sources to Climate Effects of Natural and Transported aerosol in the Arctic) conference

When: 22-24 October 2024

Where: Lausanne, Switzerland

IASC Working Groups: AWG, MWG

The Arctic is warming almost 4 times faster than the rest of the globe. Yet, how Arctic climate change will evolve remains highly uncertain, as there are large discrepancies in the projections from different climate models. At the heart of this uncertainty is our poor understanding of the aerosol-cloud interactions in the Arctic and thus their poor representation in the climate models. The cloud-aerosol puzzle is a rather complex problem, affected by several physical and chemical processes that span various scales. This is particularly true when it comes to the role of marine aerosols in the cloud lifecycle: the changing clouds contribute to changes in sea-ice extent and ocean temperature, which further impact marine biology. At the same time, changes in the marine biological activity result in modified marine aerosol fluxes that can alter cloud characteristics. To quantify these complex interactions, the

QuiESCENT conference aims to gather Arctic atmospheric and marine scientists to (a) exchange knowledge and (b) work together to establish a coordinated plan on how to address these critical research questions. Finally, in the context of the fourth International Conference on Arctic Research Planning (ICARP IV) and the ongoing planning for the International Polar Year 2032-2033 (IPY32), QuiESCENT aims to address two main objectives: (a) to hierarchise our knowledge gaps in cloud-aerosol interactions and suggest research activities to address them in field and laboratory experiments and (b) propose modeling strategies to improve the efficiency of the knowledge transfer from observations to atmospheric models.

The QuiESCENT community identified the following research priorities that the community should focus on and advance:

- Quantify the contribution of the cloud-relevant aerosol sources from changing Arctic surfaces (leads, open water, shipping, fires)
- Improve our understanding of aerosol aging and Ice nucleating Particles (INP) activity
- Improve our understanding of aerosol sources from understudied regions such as the Russian Arctic
- Advance our understanding of the boundary layer and cloud-phase partitioning in a changing Arctic climate
- Advance our understanding of turbulence, entrainment deposition, and INP recycling associated with clouds
- Foster broader evaluation of secondary ice production processes in Arctic clouds
- Enhance vertical cloud and aerosol profiling, particularly at long-term observatories
- Understand the combined influence of changes in Cloud Condensation Nuclei (CCN) and INP concentrations in the Arctic and perform sustained CCN and INP observations
- Improve our understanding of cloud radiative effects and their feedbacks from models and satellite data

Highlights:

To deal with the above key research gaps during IPY32, the workshop participants propose the following strategies:

- Push the engineering envelope to support regular airborne sampling with improved small, lightweight sensors (e.g., from UAVs, cargo aircraft, and Tethered Balloon Systems)
- Advance our knowledge of climate-intervention techniques, including polar mixed phase cloud thinning and inadvertent seeding from stratospheric aerosol injection and cirrus cloud thinning
- Perform coordinated Pre-IPY Modeling Experiments to (a) identify uncertainties, (b) support campaign planning and (c) provide projections
- Extend the experimental focus beyond the field to include cloud chambers and other controlled environments

Project Lead

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MARAT: Marine Arctic Resilience, Adaptations and Transformations

When: 5-7 November 2024

Where: Montreal, Quebec, Canada

IASC Working Groups: MWG, SHWG

In the face of rapid changes, Arctic coastal communities are navigating seascapes and landscapes marked by uncertainty, challenge, and opportunity. The MARAT-IASC workshop, held in Eastman near Montreal, Canada, in November 2024, brought together a team of researchers from different countries, disciplines, and career stages to advance research aimed to understand social-ecological changes in the marine Arctic and ways to build resilience, adapt, and transform toward more sustainable and just futures. This gathering was a culminating point in the international consortium MARAT (Marine Arctic Resilience, Adaptations and Transformations), which we initially established in 2020 through funding from the Belmont Forum. Through this workshop, the International Arctic Science Committee allowed us to pursue and expand our work led by early career researchers from Canada, Sweden, and Alaska. In MARAT, we study how Arctic marine ecological and social systems are responding to climatic and socio-economic changes, and the implications for resilience of coastal communities of the Arctic.

We had three key objectives for the MARAT-IASC workshop. First, we wanted to discuss results and learnings from each of our four work packages, sharing about significant findings that span ecological and social marine systems in the Arctic and their implications for resilience-building. Key results include, for example, improved understanding of marine food web dynamics and resilience under climate and fishing pressures, new insights on Arctic Char

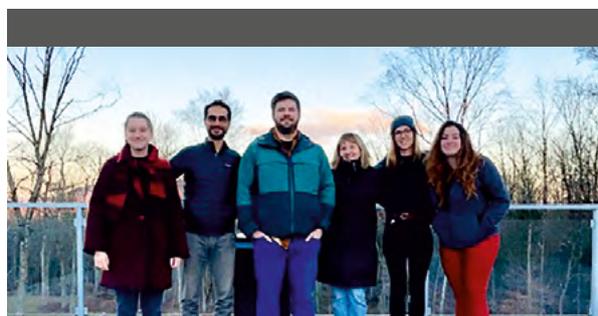


PHOTO: MARAT Project Group, Photo courtesy of the organizers

– an important species for northern communities – diet and nutritional quality under climate change, a bioeconomic model of Pacific Salmon fisheries, and an assessment of livelihood resilience (through labour and skills data) across the North.

Second, we aimed for the workshop to be a collective writing space to advance outputs, both specific to each of the work packages, as well as a MARAT-wide collaborative paper. MARAT's outputs include peer-reviewed papers as well as community-focused deliverables, including a short film. We hosted 'writing retreat' sessions followed by group discussions, which fostered productive and rich discussions and writing. The group also watched the short film together to discuss ways to increase its impact at community and regional scales, as well as at the circumpolar scale. Importantly, we worked on a MARAT-wide collaborative paper reflecting on the role of diversity (both social and ecological) by building on our different case studies (Canadian Arctic, Alaskan Arctic, Circumpolar comparative cases). We produced a first draft of the paper at the workshop. Together, the different outputs aim to make MARAT's findings both scientifically robust and accessible to Arctic communities and decision-makers. Our work can support sustainable resource management, biodiversity conservation, and resilience-building across the Arctic.

Finally, we wanted to explore ways to pursue our international, interdisciplinary, and ECR-led programme into the future. We discussed strategies for sustaining the collaborative momentum established during the project, including to identify new funding opportunities, and to expand and strengthen our circumpolar and community partnerships. During the workshop, we identified potential funding opportunities, including one with an upcoming deadline. We started our work on this proposal at the workshop, which we submitted shortly after. We happily just got the confirmation of this funding. The MARAT-IASC workshop was pivotal in advancing our work and shaping the next phase of our international, interdisciplinary, and early-career led research group.

Highlights:

1. Our research team shared rich discussions on our results on Arctic social-ecological changes at different scales and their implications for resilience and sustainability in the changing

Arctic, with approaches ranging from modelling marine food webs, circumpolar livelihood data, to metabarcoding and bioeconomic models.

2. Building on case studies across the North, we explore the role of diversity, both ecological and social, in shaping resilience in the Arctic.
3. Our early-career led consortium brings together scientists from different disciplines and countries (Alaska, Canada, and Sweden) and involves community-collaborative research with Indigenous Knowledge holders. The workshop was a rich space to shape future pathways for our group to continue and expand.

Project Lead

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Impacts of the changing land-based cryosphere on Arctic society

When: 21-23 January 2025

Where: Niseko, Japan

IASC Working Groups: AWG, CWG, SHWG

In a beautiful winter setting in Niseko, Japan, on 21-23 January 2025, glaciologists, social scientists, atmosphere scientists, and terrestrial scientists gathered for the IASC Network on Arctic Glaciology (NAG) meeting and cross-cutting activity on "Impacts of the changing land-based cryosphere on Arctic society". The 2.5-day meeting was attended by 60 in-person participants from 15 countries, of which about half were early-career scientists. A livestream ran during the entire meeting and was viewed by up to 38 registered participants. The meeting received



financial support from IASC (Cryosphere, Atmosphere and Social & Human WGs), Climate and Cryosphere (CliC) and the Japanese Tourism Agency. We used funding from IASC (€7,375) entirely as travel support for 16 early-career researchers (ECRs). Another 9 ECRs received funding from CliC (\$5,000 in total), whereas a grant from the Japanese Tourism Agency covered costs for meeting logistics. We are very grateful for the financial support which we believe contributed strongly to the above-average attendance compared to previous NAG meetings!

The meeting program included oral presentation sessions, a poster session, cross-cutting discussion session, and the NAG open forum. Total contributions, i.e. to both the NAG meeting and cross-cutting activity, included as many as 57 presentations, of which 33 oral presentations and 24 posters; about 20 of the presentations were within the theme of the cross-cutting activity. Scientific highlights of the workshop and cross-cutting activity are listed below. The general workshop on Arctic glaciology on January 21 and 23 included presentation sessions on glacier mass balance, glacier hydrology, and glacier dynamics. The cross-cutting activity on January 22 consisted of two oral presentation sessions and a cross-cutting discussion. Poster contributions to both the general workshop and cross-cutting activity were presented in the afternoon session on January 21. The two cross-cutting oral presentation sessions kicked off with keynote lectures on *Glacier hazards: Will they change in the future?* (Regine Hock) and *Scientific Contributions to Avalanche Safety Management*

at Ski Resorts: Co-Creation with Local Governments and Ski Resorts in Niseko (Satoru Yamaguchi). Other cross-cutting presentations covered a wide range of inter-disciplinary topics connecting the fields of glaciology, social science, atmosphere/snow science, and terrestrial science. Examples of this include talks and posters on:

- Glacier hazards [overview by *Regine Hock*], including e.g. glacier lake outburst floods & proglacial hydrology [*Iwo Wieczorek, Bastien Charonnat, Luke Copland, Brittany Main*], retreat-induced landslides [*Qiao Liu*], and methane emissions from glaciers and snow [*Archana Dayal, Keiko Konya*].
- Iceberg - ship coexistence in Arctic fjords [*Abigail Dalton, Evgeniy Podolskiy, Erika Brummel*]
- Avalanche safety & seasonal snow trends [*Satoru Yamaguchi, Stephanie Matti, Bernhard Hynek*]
- Rain-on-snow and extreme rainfall events in Greenland [*Baojuan Hua*]
- Co-productive projects involving glaciologists, social scientists, and Arctic community stakeholders in Greenland and Iceland [e.g. ArCS II Coastal Environments Project, *Shin Sugiyama*; and the ICELINK project, *Gudfinna Adalgeirsdottir*]

In a dedicated discussion session, scientists from various backgrounds and fields of expertise engaged in a lively cross-cutting discussion, led by Regine Hock and Satoru Yamaguchi. The main theme of the discussion was on how to connect natural sciences and Arctic Indigenous

PHOTO: Impacts of the Changing Land-Based Cryosphere on Arctic Society, photo courtesy of the organizers

community interests. Points of discussion included e.g. how, as scientists, to communicate with local Arctic communities, how to deal with scepticism of local communities towards science, the relevance of establishing long-term relations with local communities (and how to avoid researcher 'fatigue'), and the relevance of supporting Arctic communities with their local problems (which may differ considerably from our scientific problems). During the discussion, stories were shared by several participants (e.g. Shin Sugiyama and Brittany Main) about how they managed to engage with Indigenous communities, which highlighted the major effort involved in establishing trust-based relationships (patience is key). Towards the end of the discussion session, funding opportunities for co-productive and cross-cutting research were discussed. Furthermore, challenges for future cross-cutting work were discussed, e.g. highlighting the problem that natural scientists and social scientists commonly use a different scientific 'language' and methodology.

The cross-activity we had in Niseko connects directly to a new activity we propose on "Glacier hazards", for which we request support from the IASC Cryosphere, Atmosphere, Terrestrial and Social & Human WGs. After the very positive feedback from participants in the recent activity, it would be great if we can continue the cross-cutting work and discussions at the next IASC NAG meeting in Obergurgl in January 2026!

Highlights:

- Two invited presentations on current and future glacier hazards (Regine Hock) and avalanche safety in Niseko (Satoru Yamaguchi).
- A wide variety of cross-cutting oral and poster presentations on, among others, Arctic glacier hazards, iceberg -ship coexistence, avalanche risk, extreme precipitation events, rain-on-snow, and co-production of science and knowledge with Indigenous communities.
- Stimulating discussions between social scientists, glaciologists and snow experts, e.g. on connecting natural sciences, social sciences and the interests of Arctic communities.

Project Lead

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Planning for the next decade in Arctic infrastructure research: a contribution to ICARP IV

When: 21-28 March 2025

Where: Boulder, Colorado, USA - ASSW 2025 / ICARP IV

IASC Working Groups: CWG, SHWG, TWG

Our half-day workshop at ASSW 2025 focused on the review of research on drivers and cumulative effects of infrastructure and climate on Arctic socio-ecological systems done since ICARP III and on sketching a roadmap for innovative community-engaged research on Arctic infrastructural development and environmental changes in the next decade. This community event was a continuation of a series of workshops, online talks and meeting of the IASC-funded Research Initiative "Rapid Arctic Transitions due to Infrastructure and Climate (RATIC)". Young and advanced-career researchers, including an Indigenous scholar, from the fields of history, social sciences, natural sciences, engineering and architecture who have been actively involved in the RATIC network, were invited to present and to lead small group discussions. The workshop was open to the public and was attended by around fifty participants, including international researchers, students, and artists, Arctic residents, and Indigenous peoples. The workshop organizers opened the event with an introduction of its goals, its relevance for IASC and contribution to the ICARP IV process.

During Session I of our workshop, we heard seven short presentations on the state of various aspects of Arctic infrastructure research including a history of Arctic infrastructure, social sciences perspectives, indirect costs of infrastructure due to permafrost degradation, engineering perspectives on energy infrastructure, permafrost management in Arctic urban design and construction, community engaged ethical research on infrastructure, remote sensing and infrastructure mapping.

During Session II, we held four breakout groups on different aspects of planning for future Arctic infrastructure research: natural sciences, social sciences, engineering

and architecture, and research methods and ethics. The workshop ended with reports from each of the breakout groups and a general discussion on research challenges, gaps and priorities for the next decade.

Workshop outcomes include recommendations made to two specific ICARP IV Research Priority Teams: RPT3 (Vulnerability and Resilience of Arctic Environments/Societies and Sustainable Development) and RPT7 (Technology, Infrastructure, Logistics and Services). As a final product, we are preparing a white paper that will briefly present the current state of Arctic infrastructure research and then address the scientific goals that can and should be achieved over the next decade. While the workshop participants identified multiple research goals and priorities, they can be roughly clustered into the following groups: 1) establishment of new integrated research approaches and protocols to observe, monitor, and measure the cumulative effects of infrastructure and climate on Arctic ecosystems and communities; 2) pan-Arctic comparison of infrastructural and climatic changes across different geo-ecological, socio-economic and cultural settings; 3) an international interdisciplinary research framework for studying the intersections between Arctic infrastructure and climate; 4) improved accessibility, standardization and exchange of data on locally informed engineering solutions for sustainable and energy-efficient Arctic infrastructure; 5) increased engagement of Arctic residents, Indigenous peoples and youth in co-production of different types of knowledge regarding planning, maintenance and mitigation of environmental impacts of large-scale infrastructure. Finally, we propose -- as future directions for the RATIC initiative, its mission and goals -- to explore opportunities for establishing an IASC Infrastructure Action Group, an Arctic Infrastructure Observing Network, and other structured initiatives to support international collaboration on infrastructure-related research priorities.

Highlights:

1. Presentations and small groups discussions provided a review of research on the intersection between Arctic infrastructure and climate, which has been conducted over the past decade in several disciplinary fields. Speakers and participants highlighted specific findings of their infrastructure-focused projects, which are at the core of the RATIC network, demonstrated the scientific value of the existing body of knowledge and addressed questions related to challenges to research.
2. The workshop has been the culmination of a long process of identifying research gaps and priorities, methods and partnerships needed to achieve these priorities. The RATIC members, who organized and participated in the workshop, had been meeting regularly online to discuss their individual contributions to the workshop. Still, the actual workshop discussions and interactions were necessary to formulate joint research goals for ICARP IV.
3. The event mobilized and extended the RATIC network, thereby demonstrating the relevance of its central research foci and the value of long-term international interdisciplinary collaboration and of the dialogue between academia, local communities, practitioners and other stakeholders. The RATIC Steering Committee soon will resume its meetings to finalize a resulting collective white paper and to discuss funding opportunities to support future activities.

Project Lead

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Polar Educators International's 6th International Conference and Workshop: Facilitating Collaboration among Educators, Researchers, and Indigenous Communities - From Knowledge to Action

When: 21-28 March 2025

Where: Boulder, Colorado, USA - ASSW 2025 / ICARP IV

IASC Working Groups: CWG, MWG, SHWG

Building on historical precedent of combining polar science and education conferences (IPY2010-Oslo, IPY2012-Montreal, ISAR-4, ASSW2015 and ICARP III, DAVOS2018) PEI's 6th International Conference and Workshop for polar educators took place within the Arctic Science Summit Week alongside the APECS World Summit and the Indigenous Pavillion Program, which offered polar educators a unique opportunity to contribute to discussions about Arctic research priorities for the coming decade. Research and education presentations, activities and events facilitated networking, nurtured knowledge exchange, fostered partnership and collaboration among educators, arctic researchers, and indigenous participants –thus bridging the gap between polar knowledge, local and global action through polar education practice. Out of the total number of registrants for ASSW and ICARPIV, 108 indicated their participation in PEI's Polar Bridges conference sessions. The drop-in nature of the greater ASSW science conference posed a challenge to accurately determine the exact number of consistent attendees across all PEI sessions, but anecdotal evidence was that the room was generally robust with attendees and activity. The advantage to this format was that PEI attracted new and unexpected contacts, some of whom have now joined PEI as Council members, mentors potential partners in upcoming projects including the new Polar Resource Book and lead up to the next IPY.

Project Lead

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A Polar Early Career World Summit focusing on early career involvement in ICARP IV & 5th IPY

When: 22-24 March 2025

Where: Boulder, Colorado, USA - ASSW 2025 / ICARP IV

IASC Working Groups: AWG, CWG, MWG, SHWG, TWG

The future of polar research depends on today's early career researchers, yet their voices are often absent from large-scale decision making and priority-setting processes. At the Polar Early Career World Summit (PECWS), 120 emerging researchers, professionals, Indigenous scholars, and knowledge holders from across the globe gathered to define priorities that will influence the next years of Arctic, Antarctic, and cryosphere research.

Summit Overview and Approach

The Polar Science Early Career Community Office (PSECCO) and the Association of Polar Early Career Scientists (APECS) organized PECWS during ICARP IV / ASSW 2025 in Boulder, Colorado. The summit strengthened polar early career networks while ensuring the next generation's perspectives directly inform the ICARP IV process and the upcoming International Polar Year (IPY) in 2032-2033.

Participants represented diverse regions and polar science and cryosphere disciplines. The summit's design emphasized collaborative and consensus-based priority-setting rather than individual input or presentations, creating space for meaningful cross-disciplinary dialogue about the future of polar research. Participant-run workshops and a volunteer Planning Team ensured that participants had the opportunity to shape the PECWS program.

The summit employed a structured approach to capture early career perspectives in polar research priorities. Twelve priority theme groups were established before the summit based on community input gathered



through an online form (Figure 1). These themes reflect the breadth of contemporary polar research concerns. The priority development process unfolded in multiple phases. Groups first brainstormed within their theme groups to establish initial priorities. Participants then provided feedback across themes, ensuring cross-pollination of ideas. This step also incorporated ideas gathered digitally from those who could not participate physically. Next, groups synthesized discussions into refined priorities and vision statements for polar research. This collaborative approach generated substantial output: 75 distinct priorities accompanied by 186 reasonings and actions to advance these priorities. Each group presented their priorities to the full PECWS cohort on the final day of the summit.

Inclusive Participation

PECWS incorporated multiple participation pathways, recognizing the barriers many early career individuals face in attending physical events. In addition to online input in advance of the event, three PECWS share out and engagement events were held on 28 May, planned to accommodate different time zones. This hybrid approach expanded participation well beyond the 120 summit attendees, capturing diverse viewpoints from the global polar early career community.

Synthesis and Impact

The outcomes from the physical summit and asynchronous community input are being synthesized into multiple formats designed to influence polar science priority setting and decision-making. The primary output, a synthesis report, will present the final, synthesized PECWS priorities.

The synthesis report, expected to be completed in August 2025, will be shared directly with partners in the polar community, targeting those actively working in priority setting processes (e.g. ICARP IV International Steering Committee and Research Priority Team (RPT) chairs; IPY Planning Group and Task Group leads). APECS and PSECCO will advertise and reference this synthesis report when advocating for early career perspectives in the variety of arenas they work in.

Building on the momentum of the PECWS, a collaboration with the journal PLOS Climate provides a venue for the polar early career community (not just those who attended the summit) to express their views on the future of polar research. Contributions will focus on early career perspectives towards international priority setting and coordination processes in polar research. This partnership extends the summit's impact through peer-reviewed publications.

PHOTO: Group Photo of the Polar Early Career World Summit (PECWS).. Photo courtesy of the organizers

Key Outcomes

PECWS achieved three critical short-term results. First, the summit strengthened the polar early career community through meaningful connections and collaboration. Second, it increased early career attendance and engagement in ICARP IV and ASSW 2025. Lastly, it provided a concrete avenue for the polar early career community to contribute to shaping polar research priorities and addressing knowledge gaps. This involvement ensures research priorities reflect the perspectives of those who will conduct much of the work in coming decades.

The long-term legacy of the PECWS is continued engagement of the polar early career community in the entire lead-up to and completion of the next IPY. The visions and priorities developed at PECWS provide a roadmap for polar research that reflects interdisciplinary collaboration, global perspectives, and the urgency of addressing contemporary polar challenges. It is critical that early career community members do not only participate in IPY activities, but also help define and execute them.

Highlights:

1. Early career perspectives in practice: PECWS outcomes are being synthesized into multiple formats—including a forthcoming synthesis report and journal publications—to inform research priority setting and decision-making processes. This ensures that early career voices actively shape both the direction and execution of international polar research
2. Centering Indigenous voices in polar research: Indigenous researchers and knowledge-holders were especially encouraged to apply, and were prioritized in the selection process. Some of the theme groups specifically focused on inclusivity and accessibility in polar research, as well as equitable and relationship-centered engagement with local and Indigenous Peoples' groups and communities.
3. Fostering interdisciplinary collaboration in polar science: PECWS emphasized breaking down disciplinary silos by bringing together early career researchers from diverse fields—natural sciences, social sciences, engineering, Indigenous studies, and more—to co-create research priorities. This interdisciplinary approach is essential for addressing the complex, interconnected challenges facing polar regions.

Project Lead

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Arctic-Subarctic Ocean Fluxes (ASOF) Workshop 2025

When: 13 – 15 May 2025

Where: Barcelona, Catalunya, Spain

IASC Working Groups: CWG, MWG

The 23rd ASOF Workshop, held at Barcelona's Instituto de Ciencias del Mar (ICM, Institute of Marine Sciences), brought together a diverse group of researchers to enhance our understanding of Arctic and sub-Arctic oceanographic and sea ice processes. The hybrid workshop had a total of 120 participants, with around 20 attendants online. The workshop received IASC Cross-Cutting Workshop funding to support travel of 7 Early Career Researchers (ECR) and Indigenous Scholars to the meeting.

In addition to updates from the key Arctic Gateways (where long-term observations have been delivering time series of heat, volume and freshwater transports in and out of the Arctic since the 1990s), key topics included the use of chemical tracers and synthetic Lagrangian trajectory simulations to investigate water mass pathways and mixing processes. Complementing the outcomes of recent observational field campaigns, a series of talks and posters presented recent advances in remote sensing observations of e.g. sea surface salinity, satellite-derived geostrophic currents, and sea ice cover - these satellite data sets provide a valuable large-scale perspective and can highlight seasonal to interannual variability.



Ongoing changes in freshwater content across the Arctic, including the Beaufort Gyre region, and their implications for ocean stratification and circulation patterns in the Nordic Seas and the subpolar North Atlantic were another recurring topic, investigated by several posters and talks.

