IASC

35th Anniversary
of Supporting International
Arctic research Cooperation
1990 – 2025

IASC 2025
BULLETIN

INTERNATIONAL ARCTIC SCIENCE COMMITTEE

[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 circumarctic 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.

PHOTO: LIONEL FAVRE (Extreme Environments Research Laboratory – EERL / EPFL)
Measuring aerosols in Northern Greenland (81°N) during a warm air mass intrusion, an event being more and more common with the ongoing climate change.

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BULLETIN

INTERNATIONAL ARCTIC SCIENCE COMMITTEE

[IMPRINT]

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COVER PHOTO: IREK SOBOTA

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[Preface]

IASC is a non-governmental, international scientific organisation, operating among its 24 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.

This year we celebrate IASC's 35th anniversary. I thank and acknowledge the many thousands of researchers who have worked with IASC to share knowledge, exchange skills, build new partnerships and explore new ways of understanding the Arctic and its impact on global systems over the past years.

IASC's principles of scientific freedom; of research independence; and of peaceful international cooperation remain absolutely vital for the researchers, Indigenous Peoples and many others who are working together to understand and respond to ongoing pressing climate, environmental, resource, and social changes across the Arctic. At the same time, we must remain clear-sighted about the challenges facing research and cooperation in the Arctic in the light of Russia's continuing actions in Ukraine.

I am grateful to the members of the IASC Executive Committee, the Council, and the wider community for their continuing patience, support, and encouragement as we turn those principles and our IASC values into practical action in the face of the challenge.

It was a wonderful experience and a real honour to host the extended IASC family in Edinburgh in March 2024. Thank you to the University of Edinburgh as the host of the meeting and everyone who participated in a fantastic week of science, business and community meetings, the Arctic Observing Summit and much more.

As the Bulletin is published we are be about to begin our ASSW2025 meeting - including the ICARP IV Summit - in Boulder, United States. We look forward to the ASSW in Aarhus (Denmark) between 25 March and 1 April 2026 and then in Hakodate (Japan) in 2027. Our ASSW meetings are a crucial opportunity for the diverse Arctic research community – researchers, programme managers, Indigenous Peoples, decision-makers, funders – to gather together to share and test new ideas, develop new projects, and build promising partnerships. New ASSW hosts are always welcome, and the Secretariat is keen to talk with, and support, potential hosts.

The past year has seen the publication of the fifth edition of IASC's State of Arctic Science Report. Through this document we are building up an increasingly strong narrative of the strengths and gaps in Arctic science. It shows that despite the significant challenges of the last period this community remains vital, active, and engaged. The Report will make a valuable contribution to both the ICARP IV process and the 5th International Polar Year.

IASC's Fellowship program has now been operating for over 10 years. Since 2014, the annual Fellowships Programme has offered practical support and opportunities to 88 researchers to engage in IASC's work and to develop their skills and networks. This year IASC has been able to support ten Fellowships working in partnership with and with thanks to 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 in Boulder.

It is a great pleasure to say that this year the IASC Medal has been awarded Prof. Vladimir Romanovsky for his exceptional and sustained contributions to Arctic

PHOTO: IASC President Henry Burgess, Photo Courtesy Henry Burgess

science, particularly in the field of permafrost research. Over nearly four decades, he has been a leading figure in advancing permafrost science and modelling, significantly enhancing our understanding of it's role in Arctic systems. I look forward to welcoming Prof. Romanovsky to deliver his Medal Lecture in Boulder.

In celebrating those who have provided exceptional and sustained contributions to the understanding of the Arctic, we also remember and honour three estimated colleagues who have passed away. Each in their own way were critical to the successful development of IASC: Prof. Magnus Magnusson, Icelandic representative to the IASC Council from its start until 1998 and second President of IASC (1993-1997); Odd Rogne, first IASC Executive Secretary (1991 – 2005) and the first recipient of the IASC Award for Service in 2015; and Dr Robert (Bob) Corell, who was also awarded the IASC Award for Service for his life-long contribution to Arctic research, for his inclusion of diverse Arctic voices and support to early career researchers, and his influential role in the creation of IASC. On behalf of the IASC community I offer my deepest sympathy to their families and friends and our profound thanks for their enormous and positive contribution to IASC, Arctic science, and international collaboration.

It was excellent to see the new IASC Standing Committee on Indigenous Involvement make such a strong start for its first meeting in Edinburgh during the ASSW. The Committee is still open for nominations from all IASC Members and the Arctic Council Permanent Participants. The group has an important role to play in ensuring that IASC hears from, responds to and involves those with direct knowledge and experience of Indigenous Knowledge systems. I and the Executive Committee look forward to continuing to work closely with the Standing Committee in the years ahead to advance IASC's aims and objectives.

The past year has seen very intensive activity on the Fourth International Conference on Arctic Research Planning (ICARP IV) and I particularly welcome Dr Dalee Sambo Dorough who joins me as co-chair of the International Steering Committee. Over 200 researchers and knowledge holders are now participating in the seven Research Priority Teams (RPTs) who held their first community meetings in Edinburgh. The RPTs have continued their intensive engagement and consultation work and in October last year the Chairs and many members of the RPTs together with representatives from the International Steering Committee met in Akureyri, Iceland to share their progress, agree common approaches and make plans for the next stages. The ICARP IV Summit during the ASSW in Boulder in 2025 will be a critical point in the process of drawing together what will become the final recommendations and in designing the implementation process. I thank everyone who is involved in the ICARP process, for their work so far and the work to come ahead of the report's finalisation over the coming year.

This last year has also seen extremely effective progress on the practical steps to set in train an ambitious and impactful the 5th International Polar Year (IPY) 2032-33. An updated Concept Note was published in November 2024 and we now have an IPY Executive Committee and an IPY Planning Group to lead progress, as well as a dedicated website: ***www.ipy5.info***. The IPY is an enormous undertaking and I am grateful that it is being led in true partnership with the Scientific Committee on Antarctic Research (SCAR); United Nations bodies such as the World Meteorological Organization (WMO); the International Science Council (ISC); the University of the Arctic (UArctic), Association of Polar Early Career Scientists (APECS), the International Arctic Science Association (IASSA) and many more, including Indigenous Peoples' representative organisations. In the middle of last year, it was decided that the Joint IASC-SCAR Polar Conference will be hosted in Incheon, Korea in 2030. We look forward to working with colleagues in SCAR and Korea to make this a truly special and productive event. I am always reminded that the 5th IPY will be only the second since IASC came into being, but I am confident that we are already making a very significant contribution to the leadership of this vitally important initiative. Thank you to everyone for their support now and in the future.

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.

This Bulletin shows how much we have achieved together. Genuinely international and ambitious scientific cooperation has never been more important. In our 35th anniversary year – and as the IPY planning ramps up - we will celebrate our achievements and look forward with confidence that we can meet the challenges and opportunities ahead.

Henry Burgess President, IASC

PHOTO: MARIASILVIA GIAMBERINI

Republic of Korea to Host the Joint SCAR-IASC Polar Conference in 2030

The Scientific Committee on Antarctic Research (SCAR) and the International Arctic Science Committee (IASC) are excited to announce that the Republic of Korea has been selected as the host for the Joint SCAR-IASC Polar Conference in 2030. This decision was made following a comprehensive selection process by both SCAR and IASC Delegates.

The conference will take place in Incheon, a vibrant and strategically positioned city known for its global connectivity and state-of-the-art infrastructure. The event will bring together polar researchers, experts, Indigenous Peoples and Knowledge Holders from around the world to advance our understanding of critical polar issues, fostering collaborations in preparation for the International Polar Year (IPY) 2032-33.

Korea's bid, led by the Korea Polar Research Institute (KOPRI), highlighted the country's longstanding commitment to polar research. With a rich history of international collaboration, Korea has been a dedicated member of both SCAR and IASC for over three decades. The conference theme, "Frozen Frontiers, Shared Futures: Collaborations to Forge Our Planet's Tomorrow", reflects the global importance of understanding and addressing the challenges posed by rapid polar changes and their cascading effects on the planet.

Incheon's Songdo Convensia will serve as the main venue, providing world-class facilities to accommodate participants. The event promises not only to foster scientific discourse but also to showcase Korea's cultural heritage and the unique natural beauty of the region.

Dr Hyoung Chul Shin states:
„We are deeply honored to be the host of the SCAR-IASC joint polar conference 2030. We believe the 2030 joint conference will provide crucial momentum to consolidate the past achievements of polar communities and design how our collaborative efforts should proceed amidst dynamic and forceful climate change. This is particularly important in the lead-up to the 2032-2033 international polar year (ipy). We are humbled by the opportunity to facilitate this pivotal gathering that will shape the future of polar research, providing both inspirations and answers to global issues. We also pledge to make this conference one that is friendly to the environment and to future generations".
(Dr Hyoung Chul Shin, president of the Korea Polar Research Institute - KOPRI)

SCAR and IASC would like to extend their sincere gratitude to Switzerland and Sweden for their strong bids and dedication to polar science.

We look forward to seeing you in Incheon in 2030!

For more details on the conference and the host city, please stay tuned for updates on the SCAR (***scar.org***) and IASC websites (***iasc.info***)

PHOTO: IREK SOBOTA

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 24 member countries. IASC member organizations are national science organizations that cover all fields of Arctic research.

PHOTO: IASC Council Members attending ASSW 2024 in Edinburgh, Scotland, UK in person

COUNTRY	MEMBER ORGANIZATION	IASC COUNCIL MEMBER
Austria	Austrian Polar Research Institute (APRI)	Wolfgang Schöner
Belgium	Belgian National Committee on Arctic and Antarctic Research (BNCA2R)	Philippe Huybrechts
Canada	Polar Knowledge Canada	David Hik
China	Chinese Arctic and Antarctic Administration	Tijun Zhang
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, Vice-President
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	Ulf Jonsell
Switzerland	Swiss Committee on Polar and High Altitude Research	Gabriela Schaepman-Strub
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.

TABLE
An overview of the IASC countries, organizations, and Council members updated to 30 January 2025. For contact information, please visit https://iasc.info/about/organisation/council

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

Paula Kankaanpää, Vice-President

Gerlis Fugmann, IASC Executive Secretary

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 members countries, especially addressing the support for the growing number of activities undertaken by the IASC Working Groups and early career researcher development.

PHOTO: IASC Executive Committee Members attending ASSW 2024 in Edinburgh, Scotland, UK

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PHOTOS: courtesy of the Secretaries

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
Chair, Arkady Tyshkov	Russia
Annett Bartsch	Austria
Hanna Lappalainen	Finland
Juha Pekka Lunkka	Finland
Heidemarie Kassens	Germany
Yoshihiro Iijima	Japan
Louise Kiel Jensen	Norway
Tadeusz Pastusiak	Poland
Boris Morgunov	Russia
Sergey Priamikov	Russia
Vladimir Kotlyakov	Russia
Anna-Maria Perttu	Sweden
Gabriela Schaepman-Strub	Switzerland
Gareth Rees	United Kingdom
Vladimir Romanovsky	United States
Yulia Zaika	Russia

ЧЛЕНЫ ГРУППЫ ISIRA	СТРАНА
Председатель, Аркадий Тишков	Россия
Аннет Бартш	Австрия
Ханна Лаппалайнен	Финляндия
Юха Пекка Лункка	Финляндия
Хайдемари Кассенс	Германия
Йошихиро Иидзима	Япония
Луиза Киль Йенсен	Норвегия
Тадеуш Пастусяк	Польша
Борис Моргунов	Россия
Сергей Прямиков	Россия
Владимир Котляков	Россия
Анна-Мария Пертту	Швеция
Габриэла Шаепман-Штруб	Швейцария
Гарет Рис	Великобритания
Владимир Романовский	Соединенные Штаты
Юлия Заика	Россия

PHOTO: GIACOMO TRAVERSA
Qaanaaq, Greenland

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.

Priorities of the IASC SCII 2023-2024

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

a. Developing Terms of Reference (ToR) that align with Indigenous Ways of Doing, Knowing and Being.

b. Supporting Indigenous Early Career Researchers, including engagement with the Arctic ICARP IV

c. Establishing communication and outreach plans to encourage Indigenous Peoples and Indigenous Communities to share their voices and concerns.

d. Creating ethical principles and research protocol frameworks that respect Indigenous values and preferences.

e. Supporting Indigenous Fellowships and awards to recognize Indigenous Researchers.

f. 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.

Regarding specifically IASC's Structure and activities, the following initial ideas were considered and will be further discussed:

- Providing guidance for the assessment of Indigenous Involvement in the Call for IASC Cross-Cutting and Working Group Proposals 2025
- Providing funding for activities with particular value for the IASC SCII submitted through the Call for IASC Cross-Cutting and Working Group Proposals 2025
- Providing guidance on Indigenous involvement in the IASC Working Groups'work and discussion

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, Univeristy of Lapland
Member	**Hannu Autto** | Finland, Univeristy of Helsinki
Member	**Henny Piezonka** | Germany, FU Berlin
Member	**Torjer Andreas Olsen** | Norway, UiT The Arctic University of Norway
Member	**Christina Storm Mienna** | Sweden, Umeå university
Member	**James Ford** | United Kingdom, University of Leeds
Member	**Laura Zimin** | United States, University of Alaska Fairbanks
Member	**Nagruk Harcharek** | United States, The Voice of the Arctic Iñupiat
	Bridget Larocque
IASC Indigenous Fellow (2025)	**Charlotta Svonni** I Sweden, Umeå University
IASC Indigenous Fellow (2023)	**Naja Carina Steenholdt** | Denmark / Greenland, University of Southern Denmark
IASC Indigenous Fellow (2022)	**Seira Duncan** |Finland, University of Eastern Finland
IASC Indigenous Fellow (2022)	**Daria Burnasheva** | Russia, Arctic State Institute of Culture and Arts, Yakutsk (Russia)
IASC Indigenous Fellow (2021)	**Wayne Clark** | Canada, University of Alberta
IASC Fellowship Coordinator	**Stanislav Ksenofontov** | USA, University of Northern Iowa
Secretary	**Federica Scarpa** | Iceland, IASC Secretariat

IASC Medal 2025 Professor Vladimir Romanovsky

The International Arctic Science Committee (IASC) awards the 2025 IASC Medal to Professor Vladimir Romanovsky (University of Alaska Fairbanks, US) for his exceptional and sustained contributions to Arctic science, particularly in the field of permafrost research. Over nearly four decades, Professor Romanovsky has been a leading figure in advancing permafrost science and modeling, significantly enhancing our understanding of permafrost's role in Arctic systems.

His dedication to national and international collaboration has been instrumental in conducting permafrost geophysical research. By providing free and open access to data, he has facilitated the monitoring of temperatures across an extensive network of boreholes, including over 150 sites in Alaska and 168 additional sites in Canada, Greenland, Russia, Kazakhstan, and Mongolia. These efforts have been crucial in climate change research, particularly in geomorphology, soils, hydrology, and vegetation, improving our understanding of permafrost degradation and carbon dynamics.

Entering Arctic science in the early 1990s, Professor Romanovsky's work came at a pivotal time when the significance of permafrost in global system dynamics was becoming evident. His prolific output includes over 300 publications and reports, amassing more than 40,000 citations and an h-index of 91. His research has provided essential insights into Arctic-system evolution, hydrological dynamics, and infrastructure design, demonstrating extensive cooperation with researchers worldwide, including those in Russia and China.

Professor Romanovsky's impact extends beyond his publications. He has mentored numerous students and postdoctoral fellows, chaired over 20 graduate advisory committees, and supported 11 postdocs and visiting fellows. His contributions to the IASC include serving on the U.S. Delegation (2014-2022) and the IASC Terrestrial Working Group (Vice Chair 2017-2021).

His greatest contributions lie in his sustained efforts to compile, synthesize, model, and share long-term permafrost data from the circumpolar Arctic and subarctic, and his spirit of international collaboration. His data and process understanding have been incorporated into numerous environmental models, influencing studies on carbon flux, climate change, and ecosystem dynamics. His work is highlighted in the 2024 U.S. Environmental Protection Agency report on Climate Change and by his most recent contributions to the 2025 ICARP IV Summit.

As a permafrost ambassador, Professor Romanovsky is involved in nearly every international initiative related to permafrost, the Arctic, and climate change. His

PHOTO: Courtesy of Professor Vladimir Romanovsky

engagement in these activities and his role in fostering cooperation between Western and Russian scientists underscore his international credentials and experience. He currently serves as the U.S. delegate to the International Science Initiative in the Russian Arctic (ISIRA), critical for future circumarctic cooperation.

In summary, Professor Romanovsky's legacy will continue to influence polar research for generations. His collective achievements make him a deserving recipient of the 2025 IASC Medal.

IASC would like to thank the 2024 IASC Medal Committee for their services: Mark Inall (United Kingdom) (MWG) – Chair, Guðrún Nína Petersen (Iceland) (AWG), Robbie Mallett (Norway) (CWG) (Fellow), Annette Scheepstra (The Netherlands) (SHWG), and Xiaofan Yang (China) (TWG).

PHOTO: VERONICA COPPOLARO (CNR Italy and University of Manitoba)
One last sunset before the polar night shines some shadows of pink on the snowy mountains around Kongsfjorden, Ny-Ålesund, Svalbard.

PHOTO: ISAK LYBERTH

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***

2024 State of Arctic Science Report

The **International Arctic Science Committee (IASC) State of Arctic Science Report 2024** presents a synthesis of current and upcoming Arctic research activities and priorities with a broad range of input and contributions touching upon all aspects of Arctic research. It is aimed at Arctic researchers, science agencies, managers, and users, including a wide range of decision-makers and

policymakers, to help all Arctic science stakeholders and rights-holders stay up to date on Arctic research.

Published annually since 2020 by IASC, this report is updated by the members of several IASC committees:

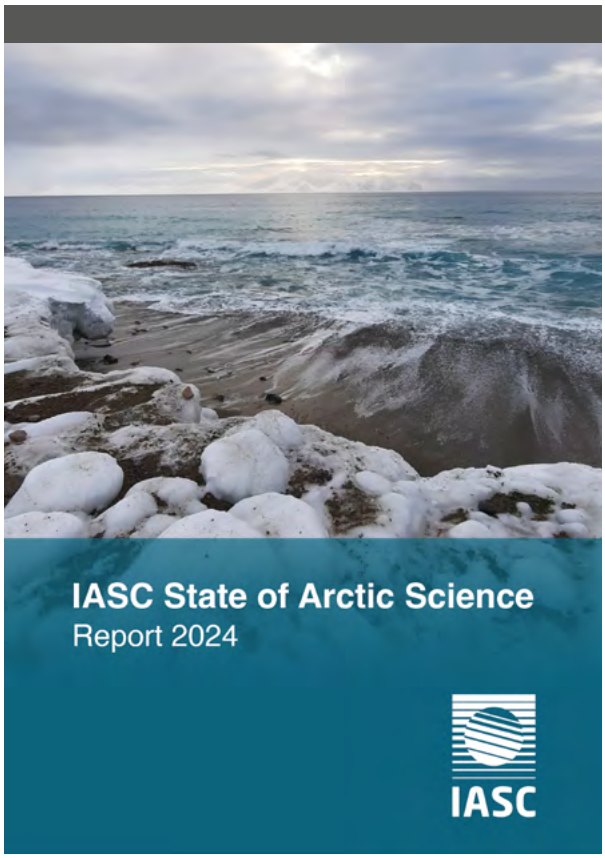
- Five IASC Working Groups (Atmosphere, Cryosphere, Marine, Social and Human, Terrestrial)
- IASC Standing Committee on Indigenous Involvement (SCII) (beginning in 2024)
- IASC Council and Executive Committee
- Arctic Data Committee (ADC)
- Sustaining Arctic Observing Network (SAON)
- International Science Initiative in the Russian Arctic (ISIRA)

The IASC State of Arctic Science Report series contributes an important resource to the **Fourth International Conference on Arctic Research Planning (ICARP IV) process** for the period of 2022 – 2026. Therefore, a wider range of contributors are included from the:

- ICARP IV International Steering Committee
- Seven ICARP IV Research Priority Teams

The content of the report is compiled by researchers and managers engaged with IASC and is thus not exhaustive. There are many other Non-Governmental Organisations (NGOs), Intergovernmental Institutions (IGOs), academic institutions, non-profits, Indigenous Peoples' organisations (IPOs), private and public companies, and others around the world working in the Arctic knowledge space that may not be participating in the preparation of this report.

IASC was founded in 1990 at a time of great geopolitical uncertainty, but also a time of hope, as a non-governmental, international scientific organisation, operating among its now 24 member countries. It works on a consensual 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. IASC is a connector – connecting scientists and other knowledge holders across international, disciplinary, and cultural boundaries and



connecting those who do research with those who apply the outcomes of research to inform solutions to Arctic challenges.

The geopolitical situation that has arisen as a result of Russia's actions in Ukraine continues to create immediate barriers and long-lasting uncertainties for research in the Arctic. The situation seriously affects international scientific collaborations and the ability of the international scientific community to carry out research and observations across vitally important and vast areas of the Arctic. The impacts on scientific collaboration, data exchange and publications, conferences and events, travel and fieldwork, maintenance of experiments and long-term monitoring stations, exchange programs and secondments, funding decisions and international research expeditions are, and continue to be, profound. The consequences are felt by national and international researchers of all career stages; however, some of the greatest impacts are experienced by the Indigenous

PHOTO: Cover of the IASC State of Arctic Science Report 2024 / Photo: Mariasilvia Giamberini

Peoples of the Arctic, many of whose lands, waterways, relations, hunting and gathering grounds, and communities span national boundaries.

The work of the Arctic Council, to which IASC is an Observer, also remains affected by the geopolitical situation. After an initial suspension of activity in March 2022, Norway assumed the Arctic Council Chairship in May 2023 for the period of 2023 to 2025, with a focus on promoting stability and constructive cooperation in the Arctic and the four priorities: Oceans, Climate and Environment, Sustainable Economic Development, and People in the North. In addition, Arctic Youth and Arctic Indigenous Peoples are cross-cutting priorities of the Norwegian Chairship. In February 2024, the Arctic Council reached consensus on gradually resuming official Working Group meetings in a virtual format, enabling project-level work to further advance.

