ROADS process and SAVs- permafrost

Ilkka Matero on behalf of the
Arctic PASSION Task 1.1b team

Permafrost project info meeting
27.8.2024 - Longyearbyen

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101003472

ARCTIC PASSION

Pan-Arctic Observing System of Systems: Implementing Observations for Societal Needs

- European Commission H2020 Program
- 4 years, 16 countries
- 33 partner organizations and 6 Indigenous Communities
- July 2021 – June 2025
- Website: www.arcticpassion.eu

Roadmap for Arctic Observing and Data Systems

GOAL 1: Create a roadmap to a well-integrated Arctic Observing System;

GOAL 2: Promote free and ethically open access to all Arctic observational data; and

GOAL 3: Ensure the sustainability of Arctic observing.

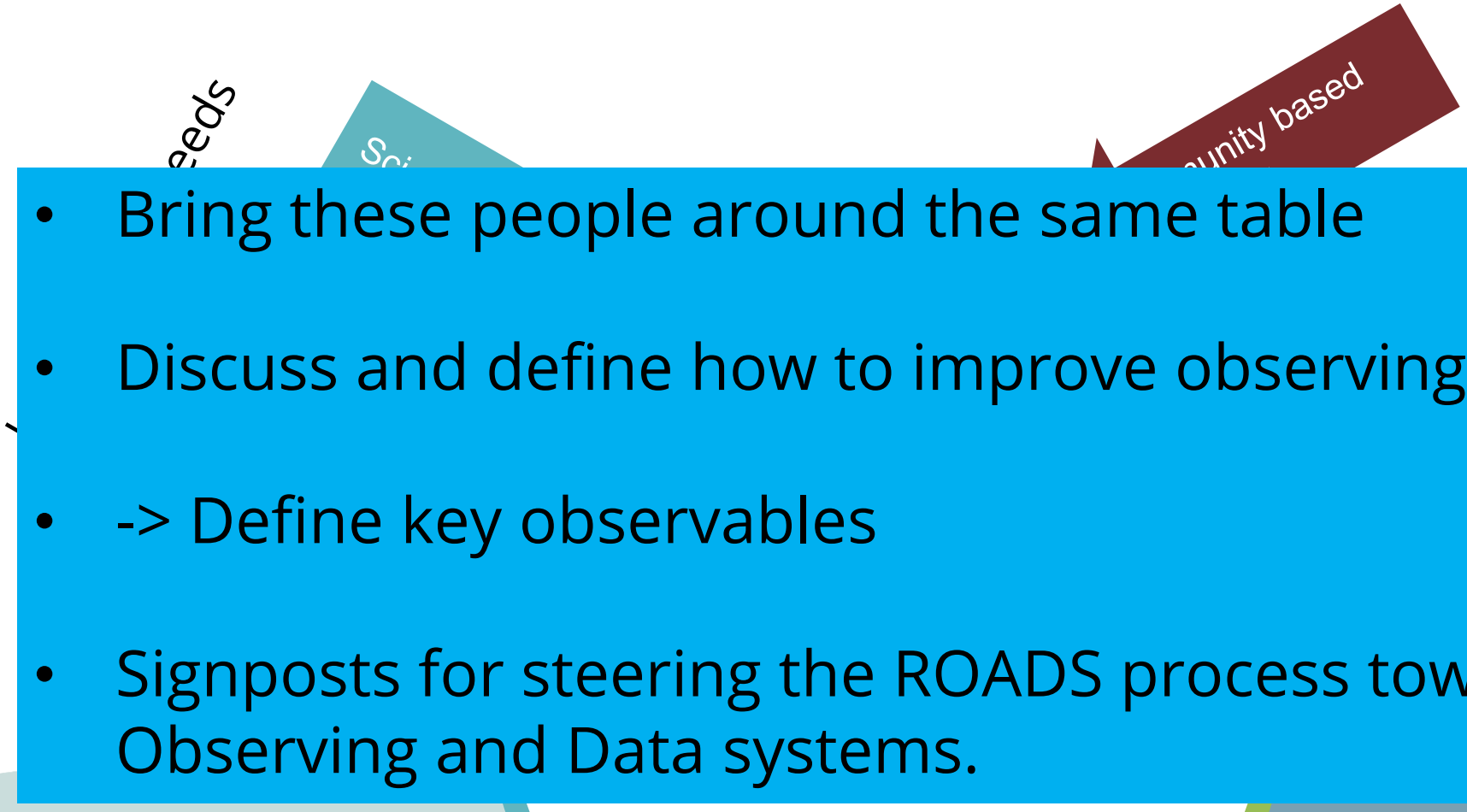
Roadmap for Arctic Observing and Data Systems

