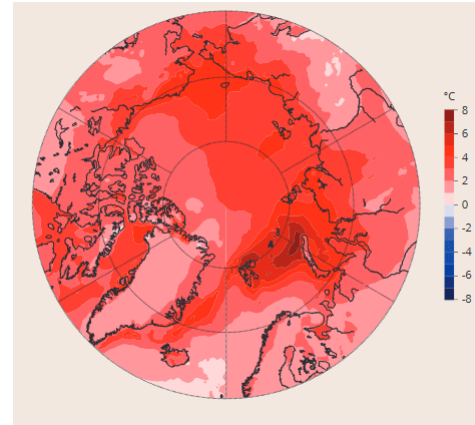


Collaborating towards an Observing System that serves society's needs in a future Arctic

Michael Karcher, Marit Reigstad, Arild Sundfjord, Jeremy Wilkinson
for the Arctic PASSION team



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Arctic Change and Arctic Observing

What do we face? What are the needs?

- We are facing a rapidly changing Arctic environment
- The changes impact the livelihood of people living in the Arctic and societies outside the Arctic
- There is an urgent need for:
 - meaningful observation and a deeper understanding to make knowledge-based decisions
 - a well coordinated, user-and-curiosity-driven, inclusive observing system
 - overcoming fragmentation, the lack of data interoperability and their accessibility and the lack of coordination
 - for a more holistic approach in Arctic observing, for example in taking into account consented IK, TK and LK and knowledge from science (including social sciences and humanities)
 - for equity in access to and shaping of the observing system for all people in a process of co-creation



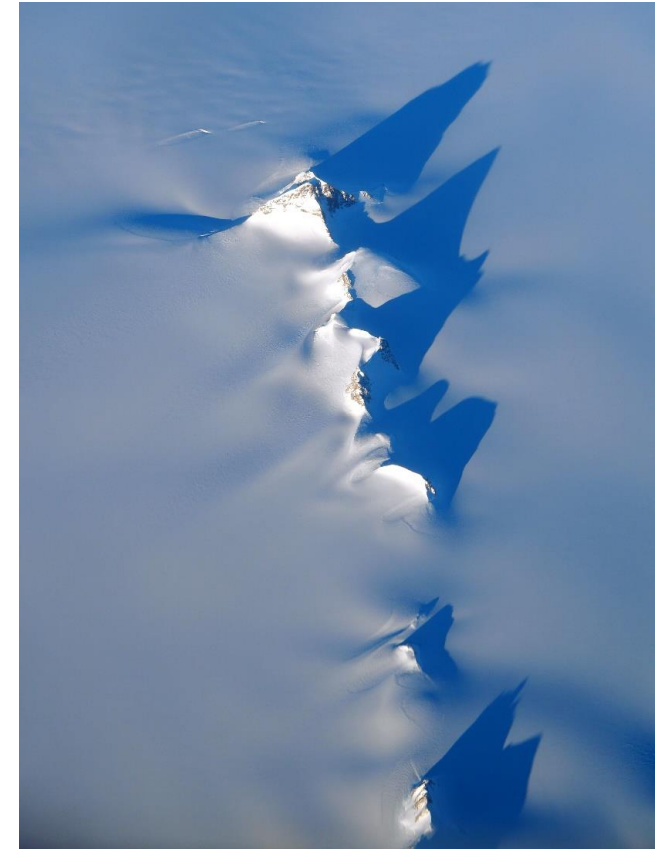
ARCTIC PASSION

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

**Collaborating towards a better
coordinated and integrated, more useful
and more equitable Arctic Observing
System**

- European Commission H2020 Program
- 4 years, 15 Mio Euro, 18 countries
- > 40 partner institutions and Indigenous Communities
- July 2021 – June 2025
- Website: www.arcticpassion.eu
- Coordination: Alfred Wegener Institute for Polar and Marine