Despite the current challenges, the **Fourth International Conference on Arctic Research Planning (ICARP IV) Process (2022 - 2026)**, led by IASC in cooperation with more than 25 international organisations, continues to move forward engaging Arctic researchers, Indigenous scholars, policymakers, residents, and other interested parties from around the world. More than 200 individuals from 28 countries are currently involved in the seven ICARP IV Research Priority Teams. The process continues to seek community input while the teams begin to draft their initial outcomes. The summative event of the ICARP IV process will be the **ICARP IV Summit 2025** during the **Arctic Science Summit Week (ASSW) 2025** in Boulder, Colorado (USA) from 20–28 March 2025. The ICARP IV Summit theme of "Arctic Research Planning for the Next Decade" will provide a unique opportunity for participants to contribute toward the ICARP IV process.

The outcomes of the ICARP IV process will be crucial in shaping the **Fifth International Polar Year (IPY) in 2032–33**. This upcoming IPY will take place in an era of unprecedented need for large-scale coordinated research on polar and global changes. It offers a crucial opportunity to address and close significant knowledge gaps through targeted attention and globally coordinated action.

Arctic research relies on international collaboration, access, and continuous monitoring and data sharing among all regions of the Arctic to understand and to effectively respond to the climate crisis and other challenges. The principles of scientific freedom, research independence, and peaceful international cooperation are vital for all who are working together to understand and respond to the ongoing climate, environmental, resource and social changes, as well as wider societal challenges across the Arctic. These rapid changes are intricately linked to near- and long-term stewardship, security, and the human rights concerns of many Arctic nations, Indigenous Peoples, and the broader global community.

Those involved in Arctic research must continually be aware of the need to foster partnerships and to create space for meaningful international Arctic science collaboration. In looking for ways to continue to work effectively in the future, the annual IASC State of Arctic Science Report is a crucial tool to identify and prioritise common areas of interest. This report also assists in monitoring the new realities and practical effects of physical and social environmental changes on Arctic research itself and scientific collaboration over the years.

Email *info@iasc.info* and find out more about IASC at *iasc.info*.

The 2024 State of Arctic Science Report and previous years reports available at:

https://iasc.info/about/publications-documents/state-of-arctic-science

IASC Cross-Cutting Activities

Recent Activities (in chronological order)

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

AQUIRE – Assessment of key research QUestions for ArctIc freshwateR biodivErsity

When: 13-15 November 2023
Where: Copenhagen, Denmark
IASC Working Groups: CWG, TWG

The AQUIRE-workshop aimed at synthesizing a list of questions that identified the most pressing research questions concerning interactions among stressors of climate change, resource development and landscape transformations and the aquatic ecosystems that provide critical ecosystem services. Prior to the workshop, responses to a survey were received from 46 of 60 experts from all seven Arctic countries with a total of 177 questions submitted. The Steering Committee assessed the questions for redundancy and overlap and developed a final set of 77 questions. The Steering Committee then grouped the questions into the following 9 thematic categories: 1) Anthropogenic development, 2) Biodiversity and taxonomic challenges, 2) Ecosystem connectivity, 4) Food webs and productivity, 5) Hydrological change, 6) Methods, monitoring and assessment, 7) Permafrost change, 8) Traditional knowledge, and 9) Winter ecology. Next, the Steering Committee and the experts ranked the 9 thematic categories in order of importance (on a 1–9 scale) for improving our understanding of Arctic freshwater processes and conditions as they affect biodiversity. Furthermore, this expert group assessed the relative importance of the questions within each category by assigning points from a proportional budget. For this, the experts were given a "budget of points" within each category from which they could assign a relative importance weight (i.e., points) to questions in each category. Questions deemed more important were assigned the most points, and the budget did not necessarily permit the expert to award points to every question. During the workshop in Copenhagen the group, consisting of five senior and three early career scientists brainstormed about statistical approaches and data interpretations, viewed and discussed preliminary analyses to reach consensus about data interpretations and appropriate figures, tables, and illustrations for an upcoming scientific paper. The group also spent quite a bit of time drafting text for the planned scientific publication.

Scientific highlights:

- Experts in Arctic freshwater biodiversity identified 77 key questions that, if answered, will aid the protection and sustainable development of Arctic freshwater ecosystems.
- A set of key messages for future research agendas and policy actions.

Project Lead

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Arctic Beaver Observation Network (A-BON): knowledge sharing and research coproduction conference

When: 26th-28th February 2024
Where: Fairbanks, Alaska, USA
IASC Working Groups: AWG, CWG, SHWG, TWG

Increasing beaver populations in the Arctic have been an interest and concern for many communities across arctic North America. Beavers cause cascading impacts across the environments in which they occur, but we lack data on the impacts that they create within the Arctic which can cascade through ecosystems and create transformations which cause concerns to local communities. The interaction between beavers and arctic environments including cryosphere may create new impacts which warrants new research. The Arctic Beaver Observation Network seeks to bring together researchers who are trying to understand impacts of beavers in the Arctic. The Arctic Beaver Observation Network's second in person meeting in Fairbanks, Alaska brought together Indigenous experts from Canada and Alaska and researchers engaged in natural and social scientific research in these regions (from Canada, Alaska, Norway and the UK). The meeting provided multiple opportunities for dialogue and this was strongly supported by the high proportion of Indigenous experts who participated in the meeting. One opportunity for dialogue was between Indigenous experts from different regions, who reflected on a range of different perspectives regarding beavers and their impacts. While some reflected on a history of hunting and trapping beavers others were concerned about the impacts beavers were having in their region, having observed stark increases in recent years. There was also an opportunity for people to share between different communities. Discussion included the manner in which people locally were involved in science projects, giving opportunities for both Indigenous experts and academic researchers to reflect on best practice and ways to keep improving research coproduction. The roughly equal balance of Indigenous experts and academic researcher also set up an atmosphere of open sharing and sought to reduce the power imbalances sometimes observed in academic meetings. There were long question and discussion periods for each panel, reflecting the openness of dialogue. Other important connections made and discussed at the meeting were between the three core research programmes occurring in Alaska, the Northwest Territories and Nunavik respectively. Presentations and informal discussions allowed projects to update on progress since the first in person meeting in Yellowknife in November 2022 with a view to future collaboration. Presentations were both led by academic researchers and Indigenous experts and a series of panels were set up on key topics such as changing beaver populations, impacts on fish, where expertise was shared. As academic beaver research in the Arctic is in its infancy, the meeting also benefitted from beaver research experts from lower latitudes who gave overviews on key topics such as beaver ecology, impacts of fish and biodiversity. In addition to presentations, there were several interactive activities aimed to bring together expertise, understand priorities for future research and foster new collaborations. There was also a presentation by a local artist, aimed to bring another perspective of the species. The meeting was also attended by a film producer and was fundamental in the development of a documentary on beaver research in the Arctic, which will be filmed across Alaska and the Northwest Territories this summer. Overall, the meeting will be effective in strengthening community and research partnerships and will help foster ongoing research in the region.

Scientific highlights

- Research coproduction on beavers in the arctic with the meeting comprising a roughly equal number of Indigenous and scientific experts (with some people have both roles).

- Discussion of priorities for future work and interest and concerns around beavers in the Arctic
- Coalescing of experts across multiple worldviews and disciplines working and living across the North American Arctic, in addition to experts with long-term research on beavers in lower latitudes in North America and Europe.

Link to agenda and further information on the meeting: *https://sites.google.com/alaska.edu/a-bon/meetings/feb-2024-fairbanks-ak*

Project Lead

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BEPSII Early-Career Research Exchange Award

When: May-June and October-November 2024
Where: Madrid, Spain and Tromsø, Norway
IASC Working Groups: AWG, CWG

Understanding the role of sea ice in the Earth's system requires global collaboration across a broad variety of disciplines. Contributing to this effort, BEPSII (Biogeochemical Exchange Processes at Sea-Ice Interfaces) is an open international network of polar marine scientists dedicated to investigating biogeochemical and ecological processes in sea-ice zones. BEPSII members are experts from over 15 countries and at all career stages. A unique network, looking at the coupling between sea ice, ocean and atmospheric processes, BEPSII is a strongly bottom-up organization, tackling the challenges of studying sea-ice biogeochemistry and ice-associated ecosystems. One of the main goals of BEPSII is to train a new generation of sea-ice scientists. As part of their efforts to support ECSs, BEPSII launched an ECS Travel Award Program in 2020, which is again being offered in 2024. The BEPSII ECS Exchange Award supports ECSs studying biogeochemical processes at ocean-ice-snow-atmosphere interfaces and wishing to collaborate with scientists at other institutions. The main goal is to support in-person collaboration, such as learning new techniques, interdisciplinary research projects, intercalibrations between laboratories, and synergy between research projects (e.g., field campaigns, laboratory experiments, and model development).

As the community of scientists working on this very topical subject is relatively small, the BEPSII steering committee considers the support of ECSs vital to the continuation of high-quality cross-cutting research and training of the next generation of polar leaders. The BEPSII ECS Exchange Award gives young scientists a unique opportunity to expand their research networks and acquire new skills and knowledge across disciplines.We were able to fund two ECS research visits with the "BEPSII-IASC early-career scientist award 2024" grant. Veronica Amoruso gained practical knowledge of the modelling/programming and a theoretical knowledge of the Hg processes in snow. At the moment, she is implementing her proposals into the mercury (Hg) module to test them, and by the end of December 2024, the "Hg snowpack module" should be fully developed. At the beginning of 2025, she will analyse Hg on real surface snow samples, collected explicitly to test the numerical "Hg snowpack module". The final step of her project is the intercomparison between the module and real data, which she will either do remotely from Venice or during another visit to CSIC. The nature of Marta Santos-Garcia's visit was a bit different. She visited Dr. Paul Dodd and Dr. Laura de Steur at the Norwegian Polar Institute (NPI) in Tromsø, Norway, to discuss results related to her ongoing work on the Fram Strait Arctic Outflow Observatory program. They discussed the collected data and modelling results. They had daily meetings in which they honed the methodology and data visualization, mined additional data to further update the time series analyses and worked on

a manuscript. Both grantees were very pleased with the opportunity, and the outcomes of their visits were substantial. Although online meetings have provided great opportunities to be in contact with people around the world and, at the same time reduce CO2 emissions and traveling costs, there is still a genuine need for in-person collaboration. These in-person contacts are especially valuable for ECSs who are just building their networks and careers. This has been already seen in the outcomes of our previous ECS program. Therefore, we greatly appreciate IASC for supporting our ECS program in BEPSII!

Scientific highlights:

1. New insights into the coupling between ocean physics and nutrient supplies that Marta Santos-Garcia developed with her mentors in Tromsø will be submitted to Nature.
2. Veronica Amoruso developed a new model of mercury behaviour in snowpack for integration into the Community Earth System Model.
3. These two early-career scientists developed valuable new contacts and skills, thanks to the opportunity for mentoring outside their own institutes

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IASC-FOX workshop to develop and coordinate input to the ICARP IV engagement phase from an early-to-midcareer perspective

When: 5 – 7 June 2024
Where: Cambridge, UK
IASC Working Groups: CWG, MWG, SHWG, TWG

This workshop was an effective forum for identifying knowledge gaps and research priorities within ICARP IV topic areas, drawing cross-cutting themes between disciplines, and proposing implementation strategies to solve Arctic research challenges. Workshop participants represented a range of early- and mid-career stages, IASC working groups, ICARP IV research priority teams, and scientific disciplines. However, the shared denominator—experience as an IASC fellow—provided a common foundation for discussions, namely familiarity with IASC's objectives and activities. As early- and mid-career researchers, much of our careers will contribute to the next decade of Arctic science; thus, we are actively invested in helping to identify and implement research priorities through the ICARP IV process.

This workshop put into action many of the objectives of IASC in general and the fellowship program specifically, including interdisciplinary collaboration, cross-cutting themes between research fields, and networking among early career researchers. By involving current and former fellows, this workshop bridged the gap from early- to mid-career researchers, demonstrating the role that IASC FOX can play in providing a forum for fellows even after their fellowship ends. 2024 marks ten years since the inaugural class of IASC fellows, so the first generations of fellows are now transitioning into mid-career stages. Many are eager to stay engaged with Arctic science

planning through IASC and processes like ICARP IV, as well as to "pay it forward" to help younger generations of fellows through research networking, career resources, and a professional support system outside of our individual institutions. This exchange was on display throughout the workshop, with participants sharing research contacts, funding sources, and job search resources. We hope that IASC FOX can continue to host events like this to further develop this network.

The workshop also emphasized the importance of bringing together researchers from different disciplines, contrasting with the format of many meetings. Rather than representing a similar research topic, participants hailed from a wide range of social and natural sciences. This required us to explain our work in a way that a non-expert could understand, forcing us to zoom out from our specific topics, examine our research in the broader context of our fields, and identify how our individual work connects to challenges and contributes to solutions in Arctic science as a whole. This approach introduced participants to new methodologies and "languages" used in different disciplines–a unique opportunity in cross-cutting communication. It also gave participants a chance to discuss their research and offer input on discipline-level topics like research gaps and priorities, which is not always afforded at meetings principally composed of more senior scientists.

Overall, participants agreed that much of our research seeks to solve the same overarching challenges–just through different methods and questions. This highlighted the importance of taking a multidisciplinary approach in future research endeavors, as well as increasing communication channels between fields. We agreed that if we had to co-author a single proposal, we could easily find a research question and roles for each of us—despite hailing from four IASC working groups, five RPTs, eight institutions, and a wide range of sub-disciplines. The takeaway: tackling complex challenges in the Arctic will require an increasingly multidisciplinary and collaborative approach, which is both feasible and beneficial.

Highlights/Deliverables:

- Report submitted as an ICARP IV resource outlining Arctic research knowledge gaps/challenges and proposing solutions/pathways forward, especially useful for RPTs 1, 2, and 6.
- Proposal submitted for a session at ASSW 2025 on "Writing Interdisciplinary Research Proposals," which draws on the methodology and discussion points from this workshop.
- Participants represented four of the five IASC working groups (including every WG that provided workshop funding) and five of the seven RPTs. This offers a direct avenue for participants to report workshop findings back to their respective WGs and RPTs to include in ICARP IV discussions.

Project Lead

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Summer School and Workshop on "Polar Climates: Theoretical, Observational and Modelling Advances

When: 22 – 31 July 2024
Where: Trieste, Italy
IASC Working Groups: AWG, CWG, MWG

The 2024 ICTP NORP/SORP summer school and workshop was an international collaboration to educate early career scientists on how polar regions interact with the rest of the world through the ocean, atmosphere, the cryosphere and ecological systems. The meeting was organized as a 7-day summer school with a 3-day

workshop afterwards. The summer school and workshop were held at the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy, a wonderful organization that is devoted to advancing scientific expertise in the developing world and has expertise on hosting meetings with excellent facilities. The 3-day workshop included the summer school students and 40 additional experts to share knowledge on the topic, "The role of sea ice and its variability in the climate system". The workshop had a keynote speaker in the morning and afternoon (one from the Southern Ocean and one from the northern oceans) and panels of experts to discuss open issues with the larger group. The focus of the workshop was on comparing and contrasting processes and feedbacks in the two polar oceans. A poster session was held each day for the participants. In addition, summer school students presented their projects to the larger audience for feedback on their work.

The summer school was a forum to educate early career scientists on three topics:

- Ocean-atmosphere-cryosphere interactions in the Polar regions. This topic involved new theoretical, observational and modelling studies dealing with the interactions among different components of the climate systems at all spatial and temporal scales, including their regional and global impacts.
- Ice sheets-ocean interactions. This topic focused on observational estimates, new coupled Arctic system modelling frameworks, and impacts on global climate and sea level rise.
- Sources, sinks, and impacts of freshwater in Polar oceans. Polar regions are a major source of freshwater to the global ocean system including river runoff and land-ice melt. The atmospheric and ocean variability that determine these sources are currently changing under the influence of global warming. This topic focused on the modelling and assessment of these processes in the Polar oceans.

The summer school was organized around six themes, with 2 lecturers for each theme, one with expertise on the Southern Ocean and one with expertise on the Arctic, in order to compare and contrast the variability in the Arctic with the Southern Ocean. The six themes and the lecturers, who were from Europe, North America, South America, and New Zealand, were:

THEME 1 - Coupled processes impacting polar ocean hydrography, *Atmospheric and sea ice processes impacting ocean stratification, ocean mixing; high-frequency variability; water mass transformation; open ocean convection.* Lecturers: Stephanie Waterman (University of British Columbia, Canada) – Arctic, Maria Paz Chidichimo (CONICET, Argentina)-Southern Ocean

THEME 2 - Atmospheric processes and interactions with ocean and cryosphere *Atmospheric teleconnections (specifically high to low latitude, impact of sea ice retreat), ocean connections (freshwater export, deep convection); polar amplification* Lecturers: Paul Kushner (University of Toronto, Canada) – Arctic, Thomas Bracegirdle (CAS, UK) – Southern Ocean

THEME 3 - Coupled processes impacting melting ice *Atmosphere and ocean processes impacting water mass properties approaching ice shelves and marine terminating glaciers, outflow of meltwater and icebergs* Lecturers: Paul Myers (U. Alberta, Canada)-Arctic, Florence Colleoni (NIOEG, Italy)-Southern Ocean

THEME 4 - Role of sea ice and its changes under global warming *Salt and freshwater fluxes due to sea ice-ocean processes; wave-sea ice interaction* Lecturers: Cecilia Bitz (University of Washington, USA)-Arctic, Inga Smith (University of Otago, NZ)-Southern Ocean

THEME 5 - Biogeochemical processes and their physical drivers *Air-sea fluxes (e.g carbon uptake), acidification, primary production, deoxygenation.* Lecturers: Letizia Tedesco (FMI, Finland)-Arctic, Ivy Frenger (GEOMAR, Germany)-Southern Ocean

THEME 6 - Observational techniques and numerical modelling *Interpretation of multiple sources; combining in-situ and remote sensing; accessibility of data, global climate and the representation of polar processes.* Lecturers: Cecilia Bitz (University of Washington, USA)-Modeling, Stephanie Waterman (University of British Columbia, Canada)-Observations

The lecturers and post-doctoral scholars organized the students into groups of 2-3 to focus on research projects during the week. In total, the school and workshop attracted 123 participants (with 90 being on site) including more than 80 students and postdocs from five continents and more than 20 countries.

Lecturers and mentors organized 12 research projects. Students did an excellent job working on projects that many times were outside their experience and presented results from these projects during the workshop.

Highlights

1. This event succeeded in bridging the gap between the two polar research communities as well as participants from the northern and southern hemisphere and to foster scientific collaborations around models and observations.
2. Lectures by Arctic and Southern Ocean experts reviewed recent scientific advances on understanding Polar climate and its variability, in particular the observed regime shift in Antarctic sea ice. Lectures are available online and can be used as course material on Polar climate.
3. This summer school and workshop provided an opportunity to educate early career scientists on Polar climate variability, with 123 participants (with 90 being on site) including more than 80 students and postdocs from five continents and more than 20 countries.

More info: ***https://indico.ictp.it/event/10498/overview***

Project Lead

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Surviving the thaw of frozen mountains – Workshop on mitigating the hazard of permafrost-degradation induced landslides in Alaska and the Arctic

When: 22-24 October 2024
Where: Victory Bible Camp, Glacier View, Alaska
IASC Working Groups: AWG, SHWG, TWG

Permafrost in mountain regions worldwide is increasingly destabilized by rising temperatures, leading to heightened slope instability and mass movement hazards. Southcentral Alaska is located within the subarctic zone and hosts sporadic to discontinuous permafrost, and recent landslides in the region are largely attributed to permafrost degradation. These landslides can have severe consequences for local communities, which depend on mountain environments for subsistence, income, and cultural activities. A study in the Talkeetna and Chugach Mountains identified 92 slope instabilities, with at least five clustered along the Matanuska valley and posing immediate threats to nearby populations. Similar vulnerabilities exist in other cold regions like Greenland, Iceland, and the Alps, where growing populations and tourism increase exposure to permafrost thaw-related hazards, underscoring the need for proactive risk assessment and mitigation. The purpose of the Workshop on mitigating the hazard of permafrost-degradation induced landslides in Alaska and the Arctic was to pool the collective experience of scientists, agency representatives and member of local communities to spur concrete action to address landslide hazards in permafrost degrading environments in Southcentral Alaska and the Arctic. The Workshop included a day of fieldtrip along the Matanuska valley to visit 5 potentially hazardous permafrost-thaw related landslides. The second and third days of the Workshop were each followed by evening events

open to the whole population of Glacier View and Wasilla to communicate the results of the workshop and to engage with the members of the affected communities.

The objectives of the Workshop were as follows:

- To facilitate the exchange of knowledge and research related to potential local landslides.
- To examine parallel programs in other regions, including Iceland, Greenland, the Alps, and the Philippines.
- To assess the roles of local institutions and state agencies in Southcentral Alaksa in identifying existing information on affected territories and evaluating their capacity to contribute to community safety efforts.
- To formulate phased plans for the assessment, monitoring, instrumentation, and communication strategies at hazardous sites.
- To identify potential funding opportunities and generate a comprehensive action plan for implementation.
- To leverage the insights gained to advance the broader understanding of permafrost-thaw-induced landslides in Arctic regions.

The workshop identified several key findings related to the challenges and opportunities for addressing landslide hazards in Southcentral Alaksa and the Arctic. Participants categorised the challenges into four main areas: assessment, communication, monitoring, and management. Assessment focuses on identifying the location and severity of hazards, while communication addresses the need for clear and effective information sharing among all stakeholders. Monitoring involves detecting changes in slope instabilities to predict potential failures, and management concerns the governance of efforts to address these issues.

The hazard of permafrost degradation, while prominent in Glacier View, is part of a broader global issue. Lessons from other programs, including advanced and community-based monitoring initiatives, could offer valuable insights for Glacier View and the Arctic. There is a need for greater understanding of permafrost thaw-related landslide hazards and their associated risks to people, infrastructure such as the Glenn Highway, and the surrounding environment, including the Matanuska River. Much of the existing information is scattered across various sources and formats, making it inaccessible to many, including local residents. However, local institutions and state agencies possess critical mapping and data programs and have expressed a commitment to expanding data collection in Southcentral Alaska.