Arctic ROADS Guiding Principles

Arctic ROADS Guiding Principles assure integrity and benefit from the process. They are:

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

What are Shared Arctic Variables?



- Bring these people around the same table
- Discuss and define how to improve observing
- -> Define key observables
- Signposts for steering the ROADS process towards better Observing and Data systems.

from Alice Bradley (2022) & Starkweather et al., (2021)

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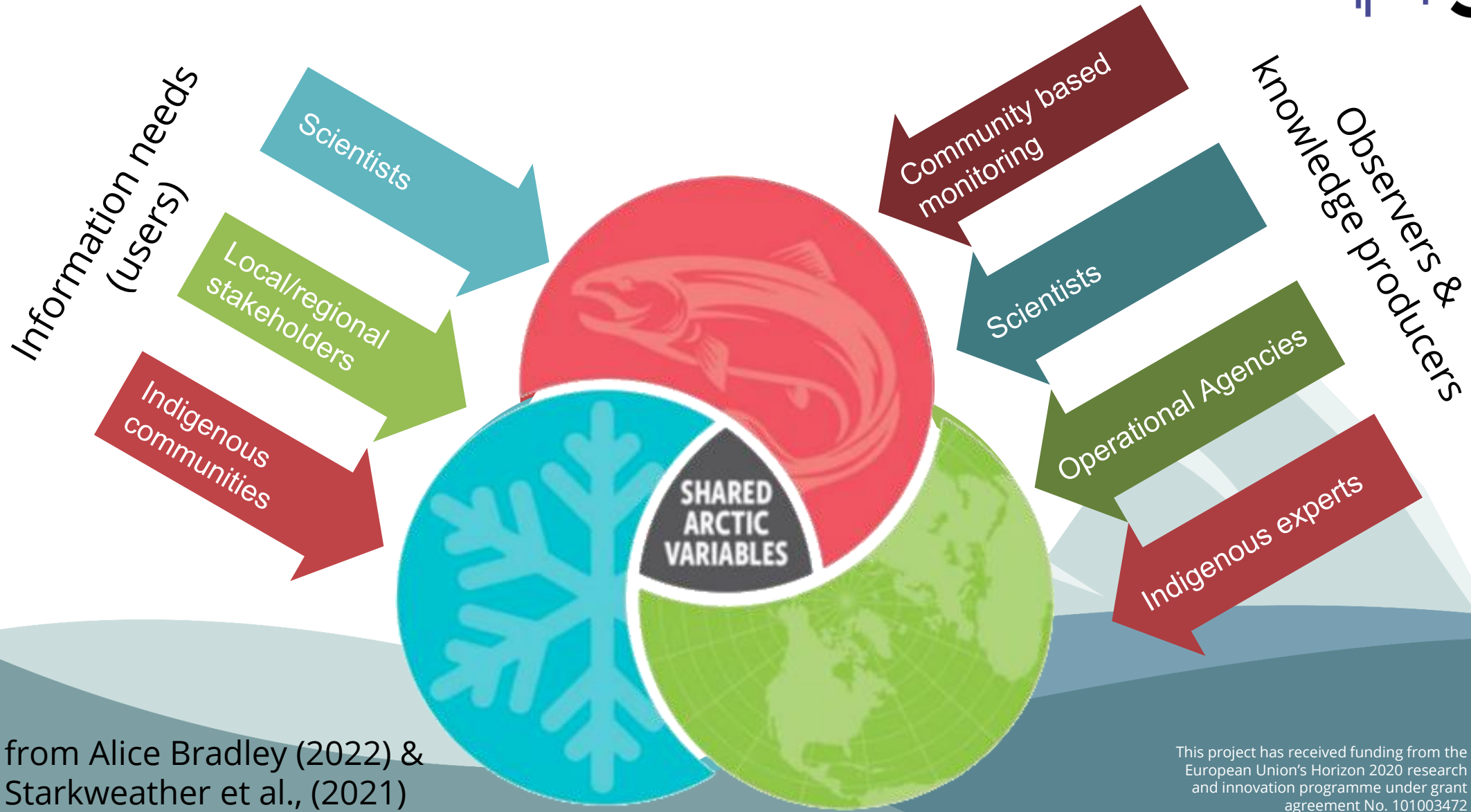