Research 

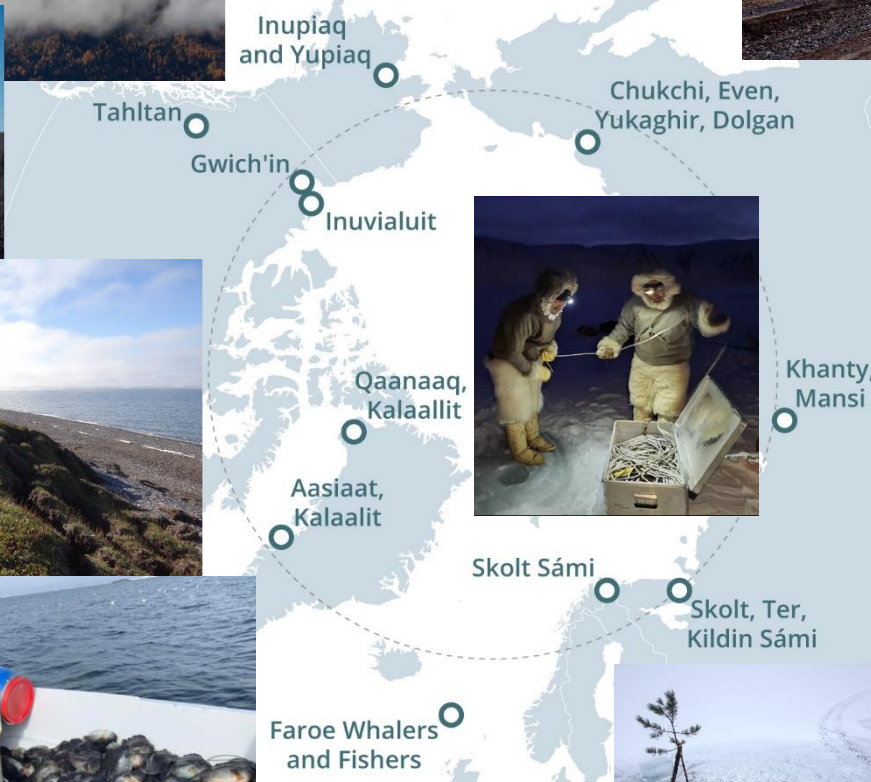


© M. Karcher



Who we are: Institutional partners

 AINA Calgary, Canada	 AMAP Tromsø, Norway	 APECS Potsdam, Germany	 AWI Bremerhaven, Germany	 GCRC Ottawa, Canada	 GINR Narsarsuaq, Greenland	 GRID-Arendal Arendal, Norway	 iLAB Hamburg, Germany	 SIOS Langyearbyen, Svalbard, Norway	 Snowchange Lehtoo, Finland	 Spatineo Helsinki, Finland	 Syke Helsinki, Finland
 CAE San Lazzaro di Savena, Italy	 CNR Italy	 CNRS Paris, France	 DMI Copenhagen, Denmark	 INPO Lindholm, Sweden	 IO BAS (Former partner) Moscow, Russia	 KOPRI Incheon, Korea	 MET Norway Oslo, Norway	 TSU (Former partner) Tosno, Russia	 UIB Bergen, Norway	 UIT Tromsø, Norway	 UKRI-BAS Cambridge, United Kingdom
 DTU Lyngby, Denmark	 EC Europe	 EPB The Hague, The Netherlands	 FMI Helsinki, Finland	 NCPOR Vasco da Gama, Goa, India	 NIPR Tokyo, Japan	 NPI Tromsø, Norway	 OASYS Hamburg, Germany	 ULAP Rovaniemi, Finland	 ULUND Lund, Sweden	 UMCES Solomons, United States of America	 UNIVBRIS Bristol, United Kingdom
 UW Seattle, United States of America	 WoA Rovaniemi, Finland	 WSL-SLF Davos, Switzerland	 JAMSTEC	+ many collaborating institutions and programmes							



Who we are: Arctic communities



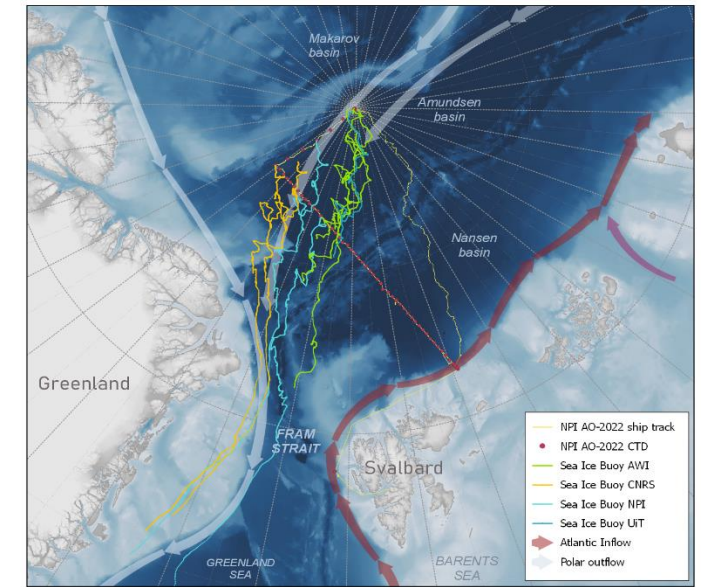
- Enhancing instrumentation and coordination
- Inclusion of different knowledge systems
- Enhancing the functionality of the Arctic Data System
- Developing new services
- Piloting the ‚Shared Arctic Variables‘ concept of SAON
- Developing societal benefit assessments
- Enhancing international collaboration
- Providing policy and decision-making support
- Contributing to developing a clearer and more equitable international Structure for Arctic observing



