



Theme F: Education and Capacity
Building for The Polar Regions
Abstracts

ID: 25 - Experiences in sustaining collaborative Arctic research teams

Conveners

Olivia Lee | University of Alaska Fairbanks, International Arctic Research Center

Christina Goethel | Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science

Karen Pletnikoff | Aleutian Pribilof Islands Association, Inc

U.S. National Science Foundation Efforts to Develop and Sustain Collaborative Arctic Research Teams

Colleen Strawhacker, National Science Foundation, Alexandria, VA, USA
Roberto Delgado, National Science Foundation, Alexandria, VA, USA

Keywords: Federal Funding, Collaborative Research, Convergence Science

Designing and implementing research in the Arctic requires technical expertise, thoughtful coordination, careful logistical planning, and strong collaborative partnerships to be successful. The U.S. National Science Foundation (NSF) Office of Polar Programs promotes creative and innovative scientific research, engineering, and education in and about the polar regions, catalyzing fundamental discovery and understanding of polar systems and their global interactions to inform the nation and advance the welfare of all people. As a federal funding agency, the NSF supports a wide range of activities in support of basic research that includes but is not limited to advancing a field or creating new directions in research or education by supporting groups of investigators to communicate and coordinate their research, training and educational activities across disciplinary, organizational, geographic and international boundaries. For the Arctic, several programs focus on strengthening convergence approaches from transdisciplinary teams to understand fundamental processes, improving collaborations between researchers and Arctic residents, and supporting early career scientists. Presenters from the NSF Office of Polar Programs will share perspectives from past research experiences as well as information about available funding opportunities to establish and sustain collaborative Arctic research teams.

The EU Polar Cluster - a collaboration of projects funded by the European Commission.

Elaina Ford, British Antarctic Survey, Cambridge, United Kingdom
Renuka Badhe, European Polar Board, The Netherlands
Nicole Biebow, Alfred Wegener Institute, Bremerhaven, Germany

Keywords: Eu, Polar, Cluster, Collaboration, Network

The EU Polar Cluster is a collaboration of currently 21 projects, funded by the European Commission - www.polarcluster.eu. It was formed from the EU Arctic Cluster as a bottom-up tool for a collection of Arctic-focused projects to pool resources and increase impact. Following the success of this, we expanded in scope to include polar and Antarctic projects, and the EU have supported the Cluster, in addition to facilitating meetings, by funding the Clustering activities and organisation through the EU-PolarNet 2 project.

The added value of clustering activities in this way includes:

- Higher impacts than single project's outputs;
- Upscale collective projects' efforts;
- Increased knowledge sharing;
- Less but better engagement with stakeholders;
- Greater visibility;
- Better use of citizen's money.

This presentation will cover some of the ways we have achieved this international and interdisciplinary collaboration, through five thematic focused task groups.

AHEAD – International Arctic Station “Snowflake”

Yury Vasiliev, Executive Director of the Institute of Arctic Technologies, Moscow Institute of Physics and Technology and head of the AHEAD project

Keywords: Renewable Energy, Hydrogen, Arctic Station, International cooperation

International Arctic Station «Snowflake» - AHEAD (Arctic Hydrogen Energy Applications and Demonstrations)

Snowflake Station is the global first of its kind fully autonomous year-round diesel free arctic facility powered by hydrogen fuel and renewable energy sources (wind and solar energy) and focuses on implementation of technologies, which directly affect the reduction of human impact on climate change. Establishing and opening during the Russian Chairmanship of the Arctic Council in 2021–2023 International Arctic Station «Snowflake» as an analogue of the International Space Station but in the Arctic. The Station will be a platform for development and testing new breakthrough technologies, for decarbonization of the Arctic regions, for ensuring energy to remote settlements, for international cooperation of engineers, researchers, scientists and students working on bold solutions that constitute a basis for life and work in the Arctic (such as environmentally friendly life support technologies, new materials, smart home and smart village systems, as well as biotech, medical, robotic and AI-driven solutions). On June 8 2020, the AHEAD was endorsed by all Arctic countries (Denmark, Iceland, Canada, Norway, Russia, USA, Finland, Sweden) at the SDWG Online Plenary Meeting, but the international cooperation will go beyond the Arctic Council member states and engage organizations representing the Arctic's indigenous peoples, as well as the observer nations that have no direct access to the Arctic but are interested in a comprehensive collaboration based on the new four-season facility in the northern latitudes. Functioning as a "living laboratory" IAS will provide a technological and economic foundation to scale up the newly developed solutions for widespread use.