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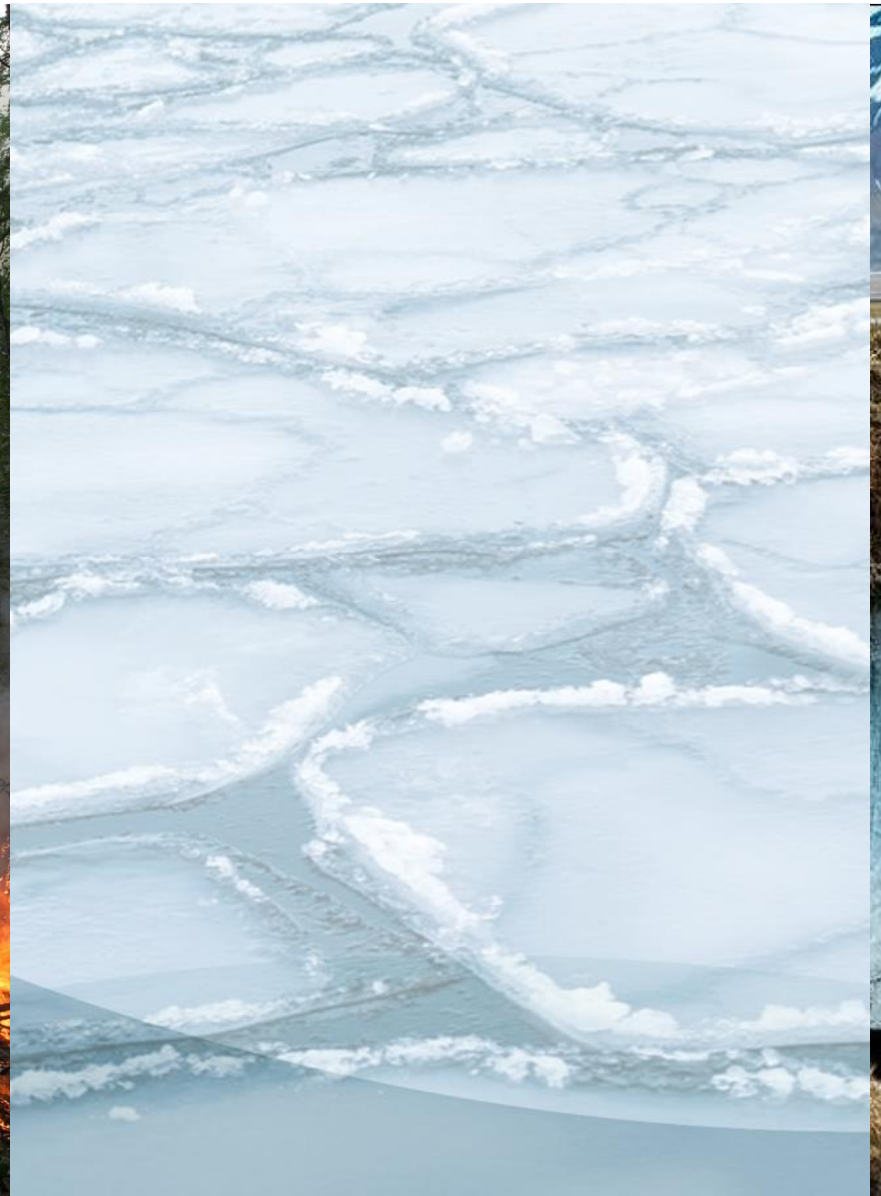
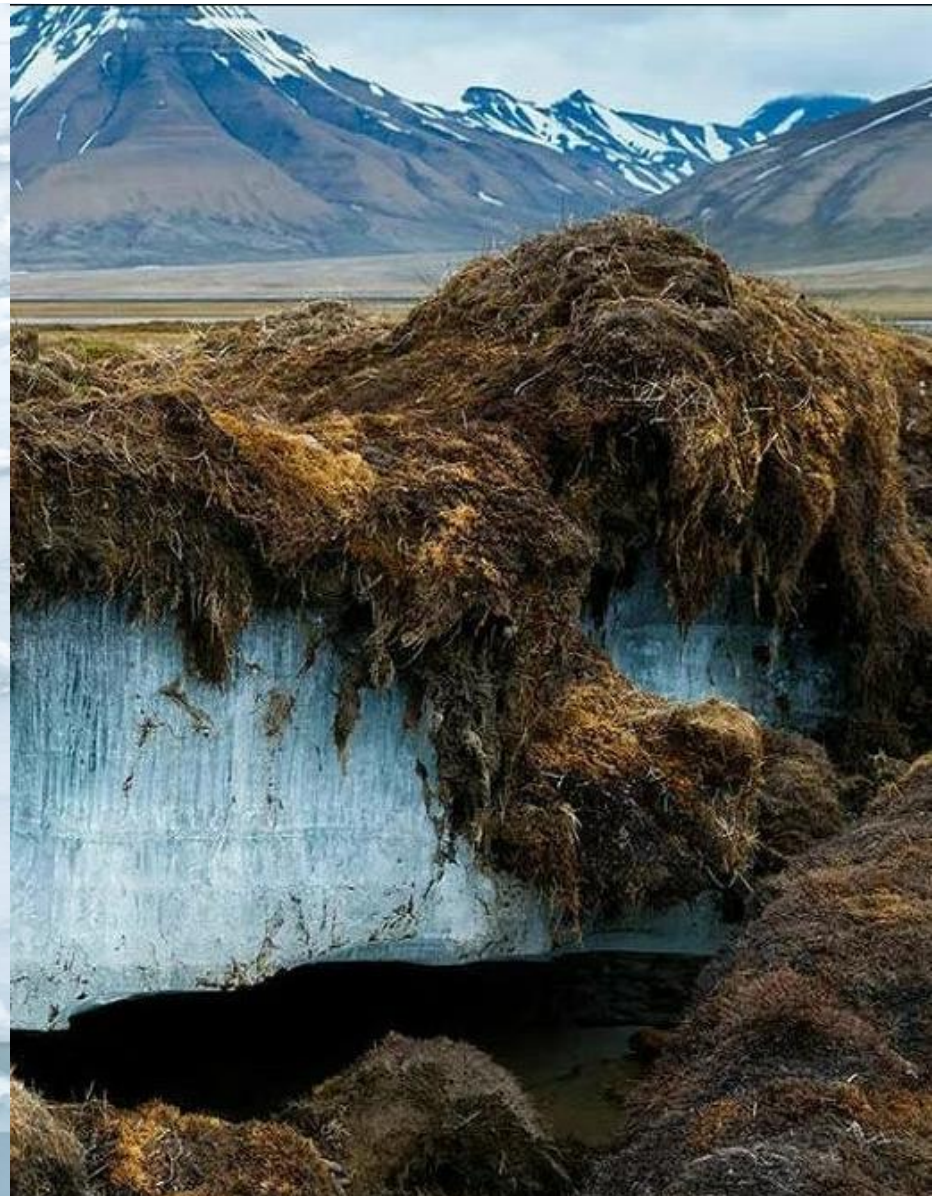
