# Bridging organizations to support researcher recommendations, and tackle unresolved societal value assessments for sustained Arctic observing

Olivia Lee[1], Helen Wiggins[2], Joseph Little[1,3]

1. International Arctic Research Center, University of Alaska Fairbanks. PO Box 757340, 2160 Koyukuk Drive, Fairbanks, Alaska 99775-7340. USA
2. Arctic Research Consortium of the United States. 3535 College Road, Suite 101 Fairbanks, Alaska 99709-3710, USA
3. School of Management, University of Alaska Fairbanks. P.O. Box 756080 Fairbanks, AK 99775-6080. USA

## Abstract

The 2018-2028 SAON strategy recognizes that a sustainable international Arctic observing system requires strong coordination and collaboration among existing observing networks, sites, data centers and the organizations that support them. Frequently, a disciplinary approach is used to help coordinate long-term observations in response to specific research questions, but an interdisciplinary approach could foster more partnerships to support long-term observations that meet information needs. We highlight the past contributions and future opportunities for leveraging the services of bridging organizations to further develop collaborations among the US Arctic research community and Arctic stakeholders. Bridging organizations that provide meeting logistics, report writing, and outreach communication support help to lower the transactional costs of building collaborations, but can also help with holding the institutional memory of past coordination efforts. As a result, bridging organizations can make it easier for members of the research community to rotate through leadership roles in coordinating Arctic observing efforts, and help with building stakeholder relationships that cross institutional and disciplinary boundaries.

## Introduction

The intellectual investment by researchers in the U.S. regarding design considerations and recommendations for sustained US Arctic observing have been a consistent collective effort for almost two decades. Recommendations from the research community for implementing an interdisciplinary Arctic observing network were made through the Study of Environmental Arctic Change (SEARCH) program that was developed as a cross-agency program focused on understanding Arctic environmental change. The knowledge products developed in support of US Arctic observing (including science plans, workshop reports, and recommendations) remain publicly accessible from the website https://www.searcharcticscience.org/aon/products. The longevity of these resources, and the ability to have continued open access to them is important to maintain recognition of the work that has already been done in a chronological archive, and also helps to serve as a benchmark to revisit recommendations and consider what barriers prevented implementation of similar recommendations that are often repeated.

*Role for bridging organizations to help coordinate research*

As new models for coordinating Arctic observing and data synthesis efforts emerge - driven by interests from the research community- there is an important role for bridging organizations to build a community of practice around the use of Arctic observations. Key roles for a bridging organization includes its ability to facilitate building network connections, foster building trust, and by supporting management of tasks, it also lowers the transactional costs for collaboration (Kowalski and Jenkins 2015). We highlight some of the support services that a bridging organization can provide, and give examples of how ARCUS provided support to U.S. funded Arctic observing researchers in the past. However, it is important to note that bridging organizations can only assist with coordination of observing efforts when there is leadership from the research community. Without leadership to develop a better understanding of the broader framework that long term observations could tie into, the research community by

necessity has to operate within the constraints of specific project goals. Hence researchers often continue to build long-term observing capacity on a project-by-project basis.

The collaboration support function of a bridging organization can help leaders in the Arctic research community focus on the next steps for engagement with a network of people who need observing data. Bridging organizations support opportunities for interaction among researchers, decision-makers and stakeholders which are needed to build a community of practice (Figure 1). For instance, the convening of workshops and meetings leading up to workshops could bring together an interdisciplinary group of individuals involved in Arctic observing to explore opportunities to link observing capacity among disparate disciplines (e.g. linking oceanographic measurements at the ice edge from oceanographers with buoys and autonomous gliders, with temperature, salinity data collected from tagged marine mammals by biologists).


**Figure 1.** Support function roles (blue circles) that a bridging organization can play to develop a community of practice where members can more regularly engage in efforts to implement recommendations for more coordinated Arctic observations.

In the past, ARCUS has provided support for AON PI meetings, which unfortunately has not been consistently held in recent years. During the AON PI meetings researchers involved in current long-term observing projects were able to identify potential program linkages, and observing gaps that could be prioritized (AON 2010). Such activities would not duplicate the broader strategic-view and implementation activities that SAON and the US AON provide, since AON researchers could focus on very near-term, potentially low-cost implementation actions from a diverse, but manageable number of existing, funded observing programs. Arguably, since synthesis of Arctic observing efforts is not a career-building function for a traditional researcher, it would be fair to expect turnover among the researcher community in assuming such a role in organizing such meetings. Given that reality, it is beneficial for bridging organizations that are not tied to a single academic institution or federal agency to provide key networking connections, an archive on relevant past reports and workshops, and workshop logistics support to new researchers willing to take on a leadership role in some aspect of near-term implementation planning to support sustained Arctic observations.

