

## What are “Shared Arctic Variables”:

People living or acting in the Arctic, as well as science and policy in the Arctic are confronted with a rapidly changing environment and increasing human activity in the region, and are in need of observations tailored to their needs to tackle the questions they are facing in this situation. The Shared Arctic Variables (SAV) framework builds on the concept of the Essential Variables (EV), which have made great coordinated advancements in global monitoring of key parameters with a focus on detecting climate change. The complexity of Arctic issues led to recommendations from SAON's Road Mapping Task Force (Starkweather et al, 2022) and from discussion of the Arctic Observing Summits in 2020 and 2022 to adopt a more shared, cross-sectoral planning approach. The SAVs will focus on observable processes and phenomena that the Arctic user and observing communities identify as important enough to warrant focused coordination for their acquisition (Bradley et al., submitted). In other words they constitute sets of observables that will help to better deal with a specific relevant theme. In this context, the “Shared” in SAV emphasizes that the defined measurable variables are of interest across local communities, industry, scientific community and policymakers. The interest in a variable can come from at least three levels:

1. Meeting community-identified benefits in Indigenous or local communities
2. Supporting fundamental understanding of Arctic systems and regional decision-making needs
3. Informing global science and decision-making needs and integrating with operational global networks

SAON has called upon its partners to identify SAV's and to propose Expert Panels to work on one or more related SAV's within a given theme. In the Arctic PASSION project ('Pan-Arctic Observing System of Systems: Implementing Observations for societal Needs, (<https://arcticpassion.eu/>')) we committed to identify three themes for SAVs and initiate and support the formation of the respective Expert Panels for each of the SAV themes. The Expert Panels will be set up diverse and will combine the knowledge of Arctic communities, local experts, scientists from within and outside of Arctic PASSION, and decision-making and policy expertise. Three working themes have been identified in the project to base the suggestions for a first set of SAVs around: permafrost, wildfires and sea ice.

### The Expert Panels

Expert panels are expected to have a central role in selecting and defining the SAVs. A small nucleus of experts (2-3 people) will be invited in the early stages of this process to identify additional experts to join the final expert panel (made of 10-12 people). The direction of development is from local to large scale and the needs of people and broadly shared benefits are meant to be in the focus. The Expert Panels' main mission is to recommend sets of observables as SAVs to the SAON Advisory Panel, set up by SAON as part of its ROADS process. The Advisory Panel will provide feedback on whether the proposed SAVs and their EPs are fulfilling the requirements identified by ROADS and are able to create an inclusive and iterative process, focusing on feedback from the observing community and information users.

### Beyond Arctic PASSION: legacy of SAVs

The pan-Arctic Observing System of Systems will continue operation beyond the project, and SAVs have a key role in guiding its development. To ensure a smooth transition after the completion of the project, the Expert Panels will collaborate with the SAON ROADS advisory panel to identify stewards for the SAVs.

### Your chance to make History

Participating in defining Shared Arctic Variables is the chance to facilitate coordination between Indigenous Communities, the scientific community, the private sector, observing communities and decision-makers in the Arctic. It is also a unique opportunity to help define the SAVs that will be the initial sets of observables that the pan-Arctic Observing System of Systems will focus on. The SAV process provides a great potential for empowerment of people living and acting in the Arctic to make the case for themes that are of high relevance for them and to develop, together with science and other stakeholders, sets of meaningful observables to help dealing with those themes in a better way.