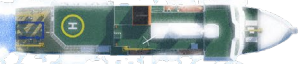




International Workshop on Arctic Ocean Observation:
Future Collaboration by Research Vessels and Icebreakers
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International Collaboration, Policy, Indigenous Peoples Session



The SAON Roadmap for Arctic Observing & Data Systems: Towards equitable observing partnerships and co-production of knowledge with Arctic Indigenous Peoples

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In considering international collaboration opportunities and future directions for coordinated use of research vessels in the Arctic, repeat measurements of ocean variables along the vessel track or at dedicated stations are a key element of research cruise planning and prominently factor into vessel design. This contribution considers potential functions that research vessels might play in supporting internationally coordinated, collaborative long-term observations that are of benefit in a local community or larger-scale society planning and decision-making context. Two questions arise that are particularly relevant as new research vessels emerge as platforms for international collaboration. (1) How can research vessel-supported observing activities best be linked to community and societal benefits, and deliver such benefits on a routine, intrinsic basis? (2) Global-class research vessels typically operate at scales or in ways disjunct from Arctic Indigenous community priorities and interests, or conversely may raise concerns about potential disruption of community subsistence harvest activities. What can be done to foster equitable engagement around research vessel activities, in particular through co-produced observation efforts?

Here, we point to the Roadmap for Arctic Observing and Data Systems (ROADS) framework under the Sustaining Arctic Observing Networks (SAON) initiative as an inclusive process that can help address both questions. SAON ROADS rests on four principles (Starkweather et al., 2021):

1. Indigenous Peoples' equitable partnership & funding for active participation are critical.
2. All aspects of the ROADS process should support broadly shared benefits from observing & data systems.
3. The ROADS process should complement & integrate current planning approaches used by existing networks (regional to global), activities & projects.
4. ROADS should support stepwise development through flexible & evolving structure that allows grassroots (bottom-up) identification of foci.

In advancing ROADS, several initiatives including the European ArcticPASSION and U.S. RNA CoObs projects are currently supporting the creation of expert panels comprising Indigenous knowledgeholders, university researchers, agency scientists and others. These panels will develop and document observing priorities and approaches for so-called Shared Arctic Variables, modeled on Essential Ocean or Climate Variables frameworks, but explicitly serving a combination of Indigenous-led benefit identification and observing system implementation, regionally identified science and decision-making needs, and the essential variables of global networks.

Thus, ROADS may also serve as a framework and process through which design and operations of Arctic research vessels can directly connect to Indigenous and broader Arctic community priorities as identified for SAVs that involve vessel-based observations and support. How can such



benefits be provided on a routine basis? As an illustration of such connections, consider the work of Inoue and colleagues (2015) showing that routine weather balloon launches from research vessels in the Arctic (if reporting into near-realtime networks such as Global Atmosphere Watch) have a direct impact on improved weather and sea ice forecasts in the broader region. Taking guidance from ROADS Expert Panels with strong Indigenous participation may help translate community priorities into planning of research vessel operations and routine cruise activities to provide such benefits.

Equitable engagement with Indigenous communities around research vessel activities will require dedicated efforts, which may benefit from communities of practice emerging out of the ROADS Expert Panels. The potential role of research vessels as platforms for exchange and knowledge co-production is touched on in Fig. 1. Achieving this potential calls for new, innovative approaches in cruise planning and operations. This present workshop may be the first step in effecting positive change.

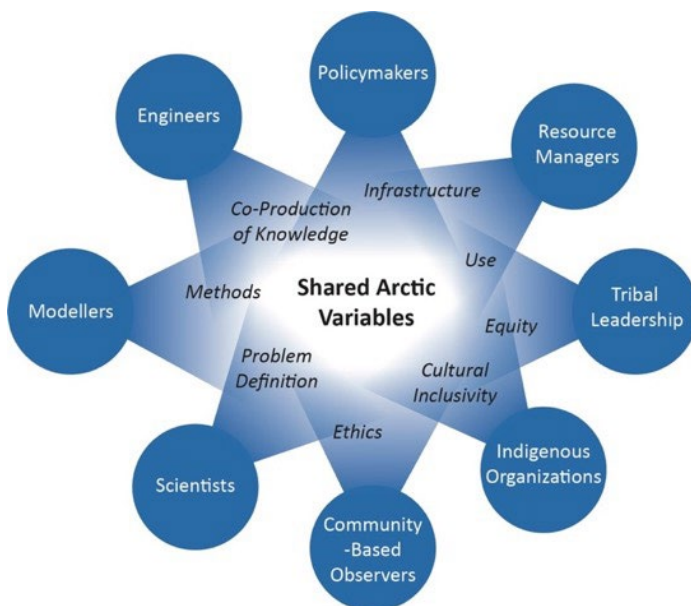


Figure 1: Shared Arctic Variables as the focus of knowledge exchange and co-production across different communities, disciplines and infrastructure frameworks. Note that research vessels as platforms for a range of activities factor into several elements of this schematic. Figure designed by Margaret Rudolf, as shown in Chythlook et al. (2022).

References:

- Chythlook, Craig et al. (2022) Research networking activities support sustained coordinated observations of Arctic change. *Oceanography*, 35(3–4):194–195.
- Inoue, Jun et al. (2015) Additional Arctic observations improve weather and sea-ice forecasts for the Northern Sea Route. *Scientific Reports*, 5.1:16868.
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