Presentations of state-of-the-art numerical tools, including remarkably high-resolution models (e.g., $1/60^\circ$ grid configurations, FESOM, GIGATL1) and ocean reanalyses (GLORYS12), showcased their potential to resolve fine-scale processes and support tracer transport diagnostics. During the concluding session of the meeting, given the urgent need to understand significant recent change, the need for improved and sustained monitoring infrastructure, particularly in key gateways such as the main straits and shelf areas, was discussed. Fjords in both Greenland and Svalbard (particularly those with marine-terminating glaciers) were recognized as critical zones for shelf-ocean interactions and climate sensitivity, warranting targeted observational and modeling efforts. In what is a new link for ASOF, indigenous researcher Anita Lafferty built connections between indigenous and western understandings of rivers in the Canadian Arctic.

The workshop served as an excellent platform for the ECRs to engage with established experts, to present their own work, to receive feedback on their research, and to

gain experience chairing sessions. This exchange is vital for fostering new collaborations and connecting with colleagues around the globe, especially for ECSs. Presenting in front of an expert, but friendly audience provides an important scientific training experience. Overall, the workshop successfully combined observational, modeling, and theoretical perspectives to refine our understanding of Arctic-Subarctic physical and biogeochemical marine systems and emphasized the strategic importance of continued investment in both human and technological infrastructure.

Looking Ahead

The next ASOF meeting will take place in Bergen, Norway, from April 20th to April 23rd, 2026. It will build on the experiences and successes of the 2025 Barcelona meeting and will hopefully again provide a venue for ECR to benefit.

Scientific Highlights

- Recent remote sensing observations are becoming increasingly important tools to understand the remote Arctic (e.g., sea surface salinity, surface geostrophic velocities, sea-ice thickness and velocity)
- Tracer studies (chemical + synthetic Lagrangian trajectories) contribute vital information of pathways through the Arctic Ocean

PHOTO: Group Photo of the Arctic-Subarctic Ocean Fluxes Workshop. Photo courtesy of the organizers

- Updates from long-term observational systems (monitoring of the Arctic Gateway straits) demonstrate significant Arctic changes and are vital to understand and predict Arctic change

Project Lead

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6th International PalaeoArc Conference - Processes and Palaeo-Environmental changes in the Arctic: From Past to Present

When: 2-5 June 2025

Where: Tromsø, Norway

IASC Working Groups: CWG, MWG

The 6th International PalaeoArc conference (PalaeoArc 2025) gathered 78 participants from 16 IASC countries, half of whom were Early Career Scientists (ECSs). The scientific schedule included two stimulating days of oral and poster presentations, separated by an energizing and engaging mid-conference excursion. PalaeoArc is an international and interdisciplinary research network bringing together scientists from different backgrounds, career stages, and disciplines. The aim of the network is to better understand Processes and Palaeo-Environmental changes in the Arctic: From Past to Present, focusing on 1) Arctic ice sheets, ice shelves and glaciers, 2) high latitude oceans and sea ice, 3) the terrestrial environments and ecosystems, and 4) the climatic response to, and interaction between, these parts of the Arctic system.

At the heart of the network is the annual meeting, working as a key forum to present new findings and stimulate discussion. The aims of PalaeoArc 2025 were to facilitate exchange of knowledge within the Arctic climate science

community, cultivate and deepen collaborative relationships, foster the next generation of polar science leaders, and to discuss the direction and remit of the network over the next 5 years. With the participation of 78 Arctic climate scientists from 16 different countries, representing over 30 institutions, the conference was successful in bringing the research community together. A total of 28 oral presentations and 30 poster presentations were given, covering a variety of disciplines and settings across the Arctic. The PalaeoArc 2025 Abstract Book showcases the breadth and depth of ongoing research within the network – all with the common goal of improving our understanding of climatically-induced environmental changes in the Arctic. The PalaeoArc network has a tradition of being an open and inclusive community, encouraging knowledge exchange and interdisciplinary collaboration. The PalaeoArc 2025 conference was designed to ensure this tradition continued. The conference location was carefully selected such that the auditorium, poster room, and break locations were all co-located to ensure ease of socializing during each conference day. The program was designed with no parallel sessions, stimulating discussions between researchers from different fields of Arctic science. In addition to the scientific program, the participants were offered opportunities to discuss and exchange knowledge in informal settings such as the icebreaker, conference dinner, and excursion.

Early career representation is a key focus of the PalaeoArc research network, and about half of the conference participants were ECSc. Participation among students was high, accounting for 27 of the 78 registered participants. Of the 28 oral presentations, 8 were given by MSc and PhD students, and 14 of the poster presentations were given by students. In addition, one of the invited keynote talks was given by an ECS and 3 of the 8 scientific sessions were chaired by ECSs. Furthermore, the Norwegian branch of the Association of Polar Early Career Scientists (APECS Norway) hosted a lunchtime get-together on the first day of the conference, providing information on early career opportunities within the international Polar science community, as well as participated in the judging panel for the Best Student Presentation and Best Student Poster. Overall, this provided valuable opportunities for students and researchers in the early stages of their career to gain experience presenting and discussing their research, as well as to build and strengthen bonds with their peers.



Between the two full days of scientific sessions, the conference participants were invited to join a spectacular mid-conference excursion. Tromsø is nestled amongst mountains, fjords and islands, offering a wide range of landscapes highly relevant for the PalaeoArc community and its research themes. The excursion was fully booked and provided an excellent opportunity for participants to get to know each other and to discuss science in an informal setting. We visited key localities used to understand and explain climatically induced environmental changes during and after the last ice age, as well as enjoyed lunch and cinnamon rolls at the beach. PalaeoArc 2025 marked the final event under the current steering committee. During the closing remarks, the incoming steering committee was announced, comprising 13 members from 11 countries. The new steering committee hosted a session during which all community members were asked to reflect on which aspects of the network that they value and any new aspects that they would like to see under the stewardship of the new steering committee. A wide range of input was provided, which will be used to formulate ideas for the future direction and remit of the network over the next 5 years. The outcomes from this consultation will be presented at the next network meeting to be hosted in Aarhus, Denmark in May 2026.

The PalaeoArc 2025 conference received financial support from the IASC Marine and Cryosphere Working Groups and from the Research Council of Norway. The IASC Cross-Cutting Funding was primarily used to lower the participation costs for Early Career Scientists. We were able to offer 18 rooms in the UiT guesthouse to students free of charge, and to pay for the conference dinner for 27 students. In addition, the funding allowed us to offer the mid-conference excursion for free to all participants joining the day trip and to significantly reduce the registration fee for all active participants. Together, these measures ensured maximum possible inclusivity and a variety of informal arenas for networking and discussion of science across disciplines and career stages.

Highlights

- Knowledge exchange within the Arctic science community. The interdisciplinary meeting brought together researchers from 16 countries to present and discuss ongoing research on past and present environmental changes in the Arctic.
- Strong ECS representation. Approximately half of the conference participants were Early Career Scientists, and PhD and MSc students gave 8 out of the 28 oral presentations.

PHOTO: Group Photo at the PalaeoArc Conference. Photo courtesy of the organizers.

- Identification of future priorities. The incoming steering committee hosted an interactive session to collect community input which will be used to help plan future activities and to guide the direction of the network over the next 5 years.

Project Lead

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Arctic Transportation Futures: Reconciling Local Needs and Global Drivers

When: 25 September 2025

Where: Vienna, Austria

IASC Working Groups: CWG, SHWG

Arctic transportation futures are at a crossroads. Increasing global connectivity, climate change, geopolitical tensions, tourism, and resource extraction are reshaping mobility and access across the region. At the same time, Northern communities depend on transportation systems that are essential to sustain local livelihoods and cultural practices, yet these systems have historically served external interests more than local priorities. Against this backdrop, the workshop “Arctic Transportation Futures: Reconciling Local Needs and Global Drivers” brought together researchers, planners, Indigenous representatives, policymakers, and private-sector actors to reflect on what sustainable and inclusive Arctic transport infrastructure and mobility should look like. The discussions made evident: Arctic transportation infrastructures are both essential and contested. They serve as lifelines for mobility, food security, healthcare access, cultural practices, and economic activity, yet are increasingly shaped by military, economic, and geopolitical agendas from outside the region. These different roles of TIs create tensions and complicate efforts to pursue transport planning that genuinely reflects local needs. While some

infrastructure projects bring benefits, others disrupt livelihoods or introduce new risks, highlighting the need for approaches that prioritize communities alongside broader national and global interests.

Participants emphasized that future Arctic transportation systems (ATS) must, above all, benefit local communities. Achieving this requires meaningful engagement with the people who depend on these systems most. Indigenous and local stakeholders repeatedly stressed that they want to be involved from the earliest stages of planning and not just merely consulted once decisions are (nearly) made. Co-creation, transparency, and shared decision-making were identified as essential elements for trust-building. The group agreed that informed consent should be pursued through ongoing dialogue, especially in situations where interests diverge or conflicts emerge.

A second shared concern related to the cumulative impacts of transportation infrastructures. Roads, ports, runways, and shipping lanes have long-term consequences that extend well beyond construction phases. Participants called for better monitoring of environmental and social effects, including those that become visible only years after a project is completed. These impacts range from habitat fragmentation and permafrost degradation to disruptions of traditional travel routes and community logistics. Because these effects accumulate, the group stressed the importance of mechanisms that allow local governments and developers to respond to emerging problems beyond simply documenting them.

The workshop also highlighted the need for stronger international and regional collaboration. Many Arctic transport challenges transcend borders: search and rescue (SAR) operations, emergency preparedness, tourism flows, and cross-border road and aviation networks require coordinated planning. Participants agreed that international cooperation should generate mutual benefits for Arctic states but must not disadvantage local communities or undermine Indigenous rights. Regional planning bodies and science organizations were encouraged to strengthen information exchange and develop shared strategies. Economic development, especially tourism, was another central topic. Tourism growth illustrates the interconnectedness of Arctic infrastructures: expanded flight routes or shipping

access alone are insufficient if communities lack adequate housing, services, or workforce support. Participants noted that from a local perspective, ATS must enhance supply security and improve the resilience of logistics systems. In other words, transportation planning should be grounded in what communities need to maintain reliable access to goods, services, and opportunities, not only in what enables external markets to expand. Throughout the workshop, the importance of transdisciplinary collaboration was clear. Arctic transportation draws on a wide range of disciplines, including planning and engineering, social and environmental sciences, policy and political studies, as well as Indigenous knowledge systems and community-based expertise. Participants called for more spaces where these different knowledge holders can meet on equal terms. Strengthening the relationship between science and society—through open communication, transparent data sharing, and accessible research outputs—was identified as a precondition for sustainable transport futures. Trust, they emphasized, is not created through a single meeting but through continuous engagement.

The workshop ultimately delivered a strong message to the ICARP IV process and to the broader Arctic research community: the future of Arctic transportation research must be shaped with, not merely about, Arctic communities. Global drivers will continue to influence mobility in the North, but local priorities must be at the center. By integrating diverse voices and acknowledging both shared and region-specific challenges, the workshop offered direction for more inclusive, responsible, and forward-looking transportation planning. Further details on the InfraNorth project and its activities are publicly available on the InfraNorth website, including a workshop statement and short video of the workshop. The outcomes of this workshop contribute to ongoing ICARP IV efforts to define priorities for the next decade of Arctic research, emphasizing that transportation reveals how deeply environmental, political, and social changes intersect in the circumpolar North. Bringing together people from different regions and a variety of stakeholders revealed that the future of sustainable Arctic transport could be improved by our ability to listen across sectors, borders and knowledge systems. Only through this collective effort can transport systems support the resilience, well-being and self-determined futures of Arctic communities.

Highlights:

1. Arctic transportation systems (ATS) are shaped by global forces, such as climate change, geopolitics, economic interests, while remaining vital lifelines for Northern communities. Understanding this duality is essential for designing transport futures that balance strategic international demands with everyday mobility, cultural practices, and wellbeing of Arctic residents.
2. The workshop emphasized that ATS create cumulative social and environmental impacts that extend beyond construction phases. Systematic monitoring, transparent governance, and mechanisms to address unintended consequences are needed to ensure that transportation infrastructures support long-term sustainability while minimizing ecological disruption and social inequities.
3. Meaningful involvement of Indigenous and local stakeholders emerged as a core requirement for future ATS research and planning. Co-creation of knowledge, cross-border collaboration, and science–society dialogue can strengthen trust and generate more inclusive, responsive, and resilient transport systems across the circumpolar North

Project Lead

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New Insights in Polar Law

When: October 21-24, 2025

Where: Nuuk, Kalaallit Nunaat (Greenland)

IASC Working Groups: MWG, SHWG, TWG

The 18th Polar Law Symposium (PLS) brought together a wide range of participants in Nuuk to address contemporary inquiries in the polar regions. As an academic discipline, polar law provides a unique platform to adopt intra- and interdisciplinary approaches and the symposium operates as an important space for collaborative

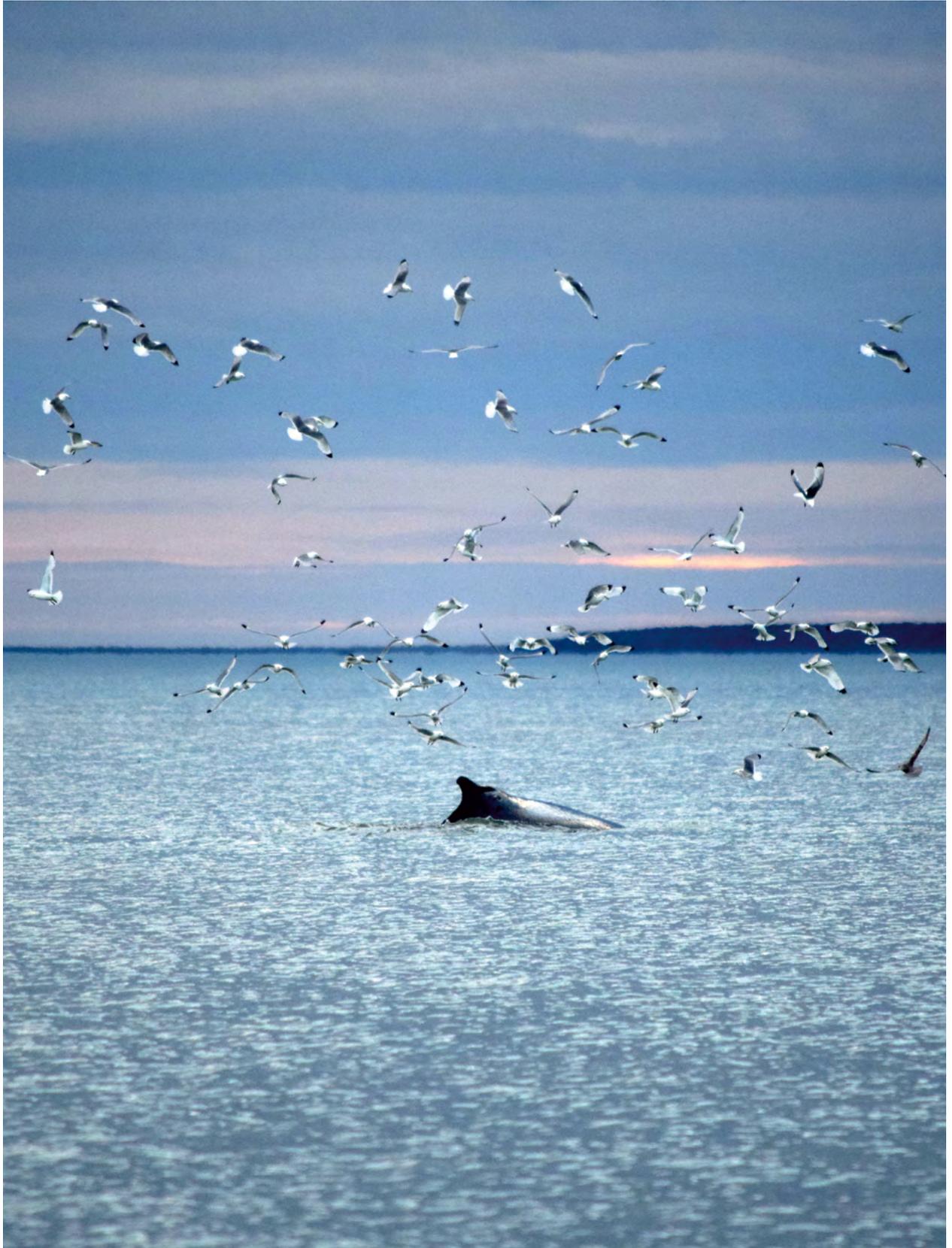


PHOTO: IREK SOBOTA (N.Copernicus Polar Station Spitsbergen and Polar Research Center)
Whale off the coast in Svalbard

research, peaceful dialogue, networking, and creativity. Since international cooperation remains the cornerstone of international law, the opportunity to meet with professionals in the field is a critical necessity, particularly in times of heightened political tension. Through mutual interaction and knowledge transfer, the symposium facilitated cooperation between academics, practitioners, and peoples originating from various places in the Arctic. The event promoted bond-creation, contact exchange, strategy-building, and the development of future governance. It allowed for the reaching of agreement and consensus, or at the very least, a minimum understanding of differing positions. This serves as a powerful demonstration of how science remains a mostly peaceful activity that can bridge borders despite turbulence in geopolitics. The diversity of profiles represented – scientists, institutional representatives, professors, and students – was a major strength of the gathering.

“New Insights in Polar Law” at the Polar Law Symposium 2025

For the next generation of academics and practitioners, the experience was defined by the connections made in divisive times. Thanks to the financial support of the International Arctic Science Committee (IASC), a group of polar law students from the University of Akureyri (Háskólinn á Akureyri) – Mathieu Gélinas, Jolanda Lipu, Emma Lipoff, Billy Starkey, and Katarina Wallerstedt – traveled to Nuuk to participate in an early career scholar led panel titled “New Insights in Polar Law.” The panel represented students from diverse academic, professional and personal backgrounds, and additionally, included collaboration with five students from Ilisimatusarfik (University of Greenland). Together, this group from the University of Akureyri and Greenland explored a wide range of topics:

- Critical examination of foundational assumptions and legal constructions in polar law.
- Questions of consent, enforceability, and the limits of international law.
- The role of Inuit water governance within Canada’s Arctic and foreign policy frameworks.
- Canada–Greenland relations and the links between polar law and other legal fields.
- Misuse of Indigenous heritage in marketing and communication.

- Perspectives on legal education in Greenland and Denmark.
- Future outlooks for polar law and Greenland.

Early Career Scholarly Reflections

From an early career scholarly perspective, the symposium was an opportunity to deepen knowledge, practice communication skills, and develop lasting friendships and collegueships. We left the conference with a renewed sense of purpose and a commitment to the ongoing dialogue that polar law demands. As students, we often deal with concepts that portray structured “truths” – formulas developed in their particular context. However, the panels of the symposium made it clear that the issues of the polar regions are more variable and nuanced than they may appear at first sight. Speakers demonstrated that certain norms and practices might prove difficult to apply, or even unsuitable, when confronted with emerging geopolitical and environmental challenges. We learned that theory is a foundation that must be continually revisited and adapted to contemporary realities, in constant change. Practice is not a simple matter of “copying and pasting” theory, but of approaching it critically and flexibly. The symposium revealed the reality of theory in practice, particularly through sessions focused on the environment, the future of Greenland, and the impacts of global tensions in polar law.

The 18th PLS offered an extraordinary opportunity to bring professionals together to discuss the future of the polar regions. The experience greatly enriched us participants by consolidating past and present perspectives, thus paving the way for new insights and knowledge. The symposium is however not limited to the production of knowledge; it is a genuine space for the advancement of scientific, legal, and social research and interaction between peoples. While the long-term impacts of the symposium may be challenging to quantify, it is safe to conclude that it plays a fundamental role for connections, inspiration, and impetus for academics and practitioners. On a professional level, it reinforced the conviction that possibilities for scientific conferences are essential for the evolution of the field. However, we noted a relatively low representation of private sector actors and locals. In future sessions, particularly those regarding

the environment, it would be beneficial to hear more on the perspectives of the Peoples directly affected as well as corporate impacts to ensure a more balanced debate between actors active in the field.

Highlights:

- **Bridging Theory and Practice:**The symposium underscored that traditional legal theories must be iteratively adapted to the unique geopolitical and environmental realities of the poles. Participants identified that “theoretical rigor” alone is insufficient for addressing Arctic governance, necessitating a shift toward flexible, critical applications of law that account for rapid local, regional and global changes.
- **Interdisciplinary Arena:**Polar law functions not in silos but as a cross-cutting discipline. By integrating perspectives from climate science, social sciences, and Indigenous knowledge, the PLS demonstrated that effective polar governance requires knowledge transfer between academics, practitioners, and the local communities who call Arctic territories their home.
- **Science Diplomacy:**Despite the current global geopolitical instability – in the North and beyond – the PLS served as a vital “peaceful space” for international cooperation. It proved that scientific and legal exchange can foster consensus-building and maintain essential communication channels between Arctic and non-Arctic stakeholders during periods of high political friction.



Atmosphere

Working Group (AWG)

The scientific scope of the Atmosphere Working Group (AWG) includes scientific research towards understanding and prediction of Arctic change, and considering the fate of perennial sea ice and the global atmospheric consequences of its disappearance. This includes past climate states, investigation of Arctic processes across data sets and approaches, and climate model projections. The scope includes local and regional impacts of Arctic change.

The geographic scope of the AWG shall be the Arctic but will also include the Arctic's responses to global change processes (arctic amplification) and impacts of Arctic changes on the northern hemisphere atmospheric circulation.

Scientific Foci

The AWG addresses topics around interactions between the atmosphere, ocean, and cryosphere, the role of the atmosphere in Arctic socio-economic development, rapid Arctic climate change, and extreme weather and Arctic predictability.

Strategic Work Plan

The AWG Strategic Work Plan concisely articulates (with scientifically-driven high-level specifics, not programmatic detail) how they will achieve IASC's vision over 5 years. This plan is meant to help Arctic scientists get involved in IASC activities, and it is expected that they will evolve in the coming years as the AWG continues with its work.

Implementation

The AWG has identified four goals that help advance the science and scientific infrastructure listed within the AWG Strategic Plan:

1. Advancement of Arctic Atmospheric Science
2. Advancement of Arctic Atmospheric Science Researchers and Networks
3. Advancement of IASC as an organization
4. Advancement of Ethical Research Practices in Arctic Atmospheric Science

To support the progress towards the above goals, guidance on actions and several specific tasks are listed in a document called the AWG Implementation Plan. These tasks are measurable and easily communicated, and supported or endorsed by the AWG to facilitate significant advancement of the international Arctic Science community.