Lessons Learned in Sustaining Collaborative Arctic Research Teams: Perspectives from the Arctic Research Consortium of the U.S. (ARCUS)

Helen V. Wiggins, Arctic Research Consortium of the U.S. (ARCUS), Fairbanks, Alaska

Keywords: Collaboration, Team Science

The Arctic Research Consortium of the U.S. (ARCUS) is a not-for-profit organization headquartered in Fairbanks, Alaska. ARCUS' vision is strong and productive connections among U.S. and international Arctic researchers, educators, Indigenous and traditional knowledge holders, Arctic residents and local experts, and other stakeholders to improve understanding of the changing Arctic. Our activities focus on collaboration, networking, and communication in Arctic research and education. We have developed and fostered a variety of teams, from small ad-hoc groups to longer-term committees steering large research programs. As is typical of many Arctic research efforts, these teams have increasingly crossed boundaries of discipline, geography, sector, and knowledge system. There are a many best practices, tips, and guiding principles that we have learned from direct experience as well as drawing from the fields of team science, virtual collaborations, convergence science, and psychology. This poster will present insights from ARCUS 20+year experiences as well as the relevant literatures, for successfully building and sustain collaborative Arctic research teams.

Institute for Atmospheric and Earth System Research (INAR) bridging research, society and international policy making

Hanna K. Lappalainen, Institute for Atmospheric and Earth System Research, INAR,
University of Helsinki
Markku Kulmala, Institute for Atmospheric and Earth System Research, INAR, University
of Helsinki

Keywords: Science Diplomacy, Northern High Latitudes

The Institute for Atmospheric and Earth System Research (INAR) has been active to find tools for upscaling its research approach and ways to solve global climate change and air quality in megacities and, at the same time, better bridge the research to society and international policy. In this task INAR has introduced Pan-Eurasian Experiment (PEEX) program (s an asset to better address the scientific challenge of the holistic system understanding e.g. understanding of Atmosphere – Earth Surface – Biosphere interactions and feedbacks in the Northern Eurasian context) INAR has also launched a measurement concept called the GlobalSMEAR for filling the observational gap of the atmospheric – ecosystem in situ data. INAR has also started the Sofia Earth Forum process to support a appearing of new ideas, perspectives and establishing a continuing framework of research community and society representatives to deliver a science based message being legitimated to fast tract policy making. The most recent activity of INAR is the “Arena for the gap analysis of the existing Arctic Science Co-Operations” (AASCO), for 2020-2021. AASCO can play a leading role in the research with its holistic and integrated understanding of the local and global feedback and interaction at the Arctic and outside the Arctic environments.

From basketball courts to ice camps: lessons in leadership, team work, and the human psyche

Allison A. Fong, Alfred-Wegener-Institut Helmholtz-Zentrum für Polar-und-Meerforschung

Keywords: MOSAiC, Team, Collaboration, Human, Ice

Tapping into individual potential and leveraging that individual capacity to achieve big goals are not easy feats, but are essential for building teams who see opportunity when confronted with challenges, who share vision despite different viewpoints, and who ultimately strive to succeed together. For me, learning team concept fundamentals began at a young age playing basketball. Some of those same concepts to remain paramount today in my efforts as a scientist and coordinator. Great collaborations and long-term, sustainable cooperation among diverse groups requires understanding 1) what drives the need for engagement in a project, 2) what are the unique competencies of team members, and 3) how to align interests and strengths to grow self-sustaining relationships. The road to championships and great scientific outputs is littered with dismantled road blocks, patched cracks, bridges, and emergency roadside assistance call boxes. Knowing how and when to either disassemble, fix, cross, or call for help along that road is critical to leading and growing a team hungry for collaboration. I draw from a number of experiences spanning graduate student years in the Center for Microbial Oceanography: Research and Education (CMORE), and more recently as co-coordinator of the MOSAiC Ecosystem team. I aim to highlight practices from the perspective of a scientist not trained in human psychology, but all too aware of the role the human psyche plays in scientific collaboration and success.

