

Roadmap for Arctic Observing and Data Systems (ROADS)

Shared Arctic Variables

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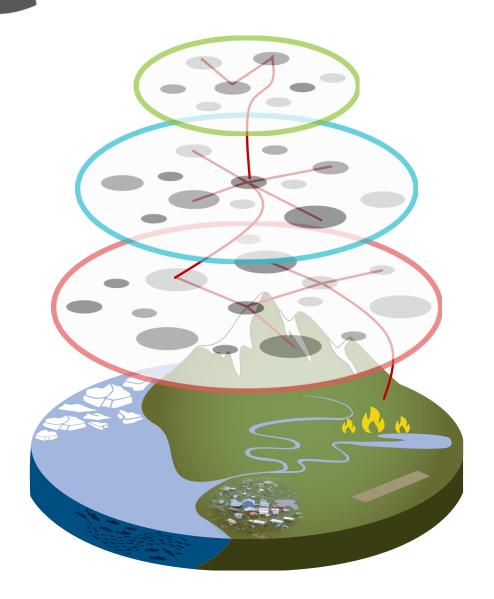
The purpose of ROADS

- Arctic changes are unprecedented
- Observations inform actions in the face of these changes
- Systemic issues (planning, engagement, deployments) at the Global, Regional and Local scale impede progress
- SAON's = partnership development, engagement
- ROADS = planning integration





Wildfires



Global Level

- Paris Agreement
- Arctic Council EPPR & Gwichin Council: Circumpolar Wildland Fires
- Satellite Products: GWIS and EFFIS

Regional Level

- Regional Fire Management
- Intertribal Timber Council
- Alaska Fire Science Consortium
- Arctic PASSION INFRA Service
- Observing Networks e.g. LTERs
- Regionally Focused Campaigns e.g. NASA ABoVE

Local Level

- Local Fire Management
- Community Preparedness Plans
- In situ observing sites
- Local Observer Networks



ROADS Guiding Principles (Polycentric!)

- Indigenous Peoples' <u>equitable partnership</u> and <u>funding</u> for their active participation is critical to ROADS;
- All aspects of the ROADS process should support <u>broadly shared benefit</u>
 from the observing and data systems;
- The ROADS process should <u>complement and integrate</u> the current planning approaches used by <u>existing networks</u> (<u>regional to global</u>), <u>activities and projects</u>;
- ROADS should support <u>stepwise development</u> through a flexible and evolving structure that allows <u>grassroots identification</u> of foci.

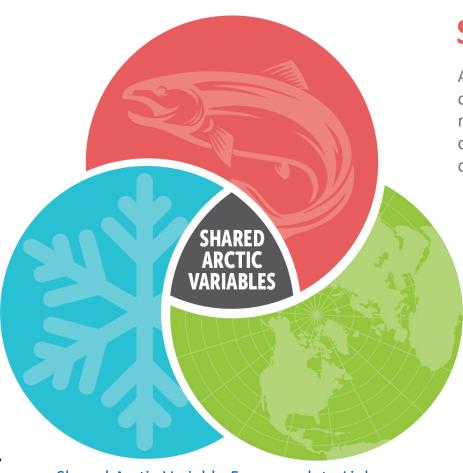


Shared Arctic Variables

Regionally-identified Science & Decision Making Needs

Regionally-led priorities driven by scientific understanding of the Arctic System and the specific decision-making needs from cascading changes within the Arctic System.

Starkweather, S., Larsen, J. R., Kruemmel, E., Eicken, H., Arthurs, D., Bradley, A. C., ... & Wilkinson, J. (2022). <u>Sustaining Arctic Observing Networks'(SAON) Roadmap for Arctic Observing and Data Systems (ROADS)</u>. *Arctic*.



Shared Arctic Variable Framework to Link
Global and Arctic Regional and Local
Observing System Priorities and
Requirements – Bradley et al. (submitted)

Indigenous-led Benefit Identification & System Implementation

A critical capacity for assuring that the outcomes of ROADS and its implementation are relevant to Arctic communities and the outcomes are well-linked to culturally-informed decision making.

Essential Variables of Global Networks

High-capacity partnerships that link the Arctic and the ROADS process to the global system and interests.

Shared Arctic Variables – under development

- Under Arctic PASSION:
 - Permafrost Living on frozen ground
 Linked to service "Pan-Arctic requirements-driven Permafrost Service"
 - Wildfires
 Linked to service "Integrated Fire Risk Management (INFRA)' Service"
 - Sea ice (Canadian initiative)
 Linked to service "Improving Safety for Shipping in the Polar Seas' Service"
- Under (CoObs RNA) Research Networking Activities for Coordinated Observations
 - Food security in the Pacific Arctic Region



INTEGRATED **ADVISORY PROCESS**

STEP 1

Assess High

Impact Shared

Arctic Variables

(SAV)

Develop SAV Requirements for **Observing**, Data Management

STEP 2

STEP 3

Develop SAV Implementation Strategy for Meeting Requirements

PANELS

EXPERT

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FOCI

XAMPLE

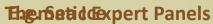
REGIONALE XO EN A GREEDS

Wellbeing & Food Security in Bering and Adjacent Seas









Also a variable of the Global Ocean Observing System and the Global Climate Observing System







E.g. Wildfires Issue-Driven Expert Panels Informing a proposea service area

under the Arctic PASSION program contributing to Arctic **GEOSS**









See AOS SS: Lihavainen et al. (Permafrost), Matero et al. (Sea Ice), Severstra et al. (Wild Fires), Rudolf (CPK)

ROADS Advisory Panel will facilitate integration across Expert Panels at each step.





Step partially complete



Step complete





A ROADS Reading Guide

Principles & Tools	Relevant Contributions
Benefit Assessment	Berkman et al. (Policy Uses), Manley et al. (Capacity), Starkweather et al. (Equity)
Shared Arctic Variables	Bradley et al., Lavergne and Kern, Perlman et al., Raymond, Willmott et al.
Advising and Expert Panels	Lihavainen et al. (Permafrost), Matero et al. (Sea Ice), Sevestra et al. (Wild Fires), Rudolf (CPK)

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Starkweather et al., 2021. Sustaining Arctic Observing Networks' (SAON) Roadmap for Arctic Observing and Data Systems (ROADS). Arctic. VOL. 74, SUPPL. 1 (2021) P. 56–68 https://doi.org/10.14430/arctic74330