➔ founding on and collaborating with previous and ongoing international efforts

Examples:

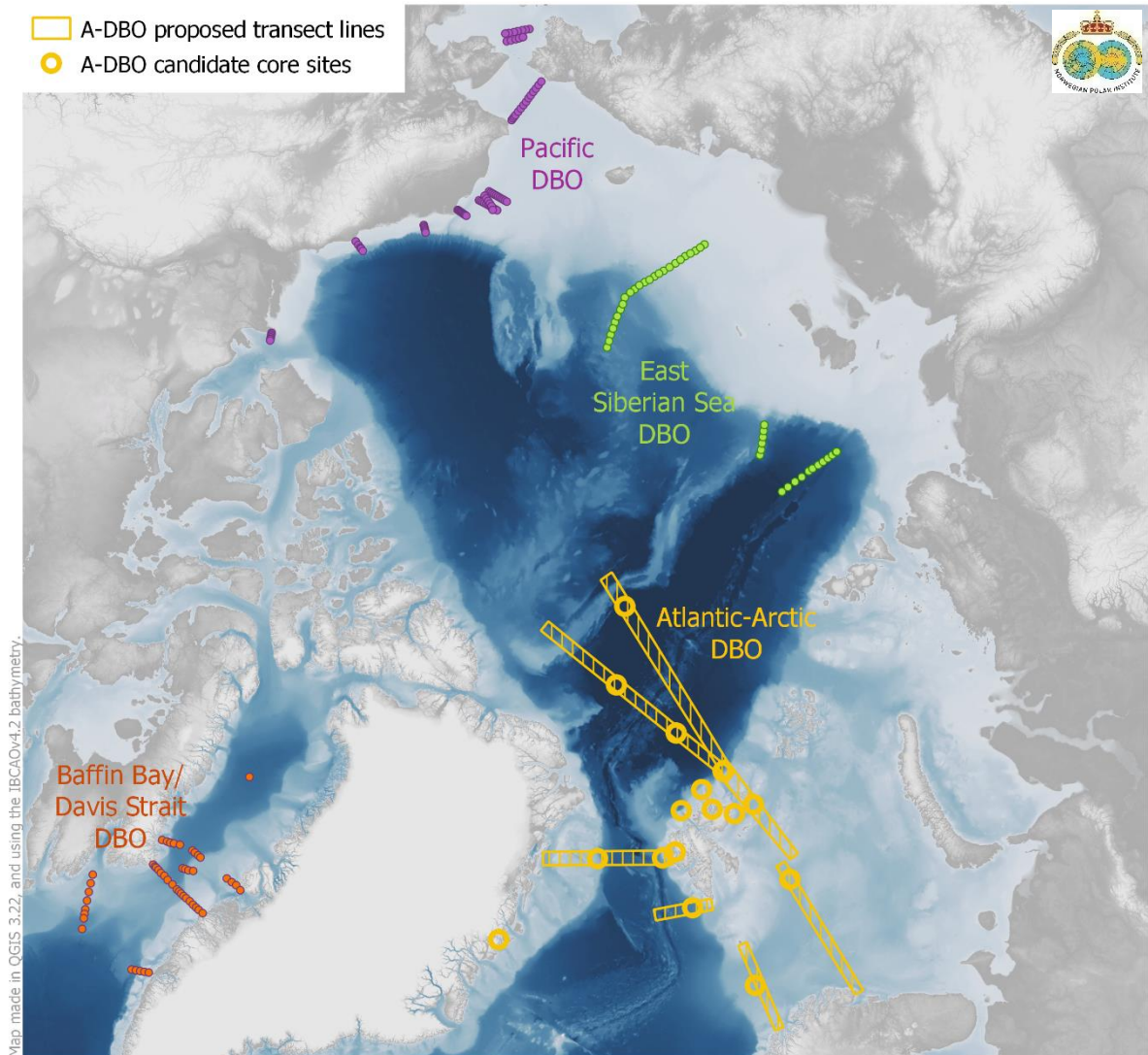
- New multi-disciplinary moorings
- New sensor and instrumentation developments for marine sphere and atmosphere
- Deployment of drifting buoys
- Building unified snow/ice interface detection for IMBs
- Building of a microwave observation operator for sea ice
- Improving monitoring of glacier runoff and calving front positions