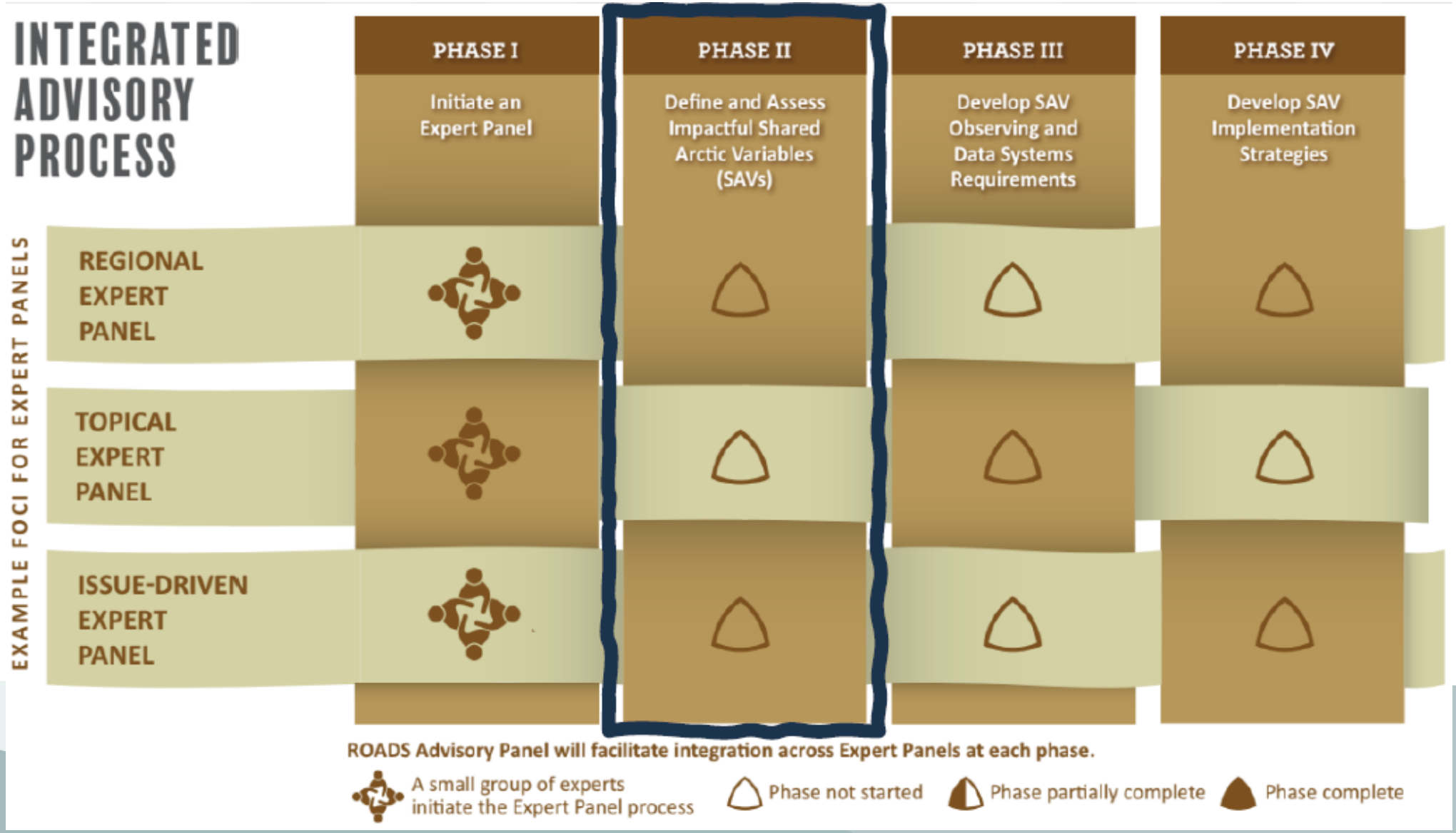
SAV themes in Arctic PASSION