Knowledge transfer towards tourists safety in polar region. Guide's competences and emergency preparedness in Arctic communities.

Barbara Horyn, University of Iceland, Reykjavik, Iceland

Keywords: Knowledge Transfer, Safety, Tourism, Emergency Preparedness, Collaborative Research

Polar adventure tourism is growing rapidly, increasing risk of accidents and leading to stress on local emergency preparedness. The objective of the research is to examine the relationship between guides competences and ensuring safety in the field. The study pays attention to key issues: polar adventure guide's risk perception, guide's training, safety practices and emergency preparedness strategies in the Arctic region. The target population for the study includes adventure polar guides from Iceland, Svalbard and Greenland, tourism educators, safety professionals and policy makers. The project is divided into four work packages: 1) defining guide competences and building safety guiding theory, 2) examining guide's risk perception, 3) exploring competence building among indigenous guides in Greenland and 4) investigating cooperation between search and rescue and guides in the region. The research is grounded on qualitative research methods. Data is gathered through field work, participant observation, semi-structured interviews and documentary analysis. The scientific contribution of the research is to contribute with novel theory in polar adventure tourism and raise involvement of scientific research on policy making in arctic tourism destinations. The long-term value of the studies on society includes practical applications of research findings, providing safety framework in polar adventure tourism and enhancing involvement of local guides in research and innovation.

Data sharing between Community-based observing systems and scientific observations

Stein Sandven, Nansen Environmental and Remote Sensing Center, Bergen, Norway
Peter Pulsifer, Carleton University, Ottawa, Canada
Finn Danielsen, NORDECO, Copenhagen, Denmark
Torill Hamre, Nansen Environmental and Remote Sensing Center, Bergen, Norway
Lisbeth Iversen, Nansen Environmental and Remote Sensing Center, Bergen, Norway

Keywords: Data, Knowledge, Planning, Communities, Sustainable Development

To develop sustainability of Arctic communities, it is essential that planning and decision-making is based on the best available data. Observing and observing systems are therefore important to establish and operate over time based on scientific, local and Indigenous methods. In the Arctic, there is a growing number of CBM programs, including Indigenous and Local Knowledge (ILK), which play an important role in addition to scientific systems to provide environmental, climate and resource data. CBM programs are usually driven by needs in local communities to help in resource management, planning and decision making. A key challenge is to enable data sharing between CBM systems and other Arctic observing and data systems and build services upon them. This calls for development of standardization of observing methods and data management. To go into the future it is important to engage with the youth councils in the different communities. In CAPARDUS examples of useful data sharing are explored in areas that are essential for the livelihood of many communities and the Arctic, such as fisheries management, hunting and reindeer herding. The examples are taken from Greenland, Alaska and Yakutia. A main goal of CAPARDUS is to establish an Arctic Practice System where data and knowledge can be shared between people living and working in the Arctic.

Bering Strait Seabird Die-off: Partnering in Search of Answers

Robb Kaler, U.S. Fish & Wildlife Service, Anchorage, Alaska, USA
Gay Sheffield, University of Alaska-Alaska Sea Grant, Nome, Alaska, USA
Brandon Ahmasuk, Kawerak Inc., Nome, Alaska, USA
Stacia Backensto, National Park Service, Fairbanks, Alaska, USA
Jackie Lindsey, Coastal Observation and Seabird Survey Team, Seattle, Washington, USA
Tim Jones, Coastal Observation and Seabird Survey Team, Seattle, Washington, USA

Keywords: Alaska, Coordination, Communication, Die-off, Seabirds

Since 2017, coastal Alaskan communities in the northern Bering and southern Chukchi seas have reported dead seabirds that had washed up on beaches. These reports are concurrent with a massive marine ecological shift resulting from the loss of sea ice extent, quality, and duration. The 2020 numbers of carcasses was lower than the previous three years (2017-2019), anomalous mortality events are a priority for food security and a public health concern for coastal communities that rely on the marine ecosystem for their nutritional, cultural, and economic well-being. The U.S. Fish and Wildlife Service coordinated with federal, state, tribal governments, and community members to report observations and collect carcasses for examination by the U.S. Geological Survey (USGS) National Wildlife Health Center and USGS Alaska Science Center. Eighteen carcasses were examined and all were emaciated and tested negative for Avian Influenza. Coordination with coastal communities provides crucial information that would otherwise be unavailable. With increasing ocean temperatures and decreasing sea ice extent, the next decade will be critical in how coastal species and communities adapt to a fast-changing environment in western Alaska. With Alaska's vast coastline, close coordination and communication with Indigenous partners is necessary to learn of anomalous mortality events in seabirds across Alaska, to determine the cause of seabird die-offs and disseminate results broadly and effectively.