The Working Group will develop a follow-up action agenda. Community members and external scientists are collaborating on pilot monitoring programs, incorporating techniques such as repeat photogrammetry, lidar surveys, and the installation of monitoring instruments. To facilitate stakeholder communication, the Working Group will support the creation of a project website on suitable platforms. Additionally, the group will centralise complex technical information, including maps, research reports, and photographs, into an accessible online repository. These efforts will be paired with pursuing necessary funding to support implementation and to disseminate these results at scientific conferences and to the general public.

Highlights

- The workshop identified key challenges in addressing landslide hazards in Southcentral Alaska and the Arctic, focusing on assessment, communication, monitoring, and management. These challenges highlight the need for improved understanding of permafrost-thaw-related hazards and their risks to people, infrastructure, and the environment, alongside lessons from global monitoring initiatives.
- Existing information on landslide hazards is scattered and often inaccessible, but a communal effort of scientists, local institutions and state agencies and members of local communities can address these gaps.
- A shared, co-created knowledge of the hazard posed by landslide in permafrost terrains in the Arctic is urgently needed. This Workshop has demonstrated that a collaborative environment between scientists,

stakeholders and local communities can greatly advance our knowledge of the risks of the degrading cryosphere for land and population in the Arctic.

More info: ***https://www.nukaprojects.com/permafrostlandslidehazards/***

Project Lead

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Chemical, biogeochemical, and physical drivers of the coupled polar atmosphere and climate: an IPY 2032-33 planning workshop

When: 17 – 22 November 2024
Where: Aussois, Alps/ France
IASC Working Groups: AWG, CWG, MWG

The International Polar Year 2032-33 planning workshop on "Chemical, biogeochemical, and physical drivers of the coupled polar atmosphere and climate" took place at the Centre Paul Langevin in Aussois, France from 17 to 22 November. The joint workshop was fully hybrid and co-organised by the international initiatives CATCH, PACES, BEPSII, ASPeCt and QUiesCENT. A total of 99 scientists and stakeholders (44 in person) from 21 countries came together (Figs.1,2). The group assembled core expertise in chemical, biogeochemical and physical processes in the Arctic and Antarctic with a research focus on the coupled atmosphere-ice-ocean system and links to climate change. The main workshop objectives were to i) present and discuss interdisciplinary 'big picture' science questions and challenges, and ii) jointly identify research priorities and implementation pathways for research activities in field, laboratory and modelling leading up to and during the 5th International Polar Year (IPY) 2032-2033. Planned workshop output includes a white paper to shape IPY32 funding calls, underpin grant applications, and influence the planning of polar research cruises, field campaigns and new long-term measurement capabilities.

Participants were from across all career stages including 21 early career researchers (ECRs), who played active workshop roles as session chairs, rapporteurs, presenters and participants in discussions. The enthusiastic contributions by the ECRs (see caption of Fig.1) in shaping the workshop are particularly acknowledged due to the importance and value of outcomes from diverse perspectives.

The programme. On the first day plenary orientation sessions with short presentations set the scene regarding current research challenges and gaps for an audience from diverse science backgrounds. The SCAR executive director Dr. Chandrika Nath and IASC president Henry Burgess provided the high-level context of the next IPY in describing the aims and strategy from the perspectives of Arctic and Antarctic research; for further reading see also the 5th IPY homepage and 5th IPY concept note. This was followed by summaries of research priorities from CATCH, PACES, BEPSII, QUiesCENT and ASPeCt, who had previously consulted their own communities. These were complemented by a series of short talks on recent or ongoing research programs such as 4th IPY project POLARCAT, MOSAiC, AC3 or the H2020 projects CRiceS and PolarRES. A forward look was provided by presentations on, for example, the Tara Polar Station and Antarctica InSync. Breakout groups then discussed new science for the 5th IPY: which major scientific issues need to be tackled by international collaborative and cross-disciplinary efforts under the 5th IPY framework, considering both Poles; how the identified topics address the IPY concept note and its call to action; if there are possibilities for transdisciplinary research to address the identified topics, including co-development of activities with indigenous

or local communities; and finally, how outcomes provide new knowledge for international policy agreements.

On the second day keynote talks on interdisciplinary 'big picture science' at the poles followed by discussion provided a larger view on how topics are connected and how processes in the coupled ocean-ice-atmosphere system are linked and potentially driving climate feedback loops. Topics included polar sea ice loss, the role of sea ice in polar biogeochemistry and ecosystems, chemical air-snow exchange, short-lived climate forcers, cloud aerosol interactions, climate interventions and policy and socially relevant research in the Arctic. The participants then broke up into smaller groups to rotate through a series of World Café sessions discussing each a specific topic regarding the implementation of new science for the 5th IPY. These topics were: research cruises, modelling experiments, new observation technologies, laboratory experiments, aircraft campaigns and remote sensing, ground observations (short/long term; community involvement).

The third day started off with a session on Indigenous and community collaboration with case studies from the Canadian Arctic, Greenland and New Zealand, and a session on impactful science communication with a strategic outlook on the 5th IPY. Brainstorming sessions then followed up on the discussions from the previous days around new science and implementation pathways to define priority research areas and list main research challenges and tools.

The fourth day commenced with talks reminding the group of some of the target stakeholders for planned IPY activities, including the International Ice Charting WG (IICWG) and Global Cryosphere Watch (CWG)/ WMO. Breakout groups for each of four identified priority research areas continued to discuss and were tasked to produce overview figures for potential use in the planned white paper.

The fifth day concluded the workshop with a public stakeholder session, a workshop synthesis presentation, a talk on perspectives from Climate and Cryosphere (CliC), a core project of the World Climate Research Program, and the final discussion.

The hybrid experience. The workshop was fully hybrid, and on-site participants were encouraged to log into Zoom to level the playing field with the online participants. Online poster sessions in Gathertown allowed for individual science presentations and further discussions.

Workshop feedback. Participants provided feedback in a survey, which was mostly positive, in particular regarding presentation topical range and quality, space provided for discussions, hybrid management, networking and building an IPY community.

Conclusions and next steps. This group with core expertise in chemical, biogeochemical and physical sciences of the polar atmosphere, ice and ocean made a first step in building a conceptual framework for a 5th IPY research program, which will be fed into the wider IPY process. The four priority research areas identified were: 1. The Water Cycle; 2. Atmospheric Composition; 3. Biogeochemistry and Ecosystems; and 4. The Energy Budget. These research areas rest on five supporting pillars consisting of 1. field observations, 2. laboratory experiments, 3. data management, 4. numerical modelling, and 5. community knowledge and engagement. Together these will enable progress to achieve the larger societal objectives of Global Weather and Climate Understanding, Polar ecosystem health, Global Security and Resilience, and Community Health and Well-Being. A detailed synthesis and overview concept will be published as a white paper in 2025.

It was recognised that rather than duplicating effort this group will liaise with other existing groups and programmes. Furthermore, collaboration and collaborative projects will already start now in preparation of the 5th IPY. To do this the workshop URL will be used as a digital hub with the video recordings of keynotes and short presentations publicly available, a participant list, and announcements of future meetings and events

via the workshop email list. This group remains open, and anyone interested is welcome to join by emailing *ipy2032workshop@univ-grenoble-alpes.fr*.

Acknowledgements. We are very thankful for generous financial support from IASC, SOLAS, IGAC, CATCH, CliC and CNRS, which provided full or partial funding to participants, including ECRs and invited speakers, enabling their workshop participation. We also thank Emmanuelle Gennai at IGE/Grenoble and the CNRS finance team for their administrative support, as well as Thorsten Bartels-Rausch and the Paul-Scherrer-Institute/Switzerland for providing the platform to host the workshop web page.

Highlights

1. The event succeeded in fostering the formation of a new interdisciplinary and diverse science community with core expertise in chemical, biogeochemical and physical sciences of the polar atmosphere, ice and ocean to start planning activities of the 5th International Polar Year.3. The workshop URL with video recordings of the presentations, participant list and announcements of future events will be used as a digital hub to foster collaborations already now in preparation of the 5th IPY. This group remains open, and anyone interested is very welcome to join by emailing ipy2032workshop@univ-grenoble-alpes.fr.
2. The group made a first step in building a conceptual framework for a 5th IPY research program, which will be fed into the wider IPY process. The four priority research areas identified were: 1. The Water Cycle; 2. Atmospheric Composition; 3. Biogeochemistry and Ecosystems; and 4. The Energy Budget. These research areas rest on five supporting pillars consisting of 1. field observations, 2. laboratory experiments, 3. data management, 4. numerical modelling, and 5. community knowledge and engagement. Together these will enable progress to achieve the larger societal objectives of Global Weather and Climate Understanding, Polar ecosystem health, Global Security and Resilience, and Community Health and Well-Being.
3. The workshop URL with video recordings of the presentations, participant list and announcements of future events will be used as a digital hub to foster collaborations already now in preparation of the 5th IPY. This group remains open, and anyone interested is very welcome to join by emailing ***ipy2032workshop@univ-grenoble-alpes.fr***.

More info:

https://indico.psi.ch/event/15591/

Project Lead

Markus Frey *(British Antarctic Survey, UK)*
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PHOTO: ISAK LYBERTH

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.

Specific topics of interest include:

- Cloud, Water Vapor, Aerosols, Fluxes
- Arctic Air Pollution
- Coupled Arctic Climate System
- Arctic Weather Extremes
- Linkages: Role of the Arctic in the Global Climate System

These topics have been put under the three pillars of:

1. Atmosphere in the coupled Arctic system
2. Arctic Climate, Weather, and Predictability
3. Arctic Pollution, socio-economic and environmental change

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. Link to the Strategic Work Plan on the IASC website.

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

Membership[1]

	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	**Jennie Thomas**	France	Arctic atmospheric chemistry, cryosphere-atmosphere interactions, regional and process modeling
Past Chair	**Stephen Arnold**	UK	Arctic trace gases and aerosols; Atmospheric chemistry; Tropospheric ozone
Member	**Michael Mayer**	Austria	Climate diagnostics; water and energy cycle; long-range forecasts
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 rediction
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; Phate of anthropogenic pollutants in the Arctic troposphere
Member	**Timo Vesala**	Finland	micrometeorology, biogeochemical cycles, boreal ecosystems
Member	**Mikko Sipila**	Finland	Secondary aerosol formation; Nucleation; Gas phase chemistry
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	**Ki-Tae Park**	Republic of Korea	Trace gases, Aerosols, Air-sea interactions
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	**Maria Sand**	Norway	Climate modeling; Black carbon aerosols; Aerosol-radiation interactions
Member	**Malte Müller**	Norway	Arctic weather, High-latitude atmosphere-surface interactions, Numerical modelling
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; influence of atmospheric circulation on the climatic conditions
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 to 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

TABLE

[1] Membership as of 30 January 2025. For updated information and contact information for each Working Group Member please visit : *https://iasc.info/working-groups/atmosphere/members*

Member	**Thomas Kuhn**	Sweden	In-situ measurements of Arctic clouds; Snowfall; Ice fog
Member	**Iris Thurnherr**	Switzerland	Weather systems; atmospheric dynamics
Member	**Jo Browse**	UK	Aerosols; Clouds; Modelling
Member	**Muyin Wang**	USA	Arctic climate dynamics; Model-data synthesis; Sea-ice prediction
	FELLOWS		
2022	**Thomas Webb**	United Kingdom	Coastal Climate, Boundary-Layer Meteorology, Climate Modelling
2023	**Rémy Lapere**	France	Chemistry-transport modeling, aerosols, air pollution
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
	SECRETARY		
	Sonja Murto	Sweden	Arctic weather extremes, Warm-air intrusions, large-scale atmospheric circulation

Recent Activities

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

AWG Steering Group Meeting

When: 6-7 February 2024
Where: Stockholm, Sweden

The steering group of the IASC Atmosphere Working Group, consisting of the chair, the two vice chairs, the past chair, and the secretary, met in Stockholm, Sweden on 5 and 6 February. The primary goals of this meeting included:

- Development of a formal implementation plan for the AWG, with a goal of having a draft plan in place shortly after this meeting to distribute to the broader AWG.
- Establishing methods to enhance participation and AWG group meeting attendance, with a goal of implementing these methods for the ASSW meeting and 2024 quarterly meetings.
- Discussion of AWG coordination in connection with ICARP-IV, with a goal of developing an engagement plan that can ensure that atmospheric scientific interests are considered within the ICARP-IV process.
- Development of AWG priorities for the coming year, with a goal of reviewing these priorities with the AWG during the ASSW meeting.
- Development of a comprehensive agenda for the AWG meeting at the 2024 ASSW in Edinburgh.

Participants first met on the afternoon of 5 February, taking time to participate in the IASC webinar to allow the coordinators of interdisciplinary projects to share information on their proposed efforts. During and following these presentations, the group spent some time discussing the current state of IASC proposals received by the AWG, and discussed different strategies for funding. After this webinar, the group spent around one hour to set the expectations for the next day's meeting and met for dinner to continue conversations.

Most of the work associated with this workshop was conducted in day two. The day started with discussion on enhancing participation of AWG members in group meetings and activities. During this discussion, several ideas were covered including:

- Supporting more small group discussions within the AWG meeting framework to allow groups of individuals interested in similar research topics to have in-depth discussions.
- Fostering topical meetings to connect the AWG with the broader scientific community and providing AWG members with direct access to information on current community priorities.
- Continuing to foster a collegial environment where AWG members can connect in a relaxed manner, encouraging broader participation and discussion.
- Considering the development of an "AWG Summit" to allow AWG members to speak in depth on topics of interest and to build general trust and collaboration between members.
- Requesting 3-slide updates on current national activities based on a template to offer all participating nations regular opportunities for providing updates.
- Scheduling "Round-the-world" meeting to better support the wide variety of time zones covered by AWG member nations.

After this discussion, the group spent time talking about AWG engagement with the ongoing ICARP-IV process. This included discussion on how to ensure that there is adequate engagement by the atmospheric science community in the ICARP Research Priority Teams. It additionally included discussion on the collection of information from the AWG membership on how individuals were planning to engage. It was noted that similar actions should be undertaken for other large international initiatives or activities. This led to the conclusion that ICARP-IV should be a primary topic of conversation during the ASSW in-person AWG meeting this year, and that we should provide a brief overview of the ICARP-IV process to the group to ensure broad awareness. Finally, we discussed how the AWG may be able to support the facilitation of groups to support advancement of key research themes linked to the ICARP-IV process and provide expert guidance on atmospheric topics of particular interest.

Following a short break, we reconvened and started to discuss the development of an implementation plan to help guide, and track progress on, work needed to advance topics related to the AWG strategic plan. This discussion included time spent on developing goals relating to the strategic plan, and then actionable and measurable tasks to help the group achieve progress on those goals. After one and a half hours of initial brainstorming, the group stopped for lunch. Following lunch, we transitioned to the development of an outline to frame the overall content of the implementation plan. After a late afternoon break, we discussed the need to have wide buy in to ensure that AWG members would support the work related to the tasks in the implementation plan.

Following this discussion, we transitioned to discussing the agendas for the open and closed meetings of the AWG at this year's ASSW. During this discussion, we developed a framework for the meetings, including talking about how much time to dedicate to individual topics, ideas for presenters and topics for short 10-minute group updates, and the budgeting process. We additionally reviewed the current state of the IASC AWG budget and discussed the merits of dedicating all funding to activities developed by the broader research community versus keeping some money to fund and accelerate activities within the AWG. Following this discussion, we had a wrap-up session that assigned tasks and set next steps before closing the meeting and continuing the discussions over dinner with institutional hosts.

Highlights:

- Strategic planning by the leadership of the IASC Atmosphere Working Group to set a course for WG activities over the next several years.
- Development of an implementation plan that will guide the focus of the Atmosphere Working Group
- Development of a detailed agenda for the upcoming AWG meetings taking place as part of the Arctic Science Summit Week

Project Lead

Gijs De Boer, University of Colorado,US
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Third International MOSAiC Science Conference

When: 26 February – 1 March 2024
Where: Potsdam, Germany

The 3rd International MOSAiC Science Conference was held under the motto - Transition to Sustained Arctic System Science - and took place from 26 February to 1 March 2024 on the Telegrafenberg Campus in Potsdam (Germany). It was organised by the AWI (Potsdam). Like the 2nd conference in Boulder, USA, this conference was also open to a broad audience from the field of polar research. This week of joint and personal exchange is of particular importance in the project and was already explicitly requested by the majority of those involved at the 2nd conference.

A total of around 160 scientists from 15 countries took part. As a prelude, 6 overview presentations were given by the Project Board on the current status of the project results. Over the course of the week, 10 invited lectures/keynotes were held on various topics. In a total of 14 session blocks and 1 permanent poster session (the posters were displayed in the foyer of the conference building for the entire week), the participants gave 84 talks and presented 46 posters.

Based on the experience and feedback from participants at the two previous conferences, the FLEX-time concept (ad-hoc discussion rounds in an organised manner) was further refined and made available and was again very well received. Six fully equipped conference rooms were provided in three buildings. In addition, there was a data session, 1 panel discussion with early career researchers (ECRs) and a tandem meeting on ice-buoys.

In addition to the panel discussion, ECRs were heavily involved in the organisation and participation of the conference from the beginning. By using the established MOSAiC ECR mailing list, a conference planning committee of ECRs was put together, which, in cooperation with the MOSAiC Office and with the support of the Project Board, helped to carry out a large number of organisational tasks. In addition, conference funding from IASC was once again successfully acquired and ECR travel support for participation in the conference was significantly increased as a result. There was also a separate session organised by ECRs for ECRs. The event was flanked by two excursions.

Thanks to the ongoing procurement of modern communication technology at the local venues, it was also possible to provide free online access to the conference for all participants with travel restrictions or unexpected developments.

Highlights:

- It was a very intensive week with particularly strong interaction between a wide range of participants from all areas (teams) of MOSAiC
- It has become clear that MOSAiC is much more extensive than the expedition in 2019/20. Many participants were not involved at that time, many work with remote sensing data and models or with field data from other campaigns that are blended with MOSAiC data.
- It was (great) to see that especially many young scientists contributed very actively to the conference, discussions and concepts. Many of the colleagues who were inexperienced in field measurements 5 years ago are now well-established.

Project Lead

Markus Rex, Alfred Wegener Institute (AWI), Germany,
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Annette Rinke, Alfred Wegener Institute (AWI), Germany,
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ARTofMELT 1st Science Workshop

When: 22 – 24 April 2024
Where: Stockholm, Sweden

What is the meaning of "Arctic melt onset"? What is it, where, when and how does it occur? And do atmospheric rivers play a role for the timing of the melt?

These were questions addressed at the 1st ARTofMELT Science Workshop 22-24 April, 2024. The workshop was held at Stockholm University as a lunch through lunch meeting starting on Monday 22nd and ending on Wednesday 24th. For one full day and two half days, almost 50 in person participants and collaborators met with ~10 online participants for a first discussion on the scientific results from the ARTofMELT (Atmospheric rivers and the onset of Arctic melt) expedition to the Arctic on the Swedish research icebreaker Oden in May and June 2023.

The first half-day was spent as a summary of all activities with presentations from all Work Package leaders, however, started with a presentation of the onboard artist sharing her experience as a non-scientist and ending with a review of the outreach and media activities. This session was also open to a wider community within the Bolin Centre for Climate Research. The full day was devoted to submitted science presentation from all fields of science on the expedition, while the second half day was devoted to planning issues; where to go next, what science to prioritize, upcoming publications and database issues. Science-to-policy was also addressed. Of those participating in person in the workshop, almost half were Early Career Researchers (ECRs) and majority of the science presentations were presented by ECRs. Support from the IASC Atmospheric Working Group helped eight of these to cover parts of their travel costs to participate. The workshop was also sponsored by the International Meteorological Institute at Stockholm University.

The rationale behind the ARTofMELT expedition was twofold. First, to study processes in the ocean, ice, snow and atmosphere relevant for the transition from the winter freeze to the summer melt. Second, to explore the role of so-called atmospheric rivers for the timing of the melt onset. The Oden expedition departed from Svalbard on 7 May and returned on 15 June; a time period when the ice is the most difficult to navigate. A special circumstance for this expedition was the attempt to navigate Oden into favorable locations using weather forecasts, meaning that the majority of all measurements had to be based onboard. Nevertheless, two ice camps were also launched for shorter periods, making it possible to deploy instruments on the ice, and meanwhile the helicopter was used to ferry scientists to surrounding ice for sampling. The scientific strategy was to characterize a column from ~500 meters into the ocean, through the ice and snow and to the top of the troposphere. The expedition was atmosphere-dominated, but also had research teams covering oceanography, cryosphere and biogeochemistry.

Only two warm-air-intrusions were captured. The first in late May when the temperatures in the lower atmosphere exceeded the melting point for half a day. The second, that also initiated the persistent surface melt, occurred on 10 June; unexpectedly late. The main discussion topic at the workshop became how to define the melt onset, as there was evidence that the ice thickness had started to decline already well before the melt finally started at the surface and there was also signs of an algal bloom starting under the ice well over a week before the melt on 10 June. So, the question on when the melt starts and what triggered it first needs a more informed definition. Operationally, the date for the melt onset is determined either by time-averaged near-surface air temperature (often from reanalysis) or from surface changes measured by satellite. ARTofMELT results indicate these methods may be less than adequate. Another observation surprising the science team was the speed by which the surface melt was manifested by melt ponds. Locations for melt

ponds were obvious already on the first day of the melt and by two days later, fully developed melt ponds were present.

Project Lead

Michael Tjernström, Stockholm University, Sweden, *michaelt@misu.su.se*

Upcoming Activities

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

PHOTO: LIONEL FAVRE (Extreme Environments Research Laboratory – EERL / EPFL)
On the way to Villum, we had to stop in Longyearbyen. The sea ice already start to melt in the fjord and form nice ice sculptures.