More Info:

iasc.info/working-groups/atmosphere

PHOTO: ALEKSANDRA OSIKA (University of Silesia in Katowice)
Hansbreen Glacier, Svalbard

MEMBERSHIP¹

	NAME	COUNTRY	EXPERTISE
Chair	Gijs de Boer	USA	Arctic clouds; Autonomous Observing; Aerosol-cloud interactions
Vice-Chair	Guðrún Nína Petersen	Iceland	Arctic weather; Extreme weather; Numerical weather prediction
Vice-Chair	Maria Sand	Norway	Climate modeling; Black carbon aerosols; Aerosol-radiation interactions
Member	Susanna Winkelbauer	Austria	Water and energy cycle; Climate diagnostics; Coupled Arctic system
Member	Ramiro Checa-Garcia	Austria	Radiative forcing; Aerosols and Atmospheric chemistry; Climate modelling
Member	François Massonnet	Belgium	Arctic sea ice; Prediction and Predictability; Climate model evaluation and forecast verification
Member	Xavier Fettweis	Belgium	Regional climate modelling; Surface mass balance; General circulation changes
Member	James Drummond	Canada	Remote sounding; Ozone and air quality; Climate change
Member	G.W.K. (Kent) Moore	Canada	High-latitude air-sea-ice interactions; Polar meteorology; Paleoclimatology
Member	DING Minghu	China	Mass balance; Air-sea/ice interaction; Measurement technique
Member	DING Zhuoming	China	Atmospheric boundary layer; Polar lows; Numerical weather prediction
Member	Kamil Laska	Czech Republic	Solar radiation modelling; Boundary layer processes; Glacier-climate interactions
Member	Henrik Skov	Denmark	Arctic troposphere; Interaction of pollutants and climate; Fate of anthropogenic pollutants in the Arctic troposphere
Member	Timo Vesala	Finland	Micrometeorology; Biogeochemical cycles; Boreal ecosystems
Member	Mikko Sipilä	Finland	Secondary aerosol formation; Nucleation; Gas phase chemistry
Member	Jennie Thomas	France	Arctic atmospheric chemistry; Cryosphere-atmosphere interactions; Regional and process modeling
Member	Jean-Christophe Raut	France	Arctic aerosols; Aerosol-cloud interactions; Numerical modelling
Member	Astrid Lampert	Germany	Atmospheric boundary layer; Airborne meteorology; In situ measurements
Member	Dörthe Handorf	Germany	Polar-lower latitude linkages; Troposphere-stratosphere coupling; Climate modelling
Member	Rohit Srivastava	India	Atmospheric aerosols; Black carbon; Climate modeling
Member	Sourav Chatterjee	India	Large-scale atmospheric circulation; Pole-tropics teleconnections; Air-sea-ice interactions
Member	Stefano Decesari	Italy	Atmospheric chemistry; Aerosol-climate interactions; Biogenic & anthropogenic organic aerosols
Member	Yutaka Tobo	Japan	Atmospheric aerosols; Aerosol-cloud interactions; Ice nucleation
Member	Masakazu Yoshimori	Japan	Global climate modeling; Large-scale circulation; Air-sea-ice interactions
Member	Eui-Seok Chung	Republic of Korea	Climate change in the polar regions
Member	Sang-Jong Park	Republic of Korea	Polar meteorology; Atmospheric boundary layer; Surface-atmosphere interactions
Member	Laurens Ganzeveld	The Netherlands	Atmospheric chemistry-climate interactions; Surface exchange processes; Modelling
Member	Nina Maherndl	The Netherlands	Mixed-phase clouds; Cloud radar; Snowfall formation
Member	Magdalena Opała-Owczarek	Poland	Climate change; Climate reconstruction; Dendroclimatology
Member	Marek Kejna	Poland	Climate change; Topoclimatic diversity of glaciated areas; Radiation balance of polar areas; Atmospheric circulation influence
Member	Daniele Bortoli	Portugal	Atmospheric physics; Active and passive remote sensing; Spectroscopy
Member	Alexander Makshtas	Russia	Sea ice and permafrost-atmosphere interaction processes; Arctic climate
Member	Boris Vladimirovich Kozelov	Russia	Geliogeophysical impact on Arctic atmosphere; Climate and micro-climate in Arctic region
Member	Ana Cabrerizo	Spain	Persistent organic pollutants; Environmental chemistry; Temporal trends
Member	Carlos Toledano	Spain	Atmospheric aerosols; Remote sensing; Radiometry
Member	Thomas Kuhn	Sweden	In-situ measurements of Arctic clouds; Snowfall; Ice fog
Member	Iris Thurnherr	Switzerland	Weather systems; Atmospheric dynamics
Member	Erhan Arslan	Türkiye	TBA

TABLE

¹Membership as of 14 January 2026. For updated information and contact information for each Working Group Member please visit :

<https://iasc.info/working-groups/atmosphere/members>

Member	Liam Kelleher	UK	TBA
Member	Xin Yang	UK	TBA
Member	Muyin Wang	USA	Arctic climate dynamics; Model-data synthesis; Sea-ice prediction

Member	FELLOWS		
2024	Patrik Winiger	Switzerland	Arctic and high-altitude aerosols; Atmospheric chemistry; Analytical chemistry
2025	Alistair Duffy	United Kingdom	Atmospheric dynamics; Solar geoengineering; Stratospheric aerosol injection
2025	Alex Hall	United Kingdom	Remote sensing; High-latitude dust; Satellites
2026	Julia Andreasen	USA	Atmospheric rivers, climate modelling, co-production of knowledge
2026	Julia Kojaj	Sweden	

SECRETARY			
	Sonja Murto	Sweden	Arctic weather extremes, Warm-air intrusions, large-scale atmospheric circulation

Recent Activities

(in chronological order)

For updated information, please check the IASC website: iasc.info

CATCH Faraday Discussion Conference

When: 17 – 19 February 2025

Where: London, UK

The Faraday Discussion on Atmospheric Chemistry in Cold Environments highlighted progress and emerging challenges in understanding chemical processes in Earth's cold regions—including the polar areas, upper troposphere, and stratosphere. This workshop brought together expertise spanning physical, analytical, and theoretical chemistry. This Faraday Discussion was distinctive because it successfully bridged multiple disciplines and scales - from molecular-level interfacial chemistry to global atmospheric modeling. In its vivid discussions, it connected scientists from the US, UK, and Europe. The meeting specifically focused on understanding the chemistry of cold environments, linking it to meteorological and physical processes.

The integration of cutting-edge analytical methods (surface-sensitive spectroscopy, neutron reflectivity, advanced mass spectrometry) with theoretical tools (electronic structure calculations, graph theory) and field campaign data from major recent expeditions like MOSAiC and ALPACA created a uniquely comprehensive scientific discussion.

The discussions addressed the main research questions in the field, such as

- **Advances in Analytical Methods:** The meeting showcased graph theory applications to understand ice nucleation mechanisms, specifically using connectivity analysis of hydrogen bonding networks to understand how alcohol groups influence water molecule ordering during freezing.
- **Halogen Chemistry:** A new understanding of halogen chemistry in the cold has addressed the chemistry for iodine in Arctic haze formation, the interplay of pollution transport and chemistry and complex chemistry between pollution, halogens, and ozone in populated and economically active areas of the Arctic.
- **Geoengineering Science:** Was addressed by presenting and discussing the fundamentals and current understanding of ozone depletion and the prediction of its recovery in the stratosphere.

- Major Research Campaigns: Insights were drawn from recent high-profile field campaigns (e.g., MOSAiC, ALPACA, CHACHA) and long-term observations at polar and high-altitude research stations. The discussions covered both local and regional perspectives.

The discussion pointed to several challenges and the need for further research in

- Understanding Multiphase Chemistry: There remain significant uncertainties around interfacial chemistry (e.g., at the ice surface or in snowpacks) and the role of biological materials as ice-nucleating particles.
- Changing Human and Environmental Contexts: The Arctic and Antarctic face increasing pressure from human activities and climate warming, with complex impacts on air quality, ecosystems, and atmospheric composition. Urbanization in cold regions is a growing concern.
- Policy-Relevant Science: The discussion also touched on geoengineering proposals such as stratospheric aerosol injection and their implications for the ozone layer—areas demanding sound scientific foundation before policy decisions.
- Future Directions: The session provided a basis for the upcoming International Polar Year 2032–2033 and highlighted the need to sustain and expand observation, measurement, and modeling efforts in these vulnerable environments

This Faraday Discussion underscored the need for chemistry-focused, multidisciplinary, and integrative research to address the complex, evolving challenges of atmospheric chemistry in cold environments. The meeting's unique format, with its vivid discussions during and between the sessions, was ideal. The venue and overall organization made the discussions and scientific exchange very productive. A main motivation was to link the aerosol research community with that of polar atmospheric researchers. Atmospheric haze and wintertime pollution are a major research focus; however, the particular aspects of "cold chemistry" as explored in polar research over the last decades were new to this community.

Highlights

1. Biogenic ice nucleating particles (INPs) are key over the Arctic Ocean. Significant links between marine biogenic activity, aerosolization, and INP abundance are highlighted, advancing our understanding of ice nucleation for Arctic clouds.
2. Tropospheric ozone is frequently depleted in the springtime Arctic, influencing atmospheric oxidation on large spatial scales. Anthropogenic pollution causes more local, intermittent depletion year-round. This paper highlights how chemistry in snow releasing reactive halogens and polluted air masses act together on ozone. The interplay between snow and polluted air masses in cold urban environments has also been shown in a novel modelling work, highlighting the role of brine in snow for chemistry.
3. Photolysis of iodide in surface snow is a plausible mechanism for supplying reactive volatile iodine to the Arctic atmosphere. This study addresses the question whether trace gases originate from biological activity in sea ice being transported to the snow, or from snow chemistry.

Project Lead

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Co-developing an Air Pollution Monitoring Network Along the Arctic Circle ATV Trail Project Report

When: 2 – 11 April 2025

Where: Kangerlussuaq and Sisimiut, Greenland

Climate-driven landscape change and ongoing infrastructure development are leading to air pollution concerns across the Arctic, including Kalaallit Nunaat



(Greenland). Air quality can be impacted by natural or manmade sources of dust and has been identified as of concern to the Qeqqata Kommunia municipality. New road infrastructure (a ATV trail) has been developed between Sisimiut and Kangerlussuaq, with the potential to change local air quality. Concerns have been raised regarding the environmental effects of road development on a UNESCO World Heritage Site and culturally significant wildlife harvesting sites, and the associated health impacts on residents. One environmental concern identified is that of dust, and how road development may exacerbate high background levels. Dust is a natural seasonal hazard in Western Greenland created via natural processes but also one that can be generated from transport infrastructure. The regional infrastructure development manager called for increased environmental monitoring along the new road and the development of better working relationships among researchers and both rights- and stakeholders in the region. We helped to fill this need by developing new partnerships and collecting initial baseline environmental data to quantify the impact of transport infrastructure on air quality along the new ATV route. To address local concerns and facilitate future sustainable development of the area, an environmental monitoring network providing quantitative data on air quality is urgently required to assess current and future

changes in air quality. Initial information from new, low-cost, low-power air quality monitors set up along the remote ATV trail will help to inform future development of a locally driven observing network along the new road. Subsequent work will distinguish the effects from different dust sources along the route, helping to identify the potential impacts of dust on human health and inform sustainable development planning. Outreach meetings brought together local rights and stakeholders with researchers to co-develop priorities and protocols for further development monitoring infrastructure along the trail in a way that can support community and citizen science research approaches. We will disseminate findings and continue to build on partnerships and appropriate protocol development at a participatory workshop and community tour during Greenland Science Week in November.

Monitoring Deployment and Field Activities: In Sisimiut and Kangerlussuaq we installed three low-cost, low power air sensors, developed at Northumbria University and trail cameras at key locations, including Arctic DTU and along the proposed ATV route. These installations support ongoing monitoring of air quality and land use changes. In April 2025, additional dust traps were deployed to capture data on seasonal dust events, particularly during the spring melt.

PHOTO: Courtesy ATV Trail Project

Partnership Development: The project was grounded in strong local partnerships with Qeqqata Kommunia, the Sisimiut Museum, Arctic Circle Trail Business, UNESCO Chairs, and Arctic DTU. These collaborations were critical in co-developing monitoring goals and methodologies that reflect community priorities.

Outreach meetings held at the Sisimiut Museum created important opportunities to share early findings and gather feedback from residents and rights-holders. These discussions helped shape our understanding of local air quality concerns, local research priorities and informed us of the next steps for community-driven research. In-person meetings and follow-up online meetings have helped the team to identify key local research priorities that we hope to address through aligned funding. This includes (but is not limited to) topics such as permafrost monitoring along the ATV road, camera work, lake monitoring along the transect and documenting community perspectives over climate change. We also discussed issues relating to Indigenous data sovereignty and ownership and agreed that our local partners would be responsible for downloading and storing the data on their computers and that we could access the data. Team members will be attending Greenland Science Summit Week, Nuuk, November 2025 where we will hold a participatory workshop to continue to identify appropriate and feasible methodologies for addressing these priorities. Additionally, this trip will enable return visits to Sisimiut and Kangerlussuaq to sustain relationship development with project partners in Greenland.

This project has enabled collaborations between Northumbria University, University of Arkansas, Loughborough University and Arctic DTU researchers that have been crucial to organising logistics of the trip and providing support with accommodation. This collaboration also enabled access to infrastructure. Collaborations with the Qeqqata Kommunia municipality, UNESCO chairs, Sisimiut Museum, and Arctic Circle Trail Business enabled us to shape research towards addressing the scientific research priorities of Greenlanders and support sustainable development planning. The model of collaborative research (Mercer et al., 2023) has been successfully applied to a very different region, highlighting that this more equitable way of working can be applied more widely to guide research and enable more ethical and equitable outcomes across diverse knowledge systems.

International Impact: Learnings from applying the collaborative research model fed directly into the ICARP IV research planning process and Arctic Science Summit Week (Colorado, March 2025). Project partners presented the approach to collaborative research to the International Arctic Science Committee Atmospheric Working Group, which led to participation and presenting results in an International Polar Year (IPY) 2032-2033 planning event at EGU Annual Meeting 2025 centered on the PACE's initiative "Improving regular vertical profile sampling for the Arctic troposphere". PACEs aims to review existing knowledge and foster new research on the sources and fate of Arctic air pollution, and its impacts on climate, health, and ecosystems. This highlights how the approach taken by this work will inform future observation monitoring networks across the Pan-Arctic Region and inform research processes in the next IPY 2032-2033.

Support for Early Career Researchers: The project also fostered collaboration between early career researchers (ECRs) from the UK and Greenland, including IASC fellows. These researchers played active roles in fieldwork, data analysis, and international engagement, building capacities required for equitable partnership development and high-quality Arctic research.

Lessons learned: We encountered several key challenges during the project. Logistics and timing presented some challenges, as shipping delays affected the dust trap deployment schedule. However, this ultimately proved beneficial, as it aligned with the spring dust storm season and enabled the collection of valuable data. In terms of technology, initial field performance has informed refinements to the sensor design, with efforts now underway to improve durability of the housing and reduce battery dependency through solar power integration and enhanced weatherproofing. More broadly, conducting research in Greenland requires careful navigation of a shifting geopolitical landscape. In this context, building trust, supporting Indigenous self-determination, and fostering transparent, reciprocal partnerships are more important than ever. Finally, our experience highlights the value of collaborative models. Applying a co-development approach rooted in solution-orientated community-based research has shown its adaptability across Arctic regions. While there is no one-size-fits-all model, this project demonstrates how meaningful, ethical collaboration can be both scaled and transferred to new contexts.

Looking Ahead: Work from this project has contributed to further funded initiatives under IASC's Terrestrial Working Group and the NSF's NNA Arctic Observing Systems and Technology Convergence Working Group. This will enable sampling to continue and partnership development with local rights and stakeholders to continue. In November 2025, we will attend the Greenland Science Summit Week in Nuuk to hold a participatory workshop that will contribute to the co-development of accessible and applicable community return to field sites and deepen collaboration with the Greenland Institute of Natural Resources and other partners. The proposed Arctic Circle ATV route has delayed opening until late 2025. This presents a timely opportunity to embed community-led monitoring into the region's infrastructure development, ensuring that local voices and values shape the environmental future of the trail and surrounding ecosystems.

Highlights:

Our data showed that 24-hour PM10 levels exceeded Danish and EU limits in both urban and peri-urban areas near Sisimiut, with more frequent exceedances near the ATV route.

Despite logistical challenges, the sensors proved reliable for capturing fine-scale, high-resolution air quality data suitable for long-term health-relevant monitoring.

Dust trap samples will be retrieved and analysed in Autumn 2025 to determine dust origins (natural vs. anthropogenic, local vs. long-range). This work is being.

Project Lead

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Atmospheric Rivers and The onset of Arctic MELT (ARTofMELT)

When: 23 – 25 April 2025

Where: Stockholm, Sweden

The onset of melt in the Arctic happens every year but the date can be very different from year to year. So, what really happens when Arctic sea ice starts melting in spring? Does it happen fast, are there any slower underlying or preconditioning processes and how does the ocean/sea-ice/atmosphere system interact through the time before and during this? The ARTofMELT was a unique expedition on icebreaker Oden in May and June 2023, in the sea ice of the northern Fram Strait, to explore the impacts of atmospheric warm-air intrusions, so-called atmospheric rivers, on the start of the melt season; hence the name, Atmospheric Rivers and The onset of Arctic MELT - ARTofMELT.

The early deployment of ARTofMELT was motivated by the need to better understand what atmosphere, cryosphere and ocean processes that govern the timing and character of melt onset. While the start of the autumn freeze is relatively well documented from scientific observations, the spring onset of the melt is not, due to very few science expeditions during winter and spring. And the reason is obvious; the difficult sea ice to brake and hence to navigate. ARTofMELT daringly targeted this period, taking interdisciplinary observations covering a vertical column from the upper ocean, through the sea ice and to the top of the atmosphere.

This was the second science workshop, roughly two years after the expedition took place, to review the progress in the different research groups with publishing datasets, scientific analysis, paper writing and collaboration. Like the first workshop, held a year earlier, it was supported by the the Atmospheric Working Group of the International Arctic Science Committee (IASC/AWG), Stockholm University's International Meteorological Institute (IMI) and the Swedish Polar Research Secretariat (SPRS). Specifically, five PhD-students benefitted from Early Career Researchers

travel grants from IASC/AWG. While the first workshop was held the week after EGU Annual Assembly, and a successful ARTofMELT-session, this workshop was held the week before the EGU; the back-to-back organization helped minimize overseas travel. Still the second workshop had a fairly large on-line participation; 18 of the 50-ish registered participants followed the workshop on Zoom.

A general idea in the program design was to merge modeling and observations, hence all sessions had a mix of modeling and observations discussed; each session also ended with O(30 min) discussion. One major purpose was to link the observations of meteorology, aerosols and aerosol precursors, atmospheric chemistry with ice characteristics and upper ocean structure across different scales from the different groups. These include observations directly from the icebreaker Oden, from airborne platforms launched from Oden such as the tethered Helikite and a helicopter-borne Helipod. Also, first results from detailed and improved atmospheric model developments were presented. The first day started after lunch and focused on meteorology, while the second day started with sea ice and ocean and ended with aerosols and atmospheric chemistry. At the end of the second day we watched the Stockholm University documentary movie and also welcomed ARTofMELT's expedition artist, Ida Rödén that showcased her book on the expedition; this was followed by a hosted dinner. On the third day the workshop ended after lunch; before this time devoted to the future: the building of the ARTofMELT data collection at the Bolin Centre Database and future publications; especially a synopsis for an expedition overview paper was discussed. Tasks were assigned and the paper has now started to come together. Below are some science highlights:

The most intriguing results that were discussed was the progression of the system up to the melt. While the melt actually happened rather fast on 10 June 2023, closer inspection of different observations, indicate thresholds being passed in different ways on different dates preceding the melt onset. Generally speaking, more protracted but slower changes appeared under the ice already weeks prior to the melt onset, but after two significant atmospheric events; one brief melt period of less than one day followed by a storm. Notable among the changes in the upper ocean is the onset of a algal bloom first detected about two weeks prior to the surface melt onset. Changes in the isotopic mix of the water vapor observations indicate

a shift after the first temporary melt but before the storm, while the characters of both aerosol size distributions and the surface energy budget diurnal cycle changed also about two weeks before the atmospheric river that triggered the melt onset arrived in the morning of 10 June.

Analysis of the energy budget also illustrates the role of low-level clouds. While cloud free conditions have the highest peaks of energy flux toward the surface, dominated by the solar radiation, it also comes with the largest surface-energy loss in the longwave portion of the electromagnetic spectra. It turns out that integrated over time, cloudy conditions provide a larger net influx to the surface. While reducing solar radiation, low clouds also cancel the longwave energy loss for a slightly positive net flux. Therefore, adding an influx of warm air can tip the system into melt by a downward turbulent sensible heat flux. Once the melt occurred in earnest, the characteristics of the surface changed fast, in less than one day and melt ponds started appearing on the second day. Unfortunately, ARTofMELT had to end on schedule only a few days into the melt period. Subsequent analysis of satellite data indicates that the 2023 melt onset date was about two weeks later than expected from climatology.

Highlights:

- While the surface melt onset was fast, components the Earth system, below, in and above the ice, underwent changes, some gradual and some abrupt, through about three weeks prior to the final onset date.
- Low-level clouds play a decisive role in precondition the surface for melt triggered by an atmospheric river. Although clouds block some solar radiation, the trapping of longwave radiation below clouds more than outweighs this loss and the surface energy budget is more often positive in clouds conditions than in clear.
- Once the surface melt has started in earnest the surface characteristics changes fast and melt ponds on top of the ice were observed in two days after the first zero-crossing of the near-surface air temperature.

Project Leads

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Polar Winter Climate and Processes: Towards Filling Knowledge Gaps in the Understanding of the Entire Climate System

When: 23 – 25 April 2025

Where: British Antarctic Survey in Cambridge, UK

The IASC and the SURFEIT project joint hybrid workshop titled “Polar Winter Climate and Processes: Towards Filling Knowledge Gaps in the Understanding of the Coupled Climate System” was held at the British Antarctic Survey (BAS) in Cambridge, UK, from 23 to 25 April 2025. The objective of the workshop was to provide an interdisciplinary platform for scientists to present recent research, exchange ideas, and foster collaborations in the study of polar winter climate. The event attracted 110 registered participants from 18 countries, representing over 40 institutions. More than 40 participants attended in person, with the remainder joining virtually.

A total of 42 abstracts were submitted, encompassing a wide array of topics—from in situ field measurements to remote sensing, laboratory studies to numerical modelling, and micro-scale processes to large-scale

dynamics. The workshop featured a strong presence of early career researchers (ECRs), including PhD candidates and postdoctoral fellows. Eleven ECRs were awarded travel fellowships, five funded by IASC and six by the UK National Capability project SURFEIT. ECRs actively contributed to the workshop by serving on the organising committee, co-chairing sessions, and providing rapporteur support.

The programme was structured around four core themes: 1. Polar winter storms, sea ice, and climate impacts; 2. Aerosols, clouds, and chemistry in the polar winter; 3. Teleconnections between polar, mid-latitude, and lower-latitude regions; 4. Identifying and addressing critical knowledge gaps. Each session consisted of a keynote lecture, several oral presentations, and breakout group discussions that engaged both in-person and online participants. Additionally, we organised a poster session featuring a 2-minute lightning presentation for each poster presenter.

Session 1 featured a series of presentations addressing the complex interactions between polar storms, sea ice, and the broader climate system. It commenced with a keynote on air–ice–ocean coupling during Arctic cyclone events, emphasising their role in modifying surface fluxes and ice dynamics. The subsequent talk provided a climatological analysis of Arctic cyclones, detailing recent trends in their frequency, intensity, and impact on sea ice and upper-ocean structure. Arctic sea ice projections (e.g. ice-free by 2050) and the internal variability alongside external forcing of the observed

PHOTO: Group Photo of the Polar Winter Climate Processes Project at the British Antarctic Survey in Cambridge, UK. Photo courtesy of the organizers.

sea-ice changes were covered in two presentations. Antarctic perspectives were introduced through two presentations on heatwaves: one focused on the intensification of winter heatwaves using pseudo-global warming frameworks and climate model diagnostics, while the other addressed the occurrence of heatwave events in the Antarctic interior. Additionally, the impact of extreme wind events in Nares Strait and an introduction to the Churchill Marine Observatory were reported during this session.

Session 2 centred on recent advancements in understanding the sources of aerosols, the aerosol–cloud interactions, and some chemical processes in the polar winter atmosphere, encompassing observational data, laboratory work, and modelling. It began with a keynote presentation emphasising the value of remote sensing in enhancing winter observations of aerosol–cloud interactions under low-light conditions. Several presentations addressed measurements of ice-nucleating particles (INPs) in the Arctic, Southern Ocean, and Antarctica. Two modelling studies concentrated on cloud representation in the UK Earth System Model, including cold-air outbreak clouds in the Arctic. The potential role of blowing snow in Arctic black carbon production was reported. Additionally, one study explored the blowing snow fragmentation process through modelling, while another examined the sublimation process in regulating the production of salt particles using an environmental electron microscope. Two presentations focused on polar chemistry; one provided laboratory evidence of the freezing-induced increase in brine acidification, while the other demonstrated field evidence of the significance of nocturnal snow chemistry in regulating reactive nitrogen.

Session 3 focused on the dynamic linkages between polar regions and lower latitudes, emphasising atmospheric teleconnections and their role in driving extreme weather patterns and climate variability. It commenced with a keynote on the role of atmospheric rivers in Antarctica and their teleconnections to lower-latitude weather systems, supported by a presentation on trend analyses of atmospheric river activity across the Arctic and western North America. Two presentations examined the dynamics of high-latitude atmospheric blocking and the seasonal behaviour of the Amundsen Sea Low, identifying their influence on mid-latitude weather

regimes and storm tracks. The impact of polar sea-ice variability on subtropical precipitation was explored in two regional studies focusing on the Indian summer monsoon and spring rainfall over South China. The final talk centred on the sensitivity of Antarctic coastal fast ice to remote climatic drivers.