The IARPC Model: Mechanisms for large-scale collaborative efforts

Meredith LaValley, Anchorage, Alaska, US
Liz Weinberg, Portland, Oregon, US
Hazel Shapiro, Boulder, Colorado, US
Ann-Christine Zinkann, Washington, DC, US
Sara Bowden, Reston, VA , US

Keywords: Cross-boundary, Collaborations, Interdisciplinary, Research Policy

The Interagency Arctic Research Policy Committee's (IARPC) key mission is to enhance collaboration in Arctic research across federal agencies in partnership with academia, NGOs, and industry, Indigenous, and international organizations. IARPC has a long history of building and sustaining collaborative science teams to advance interdisciplinary cooperation on the most pressing challenges. Two main tools used to enhance visibility and sustain IARPC's mission are: (1) the IARPC Collaborations website, which serves as a forum for more than 2600 Arctic researchers and stakeholders, and (2) the 9 collaboration teams, 3 sub-teams, and 9 self-forming teams that are supported by the IARPC secretariat to varying degrees. Several successful methods have been used to facilitate cross-boundary efforts including diverse leadership, cross-team collaboration, and inclusion of perspectives from multiple sectors. In light of the next five year Arctic Research Plan (currently under development), this talk will explore innovative ways collaboration teams are using the website and their monthly team meetings to build and sustain a collaborative community and work across disciplinary boundaries towards broad scientific goals. The work of these public collaboration teams has been especially important during the ongoing COVID-19 pandemic in supporting coordination of the research community and research cruises amidst cancellation of fieldwork and in-person conferences.

Svalbard Integrated Arctic Earth Observing System- a holistic approach

Heikki Lihavainen, SIOS, Longyearbyen, Norway
Dariusz Ignatiuk, SIOS, Longyearbyen, Norway
Christiane Hübner, SIOS, Longyearbyen, Norway
Inger Jennings, SIOS, Longyearbyen, Norway
Shridhar Jawak, SIOS, Longyearbyen, Norway

Keywords: Observations, Holistic, Earth System Science

The Svalbard Integrated Arctic Earth Observing System (SIOS) is a collaborative effort to develop and optimise a regional observing system for long-term measurements in and around the high-Arctic archipelago of Svalbard (78°N). SIOS is an international, multidomain and distributed infrastructure focusing on key processes in order to improve the understanding of how the Earth System functions. SIOS is providing representative observations in the Svalbard region to elucidate and quantify the roles of the interfaces on the state of the Arctic. SIOS has several tools to enhance the interactions between member institutions and different domains. For example, the annual State of the Environmental Science in Svalbard report is gathering multinational contributions and encourage seeking connections between disciplines. As a response to consequences of the global COVID-19 pandemic, SIOS Knowledge Centre initiated several virtual activities. It might be said that these activities have made the SIOS community more tightly knit by bringing them together – if only virtually – to share knowledge, solve problems and ensure research continuity.

Prototyping an Arctic Practices System: a methodological knowledge base for sustainable development

Pier Luigi Buttigieg, Helmholtz Metadata Collaboration - GEOMAR, Kiel, Germany
Jay Pearlman, IEEE, Paris, France
Pauline Simpson, UNESCO – Intergovernmental Oceanographic Commission (IOC) -
IOC Project Office for IODE, Oostende, Belgium

Keywords: Methods, Practices, Knowledge Exchange, Interoperability, Sustainable Development