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

Membership[2]

	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 Goosse**	Belgium	Sea Ice, feedbacks, climate modelling
Member	**François Fripiat**	Belgium	Oceanography, Glaciology and 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	**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	**Jung-Hyun Kim**	Republic of Korea	Satellite remote sensing (Ocean Color, Sea-Ice); UAV
Member	**Yeongcheol Han**	Republic of Korea	Geochemistry; Isotopes
Member	**Richard Bintanja**	The Netherlands	Arctic climate change; Climate variability; Arctic hydrological cycle; Climate modelling
Member	**Geir Moholdt**	Norway	Glaciology; Remote Sensing; Mass balance
Member	**Thomas Vikhamar Schuler**	Norway	Arctic glacier mass balance & hydrology; Subglacial processes; Modeling cryosphere: snow, glaciers and permafrost
Member	**Dariusz Ignatiuk**	Poland	Arctic glacier mass balance and hydrology, Glaciology, Energy mass balance
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; Arctic landscapes
Member	**Sergei Verkulich**	Russia	Glaciers and permafrost; Antarctic and Arctic Quaternary sediments; Terrestrial records
Member	**Carolina Gabarro**	Spain	Remote sensing; Sea-ice extension; 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 and energy transfer
Member	**Andreas Vieli**	Switzerland	Calving, glacier and ice sheet dynamics, ice-ocean interaction

TABLE

[2]Membership as of 30 January 2025. For updated information and contact information for each Working Group Member please visit : *https://iasc.info/working-groups/cryosphere/members*

Member	**Richard Essery**	United Kingdom	Snow modelling; Seasonal snow cover; Snow hydrology
Member	**Brooke Medley**	USA	Topic TBC
	FELLOWS		
2022	**Wai Yin Cheung**	Canada	Glaciology, Photogrammetry, Cross-culture studies
2023	**Armina Soleymani**	Canada	Sea ice, Satellite image processing, Remote sensing
2024	**Robbie Mallett**	Norway	Snow, sea ice, radar, altimetry
2024	**Beatriz Recinos-Rivas**	United Kingdom	Ice-ocean interactions, numerical modelling, sea level rise
2025	**Ellie Miller**	USA	Paleoglaciology, Isotope Geochemistry, Subglacial Groundwater Modeling
2025	**Leena Leppänen**	Finland	snow physics, snow microstructure, in-situ snow measurements
	SECRETARY		
	Rosalie McKay	Norway	Marine biogeochemistry, sea ice, community production

Recent Activities

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

Karthaus Summerschool on Ice Sheets and Glaciers in the Climate System

When: 22 – 31 May 2024
Where: Karthaus, Italy

With some delays due to road blockages because of the Giro d'Italia in combination with a landslide, 36 students (mainly Ph.D.) and 12 teachers arrived on 21 May in Karthaus, Schnalstal, northern Italy, for the 22th Karthaus summer school on Ice Sheets and Glaciers in the Climate System. The diverse group of students and teachers represented institutes from 15 different countries. For this edition of the school, there were 124 applications, and we inevitably had to disappoint a lot of students.

The students had lectures in various topics within glaciology and some more inter-disciplinary. Topics included continuum mechanics, kinematics, ice rheology, sliding and hydraulics, numerical modelling, polar meteorology, ice-ocean interaction, ice cores, interaction of ice sheets with the solid earth, glacier fluctuations and climate change. During the first day all students and teachers presented their research interests in 3-minute pitches. This is always an important aspect of the start of the course, because students and teachers get to know each other quickly and a good overview of projects is obtained. In addition to lectures and exercises also computer projects, done in groups of three students, were part of the daily Karthaus programme. After last years success, the workshop on Equality, Diversity and Inclusion in earth sciences was also included in this years programme. It was attended by both teachers and students and sparked a lot of discussion. On Wednesday 29 May, there was a well-deserved break from the theory and computer exercises, and an excursion took place to the Lazaun rock glacier close to Kurzras, located at the end of the Schnalstal valley (in Italian Val Cenales). In perfect weather we hiked up from Kurzras to the Lazaunhutte. Unfortunately, the preceding winter snowfall had not yet completely melted away and we were not able to walk all the way to the Lazaun rock glacier. One of the teachers explained what could be seen in the landscape (see photograph). After this lesson, lunch was taken on the terrace of the Lazaun restaurant. Most of the students and

teachers then hiked down to Kurzras, or Vernagt from where they took the bus back to Karthaus, while a few walked all the way back to Karthaus. On the last day, the outcomes of the student projects were presented by the students in 12 presentations. In the evening, students and teachers enjoyed a last diner together enhanced with music and speeches. On Saturday 1 June everybody left for home after a successful Karthaus summerschool.

The final program and a full list of students and lecturers can be found at the Karthaus-2024 website: ***http://www.projects.science.uu.nl/iceclimate/karthaus/***

Highlights:

1. Lectures on various (inter)disciplinary topics within glaciology, and on ice-ocean and ice-atmosphere interactions
2. Presentations by the students on projects carried out during the course
3. Workshop on Equality, Diversity and Inclusion in earth sciences

Project Lead

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Juneau Icefield Research Program

When: 26 May – 12 August 2024
Where: Juneau, Alaska, USA to Atlin, British Columbia, Canada

Not many research projects have been going since 1946 – but once again, in summer 2024, researchers converged on the Juneau Icefield to learn from its intriguing ice and continue its long-term dataset and educational programs. To that end, the 2024 Juneau Icefield Research Program (JIRP) welcomed 32 students, 13 staff, 24 teaching faculty, and another two dozen researchers. Thanks to IASC support, multiple students from underrepresented backgrounds received tuition reductions which facilitated their participation. The JIRP academic curriculum targets glacier systems science and field skills training for mid-level undergraduate students, but it is also inclusive of early graduate level students and advanced high-school students. This eight-week field season is based around a ski traverse of the Juneau Icefield in Southeast Alaska and northern British Columbia. Expedition members stay in permanent field camps while students learn safety skills to live and work on the glaciers, introductory/intermediate glacier science, and how to conduct field research. Along the way students design and carry out their own research projects. The academic arc of the summer begins with a focus on learning field and safety skills as well as broad introduction to glaciology and glacier mass balance. This transitions to a more in-depth focus on glaciology as well as expanding into the other areas of the JIRP curriculum including climate science, hydrology, polar engineering, geophysics, geochemistry, and more. In the second half of the program faculty continue with further in-depth teaching on glaciological and climatological topics and more field-based workshops as well as integrated overnight research trips. The JIRP student program works in parallel with a variety of research teams who use JIRP facilities for their field campaigns. Throughout the summer JIRP students (supported by educational staff) are embedded with research teams to further their mentorship and training goals.

Faculty are encouraged to field-based instruction with students, taking advantage of their natural classroom. Faculty are selected in a competitive process from a wide range of career stages and backgrounds, rotating into the student program for two-week blocks. Faculty-led research projects in summer 2024 touched on glacier dynamics, seismology, remote sensing, ice field lapse rates, and stable isotopes. Complementing their experiential research experiences, student reading groups discussed five key papers on Earth science and/or glaciology with central importance to the Icefield. Students were divided into small groups and, facilitated by faculty, read and

discussed these key papers. One of the papers included a written (formerly oral) Tlingit history. In addition, unique for this year, JIRP was able to host a Tlingit culture camp; a couple facilitators were able to stay for the undergraduate program and share lessons from the Tlingit language camp share with the student group. The JIRP curriculum also includes elements of art and science communication directly into the student group research projects and presentations, which is both fun and successful. At the end of the summer, students also presented one-minute "lightning presentations" about what they learned over the summer to a public audience in Atlin, British Columbia.

Highlights

1. Mass loss of the Juneau Icefield has doubled in recent decades.
2. The Juneau Icefield is a long-term unique natural classroom for annual cohorts of students and researchers to better understand glacier- and Arctic-systems science
3. Thanks to IASC support, multiple students from underrepresented backgrounds received tuition reductions which facilitated their participation in JIRP 2024.

Project Lead

Allen Pope, Juneau Icefield Research Program, USA, *apope00@gmail.com*

International Summer School in Glaciology

When: June 2024
Where: McCarthy, Alaska, USA

Gaduate students from over 10 countries gathered in the small Alaskan village of McCarthy to take part in the University of Alaska Fairbanks's (UAF) seventh 11-day International Summer School in Glaciology. The event took place against the backdrop of highly glacierized mountains, offering an ideal setting to equip early-career PhD students with the skills needed to tackle the growing challenges of quantifying and modeling the rapid changes in glaciers and ice sheets driven by global warming. It also aimed to foster collaboration among students and established scientists in the field of glaciology.

Five instructors from the UAF glaciology group, along with one instructor from another U.S. institution and two from Canadian universities, stayed for the entire duration of the program. This arrangement provided ample opportunities for interaction between instructors and students, both during and outside of formal instruction sessions.

Students took part in glaciology lectures, exercises, and computer projects with a focus on the Arctic, and presented their own research in a poster session with posters pinned to the outdoor walls of the Wrangell Mountain Center or to laundry lines. Excursions to nearby glaciers provided hands-on experience in a high-latitude glacier environment, which was a memorable adventure, especially for the eight students who, though studying glaciers, had never actually set foot on a glacier. The program was rounded off by a series of evening activities, including a public lecture that drew over 50 local residents, tour guides, and tourists. On the last day, the students presented results from their projects and impressed everyone with the amount of work that had been accomplished in the course of just a few days.

Overall, the course received highly positive evaluations. The graduate students left with not only a stronger foundation in glaciology but also a network of professional contacts from around the world. As in previous years, the course relied heavily on contributions from international organizations, and IASC was among one of several professional organizations providing financial support.

Highlights

- Students significantly enhanced their literacy in glaciology, gaining a broader foundation that extended beyond their specific thesis topics.

- The combination of complementary instructional methods, including lectures, exercises, research projects, and student presentations, contributed to an effective learning experience.
- Students developed a personal and professional network with glaciologists from various countries and at all career stages, creating opportunities for future collaboration and interactions

Project Lead

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Upcoming Activities

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

PHOTO: ISAK LYBERTH

Marine Working Group (MWG)

The IASC Marine Working Group (MWG) facilitates international coordination of research in the Arctic marine environment and supports cross-cutting objectives. The group engages in annual face-to-face meetings and maintains year-round communication through online platforms, fostering 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 is not limited to, marine natural science and 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 Work Plan

The MWG 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 it will evolve in the coming years as the MWG continues with its work.

More info in the MWG Strategy Plan.

More info:

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

Membership[3]

	NAME	COUNTRY	EXPERTISE
Chair	**Anna Heiða Ólafsdóttir**	Iceland	Geographical distribution, migration, life history traits, and stock assessment of small pelagic fish in the northeast 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	Topics 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 modeling, coastal oceanography, land-to-sea interface
Member	**Marie-Noëlle Houssais**	France	Physical oceanography; Ocean-sea ice processes; Large-scale and mesoscale ocean variability
Member	**Heidi Kassens**	Germany	Marine Geology; Interdisciplinary polar research projects; Cooperation with Russia
Member	**Benjamin Rabe**	Germany	Physical oceanography; upper Arctic Ocean large-scale freshwater changes; mesoscale and smaller processes in ice-covered regions; 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/nutrients; Climate change
Member	**Takashi Kikuchi**	Japan	Physical oceanography; Polar oceanography; Polar climate
Member	**Eun Jin Yang**	Republic of Korea	Polar marine ecology; Microzooplankton biology
Member	**Martine van den Heuvel**	The Netherlands	Polar marine biology; Ecotoxicology; Rapid assessment of non-indigenous species using eDNA
Member	**Arild Sundfjord**	Norway	Ocean – sea ice interaction; Regional & sub-mesoscale ocean modelling; Vertical mixing
Member	**Louise Chavarie**	Norway	fish, ecology, genetic
Member	**Agata Zaborska**	Poland	
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	Meso-scale oceanographic processes; Shot-period variations of ocean climate in the Arctic Ocean
Member	**Antonio Tovar**	Spain	Biogeochemical cycles of trace metals in the ocean; Marine environmental pollution; Global change
Member	**Manuel D'Allosto**	Spain	Atmospheric science; Marine aerosols and air quality in coastal areas
Member	**Adam Ulfsbo**	Sweden	Chemical oceanography, marine chemistry, carbonate chemistry
Member	**Samuel Jaccard**	Switzerland	biogeochemistry, carbon cycle, paleoceanography
Member	**Claire Mahaffey**	United Kingdom	Marine biogeochemistry, nutrients cycling, primary productivity and ecosystems

TABLE

[3]Membership as of 30 January 2025. For updated information and contact information for each Working Group Member please visit : *https://iasc.info/working-groups/marine/members*

Member	**Mark Inall**	United Kingdom	Marine terminating glaciers; sub-glacial discharge plumes; fjordic mixing and exchange processes
Member	**Lauren Juranek**	USA	Biogeochemistry, isotopic tracers, dissolved gases
Member	**Claudine Hauri**	USA	Topics TBC
	FELLOWS		
2023	**Lisa Winberg von Friesen**	Sweden	Marine/sea ice biogeochemistry, nitrogen fixation, microbial ecology
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
	SECRETARY		
	Neelu Singh	Norway	Microplastics, Persistent Organic Pollutants, Svalbard

Recent Activities

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

Marine Working Group Strategy Workshop

When: June 12-13, 2024
Where: Bologna, Italy

The workshop aimed at developing a IASC Marine Working Group document as a contribution to the next ICARP IV. In order to involve as many WG members as possible in the discussion, and ensure different perspectives to be reflected in the document, the in-person meeting was anticipated by interactive online discussion to share ideas through the Miro platform followed by a preparatory online meetings. This preparatory phase help to nail down the research priorities on four core themes originally included in the MWG Strategy Plan (2023): "Sea ice and Stratification," "Disturbances," "Biogeochemical Cycles," and "Connectivity and Borealization". To facilitate discussion around the main themes and contribute to capacity building, a Senior Chair (MWG member) and a Junior Chair (MWG fellow) were nominated for each of the pillars. Twenty-two members and fellows from sixteen countries contributed to the preparatory phase. This work primarily focused on the identification of emerging challenges and knowledge gaps reflecting the most urgent priorities for marine research.

The in-person meeting in Bologna began with a general presentation of the main outcomes of the preparatory work, followed by a discussion on the format of the MWG contribution to ensure the most effective way to convey the information to the ICARP process. After a short introduction illustrating the main drivers of change in the marine Arctic and highlighting their global implications, the document was organized around main themes/pillars building on the MWG Strategy Plan. However, besides the five themes identified in the MWG Strategy Plan, the theme "Humans" was added to incorporate research priorities addressing the interactions between physical/ecological processes and social dynamics. A final paragraph makes it explicit the connection between the research priorities identified by the MWG and the different Research Priority Teams (RPTs) within ICARP IV. The document will be shared with all MWG members,

including those who did not participate to the on-line and in-person activities, and finalized in September 2024 for submission to ICARP IV.

Scientific Highlights

1. The Bologna workshop, following the online preparatory meeting, identified key challenges in the marine Arctic research and narrowed them down to six main research priorities: "Sea ice and Stratification", "Disturbances", "Biogeochemical Cycles", and "Connectivity and Borealization", " Marine life" and "Human".
2. All strategic core challenges identified by the MWG aligned well with the seven research priorities that form the backbone of the ICARP IV process.
3. The six research priorities were systematically organized and clustered according to their interactions and feedback mechanisms within a hierarchical framework, and were subsequently linked by clearly identified drivers and consequences.

Project Lead

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Tommaso Tesi (Consiglio Nazionale delle Ricerche)
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Upcoming Activities

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

PHOTO: ISAK LYBERTH

PHOTO: VERONICA COPPOLARO (CNR Italy and University of Manitoba)
Life in the Arctic – The way back home after a festival on the ice. Project: The photograph was taken during my time at the BEPSII summer school in Cambridge Bay, Nunavut, Canada.

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:

- **Demographics:** COVID impacts in Arctic communities, Monitoring emerging infectious diseases, Arctic Migration.
- **Climate Change:** Food sovereignty and Security, Social and environmental determinants of Health, Changing landscapes and impacts on community wellness, Community Adaptation
- **Arctic Cooperation:** Geopolitics and drivers of Arctic Cooperation, Decision making and inclusion in the Arctic political situation, Comparative health and social policies – sharing best practices and evidence informed policy.
- **Thriving communities:** Cultural wellbeing, Mental wellness, Indigenous Languages, Land based observations and healing
- **Land use for Sustainable Livelihoods:** Resource development in a changing environment, Land use by Indigenous peoples

Cross-cutting focus - Interdisciplinary work across WG and within SHWG

- **Methods:** Indigenous methods and knowledges, Methods that support the co-production of knowledge, Align with Interdisciplinary lenses and approaches
- **Responsible research practice** Ethics for Indigenous and community-based research, Engagement and collaboration with Arctic communities, Equity and Social Justice
- **Innovation in knowledge sharing and dissemination:** Partnerships and impact with decision makers (ie EU), Use social media to share WG information and project highlights, Virtual collaboration among interest groups, Align with International Declarations Ie UNFCC, IPCC Assessments, United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)
- **Interdisciplinary lenses and approaches:** One Health, Planetary Health, Indigenous frameworks and knowledges
- **Capacity Building:** Supporting early career scientists in WG activities & research, Supporting Indigenous community knowledge holders

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

Membership[4]

	NAME	COUNTRY	EXPERTISE
Chair	**Catherine Chambers**	Iceland	Ocean governance; Coastal communities; Fishers' knowledge
Vice-Chair	**Monika Szkarłat**	Poland	Science diplomacy the Arctic, legal and social dimension of biotechnology, right to adequate food and nutrition
Vice-Chair	**Ingrid A Medby**	United Kingdom	Arctic Identity; Political Geography; Critical Geopolitics
Past Chair	**Susan Chatwood**	Canada	Health systems; Population health; Community engagement
Member	**Alexandra Meyer**	Austria	Anthropology, Climate change, Svalbard
Member	**Olga Povoroznyuk**	Austria	Anthropology of infrastructure; social and environmental transformations; indigenous and local communities of the Arctic and Siberia
Member	**Frédéric Laugrand**	Belgium	Anthropology, hunting and Inuit knowledge systems, mobility, history, religion, Canada
Member	**Nathalie Pattyn**	Belgium	
Member	**David Natcher**	Canada	Environmental livelihoods; Culture and economy; Maintenance of local food systems
Member	**SU Ping**	China	Global Governance; International Political Sociology; International Organization
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/environmental change, Globalisation
Member	**Carina Ren**	Denmark	Tourism development and entrepreneurship; Cultural innovation, co-creation, and capacity building; 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; Alaska, Bering Strait, Western Canadian Arctic; Inuit history and technology
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	
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; Stakeholder engagement
Member	**Britt Kramvig**	Norway	Indigenous peoples ontologies, politics, and art; Creativity, tourism, and innovation in Arctic and Indigenous communities
Member	**Malgorzata Smieszek-Rice**	Norway	Arctic governance, science diplomacy and science-policy interface, gender-environment nexus
Member	**Agnieszka Skorupa**	Poland	Psychology; Human behavior in extreme situations; Group and individual adaptation to Polar region
Member	**Sandra Maria Rodrigues Balão**	Portugal	Geopolitics & (Geo)Strategy; Security & Securitization Diplomacy
Member	**Andrei Golovnev**	Russia	Social psychology in the Arctic; Circumpolar states; Policy of scientific researches
Member	**Andrey Podoplekin**	Russia	Social psychology in the Arctic, Circumpolar states, Policy and programs of scientific researches
Member	**Ana Maria Manero Salvador**	Spain	International Law of the Sea, International Environmental Law, Indigenous Peoples' Human Rights

TABLE

[4]Membership as of 30 January 2025. For updated information and contact information for each Working Group Member please visit : https://iasc.info/our-work/working-groups/social-human

Member	**Ragnhild Nilsson**	Sweden	Indigenous politics; Indigenous representation and self-determination
Member	**Laine Chanteloup**	Switzerland	
Member	**James D. Ford**	United Kingdom	Climate/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		
2022	**Seira Duncan**	Finland	Anthropology, Indigeneity, Eurasia
2022	**Daria Burnasheva**	Russia	Arctic, Indigeneity, Gender, Identity, Social and cultural dimensions of climate change
2023	**Alison Perrin**	Canada	Science policy; climate change adaptation; human-environment relationships
2023	**Naja Carina Steenholdt**	Denmark	Quality of life, living conditions, Greenland
2023	**Eda Ayaydin**	France	Arctic geopolitics, indigenous politics, sovereignty, governance
2024	**Charlotte Gehrke**	Norway	Environmental policy, science communication, science diplomacy
2024	**Anita Lafferty**	Canada	Indigenous pedagogy, decolonization, land-based
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
	SECRETARY		
	Anna Varfolomeeva	Finland	Indigeneity / Extractive Industries / Sustainability

Recent Activities

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

Exploring fishers knowledge and opinions in emerging Arctic crab fisheries - An Icelandic case study

When: 19 October 2023
Where: Hafnarfjörður, Iceland

How societies tackle changing environmental and social conditions is an important topic in the Arctic sciences, and our workshop tried to carve out a tiny spot in this field by using Icelandic Atlantic rock crab (Cancer irroratus) fisheries as a focal point. This fishery is interesting because the rock crab is a newcomer in Icelandic waters (first found in Hvalfjordur in 2006), originating from the eastern coast of North America. It has already been shown that the abundance of the rock crab's main native competitors, European green crab (Carcinus maenas) and spider crab (Hyas araneus), have decreased since its establishment (Gíslason et al., 2021).

