INTAROS joint assessment of scientific and community-based observation programs

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The dramatic changes occurring in the Arctic due to the global warming generate feedbacks on global circulation and midlatitude climate and, at the local scale, pose challenges to Arctic populations and infrastructures and threaten the Arctic fauna and flora. Observations in the Arctic are needed to understand the ongoing geophysical and socio-ecological processes and changes, to plan adaptation strategies, and to sustainably manage the environment. A joint effort from the scientific and societal communities is necessary to monitor relevant phenomena in such a vast and poorly accessible area of the globe.

The integration of citizen and science observations is envisioned by the Sustaining Arctic Observing Networks (SAON) as a key element of the Roadmap for a comprehensive long-term pan-Arctic Observing and Data System (ROADS) that serves societal needs. Often, however, the different language and methodology adopted by scientific and non-scientific communities hamper the exchange and usability of the available observations. In the EU INTAROS project, metadata on community-based and scientific observing programs were collected using a common questionnaire in order to assess gaps and strengths in the observing systems.

The assessment revealed that the community-based observations rarely belong to long-term sustained programs, and suffer from lack of long-term preservation strategies more severely than science-based observing systems. On the other hand, many science-based marine observations are collected only during the summer season, while community-based observations are less prone to temporal gaps. Community-based monitoring efforts can help increase observational coverage in space and time with often low-cost approaches, while also adding value through the introduction of holistic perspectives – such as Indigenous knowledge-based – into the observing process.

Our analysis demonstrated that, despite the differences in method and language between
community- and science-based programs, the adopted assessment methodology enables the comparison and, thus, the integration of the metadata (that e.g. describe frequency of observations, locations, types of variables observed etc.) pertaining to community and science-based observing systems.