IASC

International Arctic Science Committee

STRATEGIC PLAN 2018-2023

Enhancing Knowledge and Understanding of the Arctic

Preface

The International Arctic Science Committee (IASC) is a non-governmental and international scientific organization. It 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.

IASC promotes and supports interdisciplinary research to foster greater scientific understanding of the Arctic region and its role in the Earth system. The IASC Founding Articles call upon IASC to provide scientific and technical advice, and promote cooperation and links with other national and international organizations and to periodically review the status of Arctic science. IASC's third review was a two-year long bottom-up process that resulted in the ICARP III report, "Integrating Arctic Research – a Roadmap for the Future," published in 2015.

This five-year IASC Strategic Plan (2018-2023) builds on the key priorities and overarching messages of ICARP III. It is based on three scientific 'pillars' that provide direction for a necessary progression from knowledge production, to exchange, to action.

Considering the profound changes currently taking place in the Arctic, a greater scientific understanding of the region and its role in the Earth system is needed. Importantly, this information must be passed on to policy and decision makers.

IASC's Strategic Plan will assist in this endeavor.

Susan Barr
IASC President

COVER PHOTO: BENJAMIN HELL
Helicopter on the sea ice - Tunu, Greenland. | One of IASC's interdisciplinary foci is supportting implementation of the Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC).

Executive Summary

IASC's core mission is to encourage and facilitate cooperation throughout the Arctic research community. IASC therefore released the publication "Integrating Arctic Research – a Roadmap for the Future" in 2015, resulting from the ICARP III bottom-up process that was initiated by IASC and involved over 700 scientists from 27 countries.

The ICARP III 'Roadmap' highlighted three key science priorities (see Box A):

- The Role of the Arctic in the Global System
- Observing and Predicting Future Climate Dynamics and Ecosystem Responses
- Understanding the Vulnerability and Resilience of Arctic Environments and Societies and Supporting Sustainable Development

The IASC Strategic Plan for the period 2018-2023 is based on the ICARP III roadmap and defines the directions in which IASC shall work for the next five years. The Plan is based on three pillars and will be implemented through:

Pillar 1: Facilitating Arctic Research Cooperation

- Stimulating and promoting cutting-edge interdisciplinary research
- Supporting sustained and coordinated observations
- Facilitating data and information management and sharing

Pillar 2: Promoting Engagement

- Building Arctic research capacity
- Supporting participation by Indigenous and local residents in science activities
- Nurturing and expanding IASC partnerships

Pillar 3: Ensuring Knowledge Exchange

- Encouraging high-quality scientific output
- Transferring knowledge to policy and decision makers
- Increasing Arctic science education, outreach and communication

ABOVE PHOTO: GABE LEWIS

Driving snowmobiles on the Greenland Icesheet. | The IASC Cryosphere Working Group plans to work with INTERACT to establish a snow measuring network, especially for non-standard snow properties.

A. Key Science Priorities of ICARP III

1. The Role of the Arctic in the Global System: The Arctic's accelerated changes are not fully understood, yet they cascade throughout the entire global climate system. In order to address current gaps and global connections, we need an approach that spans disciplines, scales and diverse knowledge systems in future research activities.

2. Observing and Predicting Future Climate Dynamics and Ecosystem Responses: It is critical to anticipate Arctic changes and develop adaptation actions rather than just responses. To do so, increased monitoring and sustained observations must be made and integrated with new and innovative modelling approaches to provide more timely information to Arctic residents and policy-makers alike.

3. Understanding the Vulnerability and Resilience of Arctic Environments and Societies and Supporting Sustainable Development: Sustainable infrastructure development and innovation to strengthen the resilience of Arctic communities and ecosystems requires a collaborative approach involving scientists from all disciplines, as well as representatives from communities, governments and industry.

ICARP III suggested steps to make these scientific priorities more accessible and meaningful to a broader audience through capacity building, incorporating traditional and local knowledge, and communication.

About IASC

IASC was founded in 1990 by representatives of the eight Arctic countries. Since then, IASC has evolved into the leading international science organization of the North, and its membership today includes 23 countries involved in Arctic research.

The mission of IASC is to encourage and facilitate cooperation in all aspects of Arctic research. The main scientific working bodies of IASC are the five Working Groups: Atmosphere, Cryosphere, Marine, Social & Human, and Terrestrial Sciences. These groups formulate their work plans* and work cross-disciplinarily. They advise the IASC Council, identify and formulate science plans, define and advance research priorities, encourage science-led programs, and promote future generations of Arctic scientists (see Box B).