But what to do with a new species that is also potential invasive? New species like this can be difficult to control, and crabs are some of the highest-value seafood products, so there were natural questions regarding if this species would become a fishery in Iceland. Rock crab in the U.S./Canada is caught in traps by small-scale vessels and therefore a potential rock crab fishery could

be beneficial to small-scale fishers and rural communities. In Iceland many coastal communities developed in close proximity to historically important fishing grounds. Over time, there have been several negative impacts on coastal communities, most notably quota concentration and shrinkage of the small-scale fishery sector leading to rural depopulation. Other factors that compromise the small-scale fishery and therefore the livelihoods of coastal communities include aging of the fishing sector as well as limited access, and environmental changes (Kourantidou & Kaiser, 2021; Gislaason et al., 2021). In this way, the rock crab fishery in Iceland is comparable to other Arctic coastal communities looking for sustainable community development options in changing ocean conditions. Currently, the Icelandic rock crab catches have slowly increased from less than 10 tonnes annually prior to 2020, when they reached 22 tonnes (Fiskistofa, 2022). The expectation is, however, that catches may reach 500 to 1000 tons throughout the next couple of years (Guðmundsson, 2022a). By organising a workshop with small scale fishers, researchers and processors, we aimed to understand how the knowledge and experience of small-scale fishers in several geographically disparate coastal communities could be taken into consideration for development of the fishery. We also aimed to assess the potential for crab fishing to become a viable supplement or mainstay to the livelihoods of fishers in small rural communities around Iceland.

The workshop was held in Hafnarfjörður, Iceland, on 19 October 2023. The agenda consisted of knowledge sharing among fishers, experience from processing and options for community development, learning from international experience, exploring what is known biologically, and innovations in boat design, marketing, and export. A special highlight is that ECR Jón Magnússon held his first presentation in Icelandic regarding his masters research on the biological impacts of the rock crab, congratulations Jón! In total, 29 people participated in the workshop, from different sectors (8 fishers, 2 participants working in the processing industry, a representative of the small boat owner association, a boat manufacturer, 8 researchers, 6 others from local and national government bodies and regional development associations, and the 3 organisers). Workshop participants came from several small towns around Iceland as well as the capital area and the focus of the workshop was on fishers' experiences. Two online participants joined in to detail the experiences in Norway.

The workshop generated new ideas and collaboration among stakeholders and was very well received by all. Participants expressed satisfaction with the opportunity for dialogue and knowledge sharing among scientists and fishermen. The workshop leveraged experiences from other countries on how to overcome challenges in the crab fishing industry, ensuring sustainability and profitability. It emphasized the need for collaboration, setting regulations, addressing information gaps, expanding markets, considering the environmental impact of crab fisheries and the exchange of information and data to make informed decisions and promote a more sustainable and prosperous crab fishing industry in Iceland.

Participants recognized the need to set limits and regulations for crab fishing vessels. An excessive number of traps could disadvantage especially smaller players and disrupt the ecosystem. Calculations are needed to determine the appropriate number of traps in specific areas to ensure sustainable fishing.

Collaboration between fishermen and researchers is crucial, not only for finding answers but also for formulating research questions. Fishermen acknowledge the importance of listening to scientific advice provided by organizations like the Institute of Marine and Freshwater Research. Understanding the behaviour and ecology of rock crabs and other crab species is essential for effective harvesting and conservation, so researchers should work closely with the fishing industry to address their concerns and improve the sustainability of crab fisheries.

The workshop highlighted the importance of the market's future setting and the need to address market-related challenges (highlighting the economic interests at stake) as well as several key factors that are still unknown

(impact on native species, toxins and heavy metal presence in crab meat, etc.). Other challenges include difficulties in selling rock crab and an aging workforce. At the same time, there are real opportunities for the growth of the industry, as evidenced by the experience of the processors and boat manufacturer.

In the wrap up session of the workshop, participants ranked what were important topics to move forward with, and what were easy vs hard to proceed with. It's clear that cooperation between researchers and fishermen, sustainable crab harvesting, marketing, and adapting to changing markets and regulations are central concerns in the crab fishing industry. Emphasis could be placed on the significance of storytelling and marketing to make crab products more appealing to consumers as well as the involvement of chef teams and the younger generation in promoting crab products in restaurants, creating new markets in Iceland and Europe. Participants also discussed the collaborative learning opportunities from other countries. How does Norway, the UK, the US, and Canada, manage their crab fisheries? The intention would be to learn from successful practices in these countries and adapt them to the Icelandic context. With leftover funds after the workshop, the results from the workshop will be presented at the Arctic Congress 2024 by an ECR, Sæunn Sigurjónsdóttir, who was also involved in the workshop. Her presentation will also include reflections on the process of the workshop and the importance of these kinds of knowledge exchange activities, which are not common in Iceland.

Scientific highlights

- Catches for rock crab are good for the moment, with ~30T being fished in 2022. There are differences in total catches based on the type of seabed and bait used. Similarly, there are differences depending on the setting of the traps, the timing and the trap types. A fisherman commented that around 70% of the catch come in during the first night the traps are set out. The problem is that, at the moment, there are a lot of different approaches but no consensus on the best practices (best time of day/year, best types of traps, best areas, etc.) for rock crab harvesting. As an example, one fisherman was using around 20 traps with 30m between them and commented that the first and last traps yielded the maximum catches (probably due to those covering a bigger total area) while another was using less traps and only 12m between them and seemed to yield profitable catches. This sharing of fisher´s knowledge will be important to continue

PHOTO: Photo Courtesy Workshop Organisers

in the future, both among fishers and between fishers and biologists.

- Fishing rock crab was deemed as an expensive and complicated process, with lots of moving parts, and needing lots of manpower. The current price for rock crabs (200ISK/kg) may not cover expenses like traps, bait and fuel. There are also challenges and expenses associated with processing and freezing crabs for commercial use. Concern with high catches leading to "overbooking" in the processing plant which leaves the fishermen with lots of product that cannot be used. The possibility of having multi-species fishing for more profitability was discussed among fishermen. Using the same boats to catch different stocks throughout the year, which is an expensive investment but worth it in other countries (Canada, UK) that have strong rules and regulations on fishing grounds, fishing gears, etc. Nevertheless, there are difficulties to sell rock crab, which was a big concern among the fishermen. The age of fishermen was also mentioned, as newer generations don't seem to be taking over, leaving fisheries with an aging workforce. Further work is needed both on the economic feasibility for fishing families and coastal communities, and also the regulatory environment around the fisheries management and decision-making.
- Is the rock crab in Iceland an invasive species or a fishable stock? The answer is both. There have been yearly reviews and data collection since 2007. Average crab size in Iceland is 270g and 12.5cm, with larger individuals reaching up to 550g and 15cm, and densities in Iceland are the biggest in the world, even higher than in its natural range. With each year, the rock crab population has been growing, raising concerns about species invasion and the potential impacts on native species. This is an invasive but also marketable species, but there is a need for more basic biological data. Scientific advice and data collection are essential for making informed decisions, and the use of data from other countries for comparison was considered. The workshop emphasized the need for data on age, size, fishing practices, and area-specific advice.

Project Lead

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Decolonising Archives in the Arctic

When: May 2-3, 2024
Where: Copenhagen, Denmark

How can Peoples exercise control over their historical narratives in Arctic colonial and post-colonial contexts? What is the role of archives and archival institutions in constructing a People's (hi)story? And how do the principles of international law strengthen claims for control over archives?

Twenty-three experts, researchers and practitioners met at the Danish Institute for International Studies in Copenhagen to consider the roles of international law and archives in the decolonial process. They sought workable solutions for more equitable control of archives in colonial and post-colonial Arctic contexts and to facilitate Peoples' 'historiographic sovereignty' (Nonbo Andersen, 2024). They held a public seminar at which around fifty guests attended with a further fifty following the event online, with Raymond Frogner, Head of Archives/Senior Director of Research, National Center for Truth and Reconciliation, Canada, giving the keynote address. The seminar is available for catch-up viewing online. They also held a workshop for invited guests at which working papers were presented and discussed.

Archives document, classify and crystalise the rights of individuals, communities and nations, being instruments of legal and political power, as well as privileged historical sources. As a result, archives have been seized, claimed and disputed during independence struggles, regime changes, military occupations and (de)colonisation. The party which controls the records determines which documents are retained and which destroyed as well as how they are organised, who may access them and on what terms (Lowry, 2023). Yet, without control over their own historic records, Peoples cannot fully enjoy self-determination – or, in other words, decolonise. The archival record provides evidence of the pre-colonisation presence of a People on its land, the continuity of its occupation, and its traditional legal system. These are essential to a People's claims for and realisation of self-determination in international law. Control over archives also enables a People to construct history from its own point of view, allows it to connect to its own cultural heritage and to establish and reinforce its national identity. The ongoing work of historic inquiries and reconciliation in the Western Arctic countries points to the urgency of this long-neglected issue and also creates its own archives.

The decision about what, how and where to archive is the basis of States', Peoples' and individuals' legal status and claims. For example, in the Arctic, in the absence of settler populations, the written archival record may be the only evidence of a State's (purported) occupation over a vast territory (Johnstone 2021). Peoples' claims for restoration of their territories and/or rights to exercise free, prior and informed consent over resource developments in their lands may also pivot on the documents a colonising State has selected to preserve. Constraints on access to archives also have very personal impacts on individuals seeking information about their own lives – such as birth, adoption, marriage, health and school records. Written archives are privileged in Western legal systems as reliable records of fact even when Indigenous knowledge and evidence points to their errors or incompleteness (Golding, et al, 2021).

IASC´s generous support facilitated the participation of Lisa Mullins, archivist for ICC Canada, who presented the ICC´s novel archive at the public seminar. The ICC archive is the first archiving system based on Inuit principles. IASC also funded the participation of masters student Jordane Liebeaux who presented a working paper on reconciliation and archives at the workshop. A selection of the papers emanating from the seminar and workshop are now under review for publication in a special issue of The International Journal of Heritage Studies.

This was the first in-person gathering of the recently launched Arctic Archives of the U Arctic Thematic Network on Arctic Law. The subgroup is open to anyone interested in the topic of displaced archives in the Arctic.

Scientific Highlights:

- Peoples have the right, under international law, to define their own histories, perceptions and representations of the Arctic as an element of self-determination.
- Control over the archival record, not just access, is essential to Indigenous and post-colonial self-determination.
- Reconciliation in the Arctic requires access to archives and creates its own archival record which in turn requires culturally appropriate curation.

Project Lead

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Upcoming Activities

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

PHOTO: IREK SOBOTA

Terrestrial Working Group (TWG)

The scientific scope of the 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 freshwater within the area north of the latitudinal treeline, which is characterised by Arctic climate and vegetation. Several adjacent areas include (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 with permafrost flowing from the south and connecting freshwater to marine areas of the Arctic.

Scientific Foci

- Improving knowledge at multiple spatial scales of the current state of Arctic terrestrial geosystems and ecosystems
- 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 models of the interactions between species and their environment, and the biology of life in extreme environments
- Estimating past changes in Arctic geology, hydrology, and biodiversity, measuring current change and predicting future changes
- Developing high spatial resolution models of terrestrial geosystem and ecosystem change, and other tools that can be used by Arctic stakeholders for adaptation strategies and sustainable management of natural resources and ecosystem services
- Determining the role of connectivity in the functioning of Arctic terrestrial systems, including connections within the Arctic and the global system
- Raising social awareness of the magnitude and impacts of ongoing Arctic change on flora, fauna, and people who rely on relationships with the land of the terrestrial Arctic.

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 form interactions with all the working groups

Membership[5]

	NAME	COUNTRY	EXPERTISE
Chair	**João Canário**	Portugal	Biogeochemistry; Permafrost; Trace-elements
Vice Chair	**YANG Xiaofan**	China	Subsurface hydrology; Alpine hydrology; Computational hydrology
Vice Chair	**Michelle Mack**	USA	Plant and ecosystem ecology; Disturbance ecology; Nitrogen cycling
Past Chair	**Ulrike Herzschuh**	Germany	Ecosystem change on decadal to glacial time-scales; Ancient DNA and pollen analysis
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	**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 chage, biodiversity and species interactions
Member	**Miska Luoto**	Finland	Data mining; Remote sensing; Biogeography
Member	**Christelle Marlin**	France	
Member	**Emilie Gauthier**	France	Past ecosystems; Interactions between societies and environment; Pollen analysis
Member	**Nikola Koglin**	Germany	Petrology; Geochemistry; Geochronology
Member	**Bjarni Kristófer Kristjánsson**	Iceland	Evolutionary Ecology, Limnology, Fish
Member	**Archana Singh**	India	Aquatic chemistry
Member	**Santonu Goswami**	India	Permafrost
Member	**Mariasilvia Giamberini**	Italy	Biogeochemistry, Carbon Cycle, Tundra, Climate Change Impacts
Member	**Tetsuya Hiyama**	Japan	Hydrology; Climate Change; Hydrologic-Terrestrial System Interactions
Member	**Masaki Uchida**	Japan	Microbial ecology; Ecosystem ecology
Member	**Ji Young Jung**	Republic of Korea	Biogeochemistry; Soil carbon dynamics; Tundra ecosystems
Member	**Mincheol Kim**	Republic of Korea	Ecology; Microbiology
Member	**Øyvind Mikkelsen**	Norway	Topics TBC
Member	**Kristine Bakke Westergaard**	Norway	Arctic vascular plant biosystematics, conservation genetics, alien species
Member	**Piotr Owczarek**	Poland	Dendrogeomorphology; Modern slope and glaciofluvial processes; Climate - landscape interaction
Member	**Zbigniew Zwoličski**	Poland	Geomorphology; Geodiversity; Geoinformation
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
Member	**Heather Reese**	Sweden	Remote sensing, tundra vegetation, permafrost
Member	**Christian Rixen**	Switzerland	Arctic and alpine plant ecology; Biodiversity and ecosystem functioning
Member	**Jakob Assmann**	Switzerland	Tundra Plants, Spatial Ecology, Remote Sensing

TABLE

[5]Membership as of 30 January 2025. For updated information and contact information for each Working Group Member please visit : *https://iasc.info/our-work/working-groups/terrestrial*

Member	**Gareth Phoenix**	United Kingdom	Plant ecology, biogeochemistry, climate change impacts
Member	**Robert Baxter**	United Kingdom	Cryosphere-biosphere interactions; carbon cycling; soil-plant atmosphere interactions
Member	**Craig Tweedie**	USA	TBA
	Fellows		
2022	**Kabir Rasouli**	Canada	Cold Regions Hydrology, Landcover Change, Snow, Mountain Hydrometeorology
2023	**Megan Wilcots**	USA	Terrestrial ecosystem ecology, carbon cycling, nitrogen cycling
2023	**Archana Dayal**	United Kingdom	Glacial ecosystem, Biogeochemistry, Microbial ecology
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
	Secretary		
	Clay Prater	USA	Elemental ecology; Cross-system nutrient flux; Limnology

Recent Activities

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

Upcoming Activities

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

PHOTO: MARIASILVIA GIAMBERINI

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

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

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.

Why an International Polar Year in 2032-33?

Extreme weather, increasing temperatures, sea level rise, and devastating events such as droughts, floods, and wildfires are becoming ever more prevalent and severe across the globe. At the same time, ongoing processes of ocean warming, sea-level rise, ocean acidification, and sea-ice change are negatively impacting ecosystems, economies, the rights, and livelihoods of Indigenous Peoples, and human wellbeing around the world. Many of these changes are taking shape faster than predicted. As the United Nations Intergovernmental Panel on Climate Change's (IPCC) 6th Assessment Report points out, several of the more serious global consequences are linked to unprecedented changes in the Arctic and Antarctic ('polar regions'). The urgency of understanding the consequences of such rapid changes in the polar regions for global climate, biodiversity, and human societies has never been greater. The transformations in the polar regions (particularly the Arctic), also highlight a need to articulate and elevate the critical status, rights and roles of Indigenous Peoples and their knowledge systems with respect to understanding, addressing and adapting to these changes. Global transdisciplinary coordination focused on the polar regions is therefore essential to achieving the major knowledge breakthroughs that are required to inform and develop effective international, regional, national, and local strategies to mitigate and adapt to the recent unprecedented levels of global change.

In this context, there is an urgent need to organise a 5th **International Polar Year (IPY) ("IPY-5")** in 2032-33.

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

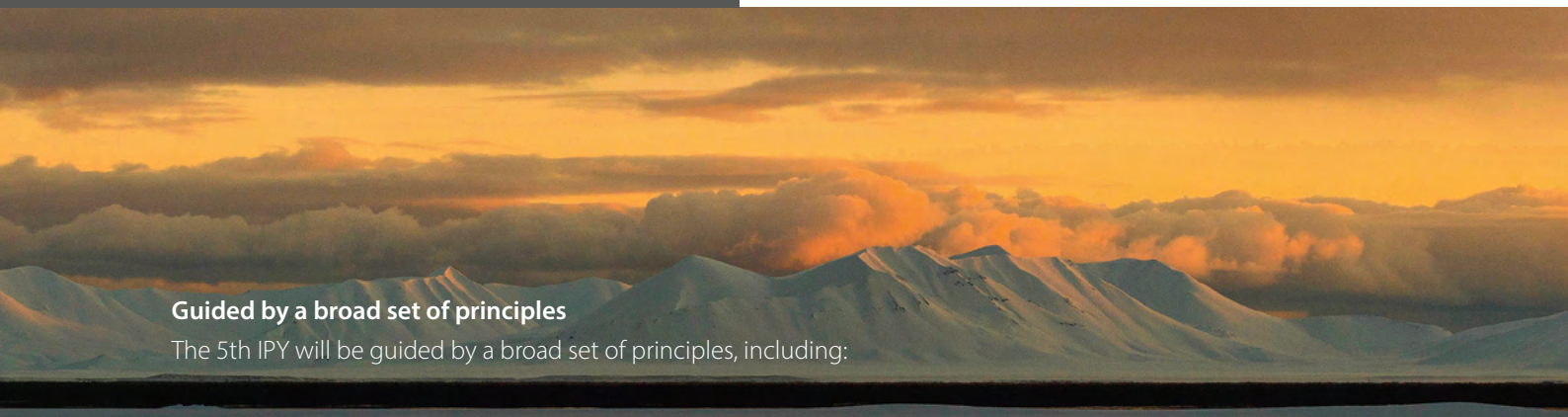
The 5th IPY (2032-33) will build on four groundbreaking IPYs convened between 1881 and 2009 (IPY-1: 1882-1883; IPY 2: 1932-1933; IPY 3 / IGY: 1957-1958; IPY 4: 2007-2008). Together with millennia of Indigenous Peoples' knowledge production, the IPYs form a long chain of coordinated polar research and 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.

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.



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.

PHOTO: MARIASILVIA GIAMBERINI
Svalbard

Moving forward together

IPY Organisation

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 Planning Group

The **IPY Planning Group** is comprised of representatives of international 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.

Organisations currently involved in the IPY Planning Group:

IPY Executive Committee

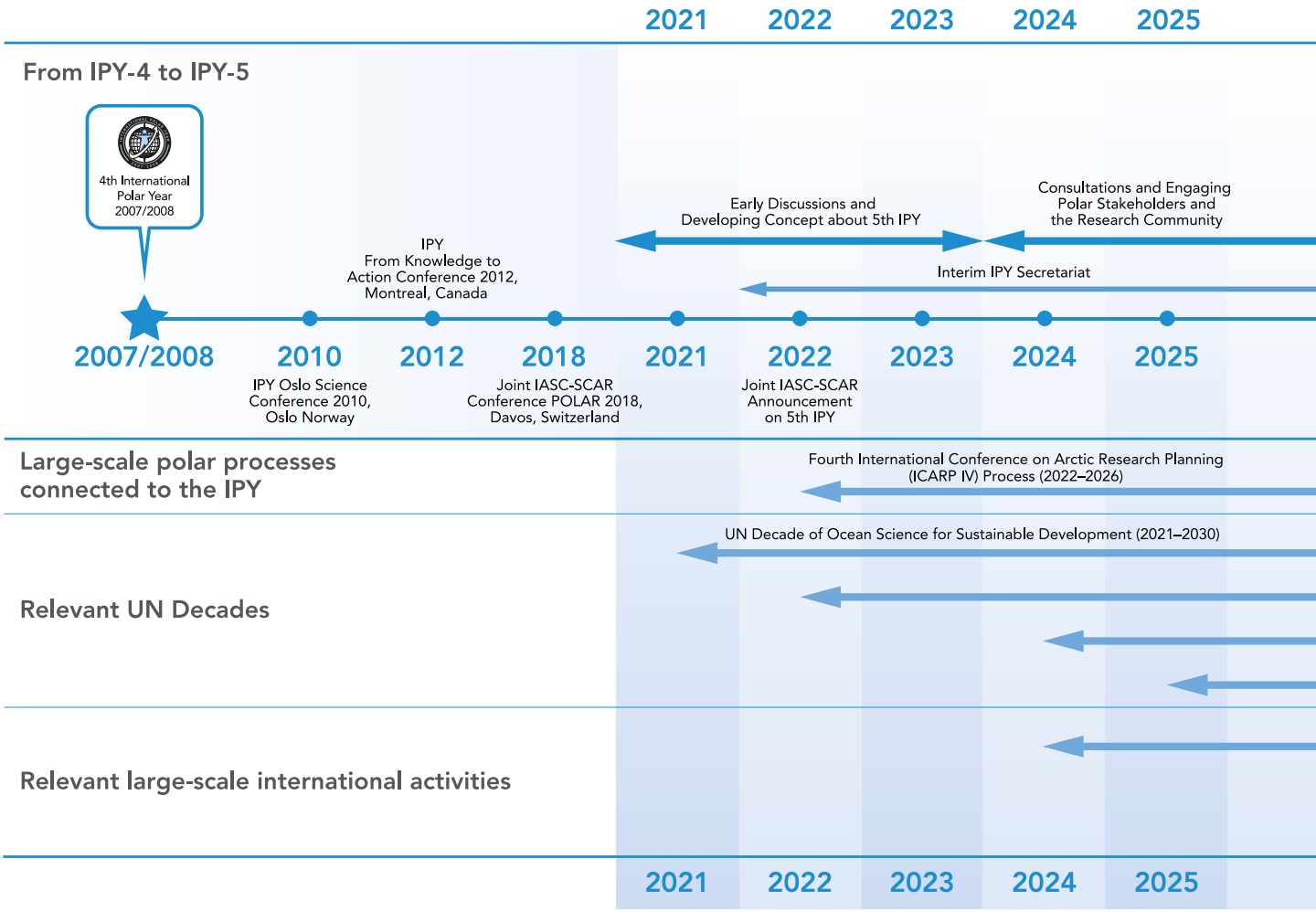
The IPY Executive Committee is composed of representatives of the International Arctic Science Committee (IASC), the Scientific Committee on Antarctic Research (SCAR), the International Science Council (ISC) and the World Meteorological Organization (WMO), plus others as needed.