Sundfjord, NPI

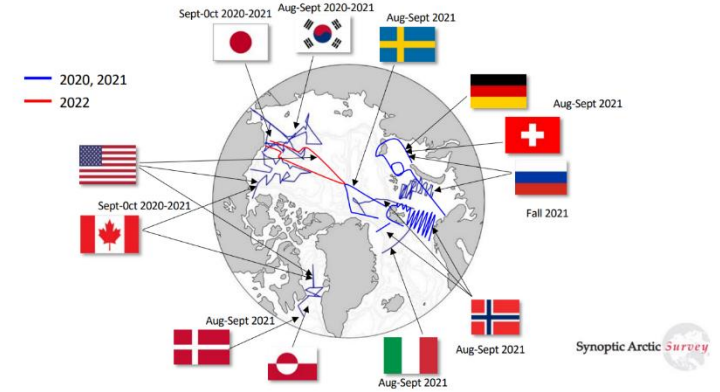
-> a comprehensive marine observing system for climate and environment

- Identify key locations for collaborative monitoring and research
- Joint and open planning - better use and sharing of infrastructure
- Better and more open sharing of data, common protocols for data processing and handling
- Create win-win situations between long-term funding and project-based research funding work

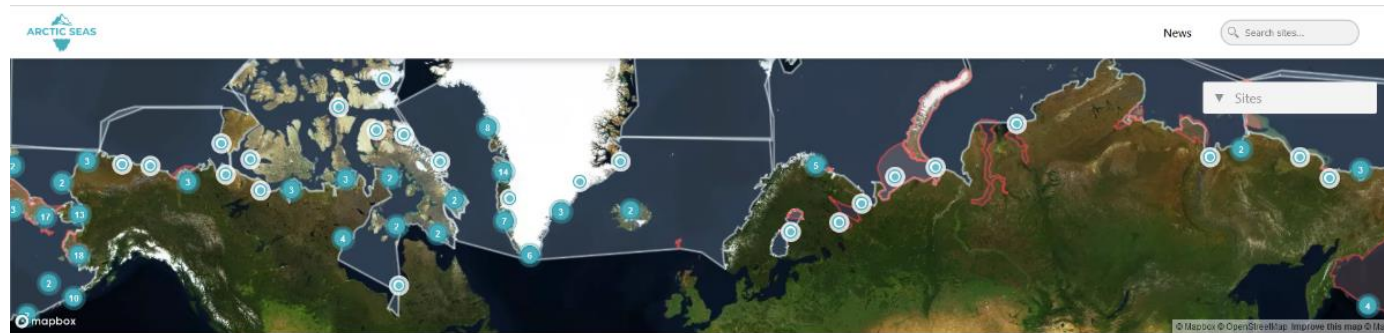


Preliminary A-DBO map, to be further refined

- Advancing the Synoptic Arctic Survey SAS, including preparation for SAS II
- Advancing the visibility of Indigenous marine occupancy, situated locations and knowledge by developing and maintaining the portal arcticseas.org