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.

How does IASC do this? IASC…

…coordinates reviews of the status of Arctic science and seeks to identify research priorities through, for example, its leadership of the ICARP process that takes place every 10 years (1995, 2005 and 2015).

…fosters major international research programs, such as MOSAiC (the Multidisciplinary Drifting Observatory for the Study of Arctic Climate) and the Year of Polar Prediction (YOPP).

…convenes and co-organizes the annual Arctic Science Summit Week (ASSW) with local partners, the biennial Arctic Observing Summit (AOS) with strategic partners, and scientific workshops through its Working Groups.

…promotes observations, monitoring, and data management by supporting SAON (Sustaining Arctic Observing Networks) and the ADC (Arctic Data Committee).

…is an accredited Observer and scientific advisor to the Arctic Council and has contributed to activities such as the Arctic Council's Scientific Cooperation Task Force.

…provides scientific advice by contributing to syntheses such as the Arctic Freshwater Synthesis (AFS), the Arctic Human Development Report (AHDR), and the Snow, Water, Ice, and Permafrost in the Arctic (SWIPA) report.

…supports young Arctic researchers through the IASC Fellowship Program and through travel grants.

PHOTO: LAURA MORSE

Beluga Whale in the Chukchi Sea. | The IASC Marine Working Group aims to expand the Distributed Biological Observatory on a pan-Arctic basis.

** https://iasc.info/outreach/news-archive/396-new-iasc-science-work-plans*

Strategy in Action

IASC activities will support both basic research, and applied research that answers societally-relevant questions, relating to the Arctic. IASC encourages all those associated with the organization to adhere to community standards of ethical conduct.

The IASC strategy is built on three central pillars to ensure that IASC increases the outreach and impact of Arctic science, enhances connections within the Arctic science community, and remains the leading promoter of coordinated international Arctic research. Suggested steps to make these scientific priorities more accessible and meaningful are listed below.

Pillar 1. Facilitating Arctic Research Cooperation

Stimulating and promoting cutting-edge interdisciplinary research. IASC will…

…address societally-relevant questions that are inherently interdisciplinary, to help cross-cutting interactions between the Working Groups.

...through its working groups, expand their interdisciplinary work together and with other scientific organizations, including the initiation of interdisciplinary, international projects that address key ICARP III priorities (see Box A). Overarching themes of sustainability and resilience will help define priorities.

…continue to facilitate the International Science Initiative in the Russian Arctic (ISIRA).

…continue to work with member countries and partners to support and expand international Arctic scientific cooperation, as expressed but not limited by the Agreement on Enhancing International Arctic Scientific Cooperation.

Supporting sustained and coordinated long-term observations and monitoring. IASC will…

…continue efforts to develop sustained Arctic observations and monitoring, focusing on SAON (Sustaining Arctic Observing Networks), a joint initiative of IASC and AMAP (the Arctic Council's Arctic Monitoring and Assessment Programme).

…help SAON achieve its goals of creating a roadmap to a well-integrated Arctic Observing System, promoting free and ethically unrestricted access to Arctic observational data, and ensuring sustainability of Arctic observing systems.

…encourage national programs to invest in and contribute to international observation networks, including platforms, resources, and shared understanding.

Facilitating data and information management and sharing. IASC will…

…encourage best practices in data archiving, management, and sharing and will support the Arctic Data Committee's goal of establishing a persistent consortium of Arctic data organizations.

PHOTO: LUCA BRACALI

Eqi Sermia bay, about 100 km off Ilulissat. | The Atmosphere Working Group will engage in the Year of Polar Prediction (YOPP)'s activities for improving weather and sea ice predictability, including a followup workshop.