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

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.

A call for a host and funding for a dedicated IPY Secretariat will be issued in 2025.



Currently assisting with tasks in the Interim IPY Secretariat:

- **Dr Gerlis Fugmann** - IASC Executive Secretary
- **Dr Chandrika Nath** - SCAR Executive Director
- **Dr Morgan Seag** - ISC Senior Representative to the UN System, Global Science Policy Unit
- **Angharad Downes** - SCAR Science and Operations Officer
- **Federica Scarpa** - IASC Communications Manager

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

More information:

https://ipy5.info/

TABLE: 5th International Polar Year Timeline

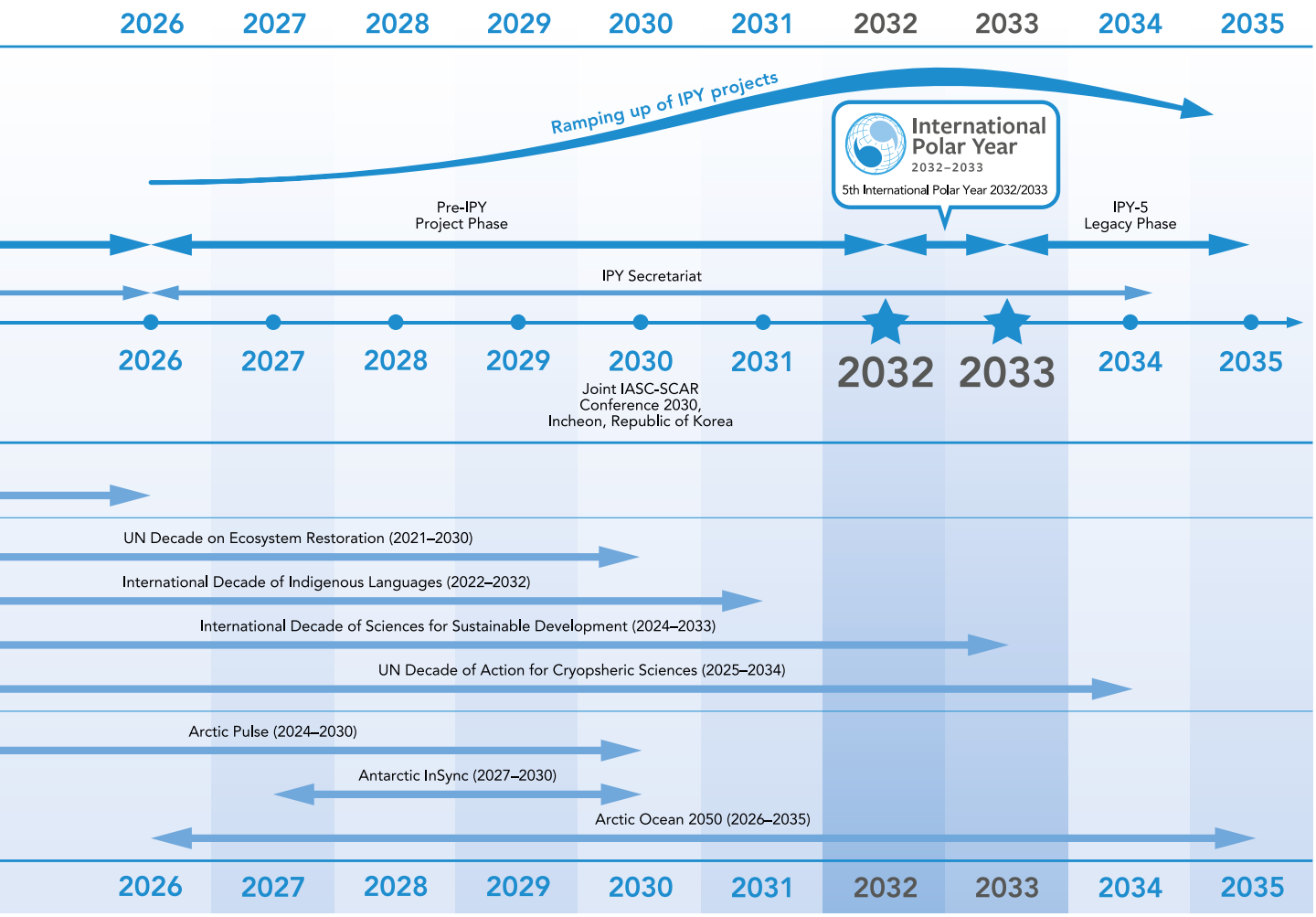
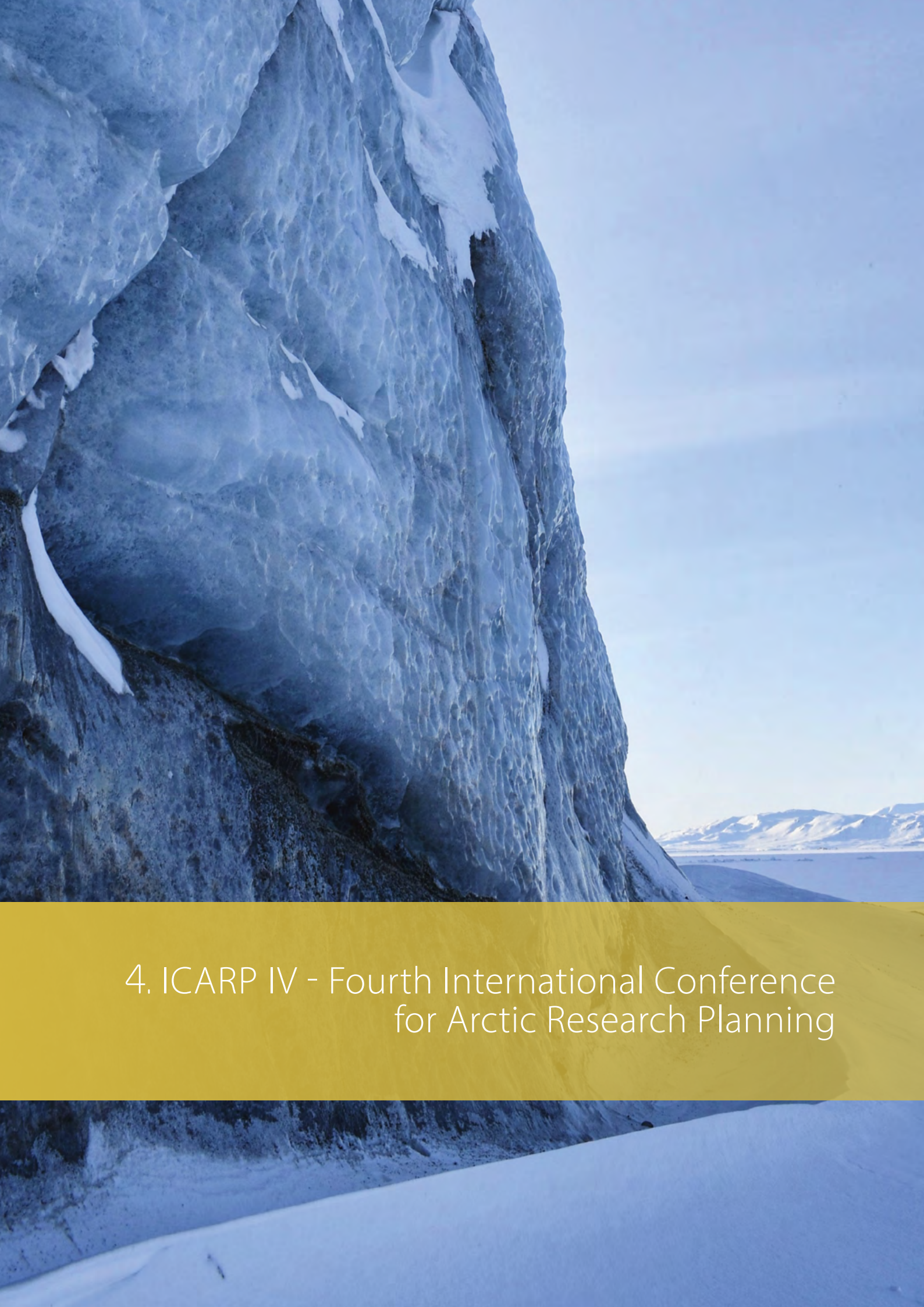

2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
Ramping up of IPY projects
International Polar Year
2032–2033
5th International Polar Year 2032/2033
Pre-IPY
Project Phase
IPY-5
Legacy Phase
IPY Secretariat
Joint IASC-SCAR
Conference 2030,
Incheon, Republic of Korea
UN Decade on Ecosystem Restoration (2021–2030)
International Decade of Indigenous Languages (2022–2032)
International Decade of Sciences for Sustainable Development (2024–2033)
UN Decade of Action for Cryopsheric Sciences (2025–2034)
Arctic Pulse (2024–2030)
Antarctic InSync (2027–2030)
Arctic Ocean 2050 (2026–2035)

PHOTO: VERONICA COPPOLARO (CNR Italy and University of Manitoba)
Details of an ice cave close to Ny-Ålesund, Svalbard.



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

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

In the lead up to its 35th anniversary in 2025, the International Arctic Science Committee (IASC) in cooperation with many partner worldwide is coordinating a multi-year planning process for the Fourth International Conference on Arctic Research Planning (ICARP IV) lasting from 2022 until 2026 that engages Arctic researchers, Indigenous Peoples, policy makers, residents and stakeholders from around the world to collegially discuss the state of Arctic science, the place the Arctic occupies in global affairs and systems. ICARP IV:

- consider the most urgent needs and priorities for Arctic research for the next decade until 2035, and
- develop recommendations to implement these priorities

The ICARP IV process will culminate at the ICARP IV Summit / ASSW 2025 to be convened in Boulder Colorado, USA from 20 - 28 March 2025, hosted by a consortium of US institutions, including the University of Colorado Boulder, University of Northern Iowa, University of Alaska Fairbanks, and Alaska Pacific University.

ICARP IV Planning Retreat 21-24 October 2024 Akureyri, Iceland

The Fourth International Conference on Arctic Research Planning (ICARP IV) Process Planning Retreat 2024 took place from 21 - 24 October 2024, in Akureyri, Iceland. Organized by the International Arctic Science Committee (IASC) in collaboration with the University of Akureyri, the retreat convened over 50 participants from 13 countries. Attendees included members of the ICARP IV International Steering Committee, the chairs of the seven ICARP IV Research Priority Teams (RPTs) and the Arctic Data Committee, members of the ICAPR IV Indigenous Peoples´ Coordination Group, representatives from Rannís The Icelandic Centre for Research - and the University of Akureyri, along with other local Icelandic partners and invited guests.

The retreat offered a unique and invaluable platform for face-to-face discussions, fostering cross-disciplinary dialogues aimed at preventing duplication of effort and aligning research outcomes across diverse priorities. Participants focused on assessing the ICARP IV process thus far, refining research priorities, and shaping discussions for the ICARP IV Summit at the Arctic Science Summit Week (ASSW) in March 2025. Additionally, the retreat explored how these initiatives will contribute to the groundwork for the Fifth International Polar Year (IPY) in 2032–33.

During the first day, each Research Priority Team (RPT) presented their progress and contributions, revealing several key issues for advancing Arctic research. Participants underscored the need for long-term, stable funding to sustain progress, paired with well-coordinated implementation strategies that respect cultural contexts. Effective communication of research outcomes to diverse audiences was deemed vital, alongside the recognition of Indigenous expertise and sustainability practices. Calls were made to address structural inequalities in research, move away from colonized frameworks, and promote self-determination. The effectiveness of collaborative and consultative approaches was highlighted. Representing the voices and concerns of Indigenous Peoples remains a top priority, underscoring the importance of Indigenous Knowledge and the leadership of Indigenous Knowledge holders as the Arctic research agenda advances. Ensuring meaningful participation from all stakeholders, including Indigenous Peoples, is critical to achieving both equitable and impactful outcomes. The heavy burden on Arctic communities as first responders, often with limited resources, was also highlighted. Regarding Arctic Data, participants acknowledged the wealth of existing resources and stressed the importance of robust rights safeguards that surpass conventional notions of data sovereignty.

Day two focused on cross-cutting discussions among the RPTs. Participants broke into smaller groups to explore common interests, gaps, and themes emerging across different areas of Arctic research. A joint session followed, where the participants discussed strategies to strengthen linkages and ensure effective communication moving forward. One proposal involved assigning designated liaisons from each RPT to each of the other teams to streamline coordination and minimize overlaps.

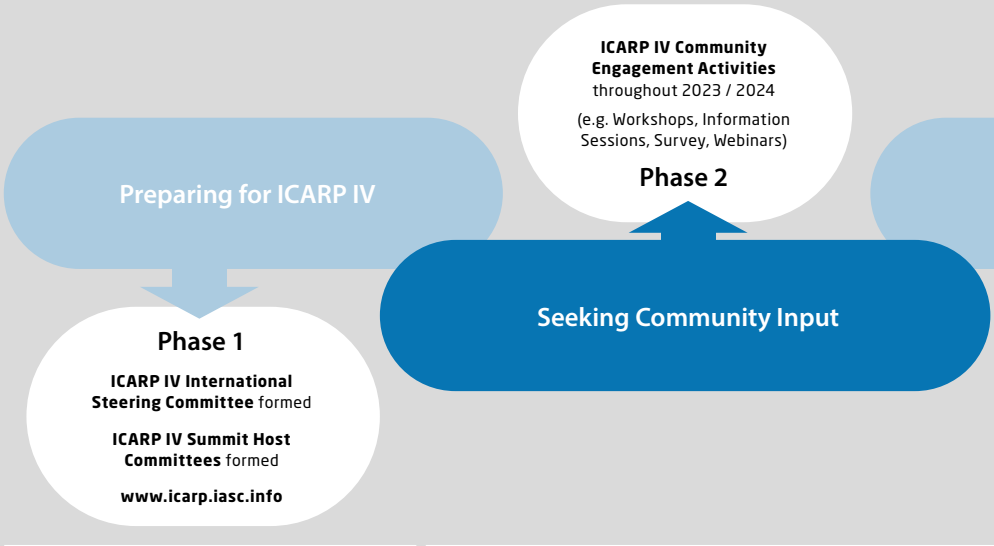
PHOTO: IASC SECRETARIAT.
Group photo of the ICARP IV Retreat in Akureyri participants

ICARP IV
INTERNATIONAL CONFERENCE ON ARCTIC RESEARCH PLANNING

Fourth International Conference on Arctic Research Planning (ICARP IV) Process (2022 – 2026)

Arctic Research Planning for the next Decade

info@iasc.info
icarp.iasc.info



Preparations for the ASSW 2025 and the ICARP IV Summit were also considered, with participants agreeing to online meetings before the Summit to maintain momentum. In addition, there was broad acknowledgment of the need to ensure consistent terminology, to address tensions around issues like data sharing and geoengineering, and to revisit and update previous ICARP priorities based on current realities.

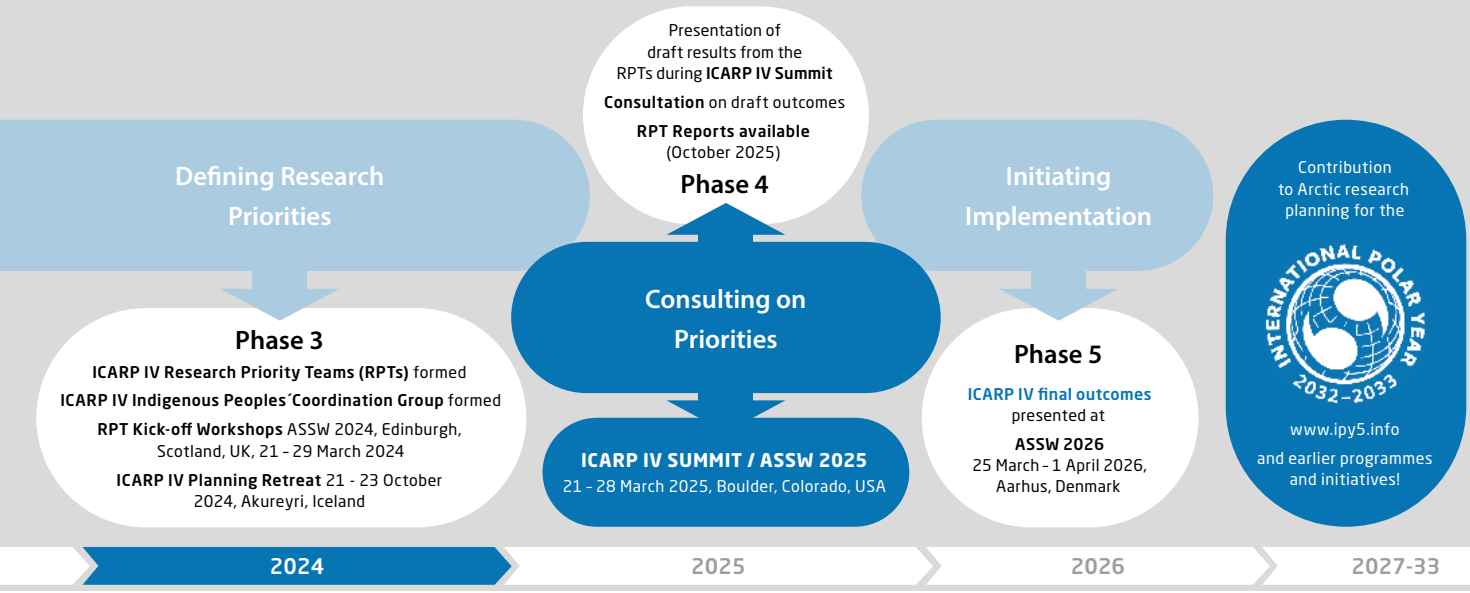
On the third day, attention turned to maximizing the impact of the ICARP IV Summit, planning the final ICARP IV outcomes, and ensuring that the Summit effectively advances each RPT's work. Participants discussed how to structure town halls, internal planning sessions, and other events to encourage input from diverse voices, including Indigenous Peoples and Early Career Researchers. Participants considered options to improve engagement, such as webinars, mentorship initiatives, and accessible online platforms. Throughout these conversations, there was a shared understanding that priorities remain open to input, and that final reports should present a limited number of realistic, actionable priorities. Participants also addressed how to track the influence of ICARP IV once it concludes, considering follow-up events, annual updates, and methods to gauge whether identified priorities inform future research, policy, and funding decisions as the Arctic moves toward IPY 2032–33.

More information on the ICARP IV Process:
https://icarp.iasc.info/

ICARP IV International Steering Committee

The ICARP IV International Steering Committee (ISC) consists of appointees from all ICARP IV partner organisations and is tasked to oversee and coordinate the ICARP IV process from 2022 to 2026, identify and develop an overall process goal, theme and agenda, sub-theme research questions, and mechanisms for action and implementation of the ICARP IV outcomes.

CO-CHAIR	**Henry Burgess**, International Arctic Science Committee (IASC) - IASC President
CO-CHAIR	**Dalee Sambo Dorough**, ICARP IV Indigenous Coordination Group
Member	**Sourav Chatterjee**, International Arctic Science Committee (IASC) - Atmosphere Working Group
Member	**Henrieka Detlef**, International Arctic Science Committee (IASC) - Marine Working Group
Member	**Catherine Chambers**, International Arctic Science Committee (IASC) - Social and Human Working Group
Member	**Yulia Zaika**, International Arctic Science Committee (IASC) - International Science Initiative in the Russian Arctic (ISIRA)
Member	**Matthew Druckenmiller**, International Arctic Science Committee (IASC) - ICARP IV / ASSW 2025 host
Member	**Gerlis Fugmann**, International Arctic Science Committee (IASC) - IASC Secretariat



Member	**Larry Hinzman**, International Arctic Science Committee (IASC) - Past ICARP IV Chair
Member	**David Hik**, International Arctic Science Committee (IASC) - Past ICARP III Chair
Member	**Lauren Divine**, Aleut International Association (AIA)
Member	**Chantelle Verhey**, Arctic Data Committee (ADC)
Member	**Rolf Rødven**, Arctic Monitoring and Assessment Programme (AMAP)
Member	**Hyoung Chul Shin**, Asian Forum for Polar Science (AFOPS)
Member	**Harmony Wayner**, Association of Polar Early Career Scientists (APECS)
Member	**Svein Mathiesen**, Association of World Reindeer Herders (AWRH)
Member	**Amy Lauren Lovecraft**, Climate and Cryosphere (CliC)
Member	**Courtney Price**, Conservation of Arctic Flora and Fauna (CAFF)
Member	**Maria Grigoratou**, European Polar Board (EPB)
Member	**Dirk Mengedoht**, Forum of Arctic Research Operators (FARO)
Member	**Tatiana Degai**, International Arctic Social Sciences Association (IASSA)
Member	**Richard Essery**, International Association of Cryospheric Sciences (IACS)
Member	**Inigo Martinez**, International Council for the Exploration of the Sea (ICES)
Member	**Kjersti Gisnås**, International Permafrost Association (IPA)
Member	**Melody Burkins**, International Science Council (ISC)
Member	**Maribeth Murray**, International Study of Arctic Change (ISAC)
Member	**Sara Olsvig**, Inuit Circumpolar Council (ICC)
Member	**Radovan Krejci**, Ny-Ålesund Science Managers Committee (NySMAC)
Member	**Maria Pia Casarini**, Polar Educators International (PEI)
Member	**Máret Haetta**, Saami Council
Member	**Seong-Joong Kim**, Scientific Committee on Antarctic Research (SCAR)
Member	**Emmanuel Boucher-Fassett**, Sustainable Development Working Group (SDWG)
Member	**Sandy Starkweather**, Sustaining Arctic Observing Network (SAON)
Member	**Heikki Lihavainen**, Svalbard Integrated Arctic Earth Observing System (SIOS)
Member	**Dag Avango**, The Arctic Five
Member	**Kirsi Latola**, University of the Arctic (UArctic)
Alternate	**Sarah Strand**, Association of Polar Early Career Scientists (APECS)
Alternate	**Paula Kankaanpää**, International Arctic Science Committee (IASC)
Alternate	**Muyin Wang**, International Arctic Science Committee (IASC) - Atmosphere Working Group
Alternate	**Lisa Winberg von Friesen**, International Arctic Science Committee (IASC) - Marine Working Group
Alternate	**Andrey Petrov**, International Arctic Science Committee (IASC) - ICARP IV / ASSW 2025 host
Alternate	**Federica Scarpa**, International Arctic Science Committee (IASC) - IASC Secretariat
Alternate	**Edward Hanna**, Climate and Cryosphere (CliC)
Alternate	**Katy Smith**, Forum of Arctic Research Operators (FARO)
Alternate	**Inga Beck**, Polar Educators International (PEI)

ICARP IV Indigenous Peoples' Coordination Group

The ICARP IV Indigenous Peoples' Coordination Group (IPCG) is an informal body composed of Arctic Indigenous Peoples engaged in the ICARP IV Research Priority Teams (RPTs) and the ICARP IV International Steering Committee to assist in and ensure coordination of the efforts to Indigenize Arctic research. At present the body is composed of:

Member	**Margaret Rudolf**, University of Alaska Fairbanks, USA
Member	**Heather Sauyaq Jean Gordon**, Sauyaq Solutions, LLC, USA
Member	**Varvara Korkina Williams**, Dartmouth College, USA
Member	**Dalee Sambo Dorough**, University of Alaska Anchorage, USA
Member	**Tatiana Degai**, University of Victoria, Canada
Member	**Cana Uluak** Itchuaqiyaq, Virginia Tech, USA

Research Priority Teams

The ICARP IV International Steering Committee convenes seven **Research Priority Teams (RPTs)** in 2024 and 2025 that work with with the input provided through the ICARP IV Community Engagement process to:

- define the knowledge gaps and research priorities for the next decade for their topic area based on the input collected, and
- Identify and suggest opportunities to enhance synergies that might exist across existing research plans, or where there is potential for formalising new alliances and collaborative partnerships.