Session 4 addressed outstanding scientific uncertainties in polar climate research, highlighting emerging areas that require targeted investigation and enhanced observational efforts. The keynote speech synthesised recent advances in understanding Antarctic weather and climate extremes, including the representation of synoptic processes and extreme events in climate models. The following presentation reported findings on how complex terrain and synoptic forcing jointly influence near-surface wind variability in East Antarctica. One introduced the AWACA project, detailing radar-based snowfall case studies and instrumentation deployment strategies in challenging polar environments. While most presentations focused on physical processes, one showcased novel observations of microbial biodiversity in Antarctic precipitation, emphasising the need for a deeper understanding of biogeochemical cycling and the potential for winter microbial transport. Another highlighted the ecological ramifications of storm-driven rain-on-snow events during the polar winter, which impact snowpack structure, soil freezing dynamics, and terrestrial biodiversity. Extending the theme of cryospheric vulnerability, one reported on the role of dust deposition from South Asian dust storms in accelerating the melting of Himalayan glaciers.

The poster sessions covered various topics, including tropical rain belts, moisture fluxes towards Antarctica by synoptic eddies, observed and projected Arctic sea ice, Antarctic temperature, marine heatwaves, and laboratory work on sea salt aerosol formation. The discussions identified several urgent scientific changes and emphasised the importance of interdisciplinary collaboration to address these challenges. Initiatives such as Antarctica InSync (<https://www.antarctica-insync.org>) and ACTRIS (<https://www.actris.eu>) were highlighted as key platforms for fostering synergistic efforts across observational, modelling, and theoretical communities. Enhancing these collaborations will lead to a more integrated understanding of polar processes and their global climatic significance.

Feedback from participants indicated that the workshop was both scientifically productive and collegially rewarding.

Next steps: The organisers are currently preparing a meeting report for submission to the Bulletin of the American Meteorological Society (BAMS). The outcomes of the workshop will inform ongoing efforts under ICARP IV and IPY-5 planning.

Highlights:

1. **Observational Gaps in Polar Winter Conditions.** A significant obstacle in both Arctic and Antarctic research is the limited availability of observational data for key parameters, such as winter sea ice thickness, snow salinity, and turbulent surface fluxes. The absence of wintertime measurements impedes the understanding of ice dynamics and atmosphere–ice–ocean interactions. The workshop recommended expanding autonomous observational networks, including drone and buoy deployments, to improve data coverage in remote and logistically challenging regions.
2. **Aerosol–Cloud Interactions and Associated Uncertainties.** Uncertainties in aerosol–cloud coupling, particularly during the polar night, represent a significant knowledge gap. These uncertainties are especially pronounced in Antarctica, where data are sparse. To address this, the workshop emphasised the need for continuous, year-round aerosol monitoring using remote sensing and autonomous platforms. In addition, enhancing model parameterisations for sea salt aerosol production over sea ice, cloud condensation nuclei, and ice-nucleating particle activity is essential for improving polar climate model performance and reducing uncertainty in cloud microphysical processes.
3. **Complexities in Teleconnections and Model Representation.** Understanding the mechanisms underlying polar–tropical teleconnections remains a critical challenge. Current climate models often fail to adequately capture these cross-scale interactions, resulting in discrepancies in simulated climate variability. Workshop participants recommended coordinated multi-model experiments to evaluate teleconnection robustness across modelling frameworks. They also advocated for targeted observational campaigns focused on atmospheric rivers and blocking events that influence polar systems

Project Lead

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Atmosphere Working Group Steering Group Implementation Workshop

When: 24 – 26 September 2025

Where: Paris, France

Members of the IASC Atmosphere Working Group (AWG) convened at the Laboratoire Atmosphères Et Observations Spatiales (LATMOS) to advance implementation of work related to the group's strategic plan. Additionally, the group worked to refine priorities and discuss concepts to strengthen collaboration within the international Arctic science community. The workshop brought together AWG leadership, three AWG fellows, and two additional AWG members from France.

Day 1: Key Themes and Discussions

Strengthening Implementation and Impact: The AWG reaffirmed its four strategic goals: advancing Arctic atmospheric science, fostering researcher networks, supporting IASC priorities, and promoting ethical research. Members emphasized the need for efficient implementation, clearer and more automatic tracking of progress, and more opportunities for early career researchers (ECRs). A regular review of the implementation plan will be done during the Arctic Science Summit Weeks (ASSWs). **Proposal Review Process:** The group reviewed recent improvements to the IASC proposal review system. Suggestions included refining evaluation criteria, introducing online tools for more efficient review tracking, and exploring the use of AI to summarize reviewer feedback. A key priority remains ensuring fair and transparent assessment across nations.

National Scientific Updates: Participants discussed enhancing coordination of national research updates, ensuring consistent reporting, and providing thematic overviews (e.g., on dust, Arctic observatories, or atmospheric field campaigns). A structured template for national updates will be developed to improve comparability and usefulness.

Value of the AWG: Feedback from a recent AWG value survey highlighted that members value staying informed about international research priorities and shaping IASC's scientific agenda. The group will work to expand survey participation and prepare a summary report ahead of the ASSW 2026. To broaden engagement, the AWG will enhance the ability to provide science updates, both through presentations and through mechanisms for sharing references of recent work.

Inter-Working Group Collaboration: Members emphasized a desire to have stronger ties with other IASC Working Groups, recognizing the benefits of cross-disciplinary science. Planned actions include sharing meeting summaries with other groups, organizing joint discussions, and proposing icebreaker events at ASSW.

Early Career and Community Engagement: The AWG reaffirmed its commitment to supporting ECRs and building community. Plans include social and networking events at major conferences, quarterly newsletters featuring science highlights, upcoming conferences/meetings and member spotlights, and the development of an AWG "protocol" for community-building activities.

Day 2: Strategic Discussions

Looking Ahead: Preparing for the Next International Polar Year (IPY 2032–33)

A central theme of the second day of the workshop was preparing for the next IPY. The group explored ideas for large-scale atmospheric initiatives, including integrating Arctic observatories, advancing cloud and aerosol research, and harnessing artificial intelligence (AI) for Arctic science. Some publications where AI is used in Arctic atmospheric science were shared among the group (Harder et al. 2022; Ramandhan et al. 2023). The group will consider developing white papers and/or supporting targeted workshops toward IPY to engage broader scientific communities and funding partners. A focus on an atmospheric component, e.g., at bigger research efforts involving icebreakers, was emphasized.

The AWG also began revisiting its Strategic Work Plan to ensure that our priorities reflect emerging topics such as AI, Arctic amplification, and cross-disciplinary collaboration. There was broad agreement that the current plan feels dated and needs an update. Revisions will be drafted for discussion at ASSW 2026. Our Strategic plan should also be aligned with the outcome of the ICARP-IV research priority teams (RPTs).

Finally, the group discussed AWG member engagement. Suggestions for increasing meeting participation included recognition of members (member spotlights in the newsletter), regular regional scientific updates and include short scientific highlights at quarterly meetings

Resulting Action Items:

- Review the current AWG Implementation Plan prior to next ASSW
- Develop an online form for a more efficient proposal review tracking.
- Develop a structured template for national scientific updates, and solicit updates by region or theme to distribute information across participating nations and enhance broader engagement.
- Circulate AWG Value Survey results and evaluate opportunities to increase group relevance to expand participation.
- Improve inter-WG collaboration through sharing AWG meeting summaries with other WGs and organizing more cross-disciplinary discussions.
- Develop an AWG “protocol” for social community-building networking activities for targeted conferences/meetings.
- Consider opportunities for broader community discussions to organize work associated with IPY 2032–33.
- Draft revisions to the Strategic Work Plan with forward-looking priorities.
- Launch a quarterly AWG newsletter to enhance group communication and visibility, including information on upcoming meetings and events, member spotlights, IASC deadlines, and community-relevant information (e.g., recent publications). Provide a summary of the newsletter at each AWG meeting

Project Lead

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Upcoming Activities

For updated information, please check the IASC website: iasc.info



Cryosphere Working Group (CWG)

The Cryosphere Working Group (CWG) supports and promotes all scientific or engineering research related to the Arctic and subarctic cryosphere, including glaciers, sea ice, snow, permafrost, seasonally frozen ground, and lake and river ice. It encompasses cryospheric interactions with the atmosphere, ocean, biosphere, and terrestrial systems in the past, present and future, and the cryosphere's role in climate and human society.

Scientific Foci

- Improve knowledge of the past, current, and future state of the Arctic cryosphere across wide-ranging spatial and temporal scales using innovative methods including in-situ observations, remotely sensed measurements, models, citizen science, and participatory research.
- Advance understanding of melt and thaw processes, ice and snow dynamics, and complex cryospheric interactions with atmosphere, terrestrial, ocean, and biological systems.
- Quantify and project cryospheric change and the frequency and intensity of extreme cryospheric events such as: heavy snowfalls, icing, avalanches and rockfalls, glacial lake outburst floods, glacier surges, abrupt permafrost thaw, permafrost coastal erosion, events resulting from sea ice dynamics, intrusion of warm air masses from outside the Arctic, and seasonal climate anomalies.
- Improve understanding of interactions between the cryosphere and human society, especially impacts of cryospheric change on humans, anthropogenic impacts on the cryosphere, and the contribution of local and indigenous communities to cryospheric knowledge.

Cross-cutting Approach

Achieving the CWG scientific foci requires interdisciplinary research and collaboration with other working groups and local communities, where applicable. Our approach emphasizes open and collaborative science; ethical, sustainable, and responsible science practices; diversity, equity, and inclusion; and using cryospheric knowledge to support society.

Work Plan

The CWG Work Plan concisely articulates how it will achieve IASC's vision over five years. This plan is meant to help Arctic scientists be involved in IASC activities and is expected to evolve in the coming years as the CWG continues to evaluate and address ongoing and emerging needs. Link to the Work Plan on the IASC website

More Info:

[\[iasc.info/working-groups/cryosphere\]](https://iasc.info/working-groups/cryosphere)

PHOTO: IGOR VASILEVICH (AARI)
Glacier Ice at Gronfjorden, Svalbard



MEMBERSHIP²

	NAME	COUNTRY	EXPERTISE
Chair	Kelly Hogan	United Kingdom	Palaeoglaciology; Glacial landforms; Marine sedimentary records
Vice-Chair	Melinda Webster	USA	Sea ice; Climate change; Atmosphere-ice interactions
Vice-Chair	Letizia Tedesco	Finland	Marine biogeochemical modelling; Sea-ice physical-biogeochemical processes; Climate change
Member	Helena Bergstedt	Austria	Permafrost; Landscape dynamics; Remote sensing
Member	Jakob Abermann	Austria	Mountain glaciers; Ice-climate interaction; Greenland mass balance
Member	Hugues Gosse	Belgium	Sea ice; Feedbacks; Climate modelling
Member	François Fripiat	Belgium	Oceanography; Glaciology; Paleoclimatology
Member	Shawn Marshall	Canada	Glacier and ice sheet modelling; Cryosphere-climate processes; Glacier mass balance
Member	LEI Ruibo	China	Sea-ice physics; Climate change; Technology for sea-ice observations
Member	XIAO Cunde	China	Cryospheric research
Member	Marie Šabacká	Czech Republic	Glacier ecology
Member	Nanna Karlsson	Denmark	Glaciology; Ice-penetrating radar; Ice-flow modelling; Mass balance
Member	Kirsty Langley	Denmark	TBA
Member	Arttu Polojärvi	Finland	Ice mechanics; Numerical modeling; Deformed sea ice
Member	Hans-Werner Jacobi	France	Snow physics and chemistry; Snow-atmosphere interactions; Climate
Member	Anne Morgenstern	Germany	Permafrost; Geomorphology; Remote sensing
Member	Gunnar Spreen	Germany	Sea ice; Remote sensing; Ocean-sea ice-atmosphere interactions
Member	Andri Gunnarsson	Iceland	Water resources; Remote sensing of the cryosphere; Snow and ice modelling
Member	Hrafnhildur Hannesdóttir	Iceland	Glaciology; Remote sensing; Terminus measurements
Member	Parmanand Sharma	India	Glaciology; Mass and energy balance; Glacier hydrology; Snow and ice chemistry
Member	AL. Ramanathan	India	Glaciology; Biogeochemistry; Hydrology
Member	Andrea Spolaor	Italy	Paleoclimate; Snow chemistry; Air-snow exchange
Member	Masahiro Minowa	Japan	Calving; Glacier dynamics; Glacier mass balance
Member	Nozomu Takeuchi	Japan	Glacier ecology; Microbiology; Glaciology
Member	Emilia Kyung Jin	Republic of Korea	Ice sheet modeling; Sea-ice observation & modeling; Ice-climate interactions
Member	Yeongcheol Han	Republic of Korea	Geochemistry; Isotopes
Member	Eveline van der Linden	The Netherlands	Ice sheet-climate interactions; Polar climate; Climate modelling
Member	Geir Moholdt	Norway	Glaciology; Remote sensing; Mass balance
Member	Thomas Vikhamar Schuler	Norway	Arctic glacier mass balance & hydrology; Subglacial processes; Cryosphere modelling
Member	Dariusz Ignatiuk	Poland	Arctic glacier mass balance and hydrology; Glaciology; Energy mass balance

TABLE

²Membership as of 14 January 2026. For updated information and contact information for each Working Group Member please visit :

<https://iasc.info/working-groups/cryosphere/members>



Member	Ireneusz Sobota	Poland	Cryospheric changes; Mass balance; Snow; Permafrost
Member	Gonçalo Vieira	Portugal	Permafrost; Remote sensing; Geomorphology
Member	Dmitry Drozdov	Russia	Permafrost mapping & thermal state; Active layer; Remote sensing; Arctic coastal dynamics
Member	Sergei Verkulich	Russia	Glaciers and permafrost; Antarctic and Arctic Quaternary sediments; Terrestrial records
Member	Carolina Gabarro	Spain	Remote sensing; Sea-ice extent; Sea-ice thickness
Member	Jaime Otero	Spain	Glaciers; Numerical models; Calving
Member	Ward van Pelt	Sweden	Glacier mass balance; Glacier dynamics; Snow physics
Member	Amy Macfarlane	Switzerland	Snow microstructure; Sea ice; Energy transfer
Member	Andreas Vieli	Switzerland	Calving; Glacier and ice sheet dynamics; Ice-ocean interaction
Member	Özgün Oktar	Türkiye	Sea ice remote sensing; Satellite-based analysis of sea ice for navigation; Antarctic sea ice variability
Member	Karen Cameron	United Kingdom	TBA
Member	Brooke Medley	USA	TBA

FELLOWS

2024	Louise Mercer	United Kingdom	Community-based monitoring; Arctic environmental monitoring; Co-development
2024	Kathleen Orndahl	USA	Satellite remote sensing; Herbivore-vegetation interactions; Vegetation change
2025	Madelaine Anderson	USA	Tundra vegetation; Hyperspectral data; Phenology
2025	Scott Sugden	USA	Environmental microbiology; Biogeochemistry; Deglaciation
2026	Emma Cameron	Germany	Paleolimnology; Aquatic ecology; Anthropogenic contaminants
2026	Brandon Samuel Whitley	Denmark	Plant-pollinator interactions; Arctic plant diversity; Molecular ecology

SECRETARY

	Kabir Rasouli	USA	Cold regions hydrology; Land cover change; Snow; Mountain hydrometeorology
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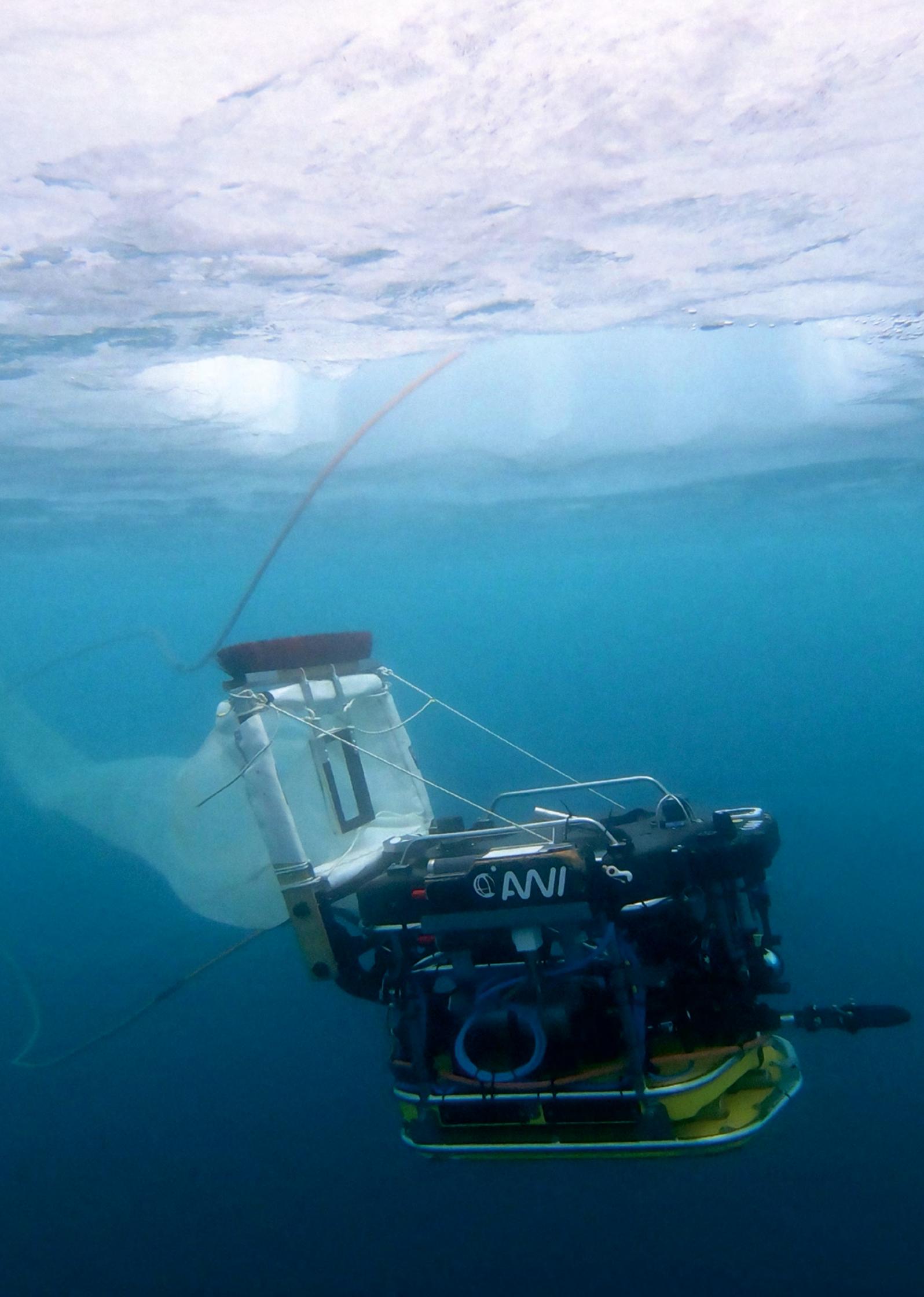
Recent Activities

For updated information, including dates, please check the IASC website: iasc.info

Upcoming Activities

For information on CWG upcoming activities, please check the IASC website: iasc.info

PHOTO: IREK SOBOTA (N.Copernicus Polar Station Spitsbergen and Polar Research Center) Iceberg



Marine Working Group

The IASC Marine Working Group (MWG) facilitates international coordination of research in the Arctic marine environment and supports cross-cutting objectives. Annual face-to-face meetings and online communication are used throughout the year, including interaction and collaboration with terrestrial, cryospheric, atmospheric, and social scientists as appropriate. An important goal is to support early career scientists and involve them in international research coordinated by IASC member countries, including an expanded role for IASC Fellows in MWG tasks. Starting in 2023, a network of IASC Alumni Fellows will support IASC and Working Group activities and their current Fellows, and maintain an active network of early to mid-career researchers and collaborators (IASC Fox).

Scientific Foci

The scientific scope of the MWG includes but it is not limited to any marine natural science or engineering research related to the Arctic Ocean and Subarctic Seas. A strategic planning process has been undertaken to guide research and monitoring priorities aligned with international science planning goals such as those identified by the ICARP process and the UN DOS Arctic Action Plan. The identified research priorities are practical areas for international cooperation consistent with the pillars of IASC and the science programmes of its 24 member countries. Five themes have been identified addressing major unknowns that remain to be resolved in order to contribute to an integrated and predictive understanding of the Arctic System and its interactions with the overall Earth System.

These themes, in no specific order of importance are:

- Marine Life,
- Sea Ice and Stratification,
- Disturbances,
- Biogeochemical Cycles, and
- Connectivity and Borealization.

Strategic Plan

The document (available on iasc.info/our-work/working-groups/marine) outlines the Marine Working Group's strategic plan for 2025–2035, identifying six key research pillars: Disturbances, Connectivity and Borealization, Sea Ice and Stratification, Biogeochemical Cycles, Marine Life, and Humans. It highlights the most pressing scientific priorities for Arctic marine research and provides recommendations to guide international collaboration, policy integration, and infrastructure development in support of ICARP IV and the upcoming International Polar Year

Implementation Plan

The MWG Implementation Plan is detailed within the MWG Strategy Plan.

More info:

<https://iasc.info/our-work/working-groups/marine>

PHOTO: EVGENII SALGANIK (Norwegian University of Science and Technology)
Remotely Operated Vehicle (ROV) with plankton nets during CONTRASTS expedition between Svalbard and Greenland.