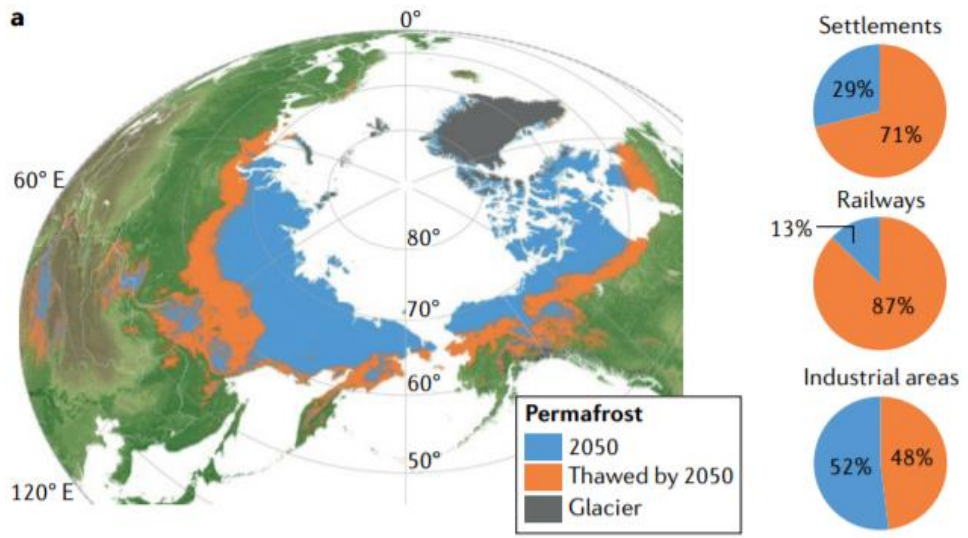




ROADS Process Phases



Circumpolar Infrastructure at risk by 2050 due to permafrost changes (RCP 4.5)



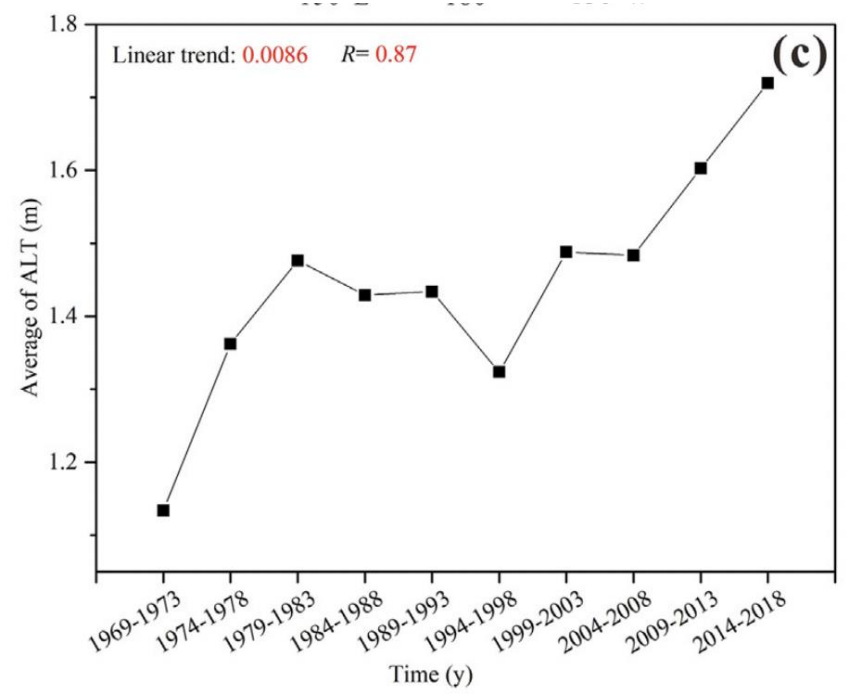
Hjort et al., (2022)