Cultures of life, work, and observation in the Arctic have unique challenges and complexities. As a result, Arctic "know how" distributed across diverse communities is of critical value for the region's protection and sustainable development. Sharing this know-how is also complex, especially as climate change is intensifying the overlap of regional needs and interests. To address the opportunities and challenges of sharing Arctic methods, standards, policies, ethical guides and other methodological content, the CAPARDUS project is prototyping an Arctic Practices System (APS). Via consultation with local communities in Alaska, Greenland, Svalbard and Russia, we are co-developing a roadmap for an inclusive and scalable APS. Building on the IOC-UNESCO Ocean Best Practices System, the APS will adapt the FAIR Principles to multi-modality methodological content (documents, multimedia, etc) and explore how to effectively apply the CARE and OCAP principles. To this end, we have prioritised fine-grained and secure permission management functions, federation of (meta)content across interoperable (but locally controlled) systems, multilingual user interfaces tailored to community needs, and machine-to-machine interfaces with Arctic and Ocean data systems. Further work will focus on linking content to both Arctic and global societal benefit frameworks and Essential Variable systems, as well as further consultation to refine the scope, management, and technological basis of the APS.

Changing Coastlines

APIA/absi/WALCC

Keywords: Outreach, Education, Communities, Change

Coastlines provide some of Alaska's most life-filled environments. From shallow nearshore waters, into tidelands, beaches and sandbars, bays and estuaries, deltas and uplands, this narrow slice of Alaska supports a disproportionately large percentage of our state's fish, bird and wildlife. This same area is also the location of the largest share of Alaska's communities and the qualities that make these coastlines so environmentally rich – the meeting of land and ocean – make these areas particularly vulnerable to the effects of climate change. One of the deliverables from the series of Promoting Coastal Resilience and Adaptation in Alaska workshops are a series of four outreach posters. They are meant to convey the current understanding and concerns of the local residents to decision-makers at the state and federal levels. This poster, the second in a set of four, synthesizes current information on the region's coastal environments, including estuaries, river systems and bluff and rocky coastlines, and key expected climate impacts on those systems. The poster targets non-specialist audiences, including western Alaska communities and local, regional, state, and national legislators. The posters have been developed through four workshops in coastal hub communities (Nome, Kotzebue, King Salmon, and Unalaska), Coastal Resilience and Community Adaptation in western Alaska, hosted by the Aleutian Pribilof Islands Association.

Sustaining Subsistence

APIA/absi/WALCC

Keywords: Outreach, Education, Communities, Change

Alaska's coastlines are changing rapidly though the drivers of change differ across the state. Coastal erosion, sea level rise, storm patterns, changes in land elevation, and thawing permafrost are important factors to understand when addressing local change. What adaptation strategies are already in place to help communities and resource managers adapt to change? One of the deliverables from the series of Promoting Coastal Resilience and Adaptation in Alaska workshops are a series of four outreach posters. They are meant to convey the current understanding and concerns of the local residents to decision-makers at the state and federal levels. This poster, the third in a set of four, synthesizes current information about the drivers of coastal change, the data needs that limit adaptation planning, and identifies possible adaptation strategies. The poster targets non-specialist audiences, including western Alaska communities and local, regional, state, and national legislators. The posters were developed through four workshops in coastal hub communities (Nome, Kotzebue, King Salmon, and Unalaska), by the Coastal Resilience and Community Adaptation in western Alaska project, hosted by the Aleutian Pribilof Islands Association.

The ocean is our grocery store...

APIA/absi/WALCC

Keywords: Outreach, Education, Communities, Change

The diverse plants, animals and ecosystems are at the heart of the way of life in western Alaska. Climate change is altering the landscapes and water of western Alaska. Some changes are clearly negative; others, such as new game entering the region, may be positive. It is likely that these changes will continue and intensify and create new challenges and opportunities for the region. Alaska's people are incredibly adaptive and will find a way forward through these changes. To do so they will need to engage scientists and policy makers. One of the deliverables from the series of Promoting Coastal Resilience and Adaptation in Alaska workshops are a series of four outreach posters. They are meant to convey the current understanding and concerns of the local residents to decision-makers at the state and federal levels. This poster, the final in a set of four, describes how climate change is affecting people of the region. The poster targets non-specialist audiences, including western Alaska communities and local, regional, state, and national legislators. The posters were developed through four workshops in coastal hub communities (Nome, Kotzebue, King Salmon, and Unalaska) by the Coastal Resilience and Community Adaptation in western Alaska project, hosted by the Aleutian Pribilof Islands Association.