MEMBERSHIP³

	NAME	COUNTRY	EXPERTISE
Chair	Anna Heiða Ólafsdóttir	Iceland	Geographical distribution; Migration; Life history traits; Stock assessment of small pelagic fish in the NE Atlantic
Vice-Chair	Laura Ghigliotti	Italy	Polar marine fish diversity and adaptation
Vice-Chair	Jinyoung Jung	Republic of Korea	Chemical oceanography; Biogeochemistry
Member	Petra Heinz	Austria	Marine ecology; Microbenthos biology; (Paleo-)ecosystems
Member	Thierry Fichefet	Belgium	Sea ice-ocean interactions; Polar climate; Modelling
Member	Bruno Delille	Belgium	TBA
Member	Christine Michel	Canada	Role of sea ice in Arctic marine ecosystems; Pelagic and benthic Arctic food webs
Member	LIU Yanguang	China	Marine geology
Member	LI Tao	China	Oceanography
Member	Oleg Ditrich	Czech Republic	Parasitology; Zoology; Polar ecology
Member	Henrieka Detlef	Denmark	Paleoceanography; Sea ice; Geochemistry
Member	Dewan Ahsan	Denmark	Risk management; Marine resource management; Green transition
Member	Jukka Tuhkuri	Finland	Ice mechanics
Member	Hermanni Kaartokallio	Finland	Sea ice ecology; Microbial ecology in cold marine environments
Member	Vincent Le Fouest	France	Ocean-sea ice-biogeochemical modelling; Coastal oceanography; Land-sea interface
Member	Marie-Noëlle Houssais	France	Physical oceanography; Ocean-sea ice processes; Large-scale and mesoscale variability
Member	Denise Kuhlhanek	Germany	Marine micropaleontology, paleoceanography, interdisciplinary polar research projects
Member	Benjamin Rabe	Germany	Physical oceanography; Arctic Ocean freshwater changes; Mesoscale processes; Autonomous instrumentation
Member	Arnab Mukherjee	India	Ocean-sea ice coupled modelling; Physical oceanography; Climate dynamics
Member	Manish Tiwari	India	Paleoclimatology; Paleoceanography; Isotope geochemistry
Member	Tommaso Tesi	Italy	Paleoclimatology; Geochemistry; Oceanography
Member	Michiyo Yamamoto-Kawai	Japan	Chemical oceanography; Freshwater, carbon and nutrients; Climate change
Member	Mariko Hatta	Japan	TBA
Member	Eun Jin Yang	Republic of Korea	Polar marine ecology; Microzooplankton biology
Member	Martine van den Heuvel	The Netherlands	Polar marine biology; Ecotoxicology; eDNA-based rapid assessment of non-indigenous species
Member	Arild Sundfjord	Norway	Ocean-sea ice interaction; Regional & sub-mesoscale modelling; Vertical mixing
Member	Louise Chavarie	Norway	Fish ecology; Genetics
Member	Agata Zaborska	Poland	TBA
Member	Agnieszka Beszczynska-Möller	Poland	Observational physical oceanography; Ocean climate; Ocean-ice interactions; Autonomous observations
Member	Catarina Magalhães	Portugal	Polar microbial ecology; Nitrogen biogeochemistry; Marine microbiome standards
Member	Sergey Pisarev	Russia	Mesoscale oceanographic processes; Short-period Arctic Ocean climate variability
Member	Antonio Tovar	Spain	Trace metal biogeochemical cycles; Marine pollution; Global change
Member	Manuel D'Allosto	Spain	Atmospheric science; Marine aerosols; Coastal air quality
Member	Adam Ulfsbo	Sweden	Chemical oceanography; Marine chemistry; Carbonate chemistry
Member	Samuel Jaccard	Switzerland	Biogeochemistry; Carbon cycle; Paleoceanography
Member	Atilla Yilmaz	Türkiye	Persistent organic pollutants, sediments, Passive sampling
Member	Claire Mahaffey	United Kingdom	Marine biogeochemistry; Nutrient cycling; Primary productivity; Ecosystems
Member	Geraint Tarling	United Kingdom	TBA

TABLE

³Membership as of 14 January 2026. For updated information and contact information for each Working Group Member please visit :

<https://iasc.info/working-groups/marine/members>

Member	Lauren Juranek	USA	Biogeochemistry; Isotopic tracers; Dissolved gases
Member	Claudine Hauri	USA	Carbonate chemistry; Regional modelling; Co-production of knowledge

FELLOWS

2024	Daniela Walch	Canada	Aquatic remote sensing; Biogeochemistry
2025	Henry Henson	Denmark	Carbon cycling; Air-sea exchange; Ocean freshening
2025	Clare Gaffey	USA	Phytoplankton phenology; Remote sensing
2026	Margaret Rudolf	USA	Research methodologies; Co-production of knowledge; Indigenous engagement
2026	Monica Ogawa	Japan	Marine mammals; Inuit researcher partnerships; Trophic ecology

SECRETARY

	Neelu Singh	Norway	Microplastics; Persistent organic pollutants; Svalbard
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Recent Activities

For updated information please check the IASC website: iasc.info

Upcoming Activities

For information on MWG upcoming activities, please check the IASC website: iasc.info



PHOTO: IREK SOBOTA (N.Copernicus Polar Station Spitsbergen and Polar Research Center)
Polar Bear swimming through icy waters



Social and Human Working Group (SHWG)

The scientific scope of the Social and Human Sciences Working Group (SHWG) shall include all aspects of social sciences and humanities research in the Arctic, as well as their connections with other IASC Working Groups. The actual work of the Social & Human Sciences WG is determined by a dynamic list of scientific focus areas. The geographic scope of the Social and Human Sciences Working Group shall be the Arctic as defined in the map accompanying the Arctic Human Development Report (AHDR). The geographic scope can be extended south where it is appropriate for an understanding of Arctic social and human processes.

Scientific Foci

Disciplinary foci for the Social & Human Working Group are:

- **Arctic residents and change:** The Arctic is at the center at various vectors of change, from climate and environmental change to economic and cultural globalization. Arctic residents - whether members of Indigenous communities, long-time settlers or recent immigrants – have long dealt with such change, as active participants in attempts to mitigate them and/ or adapt to them, sometimes successfully, sometimes not. Responses to change vary by locale, as well as along axes of age, ethnicity and gender. Through this focus, we seek to contribute to understanding the past and present role of humans in the Arctic environment, including to forecast future states and situations.
- **Histories, perceptions and representations of the Arctic:** Research within the humanities and social sciences examines historical memories and material remains of Arctic communities, to understand how exploration, exploitation and interventions have influenced natural resource use, local economies, traditional knowledge, health, political systems, gender relations, settlements, cultural heritages, languages, and identities. Through various disciplinary and analytical perspectives on cultural contacts, conflicts and collaborations, on scientific practices and specific modes of constructing

knowledge, and on varied representations of the Arctic, we can better understand present-day contexts of local communities and peoples, and better explain the relation between historical memories/material archives and current perceptions, with a goal of addressing issues of participation, representation, human rights and social justice, social and economic development, education and public outreach.

- **Securities, governance and law:** The Arctic is a peaceful and stable region, not overtly plagued by conflicts. The region has become ever more globalized. Critical topics include 1) how to effect a shift from high (geo) political stability to peaceful change, and make security less mystified and controlled by a nation-state's security-political elite; 2) how to accelerate mitigation and fulfill the Paris Agreement (COP-21); and 3) how to establish the Arctic as a resilient area and structure.
- **Natural resource(s)/ use/ exploitation and development: past, present, future**
- **Human health and well-being**

Cross-cutting scientific foci for the Social & Human Working Group are:

- Human health, well-being and ecosystem change
- Long-term impacts, vulnerability and resilience in Arctic social-ecological systems
- Competing forms of resource use in a changing environment
- Perception and representation of Arctic science

Strategic Plan 2023-2027

IASC Social and Human Working Group (SHWG) has an annual budget to invest in science initiatives. They are the most important surplus of SHWG activities. The initiatives correspond respectively to the science and the cross-cutting foci. The foci are continuously revised. In 2022 the SHWG conducted two workshops to update the strategic plan.

More info:

iasc.info/working-groups/social-human

PHOTO: EVGENII SALGANIK (Norwegian University of Science and Technology)
Sisimiut, Greenland

MEMBERSHIP⁴

	NAME	COUNTRY	EXPERTISE
Chair	Monika Szkarłat	Poland	Science diplomacy in the Arctic; Legal and social dimensions of biotechnology; Right to adequate food and nutrition
Vice-Chair	SU Ping	China	Global Governance; International Political Sociology; International Organization
Vice-Chair	Ingrid A Medby	United Kingdom	Arctic Identity; Political Geography; Critical Geopolitics
Past Chair	Catherine Chambers	Iceland	Ocean governance; Coastal communities; Fishers' knowledge
Member	Alexandra Meyer	Austria	Anthropology; Climate change; Svalbard
Member	Olga Povoroznyuk	Austria	Anthropology of infrastructure; Social and environmental transformations; Indigenous and local Arctic & Siberian communities
Member	Frédéric Laugrand	Belgium	Anthropology; Hunting and Inuit knowledge systems; Mobility; History; Religion (Canada)
Member	Nathalie Pattyn	Belgium	TBA
Member	David Natcher	Canada	Environmental livelihoods; Culture and economy; Local food systems
Member	SU Ping	China	Global governance; International political sociology; International organizations
Member	DENG Beixi	China	Polar geopolitics & security; Polar policy; Arctic shipping
Member	Barbora Halašková	Czech Republic	Arctic geopolitics and security; International relations; Foreign policy
Member	Zdenka Sokolíčková	Czech Republic	Svalbard; Climate and environmental change; Globalisation
Member	Carina Ren	Denmark	Tourism development & entrepreneurship; Cultural innovation; Co-creation; Collaborative research methods
Member	Brooks Kaiser	Denmark	Arctic economic development; Bioeconomy; Marine resource governance
Member	Mervi Heikkinen	Finland	Women's and gender studies; Intersectionality; Ethics; Higher education
Member	Florian Stammler	Finland	Indigenous and local livelihoods; Development impact assessments; Arctic Eurasia
Member	Claire Alix	France	Archaeology; Ethnoarchaeology; Inuit history and technology; Alaska & Western Canadian Arctic
Member	Virginie Vaté	France	Anthropology of religion; Shamanism and Christianity; Conversion; Chukotka and Alaska
Member	Nina Doering	Germany	Co-production; Transdisciplinarity; Ethics; Participation
Member	Peter-Tobias Stoll	Germany	TBA
Member	Swati Nagar	India	Science outreach; Polar outreach
Member	Fujio Omishi	Japan	History of international relations in the Arctic; Polar geopolitics; Arctic policy
Member	Hiroki Takakura	Japan	Siberian anthropology; Northeast Asian Indigenous history; Arctic pastoralism
Member	Hyunkyo Seo	Republic of Korea	Polar policy
Member	Annette Scheepstra	The Netherlands	Transdisciplinary research; Stakeholder engagement
Member	Özlem Terzi	The Netherlands	European Union's external policies and the Arctic, Arctic governance and security, Indigenous Peoples' rights.
Member	Britt Kramvig	Norway	Indigenous ontologies, politics and art; Creativity; Tourism and innovation in Arctic communities
Member	Malgorzata Smieszek-Rice	Norway	Arctic governance; Science diplomacy; Science-policy interface; Gender-environment nexus
Member	Agnieszka Skorupa	Poland	Psychology; Human behavior in extreme environments; Polar adaptation
Member	Sandra Maria Rodrigues Balão	Portugal	Geopolitics & geostrategy; Security; Securitization diplomacy
Member	Andrei Golovnev	Russia	Social psychology in the Arctic; Circumpolar states; Science policy
Member	Andrey Podoplekin	Russia	Social psychology in the Arctic; Circumpolar states; Science policy and programs
Member	Ana Maria Manero Salvador	Spain	International law of the sea; International environmental law; Indigenous peoples' human rights
Member	Ragnhild Nilsson	Sweden	Indigenous politics; Representation; Self-determination

TABLE

⁴Membership as of 14 January 2026. For updated information and contact information for each Working Group Member please visit :

<https://iasc.info/our-work/working-groups/social-human>

Member	Laine Chanteloup	Switzerland	TBA
Member	James D. Ford	United Kingdom	Climate and environmental change; Indigenous and local communities; Climate adaptation
Member	Victoria Herrmann	USA	Climate change; Community adaptation; Cultural heritage; Storytelling
Member	Vera Kuklina	USA	Human geography; Knowledge co-creation; Indigenous infrastructure

FELLOWS

2024	Charlotte Gehrke	Norway	Environmental policy; Science communication; Science diplomacy
2024	Anita Lafferty	Canada	Indigenous pedagogy; Decolonization; Land-based education
2024	Elena Adasheva-Klein	United States	Human-environment relations; Environmental anthropology; Environmental humanities
2025	Sophie Roher	USA	Health equity; Social determinants of health; Community-partnered research
2025	Charlotta Svonni	Sweden	Sámi education; Educational policy; Sámi history
2026	Mariel Kieval	Greenland	Resource governance; Arctic geopolitics; Critical and ontological security
2026	Haliehana Stepetin	USA	Indigenous methodologies; Indigenous food security; Indigenous knowledge systems

SECRETARY

	Anna Varfolomeeva	Finland	Indigeneity; Extractive industries; Sustainability
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Recent Activities

For updated information, please check the IASC website: iasc.info

Blue Justice in and for the Arctic

When: 29 August 2024 & 26-27 September 2024

Where: Östersund, Sweden

The Arctic Ocean and adjacent seas are undergoing profound transformations from anthropogenic pressures from climatic changes that challenge its ice cover to new forms of economic activity such as deep-sea mining. With its important role in climatic processes and the global food chain, there are growing questions of justice from Indigenous use of marine spaces and reliance on the oceans for food security to the ecological challenges presented by new resource exploitation and the policies underpinning these practices.

Ocean governance has a long history that is rooted in the evolving relationship between human communities, resource needs and technological capabilities. Once thought as a commons within defined limitations, ocean spaces are subdivided across state territories, with privileges of resource exploitation and responsibility for transboundary challenges (e.g., plastics pollution or sustainable harvesting) incompatible within contemporary challenges. This includes among them, states' needs for security of resource supply, common concerns for biodiversity protection and also for Indigenous rights.

While interests in blue governance and blue economy in the Arctic have been visible in the discourse landscape for several years, this is rarely connected to concerns of justice. By focusing on a justice that is 'blue', we sought to highlight an area of critical concern that gives priority to the transcendence of maritime activities, transboundary issues (i.e. climate change, plastics pollution), human impacts, and non-human aspects of oceanic existence. In this regard, concepts and theories for "blue" and "ocean" justice can promote evaluations of effectiveness of existing legal regimes and governance mechanisms and

identify gaps relevant to environmental challenges and protection or conservation measures. Blue justice can also extend to human rights issues, such as protection for fishers or search and rescue volunteers, and importantly can take into account core issues and concerns for Indigenous communities whose cultural survival is uniquely integrated into the use of ocean spaces, ice and living resources of the sea. Ocean justice can also evoke accounts of non-hierarchical, non-exploitative, more-than-human aspects and deep entanglement with the web of life that sustains and exists at sea. In this context, this workshop focuses on issues of Blue and Ocean justice together with particular emphasis on the Arctic.

The objectives of this focus was to:

- To connect a group of experts to push the boundaries of knowledge about Blue Ocean Justice in the Arctic toward future collaborations.
- To create a common understanding of the intersection of Arctic environmental and governance challenges, research and the implications for humans and non-humans in Arctic and oceanic spaces within a framework of justice theory and concepts.
- To reflect how justice theories and concepts can inform and transform future pathways.
- To promote deeper understanding on use of ocean spaces (e.g., deep-sea mining, fisheries), transboundary challenges (e.g., pollution, ice melt) and ocean governance concerns (e.g., biodiversity, maritime SAR) which to date remains limited in Arctic studies.

Highlights

- **Highlight 1:** Roundtable Discussion Panel including Professors J. Samuel Barkins and Hansen Hansen-Magnusson, Dr Tanja Joonas and Dr Corine Wood-Donnelly discussed how theories and concepts of International Relations intersect with ideas of blue justice, exploring what those dimensions can look like and moved towards framing research agenda that asks critical questions about the relationships between states, the oceans, legitimacy and responsibility.
- **Highlight 2:** Multi-day and multi-disciplinary workshop, coordinated by Corine Wood-Donnelly and Romain Chuffart. Participants included: Judy Boyd, Carolijn van Noort, Rachael Lorna Johnstone, Eduard Ariza, Ellie Rose Ward, Johanna Bürkert, Kamrul Hossain,

Noor Jahan Punam, and Katharina Heinrich. The group worked together on developing a knowledge map of the topic and discussing the implications for justice. Plans are in progress for an edited volume and joint scoping article.

- **Highlight 3:** Two research proposals have also been submitted, including a research collaboration proposal with Ránnis. Both of these focus on justice issues emerging from geoengineering in ocean spaces.

Project Lead

Corine Wood-Donnelly (Nord University, Norway)
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Towards shared understanding of co-creative and Indigenous-led research for ICARP IV

When: 28 May 2025

Where: Boulder, Colorado, US

What does ethical Arctic research look like when it begins with introductions, not abstracts, when it centers relationships over results, follows Indigenous research guidelines and establishes trust before methodological details, and respects the land, the people, and the knowledge systems that have been there for time immemorial? During the session “Towards a Shared Understanding of Co-Creative and Indigenous-Led Research for ICARP IV” at the ICARP IV Summit in Boulder, Colorado, USA, part of the Arctic Science Summit Week, Indigenous and non-Indigenous researchers, Indigenous leaders, and youth gathered in a circle - not just in seating, but in spirit - to reflect on what it means to decolonise and Indigenous research in the North. Through stories, and shared visions, they challenged extractive norms and offered a powerful roadmap for change. While co-creative research projects show the power of true partnerships, funding mandates too often become box-ticking exercises that starve collaboration of real resources. Dominant Arctic

research requires a better understanding of ‘co-creative’ and ‘Indigenous-led’ research and a clearer grasp on the structural and practical requirements to uphold Indigenous Peoples’ right to self-determination.

ICARP IV is an opportunity to advance this change. Charleen Fisher (University of Alaska Fairbanks) opened the session with a land acknowledgement, honoring the Ute, Cheyenne, and Arapaho Peoples who have long stewarded the mountains and lands surrounding the venue. Then, Fisher presented on the Gwich’in cultural practice of introductions - a process that contextualizes one’s identity, background, and work. Following her lead, each presenter and some participants in the room and online introduced themselves, setting the stage for an inclusive dialogue. Next, Fisher discussed the need to decolonise and Indigenise Arctic research through a thought experiment that invited participants to consider the values, attributes and interests that shape their lives and how these aspects manifest in Indigenous versus settler-colonial contexts. Fisher asked: How do you engage with and transform systemic structures within your cultural identity? How do you express leadership within these systems? Fisher acknowledged that this navigation of different cultural identities is a constant reality for many Indigenous researchers, who must balance cultural preservation with the demands of dominant academia. While powerful, even co-creative partnerships – a respectful and co-equal exchange across knowledge systems – may be costly for Indigenous individuals who must take time away from families, communities and personal work. This reflective exercise set the stage for the following presentations.

Aslak Holmberg (Saami Council) introduced two key publications by a group of Indigenous and non-Indigenous co-authors with actionable recommendations for more ethical Arctic research: *Comprehensive Policy Brief to the EU Commission – Roadmap to Decolonial Arctic Research* (Herrmann et al., 2023) and *Towards Arctic Research Upholding Indigenous Peoples’ Rights: Recommendations for ICARP IV* (Holmberg et al., 2024). The first addresses the EU and Sápmi and the second offers more a circum-polar perspective. Their goal is to transition from extractive research practices to approaches where Indigenous participation is genuine, relevant, and far from tokenistic, ultimately fostering long-term partnerships and institutional change. Since publication, practitioners from across the Arctic have shared feedback through conferences and

surveys on implementing these recommendations.

Shelly Elverum (Ikaarvik), explained why these documents were created. She highlighted that Arctic research has the power to shape policies and, consequently, Indigenous lives, but dominant frameworks that have historically dictated research methods often overlook these impacts. Today, many early-career researchers want to challenge the status quo and engage meaningfully with Indigenous communities but lack guidance. Shelly stressed the need to open doors for them, not as a checklist to follow but as an invitation to learn, improve, and embody new ways of doing research, such as approaching their work with the understanding that they are entering someone’s home. These changes foster responsible and impactful research, which ultimately provides decision-makers with well-informed insights.

An overview of each Recommendations for ICARP IV chapter followed: Evie Morin (Research Institute for Sustainability) presented Chapter 1 on Indigenous Peoples’ Right to Self-Determination as Essential for High-Quality Arctic Research, emphasizing awareness of colonial contexts and co-equal inclusion of Indigenous voices in projects, funding bodies and decision-making structures. Rune Fjellheim (Saami Council) presented Chapter 2 on Ethics, Methods, and Methodology, calling for expanded data sovereignty, ethical guidelines and accountability mechanisms. Aslak Holmberg (Saami Council) presented Chapter 3, Indigenous Led Research in Design and Practice, advocating for Indigenous ethical guidelines, Indigenous-led structural assessments, and more opportunities for Indigenous youth in research. Thora Herrmann (University of Oulu) presented Chapter 4 on co-equal participation in Arctic Research Funding Structures and Decision-Making, underscoring the need for Indigenous roles in research, funding, policymaking and evaluation. Annette Scheepstra (University of Groningen) presented Chapter 5 on Funding for Co-Creative and Indigenous-Led Arctic Research, urging accessible funding with clear language and flexible deadlines, and highlighting the need to recognize Indigenous-defined outputs, co-develop evaluation criteria and reduced reporting burdens.

Following the chapters, Rune Fjellheim elaborated on the importance of Indigenous Data Sovereignty. He noted that Indigenous Data gathering has often operated as an extractive industry, with valuable data systematically

ending up outside the Indigenous communities where it originates. As a result, Indigenous peoples increasingly insist that without recognized data ownership, there is little to share. This understanding of Indigenous Knowledge ownership is foundational to the Saami Council's Sámi Ownership and Data Access Principles, which ensure that data and associated benefits remain under Sámi control.

As an example of co-creative work, Máret J. Heatta (Saami Council) shared about the Climate Impacts on Terrestrial Ecosystems (CITE) project, a co-creative initiative between Sámi reindeer herders and researchers in northern Sápmi aimed at addressing climate change and biodiversity impacts on reindeer herding. The project was co-developed in a pilot phase in 2021 and regular dialogue allowed the project design to adapt to the reindeer herders' needs and schedules, respecting their seasonal demands and building trust among participants. The project ran from 2022 to 2024 and developed a mapping tool by and for herders to record observations. Crucially, the data remains owned and evaluated by the herders even as the tool is open access. The project stands as case study of successfully weaving knowledge systems and embracing flexibility.

Finally, as an outlook into the future of Arctic research, Michael Milton (Ikaarvik), shared insights on bridging Inuit Knowledge with Western research from his perspective as an Inuit youth. First, he explained the historic role of Inuit as original Arctic researchers. Then, he shared his experiences growing up in Pond Inlet, Nunavut, where he witnessed Elders and trappers engaging with Western researchers, often speaking the same language yet missing each other's understanding. Today his work with Ikaarvik—meaning “bridge” in Inuktitut—aims to unite Indigenous Knowledge and Western methods. Emphasizing that research should not only produce results but also foster relationships and have lasting positive impacts on communities, he called for collaborative efforts that build trust, lasting friendships, and mutual growth. His message was clear: co-creative research is not just more ethical and effective but also more fulfilling, as it builds relationships and honors the valuable contributions of Indigenous Peoples who are eager to shape and lead a sustainable future of the Arctic.

The session ended with positive feedback from both online and face-to-face participants. Participants expressed deep appreciation for the conversation and the welcoming space that had been created. Milton's closing presentation from an Indigenous youth perspective was a highlight and resonated strongly with the audience. The overall energy and optimism underscored an important message: co-creative research partnerships with and led by Indigenous Peoples are not only essential for producing high quality research outcomes but also make the process more fun and rewarding for all involved. Participants repeatedly expressed their gratitude for the opportunity to engage in this conversation.

Highlights:

- Indigenous Leadership is Essential in Arctic Research:
- Research that engages with Indigenous territories, histories, and knowledge must involve Indigenous Peoples as active, respected partners. Their leadership ensures that projects are relevant, ethical, and accountable to the communities most affected.
- Systemic Change is Needed, especially in Funding Structures:
- Sustainable, equitable Arctic research depends on transforming funding structures to support Indigenous-led and co-creative work. This shift fosters long-term partnerships and helps shape Arctic research where outcomes are meaningful and community driven.
- Co-Creation Strengthens Research:
- Co-creative approaches challenge extractive norms which may require significant time, resources, and commitment, but it builds capacity, deepens relationships, and ultimately makes the research more impactful and fulfilling for all involved.

Project Lead

Evie Mori (*Research Institute for Sustainability - Helmholtz Centre Potsdam (RIFS), Germany*)
evie.morin@rifs-potsdam.de



Naapinneq – Inuit Kalaallit Nunavummiullu/ Gathering – Inuit from Greenland and Nunavut

When: 29 September – 6 October 2025

Where: Nuuk, Greenland

The Naapinneq project is a trans-Arctic collaboration rooted in Indigenous and scientific knowledge. It demonstrates how collaboration rooted in Indigenous knowledge can transform health programs and policies. By bridging communities, the project contributes to resilience and well-being in the Arctic, ensuring that Inuit values remain central to health initiatives. Naapinneq (meaning gathering) builds on the 2024 exchange where professionals from Kalaallit Nunaat (Greenland) visited Iqaluit in Nunavut, Canada, to learn about Inuit-led parenting and child-rearing practices. In October 2025, the project continued by welcoming an Elder and colleagues from Nunavut to Nuuk, creating space for dialogue and shared learning.

The focus was on the first thousand days of a child's life – a critical period for health and development – in relation to learning from parenting and child-rearing programs in the Arctic. Central to the exchange were MANU (Meeraq Angajoqqaat Nuannaarneq, meaning Child's and parents' happiness) in Kalaallit Nunaat and Inunnguiniq (an original Inuktitut concept meaning 'making a human being'), developed by the Qaujigiartiit Health Research Center in Nunavut. While these programs may appear similar from the outside, they differ significantly: Inunnguiniq is rooted in Inuit knowledge and led by Inuit, whereas MANU, though widely implemented, is not culturally grounded and is adapted from Danish parenting programs.