Current panel composition and regional foci

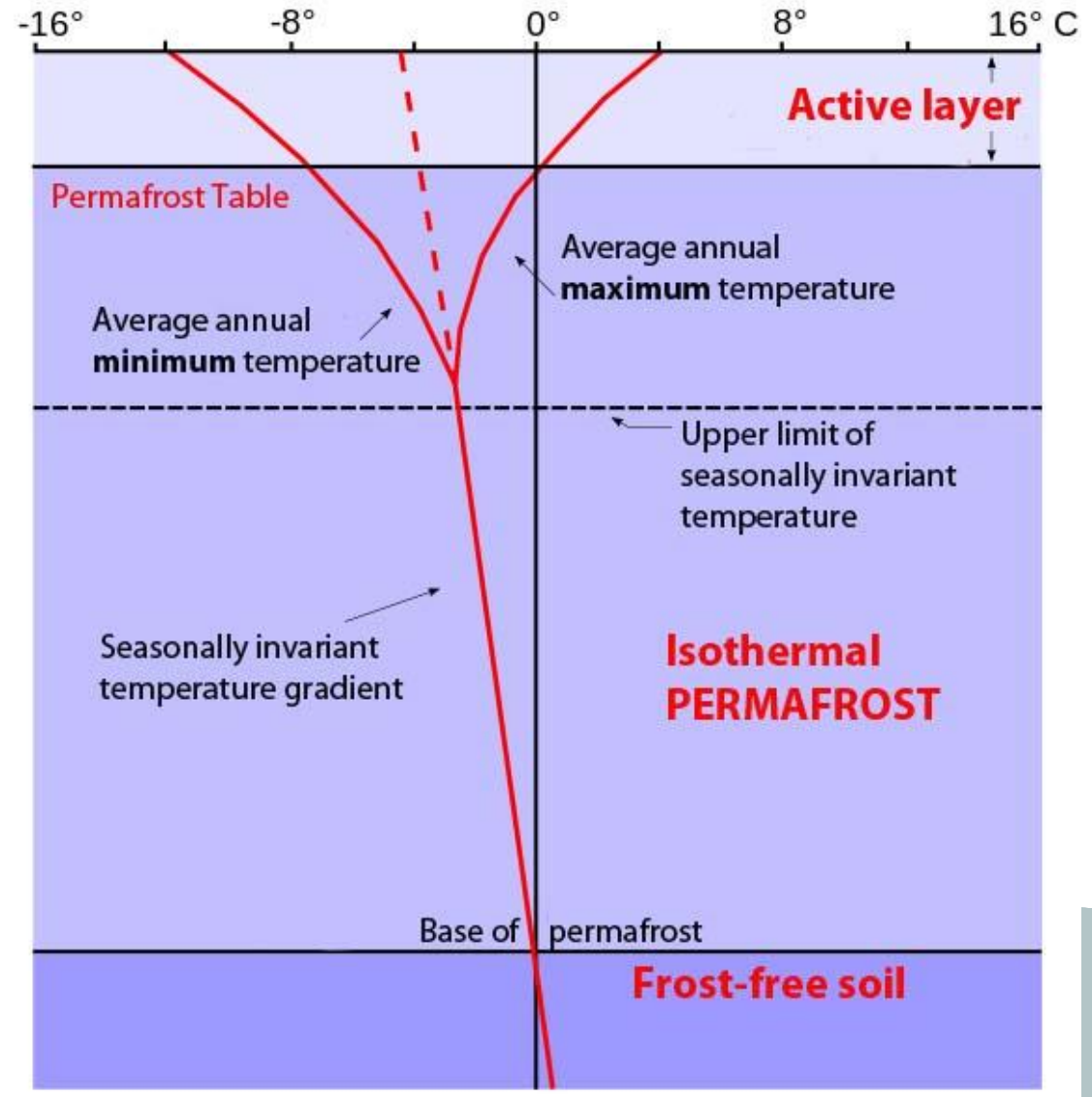
- Current panel expertise includes people with backgrounds from:
  - Longyearbyen community
  - Tuktoyaktuk community in Northwest Territories in Canada
  - Natural sciences
  - Social sciences
  - Medical sciences
  - Engineering
- Academia is currently represented well, and also other voices would be welcome