The preliminary results of the Research Priority Teams work will be presented at the **ICARP IV Summit / ASSW 2025** in **Boulder, Colorado, USA (21 – 28 March 2025)**, followed by a community-wide public consultation phase, with the aim to finalise the outcomes of the Research Priority Teams work by the end of 2025. The results will then contribute to the final report of the ICARP IV process published in March 2026.

To ground the process in the outcomes of the last ICARP III, the topic areas include the ICARP III themes (from the final ICARP III report) plus additional relevant themes. Each RPT will also consider several cross-cutting themes in their work, including but not limited to co-production of knowledge.

The following seven ICARP IV Research Priority Teams have been set up:

Research Priority Team1: The Role of the Arctic in the Global System

The team will address research priorities and their implementation regarding topics such as: the needs for further scientific understanding of the role of the Arctic in the global climate system (past, present, and future); extreme events; permafrost thaw and SLCF; temporal and spatial distribution of precipitation (spatio-temporal aggregation); teleconnection patterns; impacts of rapid changing Arctic on extreme events locally and remotely; and global consequences (including concerning human / social aspects).

RPT 1 Members

CO-CHAIR	**Kabir Rasouli**, Stantec | Canada
CO-CHAIR	**Xiangdong Zhang**, North Carolina State University | USA
Member	**Steve Arnold**, University of Leeds | UK
Member	**Marius Årthun**, University of Bergen | Norway
Member	**Rajendran Shobha Ajin**, University of Florence | Italy
Member	**David Arthurs**, Polar View | Denmark

Member	**Ed Blockley**, UK Met Office | UK
Member	**Hanne Hvidtfeldt Christiansen**, The University Centre in Svalbard, UNIS | Norway
Member	**Archana Dayal**, Aberystwyth University | UK
Member	**Markus Frey**, UKRI - British Antarctic Survey | UK
Member	**Stefania Gilardoni**, Institute of Polar Sciences - National Research Council | Italy
Member	**Mats Granskog**, Norwegian Polar Institute | Norway
Member	**Haiyan Jin**, Second Institute of Oceanography | China
Member	**Seong-Joong Kim**, Korea Polar Research Institute | Republic of Korea
Member	**Joo-Hong Kim**, Korea Polar Research Institute | Republic of Korea
Member	**William Kochtitzky**, University of New England | USA
Member	**Tao Li**, Ocean University of China | China
Member	**Hans Linderholm**, University of Gothenburg | Sweden
Member	**Marianne Tronstad** Lund, ICICERO Center for International Climate Research | Norway
Member	**Priscilla Mooney**, NORCE, Bjerknes Centre for Climate Research | Norway
Member	**Malte Müller**, Norwegian Meteorological Institute / University of Oslo | Norway
Member	**Giovanni Muscari**, Istituto Nazionale di Geofisica e Vulcanologia | Italy
Member	**Hotaek Park**, Japan Agency for Marine-Earth Science and Technology | Japan
Member	**Céline Rodrigues**, Universidade Nova de Lisboa | Portugal / University of Lapland | Finland
Member	**Erika Roesler**, Sandia National Laboratories | USA
Member	**Tommaso Tesi**, Institute of Polar Sciences - CNR | Italy
Member	**Michael Tjernström**, Stockholm University | Sweden
Member	**Margit Hildegard Simon**, Norwegian Research Centre | Norway
Member	**Armina Soleymani**, University of Waterloo | Canada
Member	**Peter Wadhams**, Turin Polytechnic, Italy | United Kingdom
Member	**Claire Waelbroeck**, CNRS - LOCEAN | France
Member	**Greta Wells**, University of Iceland | Iceland
Member	**Elana Wilson Rowe**, Norwegian Institute of International Affairs | Norway
Member	**Yutian Wu**, LDEO/Columbia University | USA
Member	**Xin Yang**, British Antarctic Survey | UK
Member	**Masakazu Yoshimori**, Atmosphere and Ocean Research Institute, The University of Tokyo | Japan

Research Priority Team 2: Observing, Reconstructing, and Predicting Future Climate Dynamics and Ecosystem Responses

The team will address research priorities and their implementation regarding topics such as: Arctic observing needs (including prioritisation and planning tools for selecting observables and the engagement of indigenous peoples and stakeholders in these processes); climate system and transformations; predicting future climate dynamics; and the need for, and nature of, sustained observations and monitoring systems including spatio-temporal comparable monitoring of abiotic and biotic factors (e.g. atmosphere - vegetation - soil). In addition, the potential of paleobiology and paleoclimatology as a basis for conservation practices and evidence-based modelling will be assessed.

RPT 2 Members

CO-CHAIR	**Margaret Rudolf**, University of Alaska Fairbanks | USA
CO-CHAIR	**Jeff Welker**, University of Alaska Anchorage and University of Oulu | USA / Finland
CO-CHAIR	**M. Syndonia Bret-Harte**, University of Alaska Fairbanks | USA
CO-CHAIR	**Robbie Mallett**, UiT The Arctic University of Norway | Norway
CO-CHAIR	**Wai Yin Cheung**, Queen's University | Canada
Member	**Hélène Angot**, University of Grenoble | France
Member	**Maurizio Azzaro**, Italian National Research Council (CNR) | Italy
Member	**Manuel Bensi**, Italian National Research Council (CNR) | Italy
Member	**João Canário**, University of Lisbon | Portugal
Member	**Tom Christensen**, Aarhus University, Cirkumpolar Biodiversity Monitoring Programme (CBMP) | Danish / Greenlandic
Member	**Lauren Divine**, Tribal Government of St. Paul Island (Department Director), SAON ROADS AP, AIA Representative to PAME, AMAP and CAFF | USA
Member	**Eugenie Euskirchen**, University of Alaska Fairbanks | USA
Member	**Kaitlyn Fleming**, Trent University | Canada

Member	**Lisa Winberg von Friesen**, Linnaeus University | Sweden
Member	**Laura Ghigliotti**, Italian National Research Council (CNR) | Italy
Member	**Ramona Heim**, University of Zurich | Switzerland
Member	**Laurie Juranek**, Oregon State University | USA
Member	**Tsubasa Kodaira**, The University of Tokyo | Japan
Member	**Astrid Lampert**, TU Braunschweig | Germany
Member	**Jan Rene Larsen**, AMAP and SAON | Denmark/Norway
Member	**Maarten Loonen**, University of Groningen | Netherlands
Member	**Rob Middag**, NIOZ Royal Netherlands Institute for Sea Research | Netherlands
Member	**Arnab Mukherjee**, National Centre for Polar and Ocean Research (NCPOR) | India
Member	**Susan M. Natali**, Woodwell Climate Research Center | USA
Member	**Shigeto NISHINO**, JAMSTEC | Japan
Member	**Anna H. Ólafsdóttir**, Marine and Freshwater Research Institute | Iceland
Member	**Kathleen Orndahl**, Northern Arizona University | USA
Member	**Sergi Pla-Rabes**, CREAF and Universitat Autònoma de Barcelona | Spain
Member	**Bjørg Risebrobakken**, NORCE Norwegian Research Centre | Norway
Member	**Brendan M. Rogers**, Woodwell Climate Research Center | USA
Member	**Alcide di Sarra**, ENEA | Italy
Member	**Kazutoshi Sato**, National Institute of Polar Research | Japan
Member	**Hazel Shapiro**, IARPC | USA
Member	**Warsha Singh**, Marine and Freshwater Research Institute | Iceland
Member	**Nozomu Takeuchi**, Chiba University | Japan
Member	**Vito Vitale**, Italian National Research Council (CNR) | Italy
Member	**Deniz Vural**, Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research | Germany
Member	**Patrik Winiger**, Paul Scherrer Institute | Switzerland
Member	**Gabriel Wolken**, University of Alaska Fairbanks | USA
Member	**Xiaofan Yang**, Beijing Normal University | China

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

The team will address research priorities and their implementation regarding topics such as: sustainable and equitable Arctic economy; adaptive management and nature-based solutions (actions/adaptations/measures); healthy Arctic and healthy peoples (multi-stressor effects, contaminants and climate interactions, One Health); energy systems; sustainable energy production; green transition and green energy; reliability; resilience; food systems; sustainable production; resilience; water systems and drinking water; sanitary health; infrastructure and migration.

RPT3 Members

CO-CHAIR	**Jackie Dawson**, ArcticNet and University of Ottawa | Canada
CO-CHAIR	**Heather Sauyaq Jean Gordon**, Sauyaq Solutions, LLC | USA
CO-CHAIR	**Varvara Korkina Williams**, Institute of Arctic Studies, Dartmouth College | USA
Member	**Nicoletta Ademollo**, National Research Council of Italy, Institute of Polar Sciences (CNR-ISP) | Italy
Member	**Claire Alix**, University of Paris 1 Panthéon-Sorbonne | France
Member	**Anne Barker**, NRC | Canada
Member	**Amanda Burson**, British Antarctic Survey | UK
Member	**Douglas Causey**, University of Alaska / Harvard University | USA
Member	**Tatiana Degai**, University of Victoria | Canada
Member	**Seira Duncan**, University of Eastern Finland | Finland
Member	**Igor Ezau**, UiT - The Arctic University of Norway | Norway
Member	**Nadezhda Filimonova**, Harvard University | Russia
Member	**Jérôme Fort**, CNRS | France
Member	**Laura Ghigliotti**, CNR-IAS | Italy
Member	**Gustavo Guarin Yunda**, Fisheries and Marine Institute, Memorial University | Canada
Member	**Taka Hirata**, NPO Digital Hokkaido / Hokkaido University | Japan

Member	**Tetsuya Hiyama**, Nagoya University | Japan
Member	**Yoshihiro Iijima**, Department of Geography, Tokyo Metropolitan University | Japan
Member	**Kaori Ishii**, Tohoku University | Japan
Member	**Emily Jenkins**, University of Saskatchewan | Canada
Member	**Ilona Kater**, Scott Polar Research Institute | United Kingdom
Member	**Brendan Kelly**, Study of Environmental Arctic Change | USA
Member	**Mariel Kieval**, University of Helsinki | Finland
Member	**Stacey Lucason**, Kawerak, Inc. (Yup'ik person, tribal member) | USA
Member	**Julia Macpherson**, University of Ottawa | Canada
Member	**Alexandra Middleton**, Oulu Business School, University of Oulu | Finland
Member	**Maribeth Murray**, University of Calgary | Canada
Member	**Andrey Petrov**, ARCTICenter, University of Northern Iowa | USA
Member	**Olga Povoroznyuk**, University of Vienna | Austria
Member	**Sophia Renn**, University of Edinburgh | UK
Member	**Mathieu Reverberi**, University Centre of the Westfjords | Denmark
Member	**Michael Reynolds**, Toolik Field Station, Institute of Arctic Biology, University of Alaska Fairbanks | USA
Member	**Massimo Santarelli**, Politecnico di Torino | Italy
Member	**Victoria Sharakhmatova**, University of Northern Iowa, ARCTICenter | USA
Member	**Virginie Vaté-Klein**, CNRS | France
Member	**Ramey Wood**, Nine One Ten | USA

Research Priority Team 4: Arctic Research Cooperation and Diplomacy

The team will address research priorities and their implementation regarding topics such as: effective international pan-Arctic cooperation in joint-funding and delivery of Arctic research outcomes; connecting and coordinating national and international funding agencies; utilising the role, contribution and value of Arctic science at times of high geopolitical tension; pathways to effective research cooperation; research exchange programs; and collaborative observing amid geopolitical constraints.

RPT 4 Members

CO-CHAIR	**Malgorzata Smieszek-Rice**, UIT The Arctic University of Norway, The Norwegian College of Fishery Science | Norway
Co-Chair	**Jennifer Spence**, Belfer Center, Harvard Kennedy School | United States
Co-Chair	**Tom Barry**, University of Akureyri | Iceland
Member	**Elena Adasheva-Klein**, Yale University / New York University | USA
Member	**Jenny Baeseman**, Baeseman Consulting | USA
Member	**Renuka Badhe**, Netherlands
Member	**Christine Barnard**, ArcticNet | Canada
Member	**Ebru Caymaz**, Canakkale Onsekiz Mart University | Turkey
Member	**Chuan Chen**, Peking University | China
Member	**Hannah Chenok**, Harvard University | USA
Member	**Michaela Coote**, University of Lapland (Arctic IR) & Network of Arctic Researchers, Ireland | Ireland
Member	**Roberto Delgado**, National Science Foundation (US) | USA
Member	**Dalee Sambo Dorough**, University of Alaska Anchorage | United States
Member	**Matthew Druckenmiller**, National Snow and Ice Data Center, University of Colorado Boulder | USA
Member	**Charlotte Gehrke**, Nord University (Norway) | Norway/Germany
Member	**Annegret Hannawa**, Universita della Svizzera italiana | Switzerland
Member	**Osamu Inagaki**, Kobe University | Japan
Member	**Jihoon Jeong**, Korea Polar Research Institute (KOPRI) | Republic of Korea
Member	**Michael Karcher**, Alfred Wegner Institute (AWI) | Germany
Member	**Hajime Kimura**, JAMSTEC | Japan
Member	**Monika Kusiak**, Institute of Geophysics Polish Academy of Sciences | Poland
Member	**Hanna Lappalainen**, University of Helsinki | Finland
Member	**Onur Limon**, none | Türkiye
Member	**Liza Mack**, Denali Commission | USA
Member	**Zia Madani**, Kobe University and University of Saskatchewan | Japan / Canada
Member	**Ana Manero-Salvador**, University Carlos III | Spain
Member	**Maribeth Murray**, University of Calgary | Canada
Member	**Gareth Rees**, Scott Polar Research Institute, University of Cambridge | United Kingdom
Member	**Peter Schweitzer**, University of Vienna | Austria

Member	**Alexander Sergunin**, St. Petersburg State University | Russia
Member	**Margit Hildegard Simon**, NORCE | Norway
Member	**Ping SU**, Tongji University | China
Member	**Tetsuo Sueyoshi**, NIPR (National Institute of Polar Research) | Japan
Member	**Maya Sundsten**, International Cryosphere Climate Initiative (ICCI) | Sweden
Member	**Nancy Sung**, The White House Office of Science and Technology Policy | USA
Member	**Kanagavalli Suryanarayanan**, UIT The Arctic University of Norway | Norway
Member	**Monika Szkarłat**, Maria Curie-Skłodowska University | Poland
Member	**Manish Tiwari**, National Centre for Polar and Ocean Research | India
Member	**David Velázquez**, Universidad Autonoma de Madrid | Spain
Member	**Chantelle Verhey**, Arctic Data Committee | Canada
Member	**Marco Volpe**, University of Lapland | Italy
Member	**Yulia Zaika**, Kola Science Centre of Russian Academy of Sciences | IASC Secretariat (ISIRA Group) | Russia

Research Priority Team 5: Co-Production and Indigenous-led methodologies

The team will address research priorities and their implementation regarding topics such as: co-production of knowledge; empowerment; capacity sharing; creating space and opportunities for Indigenous institutions / scholars to lead research and develop collaborations; Indigenous leadership; bringing education, science, and Indigenous knowledge together; producers and users of knowledge; and Indigenising Arctic research.

RPT 5 Members

CO-CHAIR	**Anita Lafferty**, University of Alberta | Canada
CO-CHAIR	**Norma Shorty**, Arctic Athabaskan Council | Alaska/Yukon
CO-CHAIR	**Stacey Lucason**, Kawerak, Inc. | USA
Member / Secretary	**Chelsea Koch**, American University | United States
Member / Secretary	**Louise Mercer**, Northumbria University | United Kingdom
Member / Secretary	**Amanda Young**, Toolik Field Station, University of Alaska Fairbanks | United States of America
Member	**Tatiana Degai**, University of Victoria | Canada
Member	**Semen Gabyshev**, CEARC (Paris-Saclay University) UVSQ | Frances
Member	**Heather Sauyaq Jean Gordon**, Sauyaq Solutions, LLC | USA
Member	**Eben Hopson**, Eben Hopson Media | United States
Member	**Christine Ingemann**, Ilisimatusarfik - University of Greenland | Greenland
Member	**Laurie-Ann Lines**, University of Alberta | Canada
Member	**May-Britt Ohman**, Ohman | Sweden
Member	**Andrey Petrov**, ARCTICenter, University of Northern Iowa | USA
Member	**Vanessa Raymond**, Arctic Data Committee | USA
Member	**Annette Scheepstra**, University of Groningen | Netherlands
Member	**Viacheslav Shadrin**, The Institute for Humanities Research and Indigenous Studies of the North, Siberian Branch of Russian Academy of Sciences | Russian Federation
Member	**Tracey Skillington**, University College Cork, Ireland | Ireland
Member	**Harmony Wayner**, International Arctic Research Center, University of Alaska Fairbanks | Alaska, USA
Member	**Sophie Weeks**, Scott Polar Research Institute, Polar Educators International | United Kingdom

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

The team will address how Arctic research planning and traditional knowledge are preparing present and future generations living in the Arctic and beyond to build community resilience and sustainability. Topics include: connecting Arctic issues, research priorities and their implementation; effective outreach, science communication and capacity building between research teams, local communities, decision-makers and the wider

public; engaging young people, local communities, decision-makers and others in research planning; training a new generation of Arctic researchers, equipped to lead and be engaged in Arctic research at all levels; the role of EOC working at the interface of academic science and Indigenous traditional and local knowledge helping to combine and harmoniously integrate these different knowledge systems; measuring impact - effective planning and evaluation; equality, diversity, access and inclusion in EOC.

RPT 6 Members

CO-CHAIR	**Inga Beck**, The Scientific Committee on Antarctic Research (SCAR) | Germany
CO-CHAIR	**Diane Hirshberg**, University of Alaska Anchorage Institute of Social and Economic Research and UArctic | United States
Member	**Kirk Anderson**, University of the Arctic | Canada
Member	**Toby Anungazuk Jr.**, Golovin resident | USA
Member	**Jessica Aquino**, Hólar University | Iceland
Member	**Mathew Kuttivadakkethil Avarachen**, Norwegian University of Science and Technology | Norway
Member	**Maria Pia Casarini**, Polar Educators International | Italy / UK
Member	**Charleen "Daazhraii" Fisher**, University of Alaska Fairbanks | USA, Alaska
Member	**Mariasilvia Giamberini**, National Research Council of Italy | Italy
Member	**Barbara Olga Hild**, University of Iceland | Iceland
Member	**Christiane Hübner**, SIOS Knowledge Centre (Svalbard Integrated Arctic Earth Observing System) | Norway
Member	**Pigga Keskitalo**, University of Lapland | Finland
Member	**Stacey Lucason**, Kawerak, Inc. (Yup'ik person, tribal member) | USA
Member	**Shannon Mcallister**, University of Calgary | Canada
Member	**Alison Perrin**, Yukon University | Canada
Member	**Neelu Singh**, Norsk Polarinstitutt | Norway
Member	**Betty Trummel**, Polar Educators International | United States
Member	**Ramcharan Vijayaraghavan**, None | India
Member	**Janet Warburton**, Arctic Research Consortium | United States
Member	**Sophie Weeks**, Scott Polar Research Institute, Polar Educators International | United Kingdom

Research Priority Team 7: Technology, Infrastructure, Logistics, and Services

The team will address research priorities and their implementation regarding topics such as: Arctic infrastructure needs; engineering; new and emerging technologies (e.g. AI and machine learning), the potential for further automation and remote operation in research; the requirements and opportunities presented by new large-scale research equipment and monitoring systems; the potential for step-changes in the sharing of national infrastructure and the creation of new international platforms.