The gathering inspired more Kalaallit professionals to reconnect with Inuit knowledge and root their work in local values. Furthermore, the gathering has turned the spark, that was ignited in the August 2024 workshop in Iqaluit, into a strong light with a bigger and stronger group of Kalaallit professionals wanting to work towards a parenting and child rearing program that builds on Kalaallit Inuit values and knowledges.

Highlights of the week

A workshop aimed at discussing the future of MANU (October 2), Elder Annie Petaulassie and facilitator Lily Maniapik introduced Inunnguiniq principles to MANU facilitators from across Kalaallit Nunaat. The presentation sparked dialogue on cultural safety, relational parenting and values in child-rearing.

Oral presentation at the 12th NunaMed Conference (October 3–5), sharing project experiences and discussing how Indigenous knowledge can inform health promotion and services.

A sharing circle on the final day, where partners reflected on future steps, including developing a Kalaallit Inuit-based parenting and child-rearing program inspired by Elders' wisdom and Inunnguiniq's success.

Key Outcomes

- Strengthened relationships between Inuit knowledge holders, health professionals, and researchers in Kalaallit Nunaat and Nunavut.
- Increased awareness of culturally safe parenting practices and their role in maternal and child health.
- Commitment to co-developing Inuit-led parenting and child-rearing initiatives in Kalaallit Nunaat.
- A research paper is currently in review and data collected during the MANU workshop on the first day are under analysis. Finally, for the continuation of the project future gatherings and briefs on the discussions are being planned.

Highlights

1. Revitalizing Indigenous Knowledge – The exchange showcased how Inuit parenting teachings, embedded in programs like Inunnguiniq, can inform culturally safe health interventions in Kalaallit Nunaat.
2. Interdisciplinary Collaboration – Naapinneq united Elders, health professionals, policy makers, and researchers, to work towards creating a model for integrating Indigenous and scientific knowledge in maternal and child health.
3. Policy and Practice Impact – Discussions at throughout the activity days, especially the sharing circle, initiated

the groundwork for developing a Kalaallit Inuit-based parenting and child-rearing program, strengthening culturally informed health promoting programs.

Project Lead

Christine Ingemann (*Centre for Public Health in Greenland, National Institute of Public Health, University of Southern Denmark*)
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Upcoming Activities

For updated information on SHWG activities, please check the IASC website: iasc.info





PHOTO: FEDERICA SCARPA
Sunset in Nuuk, Kalaallit Nunaat



Terrestrial Working Group (TWG)

The scientific scope of the IASC Terrestrial Working Group (TWG) shall include any scientific research on Arctic terrestrial and freshwater environments, landscapes and biota, and their responses to, and interactions with, other components of the Earth system. The remit encompasses the dynamics of the Arctic system; past, present and future

Geographically, the main area of interest of the IASC Terrestrial Working Group encompasses lands and fresh water within the area north of the latitudinal treeline with Arctic climate and Arctic vegetation. Several adjacent areas are included where highly relevant for certain disciplines and projects (a) boreal oceanic tundra (e.g. the Aleutian Islands, North Atlantic islands), (b) alpine tundra that is continuous with the Arctic tundra (e.g. the central highlands of Iceland, the Scandes Mountains, the Polar Urals), (c) the forest tundra, and (d) drainage basins to the south that connect with freshwater and marine areas of the Arctic.

Scientific Foci

- Improving knowledge at multiple temporal and spatial scales of the current state of Arctic terrestrial geosystems and ecosystems, with special attention to impacts of permafrost degradation and Critical Zone processes
- Determining the net effect of the terrestrial and freshwater environmental and biosphere's processes that amplify or moderate climate warming
- Developing unifying concepts, fundamental theories, and computer models of the interactions among species, interactions between species and their environment, and the biology of life in extreme environments

- Estimating past changes in arctic geo- and biodiversity, measuring current change and predicting future changes.
- Improving our knowledge in past ecosystems dynamics (before current Global Change). Determine baseline conditions to frame "natural variability and rate of change" versus "current variability and rate of change"

Cross-cutting

Understanding the major issues within the wide disciplinary and geographical scope of the Terrestrial Working Group requires interaction with other Working Groups. The initial priority activities developed by the Terrestrial Working Group would benefit from interactions with all the Working Groups

Work Plan

The TWG Work Plan concisely articulate (with scientifically-driven high-level specifics, not programmatic detail) how they will achieve IASC's vision over 5 years. This plan is meant to help Arctic scientists get involved in IASC activities, and it is expected that it will evolve in the coming years as the TWG continues with its work.

PHOTO: IREK SOBOTA (N.Copernicus Polar Station Spitsbergen and Polar Research Center)
Aerial view of Svalbard's river system.

MEMBERSHIP⁵

	NAME	COUNTRY	EXPERTISE
Chair	Michelle Mack	USA	Plant and ecosystem ecology; Disturbance ecology; Nitrogen cycling
Vice Chair	Mariasilvia Giamberini	Italy	Biogeochemistry; Carbon cycle; Tundra; Climate change impacts
Vice Chair	Gareth Phoenix	United Kingdom	Plant ecology; Biogeochemistry; Climate change impacts
Member	Annett Bartsch	Austria	Permafrost; Snow; Remote sensing
Member	Leopold Füreder	Austria	Freshwater ecology; Biodiversity structure and function; Food webs
Member	Elie Verleyen	Belgium	Microbial (paleo)ecology; Lakes; Soils
Member	Sophie Opfergelt	Belgium	Permafrost; Organo-mineral interactions; Biogeochemistry
Member	Philip Marsh	Canada	Hydrology; Snow; Permafrost; Hydrologic-terrestrial system interactions
Member	Emily Jenkins	Canada	Wildlife; Parasites; Vectors
Member	YANG Xiaofan	China	Subsurface hydrology; Alpine hydrology; Computational hydrology
Member	LI Guangwei	China	Tectono-geomorphology; Low-temperature thermochronology; Structural geology
Member	Milos Bartak	Czech Republic	Extremophile polar microorganisms and plants
Member	Josef Elster	Czech Republic	Microbial ecology; Stress ecophysiology of cyanobacteria and microalgae
Member	Thomas Friborg	Denmark	Climatic feedbacks; Carbon budgets; Terrestrial ecosystems
Member	Simon Bahrndorff	Denmark	Thermal adaptation; Host-microbiota interactions; Climate change in terrestrial ecosystems
Member	Kari Saikkonen	Finland	Climate change; Biodiversity; Species interactions
Member	Miska Luoto	Finland	Data mining; Remote sensing; Biogeography
Member	Christelle Marlin	France	TBA
Member	Emilie Gauthier	France	Past ecosystems; Society-environment interactions; Pollen analysis
Member	Nikola Koglin	Germany	Petrology; Geochemistry; Geochronology
Member	Ulrike Herzschuh	Germany	Ecosystem change (decadal to glacial scales); Ancient DNA; Pollen analysis
Member	Bjarni Kristófer Kristjánsson	Iceland	Evolutionary ecology; Limnology; Fish
Member	Archana Singh	India	Aquatic chemistry
Member	Santonu Goswami	India	Permafrost
Member	Yoshihiro Iijima	Japan	TBA
Member	Shota Masumoto	Japan	TBA
Member	Ji Young Jung	Republic of Korea	Biogeochemistry; Soil carbon dynamics; Tundra ecosystems
Member	Mincheol Kim	Republic of Korea	Ecology; Microbiology
Member	Rúna Magnússon	The Netherlands	Polar vegetation; Permafrost; Climate change
Member	Stef Bokhorst	The Netherlands	Soil ecology; Extreme weather; Plant ecology
Member	Øyvind Mikkelsen	Norway	Topics TBC
Member	Kristine Bakke Westergaard	Norway	Arctic vascular plant biosystematics; Conservation genetics; Alien species
Member	Piotr Owczarek	Poland	Dendrogeomorphology; Slope and glaciofluvial processes; Climate-landscape interactions
Member	Zbigniew Zwoliński	Poland	Geomorphology; Geodiversity; Geoinformation
Member	João Canário	Portugal	Biogeochemistry; Permafrost; Trace elements
Member	Alexander Makarov	Russia	Carbon cycle
Member	Olga L'vovna Makarova	Russia	Tundra invertebrates; Mites; Insects; Earthworms; Taxonomy; Community structure
Member	Sergi Pla-Rabes	Spain	Paleoecology; Remote ecosystems; Biodiversity; Biogeochemistry

TABLE

⁵Membership as of 14 January 2026. For updated information and contact information for each Working Group Member please visit :

<https://iasc.info/our-work/working-groups/terrestrial>

Member	Heather Reese	Sweden	Remote sensing; Tundra vegetation; Permafrost
Member	Christian Rixen	Switzerland	Arctic and alpine plant ecology; Biodiversity; Ecosystem functioning
Member	Jakob Assmann	Switzerland	Tundra plants; Spatial ecology; Remote sensing
Member	Michael Lim	United Kingdom	TBA
Member	Craig Tweedie	USA	TBA

Fellows

2024	Louise Mercer	United Kingdom	Community-based monitoring; Arctic environmental monitoring; Co-development
2024	Kathleen Orndahl	USA	Satellite remote sensing; Herbivore-vegetation interactions; Vegetation change
2025	Madelaine Anderson	USA	Tundra vegetation; Hyperspectral data; Phenology
2025	Scott Sugden	USA	Environmental microbiology; Biogeochemistry; Deglaciation
2026	Emma Cameron	Germany	Paleolimnology; Aquatic ecology; Anthropogenic contaminants
2026	Brandon Samuel Whitley	Denmark	Plant-pollinator interactions; Arctic plant diversity; Molecular ecology

Secretary

	Kabir Rasouli	USA	Cold regions hydrology; Land cover change; Snow; Mountain hydrometeorology
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Recent Activities

For updated information, please check the IASC website: iasc.info

Circumpolar Arctic Vegetation Science Workshop at ICARP IV

When: 21 - 28 March 2025

Where: Boulder Colorado, US

Arctic climate dynamics and ecosystem responses. infrastructure. The initiative creates a framework to answer where and why Arctic vegetation is changing – or remaining stable – how these patterns affect ecosystem function and feedbacks, and what scalable observation systems are needed to track and model them. A 3-day CAVSI workshop at ASSW 2025 was attended by 85 participants from 15 countries. Prof. Ladislav Mucina presented the keynote address titled “Vegetation complexity of the Arctic-Alpine realm at disparate spatial scales”.

The workshop participants first defined the priority vegetation science questions that need to be addressed by the community of terrestrial Arctic researchers in the next decade. The questions fell into seven broad topics: Landscape dynamics and change; biodiversity monitoring and mapping; climate change and disturbance regimes; functionThe Circumpolar Arctic Vegetation Science Initiative (CAVSI) is an international Arctic research effort motivated by widespread and accelerating changes to Arctic vegetation and the need to understand their ecological, climatic, and biodiversity impacts. The goal is to build an Arctic Vegetation Observing Network (AVON) that includes ground observations, mainly at existing sites where there are permanent vegetation plots, and to develop shared archives of plot vegetation and environmental data and vegetation maps - to improve models, support biodiversity assessments, and inform global change research. A key component of CAVSI is to support and train the next generation of Arctic vegetation scientists through mentorship, collaboration, and shared research.

CAVSI is a response to the needs expressed by ICARP IV Research Priority Teams 1 and 2, which focus on the role of the Arctic in the global system and observing, reconstructing, and predicting future al ecology and biotic-abiotic interactions; community engagement and indigenous knowledge; and data integration and collaborative frameworks.

CAVSI2

Seven panels of experts addressed the following issues: (1) Training the next generation of arctic vegetation scientists; (2) Learning from large pan-Arctic networks or programs; (3) Learning from vegetation-focused Arctic networks or projects; (4) Pan-Arctic species lists and local floras; (5) Sampling and archiving protocols for Arctic plot data; (6) Vegetation classification; and (7) Vegetation mapping and remote sensing.

CAVSI3

Each panel developed several recommendations that were summarized in the final Workshop Resolution that included nine priority research items:

1. Establish a Circumpolar Arctic Vegetation Science Initiative (CAVSI) to help address priority vegetation-related science questions across disciplines and a hierarchy of spatial scales in relationship to, for example: landscape dynamics and change, biodiversity monitoring and mapping, climate change and disturbance regimes.
2. Establish an early career vegetation scientists' network to foster career development in Arctic vegetation-related disciplines to promote Arctic vegetation-science-related education and training activities, and develop cross-disciplinary and cross-cultural connections with other Arctic-related early-career groups.
3. Develop an Arctic Vegetation Observation Network (AVON) within existing interdisciplinary observing networks to (1) aid in site and project management and development of comparable frameworks for locating and tracking vegetation plot data and mapped information, (2) promote long-term sustained observations at well-marked permanent vegetation plots and mapped areas; (3) coordinate vegetation observations with other Arctic system observations; (4) identify geographic and topical gaps for sampling, archiving, classifying, and mapping Arctic vegetation, and (4) establish new observatories in understudied vegetation-habitat types and regions.
4. Update, maintain, and publish a Pan Arctic Species List (PASL) and local floras (complete species lists, including vascular plants, bryophytes, and lichens) at Arctic research stations and other research sites.

5. Adopt standardized protocols for vegetation and environmental plot surveys that are widely used by the international vegetation science community, that include traditional plot survey methods, and where feasible, use new transformative methods appropriate for observing, modeling, reconstructing, and predicting Arctic vegetation change.
6. Develop regional Arctic vegetation archives for vegetation plot data and map data and merge the regional archives into a circumpolar Arctic Vegetation Archive (AVA), including methods to harmonize and standardize the data.
7. Develop local, regional, and circumpolar Arctic vegetation classifications (AVCs) and checklists of classified vegetation units based on standardized approaches developed by the international community of vegetation scientists, including crosswalks to equivalent units in other regional and national classification approaches.
8. Revise, edit, and publish a new version of the Circumpolar Arctic Vegetation Map (CAVM v. 3) with increased resolution and a hierarchical legend approach that can be applied to maps at global, regional, landscape, and plot scales.
9. Apply the products of CAVSI to priority ICARP IV and IPY-5 research topics.

A CAVSI White Paper includes a framework for vegetation description and monitoring. It includes: (1) a network of sites across the full range of Arctic climates, phytogeographic regions, local habitats, and disturbance regimes; (2) standardized methods to describe and monitor local floras, vegetation composition, and key environmental factors; (3) a pan-Arctic vegetation plot archive to store legacy and recent plot data; (4) a consistent hierarchical classification and checklist of Arctic vegetation; (5) an archive of Arctic vegetation and landcover maps; (6) applications and ideas for CAVSI IPY5 initiatives; (7) an 11-year timeline for CAVSI activities leading up to and including synthesis from IPY5 activities; (8) recommendations for priority research activities; and (9) Five appendices containing: (i) List of CAVSI Workshop participants; (ii) CAVSI Workshop agenda; (iii) Keynote address by Prof. Ladislav Mucina abstract; (iv) Summaries of the seven panel discussions and breakout groups, (v) Resolution of the CAVSI workshop. In addition, two CAVSI science

sessions were held on March 25 and 27: Science Session 2.6 “Back to the Future II: Linking past and future IPY terrestrial biodiversity efforts, and Science Session 2.8, “Building a time machine out of a DeLorean: Observing, reconstructing, and predicting vegetation change in the Arctic.” Forty-one oral and poster presentations are included in the proceedings volume from these sessions (in progress).

Highlights

- The three-day CAVSI workshop and two CAVSI science sessions that occurred during Arctic Science Summit Week, March 20–28, 2025. Eighty-five workshop participants attended the workshop, including online participants, from 15 countries. Including the distribution of the hard-copy raster versions of the Circumpolar Arctic Vegetation Map (CAVM Team 2024).
- CAVSI White Paper This document provides a framework for vegetation description and monitoring. It includes: (1) a network of sites across the full range of Arctic climates, phytogeographic regions, local habitats, and disturbance regimes; (2) standardized methods to describe and monitor local floras, vegetation composition, and key environmental factors; (3) a pan-Arctic vegetation plot archive to store legacy and recent plot data; (4) a consistent hierarchical classification and checklist of Arctic vegetation; (5) an archive of Arctic vegetation and landcover maps; and (6) applications and ideas for CAVSI IPY5 initiatives, (7) an 11-year timeline for CAVSI activities leading up to and including synthesis from IPY5 activities, and (8) recommendations for priority research activities.
- CAVSI Science Sessions Proceedings Volume (in progress). This document includes the illustrated abstracts from 41 oral and poster presentations at Science Session 2.6 “Back to the Future II: Linking past and future IPY terrestrial biodiversity efforts, and Science Session 2.8, “Building a time machine out of a DeLorean: Observing, reconstructing, and predicting vegetation change in the Arctic”.

Project Lead

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Co-developing an Observing Network for Monitoring Terrestrial Change Across the Arctic Circle Trail (CONTACT)

When: November 2025

Where: Greenland

The Arctic Circle Trail (ACT), a popular hiking route between Sisimiut and Kangerlussuaq, West Greenland, is increasing in popularity each year. As the trail passes through a UNESCO World Heritage Site and culturally significant areas, there are concerns about the environmental and cultural impacts of increasing hiker presence across these sensitive areas. To address these concerns and inform sustainable management and tourism practices, an environmental observing network is necessary to monitor terrestrial change along the trail.

Aiming to identify priorities relating to vegetation change along the ACT, the CONTACT team gathered in Sisimiut, the town at the western terminus of the ACT, and started activity with revisiting previously installed weather stations and community meetings. Led by Millicent Harding (Durham University, UK), the team hiked the peri-urban area of Sisimiut until the beginning of the ACT trail. An Arctic DTU (Danish Technical University, Arctic campus) weather station was visited along the way and dust sensors were collected. These sensors were set up through the previous Terrestrial and Atmospheric Working group funded project (UTILISE).

The team also visited the Sisimiut Museum and the opening of its exhibition on the Aasivissuit – Nipisat interactive map, the historical Inuit hunting area which the ACT partly overlaps with. During that meeting, the team had the chance to make connections with community members who are active in the ACT area during the hunting season. Local feedback related to the ACT and its frequentation by local hunters and international hikers was collected informally.

CONTACT's visit occurred during Greenland Science Week 2025, which enabled the team to take part in a community workshop in Sarfannguit (a boat/helicopter access only settlement of approximately 90 people and the only currently inhabited settlement within the UNESCO area). During the meeting, CONTACT's researchers learned about reindeer hunting in the UNESCO area of the ACT, which was raised as a topic of interest by the community. Participants raised concerns that animals seemed to appear slimmer this year with a heavy parasite burden noted by many hunters. Citizens also raised the topic of the development of the new ATV trail connecting Sisimiut and Kangerlussuaq, and which traverses the UNESCO area in a key hunting and foraging region. Concerns included that newly introduced traffic and noise could impact animals and plants key to traditional cultural harvesting. After the short trip to Sisimiut, part of the team reached Nuuk for the beginning of the main gathering of Greenland Science Conference 2025, while a small delegation went to Kangerlussuaq, aiming to reunite in Nuuk during the science conference. In Kangerlussuaq, meetings were held with Qeqqata Municipality officials and local project partners.

During the Greenland Science Conference in Nuuk, the CONTACT project was presented by project leader Millicent Harding to the assembly of attendees, and received interest by both local residents and visiting scientists.

A wrap-up workshop was organized by the CONTACT team at the Greenland University Ilisimatusarfik before leaving. The team had the chance to reflect on the information collected and collectively plan for next steps. This trip allowed team members to identify appropriate and feasible future directions. Those organising the new National Park have identified clear priorities and information gaps relating to monitoring vegetation baselines and change. TWG members will work towards addressing these gaps through collaborations with other TWG aligned projects including the Circumpolar Arctic Vegetation Science Initiative.

Project Leader:

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Upcoming Activities

For updated information on TWG activities, please check the IASC website: iasc.info

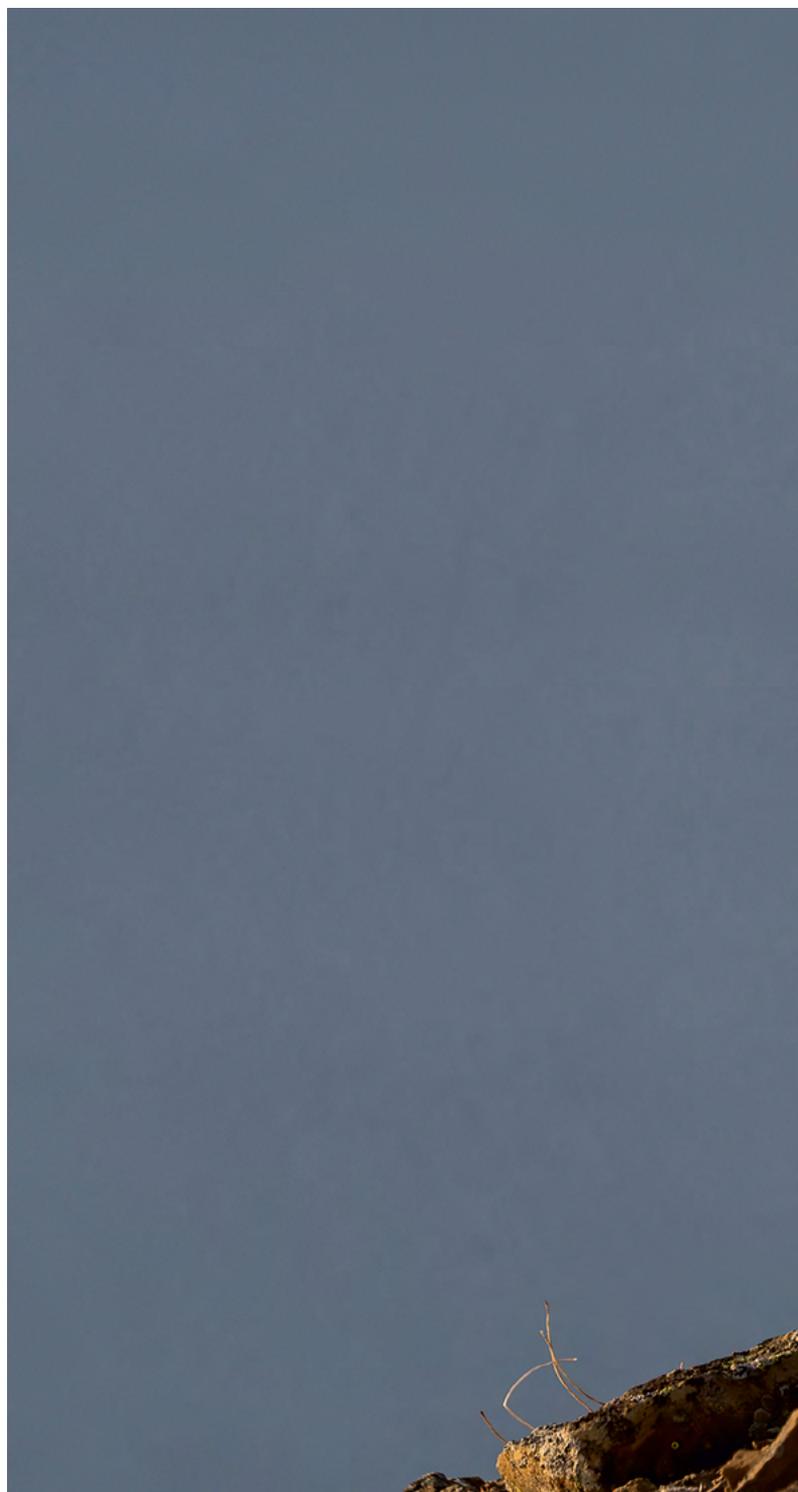




PHOTO: LIONEL FAVRE (EERL lab from EPFL)
Arctic fox in the evening sun, Svalbard.

PHOTO: DANILO PETROCELLI
Drone operations in the Greeland Sea.



3. IPY-5– International Polar Year 2032-33

3. IPY-5– International Polar Year 2032-33



IPY-5: A crucial new phase in organising regular IPYs

IPY-5 in 2032-33 aims to address urgent global challenges by advancing polar research, focusing on the impacts of climate change in the Arctic and Antarctic. This coordinated effort will bring together scientists, Indigenous knowledge holders, and global stakeholders to produce actionable insights for mitigating and adapting to environmental changes, while promoting international collaboration and inclusivity.