Potential SAV: Active Layer Thickness

- Uppermost permafrost that thaws annually
- Makes ground less stable and promotes release of frozen greenhouse gases
- 50%+ increase in thickness in NH in 50 years



Li et al., (2018)



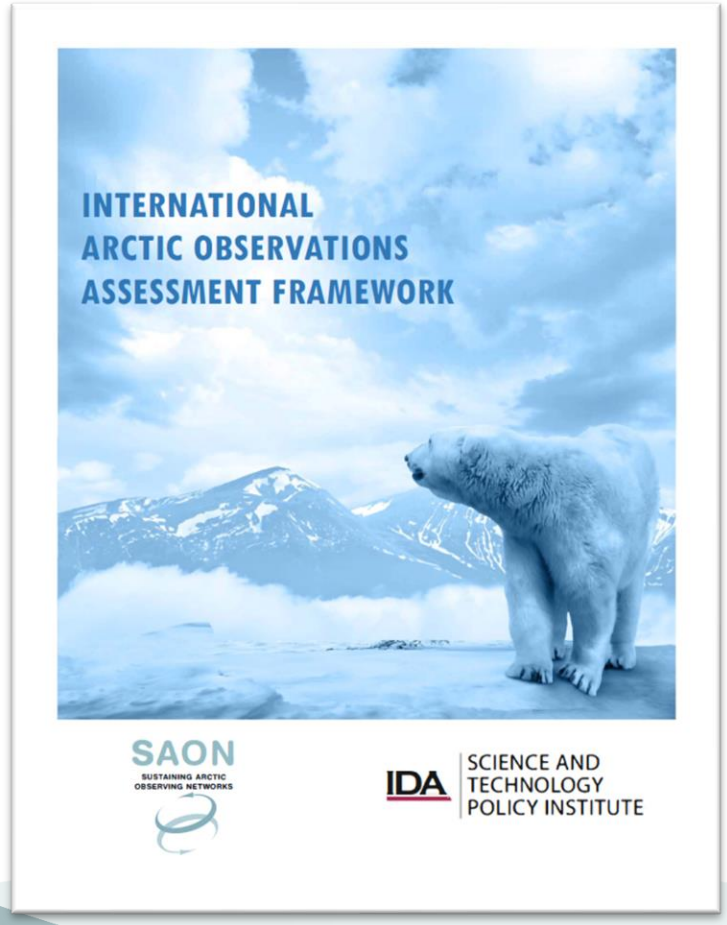
Potential SAV: Ground deformation

- Less stable permafrost / thicker active layer speed up changes in permafrost-covered areas
- Loss and increased upkeep of critical infrastructure, roads & habitation

Photo from USGS https://on.doi.gov/arctic-coasts

Photo from Yereth Rosen / Alaska Beacon

Key Societal Benefits Areas benefiting from better observations



1. Disaster Preparedness
2. Infrastructure and Operations
3. Human health

Thanks

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