The value of a bridging organization would be to aid the research community in coalescing cross-disciplinary research ideas, to develop a foundation in shared Arctic observing needs. Along with assisting with in-person meetings, bridging organizations can support networking activities, which is valuable for building and strengthening connections between researchers in the Arctic observing community. One way that researchers are currently able to share common observing needs is by coordinating research interests and observing needs around planned research cruises. However, these coordination efforts rarely include opportunities to connect with observing programs on the coast, or farther inland. Such issues may be resolved by providing more frequent opportunities for researchers to interact with each other to share data or communicate gaps in observing needs. The Interagency Arctic Research Policy Committee (IARPC), can provide an initial forum for such conversations among

researchers, but bridging organizations like ARCUS can play a role in scheduling meetings to keep regular conversations going on how to better implement coordinated observations around specific areas of interest, or cross-cutting research themes that could benefit from leveraging existing or newly-funded observing resources.

*Critically missing societal value assessments*

Understanding the usefulness of observation data is an important factor in sustaining observations long term. There is an expectation that open access to data would be able to serve societal information needs, but this assumption is rarely tested. The previous section emphasized how a bridging organization could help researchers identify and coordinate key observations, but a similar support function could also be used to develop connections between researchers and stakeholders in Arctic observing data. From an Alaska climate adaptation perspective, evidence suggests that there is still a need to build bridging relationships among scientists, decision-makers and climate service providers (Kettle et al. 2017). It is necessary to first focus stakeholder engagement around specific observing data. In order to reach that stage, the research community should have already been involved in identifying a key observing indicators that are a priority for sustained observations. These identified indicators make it possible to identify who the key stakeholders are. Starkweather et al. (2013) demonstrated how stakeholders in black carbon modeling, mitigation and regulation communities placed different values on different atmospheric observational data. While stakeholders may respond individually when judging the value of specific observational data in a survey, providing a venue for stakeholders and researchers to jointly discuss how observational data is used is a more collaborative way to understand the value of observational data - particularly in reference to how the data can be used in responding or adapting to Arctic change.

Moving away from a focus on defining and optimizing physical environmental observations, and now emphasizing societal benefits of observing data would greatly benefit

from the involvement of social scientists in the process of assessing the societal value of observing data. Frequently the addition of social scientists in the process of prioritizing long-term observations is not done from the outset of the project development, which compromises the scope and resources needed to conduct a thorough assessment

Providing spaces for more active engagement among researchers and stakeholders, particularly in Arctic rural communities can also help researchers frame their results and communications to stakeholders so that they are more useful for local decision-making (Brunet et al. 2014). Likewise, such spaces incentivize synchronous communication because they provide an important opportunity for stakeholders to provide feedback and guidance. Demonstrating the use of data to society, beyond the assumption that freely accessible data can be readily used to support stakeholder decision-making requires the expertise of social scientists, and bridging organizations can help to make more connections among researchers who do not often network across disciplines. Given the urgency in responding to critical states of ecosystem change in the Arctic where observational data remain sparse, it is necessary to leverage all available resources to make connections that support sustained observations that have an impact on decision-making.

**References**

Arctic Observing Network (AON). 2010. Arctic Observing Network (AON) Program Status Report – 2009. Results from the Third AON Principal Investigators (PI) Meeting, 30 November – 2 December, 2009, Boulder, CO.

Brunet, N. D., Hickey, G. M., and Humphries, M. M. 2014. Understanding community-researcher partnerships in the natural sciences: a case study from the Arctic. Journal of Rural Studies, 36, 247-261.

Kettle, N. P., Trainor, S. F., and Loring, P. A. 2017. Conceptualizing the science-practice interface: lessons from a collaborative network on the front-line of climate change. Frontiers in Environmental Science, 5, 33.

Kowalski, A. A., and L. D. Jenkins. 2015. The role of bridging organizations in environmental management: examining social networks in working groups. Ecology and Society 20(2): 16.

Starkweather, S., Walden, V. , Uttal, T., Drummond, J., Key, J., Kay, J., Vihma, T., Skov, H., and Burkhart, J. 2013. Advancing Arctic Atmospheric Science through Developing Collaborative, Use-Informed Targets for International Observing Development.