B. Scientific Foci of IASC Working Groups

IASC's scientific Working Groups provide scientific advice, guidance, and drive to IASC activities. Some examples of the priorities for the next 5 years from the Working Groups include:

- Long-term Arctic climate modelling capabilities via improved, coupled process understanding
- Arctic air pollution: trace gas and aerosol forcing, community & ecosystem impacts, and climate feedbacks
- Satellite and modelling activities for improving the predictability of Arctic change on daily to seasonal timescales, including extreme events
- Linkages: Role of the Arctic in the global climate system
- Atmosphere-glacier-ocean interaction and implications for Arctic glacier mass budget
- Formation, development, frequency/intensity, and impacts of extreme cryospheric events
- Improve interdisciplinary knowledge of snow-related processes
- Geological history of the Arctic Ocean basin
- Biological productivity under changing sea ice regimes
- Paleoclimate records and predicting future responses in Arctic systems
- Effect of diminishing ice cover on the carbon cycle in the Arctic and its impacts
- Consequences of variability in heat and momentum exchanges between ocean, land, ice, atmosphere and space in a changing climate
- Changes in the hydrological cycle and their impact on the Arctic system
- Histories, perceptions, and representations of the Arctic
- Natural resource and land use, exploitation, and development: past, present, future
- Long-term impacts, vulnerability and resilience in Arctic social-ecological systems
- Human health, well-being, and ecosystem change
- Ecosystem science focusing on species interactions and the biology of life in extreme environments
- Landscape dynamics and disturbance regimes
- Permafrost and infrastructure, including the deployment of engineering expertise for adapting to change

For further information and deliverables, see the full IASC Working Group Work Plans: https://iasc.info/outreach/news-archive/396-new-iasc-science-work-plans

Pillar 2. Promoting Engagement

Building Arctic research capacity. IASC will…

…further develop its Fellowship Program by encouraging, supporting and investing in early career researchers and will continue to contribute at least 30% of its scientific funds to support early career researchers and capacity building activities.

…further develop opportunities for mentorship within its own structure and will continue to strengthen its cooperation with organizations like the Association of Polar Early Career Scientists (APECS) and the University of the Arctic (UArctic).

…promote inclusion and a more balanced participation of gender and nationality in the IASC community.

Supporting participation by Indigenous and local residents in science activities. IASC will…

…continue to work with Indigenous and local populations in the Arctic and will continue to finance Indigenous participation in IASC workshops and conferences. Recommendations from the IASC Action Group on Indigenous Involvement will be a basis for this work.

…promote community-based observing programs and promote the training of local communities to take part in research programs.

PHOTO LEFT: DIANE HIRSHBERG
Nuuk, Greenland | *IASC will support the interdisciplinary PACES activity to undersatand better the import of trace gases, aerosols, and short-lived pollutants into the Arctic from mid-latitudes.*

Nurturing and expanding IASC partnerships. IASC will…

…produce tangible cooperative outcomes such as increased information exchange, joint meetings, and initiatives from existing and future memoranda of understanding and letters of agreement.

…expand its partnership with SCAR (the Scientific Committee on Antarctic Research) and other appropriate polar science groups to identify and address themes of international polar priority.

…strengthen its cooperation with the industry and business communities based on recommendations from the IASC Action Group established to address this matter.

PHOTO RIGHT: MANA TUGEND
Steam from the Krafla power station, Iceland.

Pillar 3. Ensuring Knowledge Exchange

Encouraging high-quality scientific output. IASC will…

…continue to conduct, promote, and contribute to Arctic science syntheses, white papers, reports, peer-reviewed journal articles, and special issues.

…further strengthen the role of the Arctic Science Summit Week (ASSW) as a means to establish partnerships, enhance collaborations, and to share and disseminate Arctic research results.

Transferring knowledge to policy and decision-makers. IASC will…

…continue to contribute scientific advice and expertise for such bodies as the Arctic Council, its working groups, and relevant international action groups.

…translate scientific understanding and information into policy relevant information. Recommendations from the IASC Action Group "Connecting Arctic Scientists and Policymakers" will be a basis for this work: https://iasc.info/action-groups.

Increasing Arctic science education, outreach, and communication. IASC will…

…more purposefully reach out to inform the media, educational systems, and the broader public about Arctic science using ASSW and other activities.

…identify tools, through the IASC Council and Working Groups, for representatives to help provide information both to and from home countries regarding IASC initiatives and opportunities.

…serve as the communication medium which brings national scientific priorities to the attention of the Arctic science community, highlighting actions that require implementation through international cooperation.

…strive, within financial and practical possibilities, to be actively represented through its members at relevant workshops, meetings, and similar fora that are consistent with IASC scientific priorities.

…enhance the range of its communications by strengthening its presence on relevant social media and web platforms.

PHOTO: BRUCE FORBES

Nenets Reindeer Herders. | IASC will work to bridge barriers between natural and social sciences with increased information exchange, regular meetings, and joint initiatives with IASSA and UArctic.

IASC Strategic Plan 2018-2023

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