RPT 7 Members

CO-CHAIR	**Marin Kuizenga**, University of Alaska, Toolik Field Station | USA
CO-CHAIR	**Dariusz Ignatiuk**, University of Silesia in Katowice/Polish Polar Consortium | Poland
CO-CHAIR	**Cana Uluak Itchaqiyaq**, Virginia Tech University | USA
Member	**Marie Frost Arndal**, Aarhus University / FARO | Denmark
Member	**Josef Elster**, Centre for Polar Ecology, University of South Bohemia | Czech Republic
Member	**Magnus Friberg**, SUNET / Swedish Research Council | Sweden
Member	**Syndonia Bret Harte**, University of Alaska, Institute of Arctic Biology | USA
Member	**Falk Huettmann**, University of Alaska, Fairbanks | USA
Member	**Shridhar Jawak**, Norwegian Climate and Environmental Research Institute | Norway
Member	**Hideki Kobayashi**, Japan Agency for Marine-Earth Science and Technology | Japan
Member	**Gael Lymer**, Natural Sciences Belgium | Belgium
Member	**Bill Manley**, University of Colorado | USA
Member	**Verena Mohaupt**, AWI | Germany
Member	**Julia Muchowski**, Swedish Polar Research Secretariat | Sweden
Member	**Lloyd Pikok Jr.**, None | USA
Member	**Benoît Pirenne**, Ocean Networks Canada | Canada

Member	**Morten Rasch**, University of Copenhagen | Denmark
Member	**Hannele Savela**, Thule Institute, University of Oulu (INTERACT) | Finland
Member	**Archana Singh**, National Center for Polar and Ocean Research | India
Member	**Rohit Srivastava**, National Centre for Polar and Ocean Research (NCPOR) | India
Member	**Anneli Strobel**, Alfred Wegener Institute | Germany
Member	**Yutaka Tobo**, National Institute of Polar Research | Japan
Member	**Elmer Topp-Jørgensen**, INTERACT - International Network for Terrestrial Research and Monitoring in the Arctic | Denmark
Member	**Marcin Wichorowski**, Institute of Oceanology Polish Academy of Sciences | Poland

ICARP IV Summit

Following an invitation from the **U.S. Polar Research Board** at the National Academies the IASC Council voted to approve **Boulder, Colorado (USA)** as the **host of ICARP IV Summit**, to be held concurrently with **Arctic Science Summit Week (ASSW) 2025** from **20 - 28 March 2025**. The **Conference Host Committee** is committed to providing an outstanding venue for sharing scientific achievements, advancing collaboration, and planning for the future of Arctic research.

The **ICARP IV Summit** is the summative event of the Fourth International Conference on Arctic Research Planning (ICARP IV) process, which is a multi-year effort that began in 2022 to engage the international community on critical topics and priorities for Arctic research in the next 10 years that cut across disciplines and knowledge systems, and that require new and innovative thinking and collaboration. The Summit will engage Arctic researchers, Indigenous Peoples, policymakers, and other interested parties from around the world, serving as a crucial milestone for shaping the Fifth International Polar Year in 2032–33 (see Chapter 5 of this Bulletin).

The ICARP IV Summit will provide an opportunity to discuss and consult on the initial outcomes of the seven ICARP IV Research Priority Teams.

The Summit will also invite further sessions on important research questions and priorities for Arctic research that should be considered in the ICARP IV process.

More info:

https://icarp.iasc.info/

PHOTO: MARIASILVIA GIAMBERINI

5. Arctic Science Summit Week 2024

5. Arctic Science Summit Week 2024

The ASSW 2024 took place in Edinburgh, Scotland, UK, between 21-29 March 2024, co-organised by the University of Edinburgh, Scottish Arctic Network (ScAN), and IASC with support from varipus local and international partners (***https://www.assw.info/past-assws/assw-2024/assw-2024-partners-sponsors***).

ASSW2024 included the following components:

- ASSW 2024 Business and Community Meetings (21 - 29 March 2024) - a total of 95 events during the days of business and community meetings covered a wide range of topics, from regular IASC working group meetings, to ICARP IV Research Priority Team Workshops, to ECR and community-led events.
- ASSW 2024 Science Day 2024 "Arctic Coasts" (26 March 2024) - Hosted at Dynamic Earth science outreach centre, this day attracted over 300 participants including members of general public. The agenda featured an extensive array of topics under the theme of "Arctic Coasts" and included a keynote address by Julie Fitzpatrick, Chief Scientific Adviser for Scotland, and a public lecture from Dr. Michael Sfraga, Chair of the US Arctic Research Commission. Events also included the IASC medal ceremony and a panel discussion on inclusive and collaborative research practices in the Arctic.
- Arctic Observing Summit 2024 (27 - 29 March 2024) - The three-day summit spawned fruitful discussions, the outcomes of which including short statements, are available on the AOS website ***https://arcticobservingsummit.org/summits/aos-2024/***

In addition to the scientific discussions, the delegates enjoyed a rich social and cultural programme, featuring an art exhibition, a welcoming reception at the Edinburgh City Chambers, and a conference dinner in the historic Playfair Library. Attended by over 900 delegates both in-person and online, ASSW 2024 was a resounding success. It laid a significant foundation for upcoming discussions at Boulder 2025 and the momentum building towards the 5th International Polar Year

Upcoming ASSWs

ASSW 2025

Boulder, Colorado, US from 20 - 28 March 2025

Following an invitation from the U.S. Polar Research Board at the National Academies the IASC Council voted to approve Boulder, Colorado (USA) as the host of ICARP IV conference, to be held concurrently with Arctic Science Summit Week (ASSW) 2025 from 20 - 28 March 2025. The Conference Host Committee is committed to providing an outstanding venue for sharing scientific achievements, advancing collaboration, and planning for the future of Arctic research.

ASSW 2026

Aarhus, Denmark from 25 March - 1 April 2026

The IASC ASSW 2026 will be held in Aarhus, Denmark, from 25 March - 1 April 2026. The program consists of Business and Community meetings (March 25-28), IASC working group, SCII and council meetings (March 25-28), an Arctic Science Day with the theme "Networks in the Arctic" (March 29) and the three-day Arctic Observing Summit, AOS (March 30 - April 1), all within the framework of Aarhus University's award-winning campus.

ASSW 2027

Hakodate, Hokkaido, Japan, 2027

ASSW2027 will be held in Hokkaido, Japan. This ASSW will includes a **Science Symposium** as well as meetings of the participating organizations. These symposia create a platform for exchanging knowledge, cross fertilization and collaboration and attract scientists, students, policy makers and other professionals from all over the world.

PHOTO: NUNZIATINA PORCINO (CNR-ISP, Italy)
Hornsund, Spitsbergen island

6. Data and Observations

6. Data and Observations

Sustaining Arctic Observing Network (SAON)

Vision, Mission and Goals

SAON is a joint initiative of the Arctic Council and IASC. SAON's vision is a connected, collaborative, and comprehensive long-term pan-Arctic Observing System that serves societal needs. The mission of SAON is to facilitate, coordinate, and advocate for coordinated international pan-Arctic observations and mobilize the support needed to sustain them.

The SAON Board has approved a 10-year strategy and implementation plan for SAON in 2018 and adopted the following three goals:

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.

Creating a roadmap to a well-integrated Arctic Observing System.

In its strategy, SAON has identified the need for a Roadmap for Arctic Observing and Data Systems (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 process 1) must include funding for Indigenous Peoples' equitable partnership and active participation2) complement and integrate, without duplication, the current planning approaches used by existing efforts (regional to global), and 3 support step-wise development through a flexible, collaborative and evolving structure.

An element in the ROADS process is Shared Arctic Variables (SAVs); these support translation of societal requirements into observing system requirements and coordination of observing implementation strategies. Current SAV candidates are 1) Harmful Algal Blooms, 2) Permafrost, 3) Salmon and Food Security, 4) Sea ice, and 5) Wildfire. The status of development of these can been seen at https://roadsadvisorypanel.org/expert-panel.

The SAON Committee on Observations and Networks (CON) has initiated work to conduct an inventory of national observational capacities. This is supported by the Polar Observing Assets Working Group and its work to develop the Registry of Polar Observing Networks.

PHOTO: NUNZIATINA PORCINO - (CNR-ISP, Italy)
View from the Polish Polar Station, Hornsund, Spitsbergen Islands

SAON is organizing the Arctic Observing Summit (AOS) with partners. The next is scheduled for 2026 and is described elsewhere in the Bulletin.

Free and ethically open access to all Arctic observational data

In 2020, the Arctic Data Committee (ADC) initiated with Antarctic partners an open series of virtual workshops under the heading Polar to Global Online Interoperability and Data Sharing. At the workshops, three subgroups work under the headings:

- Federated Search (***https://data.arcticobserving.org/ and https://polder.info***)
- Vocabularies and Semantics (***https://arcticdc.org/activities/core-projects/vocabularies-and-semantics-wg***)
- Updating the IASC 2013 Statement of Principles and Practices for Arctic Data Management

The Polar Data Forum (PDF) focuses on improving how people and systems can share data in a meaningful way. The next PDF will be organized in cooperation with partners in October 2025.

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

Arctic Data Committee (ADC)

The Arctic Data Committee (ADC) is a collaborative initiative of the International Arctic Science Committee (IASC) and the Sustaining Arctic Observing Networks (SAON). One of SAON's guiding principles is to "promote ethically free and open access to ethically collected data." Over the years, various workshops (e.g., the Polar Data Planning and Polar Data Architecture Workshop) and conferences (e.g., the Polar Data Forum) have been organized to address structured approaches to polar and Arctic data management. These events have largely focused on facilitating the exchange of discovery information between data centers and integrating such data into portals. Since 2019, regular hackathons have been held under the Polar to Global Online Interoperability and Data Sharing Hackathons initiative (***https://p2g-data.org/***). These hackathons foster collaboration between ADC-related working groups and the broader polar data management community.

As of March 2024, the Arctic Data Committee resumed activities following a two-year hiatus. Under the leadership of newly elected co-chairs, Leasi Vanessa Raymond and Chantelle Verhey, the ADC has initiated work in several key areas, outlined as follows:

1. **Drafting IASC's Revised Data Statement:** The committee is conducting biweekly writing sessions to finalize the document.
    a. **Updates at ASSW:** Progress will be discussed during the IASC Council update at the Arctic Science Summit Week (ASSW).
2. **ICARP IV Planning:** ADC is contributing to the planning of the Fourth International Conference on Arctic Research Planning (ICARP IV) by providing representation on the steering committee and ensuring

cross-cutting participation with an ADC representative involved in every RPT (rather than hosting a standalone RPT).

3. **Co-Presentations at ASSW:** ADC will co-present with SAON and the Inuit Circumpolar Council (ICC) in a special session (5.9) on societal impacts, focusing on Indigenous knowledge and its integration into international environmental assessments and research projects.
    a. Also have a data session (8.2) Data-Driven Research: Streamlining Collaboration Between Repositories and Researchers
4. **Polar Data Forum VI Planning:** Preparations for Polar Data Forum VI are underway in partnership with the SCADM lead. The event, scheduled to follow the International Data Week (October 20–24), will focus on the theme "Human + Impact."
5. **Mapping the Polar Data Ecosystem:** Efforts to update this initiative are ongoing for interested parties; and a final report has been submitted
6. **Ongoing Support:** Continued contributions to initiatives such as POLDER-Polar Data Search, Shared Arctic Variables, POAWG - RoPON, and SAON ROADS Advisory Panel.

Onwards

Looking ahead, the Arctic Data Committee (ADC) is committed to advancing collaboration, innovation, and accessibility in Arctic data management. By fostering partnerships across disciplines and communities, the ADC aims to support ethical, open-access data practices that empower researchers and stakeholders alike. Through its ongoing initiatives, workshops, and forums, the committee continues to enhance global collaboration, streamline data sharing, and address critical challenges in Arctic research. These efforts ensure that the ADC remains a key driver in promoting sustainable and inclusive data solutions for the future of Arctic science.

PHOTO: MARIASILVIA GIAMBERINI

7. Capacity Building

7. Capacity Building

IASC Fellowship Program

IASC recognizes that the next generation of Arctic researchers are faced with emerging scientific and societal challenges due to the growing impacts of Arctic and global climate change. IASC therefore believes that it is of great importance to foster, promote, and involve early career researchers (ECRs) working in the Arctic by:

- Striving to represent ECRs within IASC;
- Providing support, endorsement, and dissemination of information on activities, projects and requests for participation;
- Supporting travel grants to ECRs for participation in Arctic conferences.

Using these instruments, IASC aims to promote ECRs within the organization by providing career development activities such as planning international and interdisciplinary research activities and programs, organizing scientific workshops, and developing professional networks.

Every year since 2014, the IASC Fellowship Program has provided five excellent Arctic ECRs (incl. graduate students, postdocs and junior research group leaders) with the opportunity to get engaged in the IASC Working Group. Starting in 2020, an additional Indigenous Fellowship was added to the IASC Fellowship Program. The appointment of Indigenous Fellows comes at the recommendation of the Action Group on Indigenous Involvement. IASC has had Indigenous Fellows before, but this recommendation (and line in the IASC budget) means that there will be at least one offered to an Indigenous ECR every year. The Indigenous Fellow can choose whichever IASC Working Group is most of interest and relevance to them

This year 10 ECRs were lucky to receive their fellowships. APECS very kindly coordinated the application and review process; recommendations from APECS based on the peer review process were delivered for final selection to the IASC Working Group Chairs. The reviewers were impressed by the excellent quality of the applications.

As of 2025, a total of 88 ECRs have participated in the IASC Fellowship Program. Fellows have the opportunity to participate as WG members for three years and are provided with funding to attend two consecutive ASSW meetings during their initial fellowship year. This unique opportunity allows ECRs to become active members of their WGs, hence, to develop research collaborations and professional networks with senior researchers

from various disciplines. Five Fellows for each WG have been selected in 2025 and they are **Alistair Duffy**, **Ellie Miller**, **Henry Henson**, **Sophie Rohere** and **Madelaine Anderson**. **Charlotta Svonni** has been announced as an Indigenous Fellow in 2025 and has joined the SHWG.

In 2025, IASC also offered special joint Fellowships in co-operation with other partners.

The Fellowship Program together with the Polar Initiative of the Prince Albert II of Monaco Foundation (PA2F) provided four fellowships to **Alex Hall**, **Leena Leppanen**, **Clare Gaffey** and **Scott Sugden**. Congratulations to all 10 IASC Fellows!

Fellows will be introduced during the IASC Council meeting at the ASSW2025 in Boulder, Colorado, USA. The previous years' Fellows were actively involved in both the WG and Council meetings as well as in the ASSW science symposium, where Fellows co-convened scientific sessions, presented scientific results and participated in panel discussions.

IASC is excited to witness the contributions of all our current and past Fellows brought to the IASC's scientific activities and Arctic research as a whole. IASC would like to acknowledge all that have supported the idea of the IASC Fellowship Program and outstanding ECRs, who have functioned as Fellows. Now in its tenth year, the benefits of the IASC Fellowship Program are clearly evident for the Fellows, IASC, and Arctic research.

Dr. Stanislav Ksenofontov,
IASC Fellows Coordinator

PHOTO: IREK SOBOTA

IASC Fellows 2025

Alistair Duffey | Atmosphere WG
Atmospheric dynamics, solar geoengineering, stratospheric aerosol injection

Ellie Miller | Cryosphere WG
Paleoglaciology, Isotope Geochemistry, Subglacial Groundwater Modeling

Henry Henson | Marine WG
Carbon cycling, Air-sea exchange, Ocean Freshening

Sophie Roher | Social and Human WG
Health equity; social determinants of health, community-partnered research

Charlotta Svonni | Social and Human WG - Indigenous Fellow - IASC Standing Committe on Indigenous Involvement
Sámi education, Educational policy, Sámi history.

Madelaine Anderson | Terrestrial WG
tundra vegetation, hyperspectral data, phenology

IASC - Prince Albert II of Monaco Foundation Fellows 2025

Alex Hall | Atmosphere WG
Remote sensing, high latitude dust, satellites

Leena Leppänen | Cryosphere WG
Snow physics, snow microstructure, in-situ snow measurements

Clare Gaffey | Marine WG
Phytoplankton phenology, remote sensing

Scott Sugden | Terrestrial WG
Environmental microbiology; biogeochemistry; deglaciation

IASC Fellows 2024

Patrik Winiger | Atmosphere WG
Arctic and high-altitude aerosols, atmospheric chemistry, analytical chemistry

Robbie Mallett | Cryosphere WG
Ice-ocean interactions, numerical modeling, sea level rise

Daniela Walch | Marine WG
Aquatic remote sensing, biogeochemistry

Charlotte Gehrke | Social and Human WG
Environmental policy, science communication, science diplomacy

Anita Lafferty | Social and Human WG - Indigenous Fellow
Indigenous pedagogy, decolonization, land-based

Louise Mercer | Terrestrial WG
Community-based monitoring, Arctic environmental monitoring, co-development

IASC - Prince Albert II of Monaco Foundation Fellows 2024

Beatriz Recinos-Rivas | Marine WG
Ice-ocean interactions, numerical modeling, sea level rise

Elena Adasheva-Klein | Social and Human WG
Human-environment relations, environmental anthropology, environmental humanities

Kathleen Orndahl | Terrestrial WG
Satellite remote sensing; herbivore-vegetation interactions; vegetation change

IASC - ROADS Fellows 2024

Izuchukwu O Ezukanma
Tundra, weathering, Greenland

Fellows' Voices

As an IASC fellow for the Social and Human Working Group and member of the ICARP Research Priority Team IV, it has been a great privilege to learn from inspiring colleagues in the polar social sciences about the administrative processes involved in supporting the research infrastructure of IASC and beyond. Getting to know and collaborating with other IASC members has been a particular highlight of the fellowship, especially during the 2023 ASSW in Edinburgh. I look forward to continuing the exchange of knowledge and ideas with this diverse group of experts at the upcoming ASSW in Colorado.

Charlotte Gehrke
2024 Human & Social Working Group Fellow
Science diplomacy, environmental policy, science communication
Contact: ***charlotte.gehrke@nord.no***

I began my fellowship with the IASC Marine Working Group in the year leading up to the ICARP IV summit, and it has been an incredible opportunity to immerse myself in Arctic research coordination and planning. I deeply appreciate the trust the group has placed in me, allowing me to take on responsibilities to co-lead an expert panel within the MWG and contribute my perspectives on Arctic coastal marine systems. The programme creates a fantastic network, and the dedication of the current fellows as well as IASC FOX has been nothing short of remarkable and inspiring!

Daniela Walch
2024 Marine Working Group Fellow
Aquatic remote sensing, biogeochemistry
Contact: ***wald0001@uqar.ca***

My time as an IASC Fellow has been both professionally and personally rewarding. At the ASSW in Edinburgh, I presented an environmental community-based monitoring approach, leading to ongoing collaborations with the Terrestrial Working Group. This has included a visit to Kalaallit Nunaat (Greenland), where we're fostering new partnerships and community-based research projects. As a Fellow, I have helped steer TWG discussions towards prioritising and supporting community-engaged research processes. The fellowship has expanded my network and the scope of community-based research I support. I look forward to continuing to build on these collaborations and initiatives.

Louise Mercer
2024 Terrestrial Working Group Fellow
Community-based monitoring, Arctic environmental monitoring, co-development
Contact: ***louise.mercer@northumbria.ac.uk***

The joint IASC-PA2F Fellowship offered opportunities to engage with international Arctic science, develop connections, and shape the future of Arctic research. In February 2024, I participated in the Polar Symposium in Monaco, serving as a rapporteur and presenter for

workshops on equitable participation and local communities. Our contributions informed the Symposium's summary booklet and roadmap for actionable recommendations. In June 2024, I joined the IASC FOX workshop in Cambridge, where I discussed the role of social sciences

in Arctic research and contributed to drafting recommendations for ICARP IV on education, outreach, and science communication.

Elena Adasheva
2024 IASC-PA2F Fellow Human-environment relations, environmental anthropology, environmental humanities
Contact: ***lenaadasheva@gmail.com***

It has been an incredible enriching experience to be an IASC Fellow, providing a unique platform for engaging in conversations that challenge and shift existing Arctic science systems. As an Indigenous scholar, this fellowship has provided a platform to integrate Indigenous ways of knowing into broader scientific discourses, ensuring that these perspectives inform future research and policies. The chance to collaborate and learn alongside a diverse group of passionate researchers, community members, Elders, including other Indigenous scholars, has been life-changing. Together, we are fostering meaningful connections that bridge disciplines, knowledge systems, and communities. Throughout the year, I have gained invaluable skills and insights and I look forward to continuing to learn and grow within the IASC community. Having the opportunity to represent Indigenous voices in such a manner has been a true honour for me as I continue this work to uplift Indigenous voices throughout the Arctic. mahsi cho (thank you).

Anita Lafferty
2024 Human and Social Working Group - Indigenous Fellow
Indigenous pedagogy, decolonization, land-based
Contact information: ***alaffert@ualberta.ca***

IASC moves science beyond individual research silos into a collaborative space where all knowledge systems are treated equally, and researchers work together across geographic boundaries. As an IASC fellow, I witnessed this firsthand, starting with ASSW24 in Scotland. It was transformative to meet and work with scientists from across the globe who are brilliant, dedicated and talented, but also warm, welcoming and humble. It has been an amazing opportunity to participate in this team as we collectively plan for the future of Arctic research, and I look forward to continuing to do so through IASC and the ICARP IV process.

Kathleen Orndahl
2024 IASC-PA2F Fellow
Satellite remote sensing; herbivore-vegetation interactions; vegetation change
Contact information: ***kathleen.orndahl@nau.edu***

I received support from IASC to attend the Arctic Science Summit Week in Edinburg, United Kingdom from the 19th to 29th March 2024. During the Summit, I was formally introduced to the SAON Board and other team members. Starting from April 2024, I started joining the monthly SAON Advisory Panel's teleconference. The monthly calls acquainted me with the ROADS documentations and activities of the various Expert Panels. The priority on Indigenous Data Sovereignty and incorporation of Indigenous Knowledge spurred me to participate in the National Tribal and Indigenous Climate Conference held in Anchorage, Alaska with travel support received from ARCUS.

Izuchukwu O Ezukanma
2024 IASC - ROADS Fellow
Tundra, weathering, Greenland
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