The 5th IPY (2032-33) will build on four groundbreaking IPYs convened between 1881 and 2009 (IPY-1: 1882-1883; IPY 2: 1932-1933; IPY 3 / IGY: 1957-1958; IPY 4: 2007-2008). Together with millennia of Indigenous Peoples' knowledge production, the IPYs form a long chain of coordinated polar research and credible scientific evidence on socio-ecological changes in the polar regions. This record of biophysical and social changes and our understanding of their impacts to the polar systems themselves (particularly for Indigenous communities, residents and human visitors), offers a unique opportunity to more deeply understand global processes, make informed decisions and act accordingly. Encompassing planning, project, and legacy phases implemented over a span of ten years, IPY-5 is an opportunity for many countries, institutions, and networks to coordinate their research, observations, protocols, and expeditions in the polar regions. It provides the necessary opportunities for global and transdisciplinary coordinated research

action among polar researchers, knowledge holders, rights holders, educators, and other stakeholders to produce urgently needed actionable information that will support evidence- and human rights- based solutions to local and global challenges. Meaningful impact is supported by an inclusive and coordinated approach across different scientific disciplines, programmes, and knowledge systems including through co-production and co-creation of knowledge as well as education and community/citizen science approaches. IPY-5 also supports progress towards achieving implementation of international treaties, agreements, and other large-scale

international processes including the UN Declaration on the Rights of Indigenous Peoples, the UN Sustainable Development Goals (SDGs), the 2023 Helsinki Declaration on Climate Change and Antarctica adopted by the Antarctic Treaty Consultative Meeting, and the 4th International Conference on Arctic Research Planning Process (ICARP IV), as well as several relevant UN Decades. IPY-5 will leverage these, and other initiatives, which together highlight the need for greater international coordination to provide the credible scientific evidence needed for effective decision-making on urgent local to global issues.

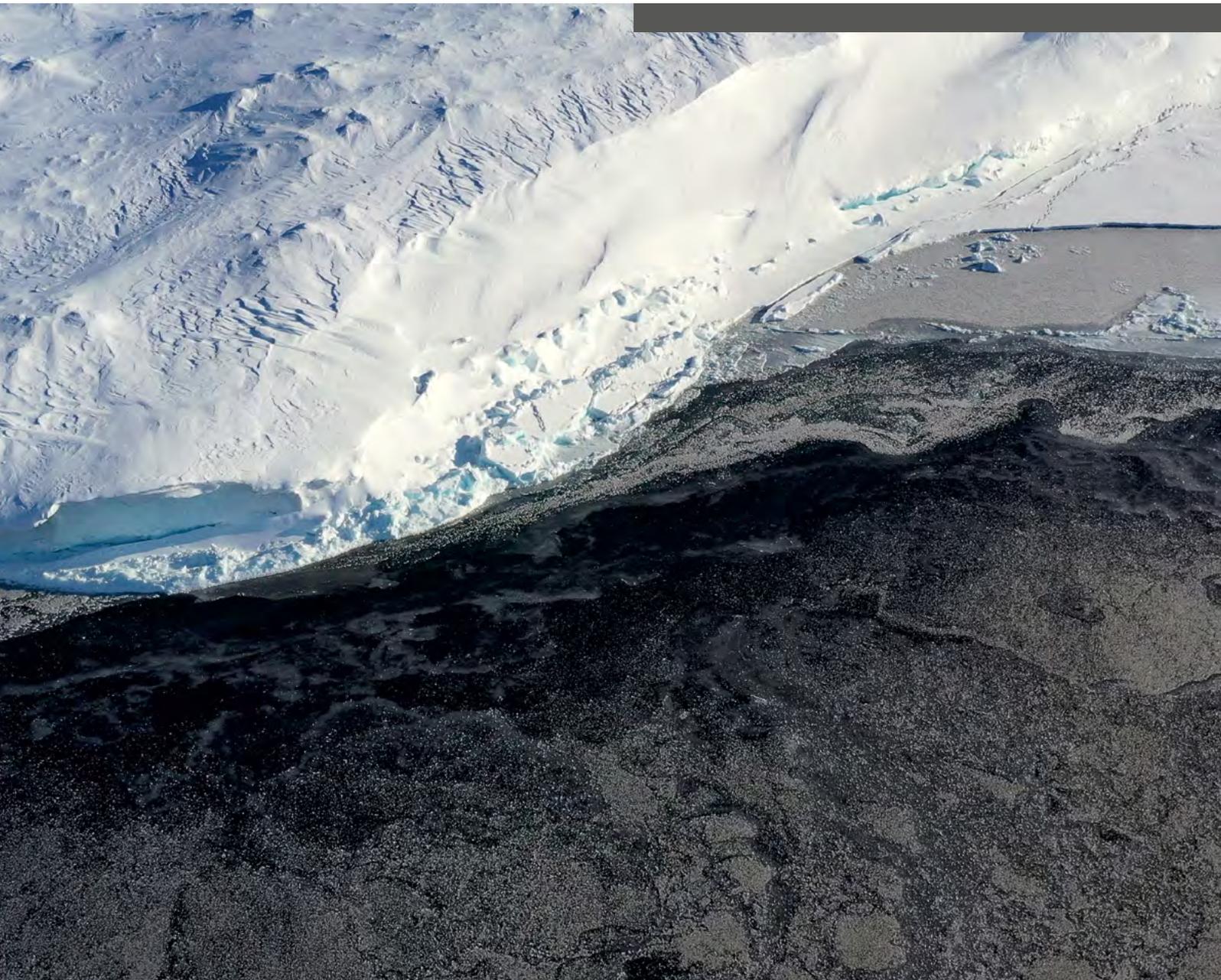
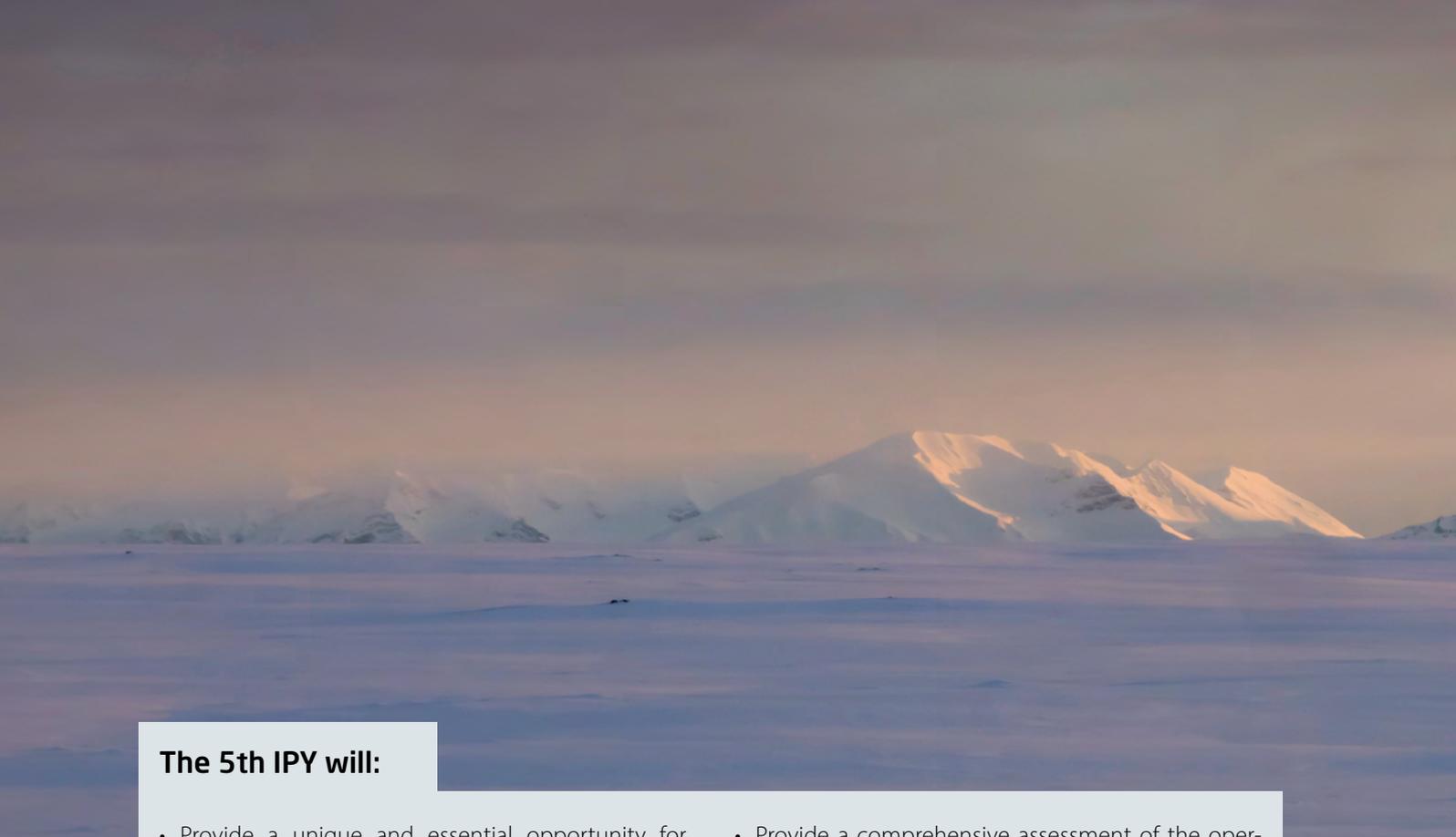


PHOTO: DANILO PETROCELLI
Drone operations in the Greenland Sea.



The 5th IPY will:

- Provide a unique and essential opportunity for strengthened international cooperation and partnership to advance polar research and knowledge production.
- Allow researchers and knowledge holders to build on the outcomes of previous IPYs, including by: expanding integrated and coordinated observations of accelerating changes; supporting modelling efforts; deepening understanding through transdisciplinary syntheses studies; and expanding the long-term monitoring of current conditions required to understand deeply integrated Earth systems and inform predictions of future impacts of climate and environmental changes.
- Build specifically on the methodological, technological, educational, and epistemological advancements of the 4th IPY, including major shifts toward working across knowledge systems and transdisciplinary research with specific emphasis on equitable and ethical engagement with Indigenous Peoples and their knowledge systems.
- Support, connect and extend networks of Indigenous Peoples, academics, local leaders, and early career and community researchers to understand the human and environmental links, impacts and feedbacks with the polar regions and beyond.
- Provide a comprehensive assessment of the operation and evolution of polar ecosystems enabling a more holistic understanding of the Earth's interconnected living systems and their trajectories in a changing climate.
- Document, understand, and amplify experiences and knowledge held by Indigenous Peoples and the societies in the Arctic in the context of rapidly changing interconnected natural and human systems.
- Produce education and outreach opportunities to engage the wider community with open and accessible communication strategies, platforms and co-developed content, including by identifying new ways to communicate research and engage communities worldwide to seek solutions and act.
- Support education, recruitment, and capacity-building for the new generation of experts needed to understand Arctic and Antarctic changes as well as their global implications.
- Inform and support local to global evidence-based mitigation and adaptation solutions and progress towards achieving the UN Sustainable Development Goals, including by supporting enhanced science- and knowledge policy interfacing.

PHOTO: MARIASILVIA GIAMBERINI

Guided by a broad set of principles

- The 5th IPY will be guided by a broad set of principles, including:
- Fostering the widest possible international collaboration to produce knowledge for action with direct societal relevance.
- Committing to inclusive and diverse practices, including the implementation of equitable and ethical standards for engagement and cooperation with Indigenous Peoples and their knowledge systems.
- Striving for holistic, systemic, transdisciplinary research approaches that minimise environmental footprints. This includes co-design of research programs and co-production of knowledge across different knowledge systems, as well as ensuring that funding programs are directly supporting and financing Indigenous People's comprehensive participation for the benefit of all parties.
- Ensuring balanced involvement and information flow, identification of areas of common interest, and effective knowledge exchange across Arctic and Antarctic polar research communities and networks.
- Encouraging open science and open data, according to the FAIR (Findable, Accessible, Interoperable, Reusable) and CARE (Collective benefit, Authority to control, Responsibility, and Ethics) data principles.
- Encouraging effective and inclusive science communication, polar education, and public engagement, both in the polar regions and globally.
- Engaging in capacity building and sharing for early-career scientists, Indigenous Peoples and those from historically under-represented groups across the polar regions and polar research disciplines.

Moving forward together

The 5th IPY is envisioned as a coordinated international, multi-year activity with three distinct phases:

- 1. Planning phase (2021-25):** Conceptual discussions among several polar research and Indigenous Peoples' Organisations started in 2021. Between 2023-25, a period of broad consultation is being carried out to understand the needs of the relevant stakeholders, including national and international funding bodies to:
 - Refine planning documents
 - Co-develop timelines, structures, priorities, visions and ambitions
 - Establish processes to support IPY-5 initiatives
- 2. Project phase (2026-33):** The IPY-5 project phase will include the initiation and implementation of IPY initiatives culminating in 2032-33 in a two-year

period of intensive polar fieldwork and analysis, modelling efforts and process understanding studies, as well as education and outreach activities. The project phase will connect communities through key polar research initiatives and events including a joint IASC-SCAR Conference 2030, and will engage closely with related regional and global efforts such as the Fourth International Conference on Arctic Research Planning process (ICARP IV), the Antarctic InSync initiative, and relevant UN Decades.

- 3. Legacy phase (2034+):** In the years following the 5th IPY, the data collected will continue to be fully utilised and archived. This will involve analysis and synthesis activities, with a focus on knowledge transfer, reporting, and establishment of supporting frameworks for legacy outcomes. In addition, an evaluation of the impact of the 5th IPY will be undertaken at the start of the legacy phase.

IPY Organisation

IPY Planning Group

The **IPY Planning Group** is comprised of representatives of international and regional organisations. It meets twice a year and:

- provides input, advice and overall direction for the IPY planning process and the IPY Executive Committee
- prepares, presents and assists in taking forward specific issues to the IPY Executive Committee

Task Groups will be set up by the IPY Planning Group to work on specific aspects of the planning process in more detail. The task groups report back periodically to the IPY Planning Group.

IPY Executive Committee

The IPY Executive Committee is composed of representatives of the International Arctic Science Committee (IASC), the Scientific Committee on Antarctic Research (SCAR), the International Science Council (ISC) and the World Meteorological Organization (WMO), plus others as needed.

This committee moves planning efforts forward between IPY Planning Group Meetings and takes overall responsibility for the direction and development of the IPY.



PHOTO: PETER PROKOSCH
Gentoo Penguin colony at Chilean research station, Antarctic Peninsula

IPY Interim Secretariat

The interim IPY Secretariat is provided by the Secretariats of IASC and SCAR from its existing staff members with additional contributions from the ISC and WMO.

Currently assisting with tasks in the Interim IPY Secretariat:

- **Dr Gerlis Fugmann** – IASC Executive Secretary
- **Dr Chandrika Nath** – SCAR Executive Director
- **Dr Vanessa McBride** – ISC Science Director
- **Angharad Downes** – SCAR Science and Operations Officer
- **Johanna Franke** – IASC Communications Manager

You can contact the Interim IPY Secretariat at ipy-secretariat@iasc.info



Opportunities for Engagement

The International Polar Year 5 (IPY-5, 2032–2033) is moving into an important preparatory phase, with several opportunities now open for engagement by national bodies, institutions, and research communities.

National Involvement

Countries and national organizations are invited to engage in IPY-5 through coordinated national processes. This includes establishing national IPY committees or focal points, aligning existing and planned polar research activities with IPY-5 objectives, and supporting community-building across disciplines and sectors. National involvement is key to ensuring broad participation, coordination, and long-term impact of IPY-5 activities.

IPY-5 International Coordination Office

Following an open call in 2025, the host of the new IPY-5 International Coordination Office will be chosen in 2026. The ICO will play a central role in coordinating IPY-5 activities globally, supporting governance structures, communications, partnerships, and programme implementation. The successful host will demonstrate strong administrative capacity, international reach, and experience in managing large, collaborative research initiatives.

Project Endorsements

IPY-5 offers a formal endorsement process for projects, programmes, and activities that align with IPY-5 goals. Endorsed activities will become part of the official IPY-5 portfolio, increasing visibility, coordination opportunities, and international recognition. The endorsement process is designed to be inclusive and to support a wide range of initiatives, from research and observing programmes to education, outreach, and knowledge co-production.

More information:

<https://ipy5.info/>



PHOTO: ALEKSANDRA OSIKA (University of Silesia in Katowice)
Northern lights over Adventdalen, Svalbard

PHOTO: URSULA ENZENHOFER



4. ICARP IV - Fourth International Conference
for Arctic Research Planning

4. ICARP IV - Fourth International Conference for Arctic Research Planning

The Arctic is changing faster than anywhere else on Earth, driven fundamentally by human-caused climate change. The consequences of this transformation extend far beyond the Arctic, affecting global climate, weather patterns, biodiversity, and communities worldwide. Understanding, mitigating, and adapting to these changes are critically important tasks that require large-scale international cooperation, as well as coordinated and sustained funding.

At the same time, Arctic research is being affected by increasing geopolitical tension and a changing landscape of international cooperation. For example:

- The global COVID-19 pandemic revealed vulnerabilities in Arctic research infrastructure, prompting calls for more resilient systems.
- The full-scale invasion of Ukraine by Russia in 2022 has had a deep impact on Arctic diplomacy and research collaboration.
- Broader geopolitical shifts affecting support for scientific research and action on climate change are compounding these disruptions.

Maintaining effective cooperation in this context requires new approaches that emphasize resilience, inclusivity, and a broader recognition of diverse knowledge systems.

The work of the Fourth International Conference on Arctic Research Planning (ICARP IV) process was shaped by these pressing needs. The ICARP IV process engaged Arctic researchers, Indigenous Peoples, policy makers, residents and other stakeholders from all countries involved in Arctic research. Participants were tasked with identifying the most urgent knowledge gaps and research priorities that should be addressed over the next decade, and to recommend approaches to address these needs.

ICARP IV was organized into seven Research Priority Teams (RPTs):

- RPT 1: The Role of the Arctic in the Global System
- RPT 2: Observing, Reconstructing, and Predicting Future Climate Dynamics and Ecosystem Responses
- RPT 3: Understanding the Dynamics and Resilience of Arctic Social-ecological Systems to Foster Sustainable Futures
- RPT 4: Arctic Research Cooperation and Diplomacy
- RPT 5: Co-Production and Indigenous-led Methodologies
- RPT 6: Education and Knowledge-sharing in and about the Arctic: Research and Practice
- RPT 7: Technology, Infrastructure, Logistics, and Services

The RPTs' recommended research needs and priorities fall into six broad categories:

- Addressing gaps in scientific understanding and modeling capabilities;
- Improving research infrastructure and observation systems;
- Mitigation and adaptation to changing conditions;
- How research should be conducted;
- Education and outreach; and
- Governance, policy, and funding systems.

Indigenous Peoples' engagement and leadership in the research process was a strong overarching theme across all RPTs.

ICARP IV Final Report

The ICARP IV Final Report presents the outcomes of the ICARP IV process, conducted from 2022 to 2026 and led by the International Arctic Science Committee (IASC) in cooperation with 26 international partner organisations. Building on the three previous ICARPs (1995, 2005, 2015), the ICARP IV process was grounded in a community-wide undertaking that engaged Arctic researchers, Indigenous Peoples, policymakers, residents, and stakeholders was officially released at ASSW 2026.

Through the groundwork of the RPTs, as well as the inputs from community consultations, working meetings, Town Hall sessions, workshops, endorsed activities, and the Final Summit held in Boulder, Colorado (USA) in March 2025, the process identified and the Final Report presents:

The most urgent needs and priorities for Arctic research for the next decade (until 2035): The report provides a synthesis of each RPT's work, including foci, rationale for prioritization, and methodologies. This part highlights overlaps and synergies across RPTs and includes optional team-specific chapters where relevant. At its core, each RPT's report identifies five urgent knowledge gaps and five key research priorities for 2025–2035, presented with clear justifications and, where possible, ranked by urgency.

Recommendations for their implementation: Building on the research gaps and priorities identified, the report outlines actionable recommendations—framed as Strategic Actions and Funding Needs at the global, pan-Arctic, regional, and local levels—specifying required actions, responsible agents, engagement strategies, and opportunities for collaboration. The report also suggests mechanisms to track uptake and monitor the impact of ICARP IV outcomes, including their integration into initiatives such as the 5th International Polar Year (2032–33).

ICARP IV emphasized inclusivity in its process, involving early-career scientists, Indigenous Peoples, and local residents in the development of priorities and science plans to address key questions. The ICARP IV process rested on a foundation of the recognition of and respect for Indigenous Peoples' Knowledge and leadership in research, the value of diverse ways of knowing, and the need to invest in meaningful and equitable research collaborations.

Together with the ICARP IV Final Report, an Executive Summary for Policy-Makers and an Executive Summary for Science Funders were also released.

The ICARP IV Final Report and the RPTs Final Reports are available at:

icarp.iasc.info/publications/publications-icarp-iv

Research Priority Teams Final Reports

The final reports from the seven Research Priorities Teams (RPTs) have been officially released at ASSW 2026. A short description of the focus of each RPT, along with links to the individual final reports, is provided below.

RPT1: The Role of the Arctic in the Global System

The overarching goal of the RPT 1 is to identify urgent research needs and priorities and make corresponding recommendations on actionable implementation for improving systematic understanding of variability, changes, and extreme events of the Arctic Earth system, and their two-way interactions with the global system. Due to its nature, the outcome from the RPT 1 provides foundational information to facilitate and collaboratively benefit from other RPTs.

RPT 2: Observing, Reconstructing, and Predicting Future Climate Dynamics and Ecosystem Responses

The work of the RPT 2 has been organized along discipline-specific lines: four discipline-specific subgroups addressed the cryosphere, hydrosphere/marine, terrestrial ecosystems, and atmosphere. A subgroup was also formed to address the key issue of involving Indigenous Peoples, both in terms of contributing knowledge and engaging in activities. Finally, a subgroup was organized to address the processes linking the four domains of the climate system listed above. These groups were tasked with examining the issues in their breadth and complexity, ultimately identifying a single overarching research need and a priority. For each priority, we identified elements deemed important for its implementation over the next 10 years.

RPT 3: Understanding the dynamics and resilience of Arctic social-ecological systems to foster sustainable futures

The RPT addresses research priorities and their implementation around topics such as: sustainable and equitable Arctic economy; adaptive management and based solutions (actions/ adaptations/measures); healthy Arctic and healthy Peoples (multi-stressor effects, contaminants and climate interactions, One Health, Planetary Health); energy systems; sustainable energy production;

reliable, accessible, and cost-effective energy that meets community needs; reliability; resilience and disaster risk reduction; food systems; sustainable production; water systems and drinking water; sanitary health; infrastructure and migration. As can be seen, this is a broad area of “focus”. These focus areas exist at a nexus of supporting Arctic societies: their well-being, food access, energy supply, public safety; knowledge, infrastructure development, and economies

RPT 4: Arctic Research Cooperation and Diplomacy

The scope of RPT 4 includes identifying key research needs and priorities related to effective international cooperation, such as joint funding strategies, connecting national and international funding agencies, effective international guidelines and legislation, ethical sharing of research infrastructure and data, as well as ensuring the value and contribution of Arctic research during times of geopolitical tension. It also focuses on pathways for understanding and, where possible, strengthening research cooperation, including research exchange programs and collaborative observing efforts amidst geopolitical constraints. The team considered how existing cooperation models are being tested and how they must be reimagined to operate effectively in a new, multipolar, and increasingly competitive global environment.

RPT 5: Co-Production and Indigenous-led Arctic Research

Co-production of knowledge requires a shift in the way research is imagined, funded and evaluated. It is a relational approach that brings together distinct knowledge systems, Indigenous and Western, into an equal relationship. Dissemination of Indigenous Knowledge must be understood as a collaborative and interactive process that goes beyond conventional academic outputs. Scholars are asked to confront their own biases and engage with Indigenous Elders, Knowledge Holders, youth and families in processes grounded in reciprocity, respect, and community responsibility. RPT 5 identifies key principles of co-production drawn from Indigenous teachings and experiences of Arctic researchers and communities. The principles guide researchers toward equitable, rights-based collaborations that respect and honour Indigenous sovereignty and advance co-production as the transformative foundation of Arctic science.

RPT 6: Education and knowledge-sharing in and about the Arctic: Research and Practice

RPT 6, Education and Knowledge Sharing in and about the Arctic: Research and Practice, encompasses a broad set of activities focused on advancing research on education in the Arctic as well as education about the Arctic, both in the north and globally. In this report Arctic education refers to both education in the Arctic and education about the Arctic; when only one of these is intended, it is specified explicitly. The title is intended to reflect that education in the Arctic is a content area for research that stands separate from the need to grow education about the Arctic and to enhance connections between Arctic researchers and educators. The terms “research” and “practice” encompass these multiple goals and are meant to be inclusive of educational practice and practitioners at all levels and in multiple settings, formal and informal. The use of the term “knowledge-sharing” is meant to expand the focus to include diverse knowledge systems, especially Indigenous and local knowledge systems in the Arctic, as well as education in non-institutional settings - on the land, in communities and families, in museums and community organizations, alongside Western science.

RPT 7: Technology, Infrastructure, Logistics, and Services

Research Priority Team (RPT) 7 addresses key gaps and priorities in technology, infrastructure, logistics, and services which will support Arctic research in the coming decade. These gaps and priorities are presented as research priorities however they may require research or may be issues of focus and implementation. We present this information as a road map for policy makers, funding agencies and scientists, acknowledging the extensive body of thought work which this report is based on.

The individual reports
are available at:

*[icarp.iasc.info/publications/
publications-icarp-iv](http://icarp.iasc.info/publications/publications-icarp-iv)*

PHOTO: VERONICA COPPOLARO (CNR Italy & University of Manitoba)
A female polar bear with her young one, Manitoba, Canada



5. Arctic Science Summit Week 2025
and ICARP IV Summit

5. Arctic Science Summit Week 2025 and ICARP IV Summit

The Summit for the Fourth International Conference for Arctic Research Planning (ICARP IV) was held from 25–28 March 2025 as the central event of Arctic Science Summit Week (ASSW 2025) at the University of Colorado Boulder, USA. The Summit marked the culminating in-person gathering of the multi-year ICARP IV process initiated in 2022 to engage the international Arctic research community in identifying priorities, knowledge gaps, and pathways for Arctic research over the coming decade. The Summit served as both a point of synthesis and consultation on the work of the seven ICARP IV Research Priority Teams (RPTs) and a bridge toward shaping the Fifth International Polar Year (IPY-5) planned for 2032–33.

The ICARP IV Summit was embedded within the broader ASSW 2025 program, which included numerous community meetings, workshops, and organizational sessions. The Summit itself was structured around the seven ICARP IV Research Priority Team topics, with an additional cross-cutting focus on data management. Over the four-day period, the Summit hosted seven town hall events—one for each RPT—and a total of 73 individual sessions across the priority areas.

Across these sessions, 523 abstracts were presented, comprising 357 in-person oral presentations, 46 virtual oral presentations, and 120 poster presentations.

Together, these sessions provided a concise but comprehensive snapshot of current Arctic research activities, emerging methods, and priority questions spanning physical, biological, social, and human dimensions of Arctic change.

Three plenary panels framed the Summit. The opening plenary, held on 25 March, addressed the question “What is the vision for the Arctic for the next 10 years and how can ICARP IV contribute toward that vision?” Moderated by Henry Burgess (President of the International Arctic Science Committee and ICARP IV Co-Chair), the panel brought together Arctic leaders to emphasize the need for integrative, forward-looking, and inclusive research frameworks.

A second plenary panel on 27 March focused on “Imperatives for Co-Production of Knowledge and Indigenous-Led Research.” Moderated by ICARP IV Co-Chair Dalee Sambo Dorough, this panel centered Indigenous perspectives and experiences, highlighting why co-production and Indigenous leadership are essential to ethical, relevant, and effective Arctic research. The closing plenary on 28 March, moderated by Melody Burkins (Dartmouth College), convened co-leads from multiple RPTs to reflect on lessons from the Summit and outline pathways for producing the final ICARP IV outcomes.

Indigenous Pavilion and Community-Centered Spaces

A major innovation of the ICARP IV Summit was the inaugural Indigenous Pavilion. Conceived as a space for immersive, place-based, and community-centered learning, the Pavilion emphasized Indigenous Knowledge, consultation, creativity, and reciprocity. It provided a dedicated venue for dialogue among students, knowledge holders, researchers, and communities, reinforcing the Summit's commitment to respectful engagement and co-production of knowledge.

The Pavilion featured contributions from a diverse group of Indigenous leaders, researchers, and institutional representatives. In parallel, numerous Summit sessions aligned with the work of RPT 5 on Co-Production and Indigenous-Led Methodologies, underscoring the cross-cutting relevance of Indigenous research approaches throughout the ICARP IV agenda.

Beyond formal sessions, the Summit created intentional gathering spaces to foster consultation, cultural exchange, and informal dialogue. Two large, heated tents adjacent to the University Memorial Center served as communal meeting areas, complemented by art exhibits and a film festival highlighting Arctic creativity and storytelling. These elements reinforced the Summit's emphasis on relationship-building and shared learning alongside scientific exchange.

Summit Statements and Outcomes

The ICARP IV Summit culminated in the issuance of two formal statements. The official ICARP IV Summit Statement, issued by the ICARP IV International Steering Committee and the Summit Local Organizing Committee, articulated the significance of the Summit and its role in shaping future Arctic research priorities. Indigenous participants also drafted and issued a separate Statement from the Indigenous Participants of the ICARP IV Summit, offering perspectives grounded in Indigenous rights, knowledge systems, and research priorities. Both statements were read during the closing ceremony and serve as key reference points for the continuing ICARP IV process.

The Summit was organized by a Local Organizing Committee chaired by Matthew Druckenmiller (National Snow

and Ice Data Center, University of Colorado Boulder), with extensive institutional, logistical, and technical support from the University of Colorado Boulder and partner organizations. The Summit was supported by a grant from the U.S. National Science Foundation (Award #2446211) and by contributions from numerous institutional sponsors.

Summary of ICARP IV Contributions

The abstracts presented at the ICARP IV Summit reflect the breadth and interdisciplinarity of contemporary Arctic research and the priorities emerging from the ICARP IV process. Collectively, they document rapid environmental change across the Arctic and its cascading effects on ecosystems, communities, and governance systems.

Presentations addressed key physical and environmental processes, including sea ice loss, permafrost thaw, changing snow and hydrological regimes, ocean circulation, and extreme events, with an emphasis on improved observing systems, modeling, and integration of satellite, in situ, and community-based observations. Ecological studies examined responses of marine and terrestrial ecosystems, biodiversity, and food webs, often linking environmental change to implications for subsistence and ecosystem services.

Social, cultural, and human dimensions were strongly represented, including research on community resilience, health, food security, infrastructure, and governance. Indigenous Knowledge and Indigenous-led and community-based research featured prominently, highlighting co-production methodologies and ethical frameworks for collaboration. Cross-cutting themes of data stewardship, accessibility, capacity building, and training further emphasized the need for sustained, inclusive, and internationally coordinated approaches to Arctic research.

Taken together, the Summit contributions illustrate a research community increasingly oriented toward integrative, solutions-focused, and ethically grounded approaches, providing a strong foundation for the final ICARP IV outcomes and for future initiatives, including IPY-5.

Upcoming ASSWs



ASSW 2026

Aarhus, Denmark from 25 March - 1 April 2026

The Arctic Science Summit Week 2026 (ASSW2026) including the Arctic Observing Summit 2026 will be held in Aarhus, the City of smiles in Denmark, on March 25 to April 1, 2026. The ASSW2026 will be organised by a strong team of partners under the FAF-umbrella, namely Arctic Hub, Association of Polar Early Career Scientist (APECS), Aalborg University (AAU), Forum of Arctic Research Operators (FARO), International Arctic Science Committee (IASC), Ministry of Foreign affairs (UM), Technical University of Denmark (DTU), University of Copenhagen (KU), University of the Faroe Islands (Fróðskaparsetur Føroya), University of Greenland (Ilisimatusarfik), and Aarhus University.

ASSW 2027

Hakodate, Hokkaido from 12 - 20 April 2027

ASSW 2028

Porto, Portugal in March 2028

ASSW 2029

Stockholm, Sweden in March 2029



IASC-SCAR Conference (POLAR) 2030

Incheon, Republic of Korea (Date TBC)



PHOTO: GLENN ASAKAWA (University of Colorado)
View of the Flatirons in Boulder, Colorado (USA), host city for the ASSW2025 and ICARP IV Summit.

PHOTO: FEDERICA SCARPA

Svalbard Satellite Station (SvalSat), located on Platåberget near Longyearbyen.

The world's largest commercial ground station and a critical hub for polar-orbiting satellites.



6. Data and Observations

6. Data and Observations

Sustaining Arctic Observing Networks (SAON)



Vision, Mission and Goals

SAON facilitates, coordinates, and advocates for coordinated international pan-Arctic observations and mobilizes the support needed to sustain them.

Addressing the goals of SAON requires the expertise and cooperation of a wide range of stakeholders and knowledge systems. With the Arctic Council (AC) and IASC as the parent organisations, SAON as members currently has 18 country members, three AC Permanent Participants (Arctic Indigenous Peoples organisations) and a series of regional and international organisations.

A strategy for SAON was approved in May 2018. It describes SAON's vision, mission, guiding principle and goals, and outlines in concrete steps the way the goals will be achieved. The strategy identifies these main goals for SAON:

1. Create a roadmap to a well-integrated Arctic Observing System;
2. Promote free and ethically open access to all Arctic observational data; and
3. Ensure sustainability of Arctic observing.

A roadmap to a well-integrated Arctic Observing System

SAON has identified the need for a Roadmap for Arctic Observing and Data Systems (Arctic ROADS) as a way of defining the needed observing and data system and to specify how the various partners and players are going to collectively work towards achieving that system.

The EU-funded program Arctic PASSION ended in 2025. It was established as a response to the European Commission call for Supporting the implementation of GEOSS in the Arctic in collaboration with Copernicus. Through the AMAP Secretariat, the SAON Secretariat has been responsible for several deliverables in the program. One of the work packages, worked to develop a series of Shared Arctic Variables (SAVs) (including permafrost and wildfires) and the framework necessary to document these. This work includes collaboration with Canadian partners (on sea ice as a SAV) and the University of Alaska, Fairbanks, USA on food security, wildfire, salmon and harmful algal blooms in the Pacific Arctic region.

One of the goals of the SAON Committee on Observations and Networks (CON) is to organize an inventory of national observational capacities. The Committee has been working to develop use cases for such an inventory, and the synthesis will be presented at the Arctic Observing Summit 2026 (AOS, see below).

The Polar Observing Assets Working Group (6) has developed the Registry of Polar Observing Networks (7), which currently holds 49 entries on systems and organizations that coordinate or track observing activities and infrastructure in the polar regions. Functionality is under development which allows federated search across the registered entries.

Free and ethically open access to all Arctic observational data

The Arctic Data Committee (ADC) continues to advance international coordination and best practices for polar data management. Since 2020 an open series of virtual workshops under the heading ‘Polar to Global Online Interoperability and Data Sharing’ has been held. In 2025, three subgroups have worked under the headings

- Federated Search
- Vocabularies and Semantics
- Updating the IASC 2013 Statement of Principles and Practices for Arctic Data Management

The Arctic Data Committee, together with SCADM and CODATA, is co-leading an International Polar Year Data Task Force. The task force remains open to community participation, with engagement opportunities available through the ongoing Polar to Global Interoperability Hackathons.

The Arctic Data Committee also continues to collaborate closely with partner initiatives supporting polar data discovery and interoperability. The SAON Data Portal continues to harvest discovery metadata from a series of data centers and make them available to the user through a federated search mechanism. Through POLDER, ongoing modernization of the Polar Data Search infrastructure is improving performance, scalability, and long-term sustainability, while recent repository additions have expanded the breadth of discoverable polar data.

More information about the work of the ADC is found in another chapter of this Bulletin.

Arctic Observing Summit (AOS)

SAON is the co-organizer of the Arctic Observing Summit (AOS). AOS is a high-level, biennial summit that aims to provide community-driven, science-based guidance for the design, implementation, coordination and sustained long-term operation of an international network of Arctic observing systems. SAON is a co-host of the event and holds one of the co-chair positions. The next AOS will be held in Aarhus, Denmark 30th March - 1st April 2026.

Arctic Data

Committee (ADC)

The Arctic Data Committee continues to advance international coordination and best practices for polar data management, with several major milestones achieved in 2025 and significant developments ahead in 2026.

In October 2025, the Arctic Data Committee hosted a highly successful Polar Data Forum in Hobart, convening the global polar data community for 85 presentations and four interactive workshops. These sessions focused on data storytelling, polar semantics and vocabularies, ship and sea-ice navigation data, and the future of global polar data coordination. A full conference report will be released soon.

Other ongoing initiatives that the ADC has also been supporting include the Polar data at risk initiative, ArcticPASSION wrap-ups (Mapping the Polar Data Ecosystem - report can be found at <https://zenodo.org/records/17037136>), and the SAON ROADS sea-ice expert panel.

Looking ahead, the Arctic Data Committee will release the new IASC Data Statement in March 2026. The statement is aligned with the SOOS and SCAR data policies and reinforces shared principles for open, ethical, and responsible polar data stewardship across the international community. In parallel, the Arctic Data Committee, together with SCADM and CODATA, is co-leading an International Polar Year Data Task Force. The task force remains open to community participation, with engagement opportunities available through the ongoing Polar to Global Interoperability Hackathons.

The Arctic Data Committee also continues to collaborate closely with partner initiatives supporting polar data discovery and interoperability. Through POLDER, ongoing modernization of the Polar Data Search infrastructure is improving performance, scalability, and long-term sustainability, while recent repository additions have expanded the breadth of discoverable polar data. Planned enhancements in 2026, including improved faceted search capabilities such as depth-based search, will further support marine and cryospheric research. Updates to associated best-practice guidance will reflect evolving community priorities, including strengthened guidance on Indigenous Knowledge and the use of bio-cultural labels through Local Contexts.

Together, these efforts underscore the Arctic Data Committee's central role in strengthening global polar data coordination and ensuring that polar data are discoverable, interoperable, and responsibly managed for the long term.

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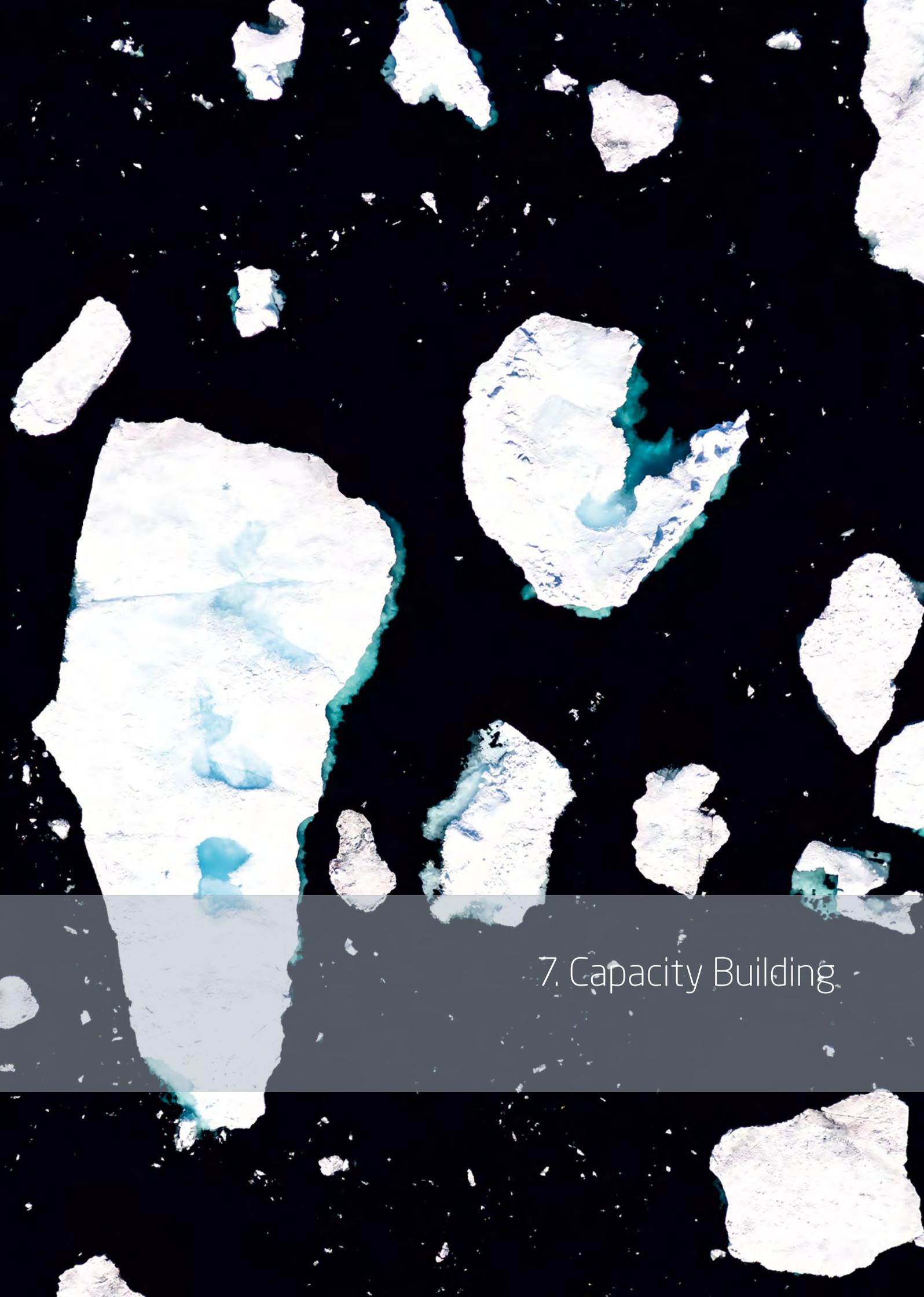
Website:

<https://arcticdc.org/>



PHOTO: FEDERICA SCARPA
Nuuk, Kalaallit Nunaat

PHOTO: MATTEO MONZALI
Arctic sea ice, drone shot



7. Capacity Building

7. Capacity Building

IASC Fellowship Program

The International Arctic Science Committee (IASC) recognizes that the Arctic is undergoing unprecedented environmental, social, and political transformations. These changes present both significant challenges and unique opportunities for scientific research. Early Career Researchers (ECRs) working in Arctic-related disciplines are at the forefront of addressing these emerging issues, often navigating interdisciplinary approaches, international collaborations, and complex societal dimensions alongside their scientific work. In response, IASC places strong emphasis on supporting, empowering, and integrating the next generation of Arctic researchers into its scientific community and governance structures.

The IASC Fellowship Program was established as a strategic initiative to foster meaningful engagement of ECRs within IASC and to strengthen their professional development. Through this program, IASC aims to ensure that ECR perspectives are represented within its Working Groups (WGs), that early career researchers are supported in building international networks, and

that they gain hands-on experience in shaping Arctic science agendas at a global level. Key objectives of the program include advocating for ECR participation within IASC, disseminating information on research opportunities and collaborative initiatives, and providing financial support—particularly travel funding—to enable ECR attendance at major Arctic science meetings and events.

Beyond financial assistance, the Fellowship Program is designed to offer substantial career development opportunities. Fellows are actively involved in the planning and coordination of international and interdisciplinary research activities, the organization of scientific workshops and sessions, and the development of long-term professional networks that extend across disciplines, institutions, and regions. By participating directly in IASC Working Groups, Fellows gain insight into science-policy interfaces, strategic research planning, and collaborative decision-making processes that are critical for future leadership roles in Arctic research.

Since its launch in 2014, the IASC Fellowship Program has annually selected outstanding Arctic ECRs, including graduate students, postdoctoral researchers, and early-stage research group leaders. Each year, Fellows are appointed to one of the IASC Working Groups, where they serve as active members for a three-year term. This sustained engagement enables Fellows to move beyond observational participation and to contribute meaningfully to Working Group activities, initiatives, and outputs.

In addition to the Fellowship Program, IASC supports ongoing engagement of former Fellows through IASC FOX (Fellows' Ongoing X-change). IASC FOX is an alumni network that sustains connections between past and current IASC Fellows, enhances communication and collaboration, and maintains an active community of early- to mid-career Arctic researchers. Through FOX, Fellows alumni continue to support IASC and Working Group activities while strengthening long-term professional networks within the Arctic research community.

For the IASC Fellowship 2026, IASC offered a total of ten Fellowships. These included eight regular IASC Fellowships, one of which is an IASC Indigenous Fellowship for an early career Arctic Indigenous Scholar or Knowledge Holder. In addition to joining an IASC Working Group of their choice, the Indigenous Fellow was also invited to participate in the IASC Standing Committee on Indigenous Involvement. IASC also offered two IASC-PA2F Fellowships, which were generously funded by the Prince Albert II of Monaco Foundation (PA2F) as part of its Polar Initiative. These included one IASC-PA2F Indigenous Fellowship for an early career Arctic Indigenous Scholar or Knowledge Holder and one IASC-PA2F Science Diplomacy Fellowship.

Now in its second decade, the IASC Fellowship Program has clearly demonstrated its value—not only for the Fellows themselves, but also for IASC and the broader Arctic research community. By investing in outstanding ECRs, IASC strengthens its scientific capacity, fosters innovation, and helps ensure a resilient and inclusive future for Arctic research.

Dr. Armina Soleymani

IASC Fellowship Coordinator



PHOTO: ANDRÉ MOREAU
Pond Inlet, Nunavut

IASC Fellows 2026

<p>Julia Andraesen Atmosphere WG Atmospheric Rivers, Climate Modelling, Co-Production Of Knowledge</p>	<p>Mariel Kieval Social and Human WG Resource Governance; Arctic Geopolitics; Critical And Ontological Security</p>
<p>Julia Kojaj Atmosphere WG Aerosol-Cloud Interactions, Bioaerosols, Natural Aerosol Sources</p>	<p>Haliehana Stepetin Indigenous Fellow - IASC Standing Committe on Indigenous Involvement Indigenous Methodologies; Indigenous Food Security; Indigenous Knowledge Systems</p>
<p>Monojiit Saha Cryosphere WG Sea Ice, Remote Sensing, Arctic Fieldwork</p>	<p>Emma Cameron Terrestrial WG Paleolimnology; Aquatic Ecology; Anthropogenic Contaminants</p>
<p>Monica Ogawa Marine WG Marine Mammals; Inuit Researcher Partnerships; Trophic Ecology</p>	<p>Monica Ogawa Terrestrial WG Plant-Pollinator Interactions, Arctic Plant Diversity, Molecular Ecology</p>

IASC - Prince Albert II of Monaco Foundation Fellows 2026

<p>Gabrielle Kleber Cryosphere WG Glaciology, Methane, Biogeochemistry</p>	<p>Margaret Rudolph Marine WG Research Methodologies, Co-Production Of Knowledge, Indigenous Engagement</p>
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IASC Fellows 2025

<p>Alistair Duffey Atmosphere WG Atmospheric dynamics, solar geoengineering, stratospheric aerosol injection</p>	<p>Ellie Miller Cryosphere WG Paleoglaciology, Isotope Geochemistry, Subglacial Groundwater Modeling</p>
<p>Henry Henson Marine WG Carbon cycling, Air-sea exchange, Ocean Freshening</p>	<p>Sophie Roher Social and Human WG Health equity; social determinants of health, community-partnered research</p>
<p>Charlotta Svonni Social and Human WG - Indigenous Fellow - IASC Standing Committe on Indigenous Involvement Sámi education, Educational policy, Sámi history.</p>	<p>Madelaine Anderson Terrestrial WG tundra vegetation, hyperspectral data, phenology</p>

IASC - Prince Albert II of Monaco Foundation Fellows 2025

<p>Alex Hall Atmosphere WG Remote sensing, high latitude dust, satellites</p>	<p>Leena Leppänen Cryosphere WG Snow physics, snow microstructure, in-situ snow measurements</p>
<p>Clare Gaffey Marine WG Phytoplankton phenology, remote sensing</p>	<p>Scott Sugden Terrestrial WG Environmental microbiology; biogeochemistry; deglaciation</p>



PHOTO: IASC Fellows 2025 in Boulder Colorado, US. Photo by the IASC Secretariat.



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