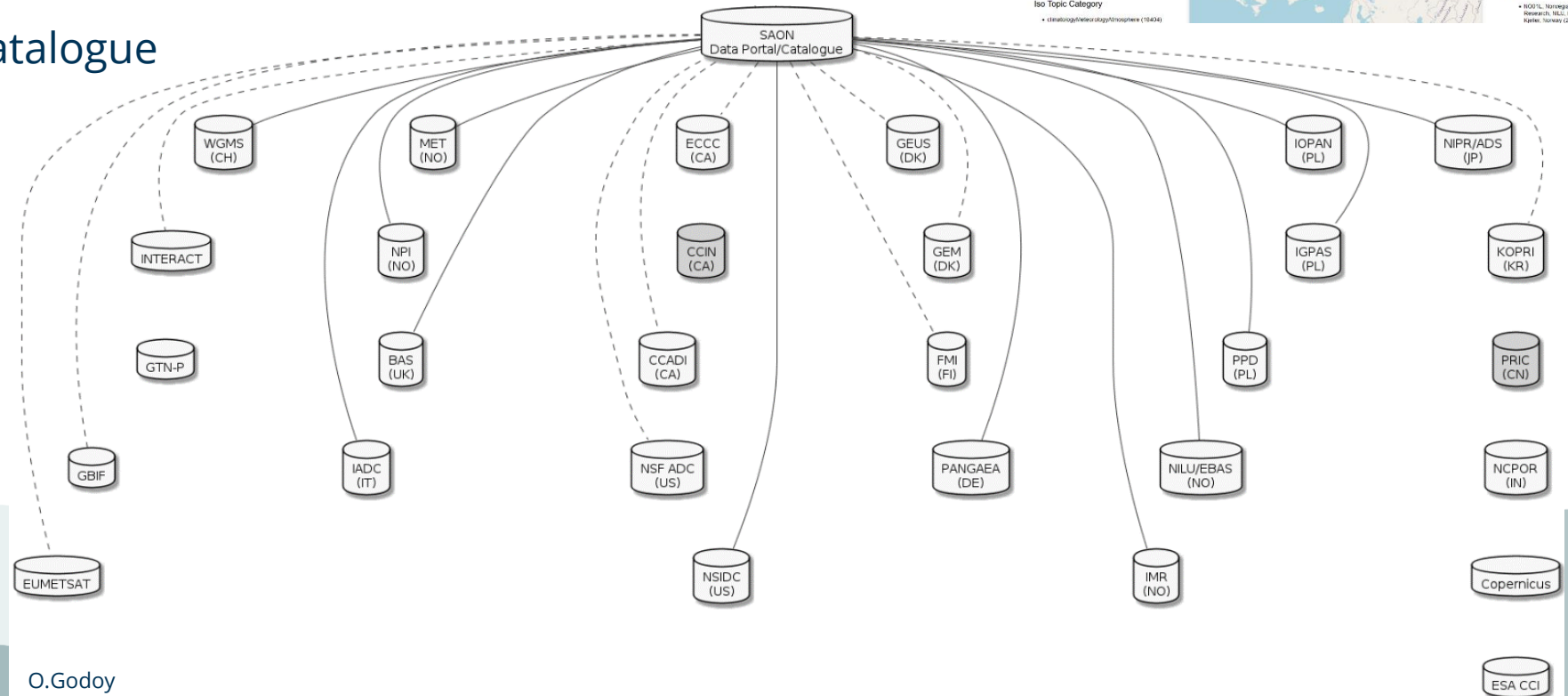
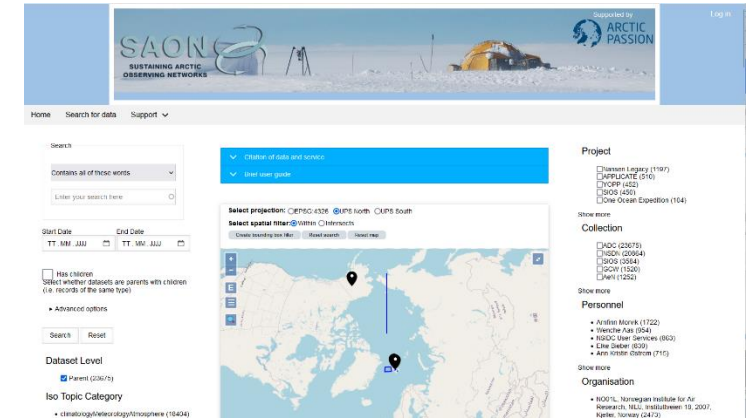
International SAS Cruises (12 Nations)



Snowchange Arctic Seas Portal - Information about Indigenous Communities and Ecology of Northern Waters. [More information](#)



- Mapping the Polar Data System
- Transformation of data to standardized form
- FAIR Data and Service provision
- Long term data preservation
- Data centers harvesting for the unified SAON Data Portal/Catalogue

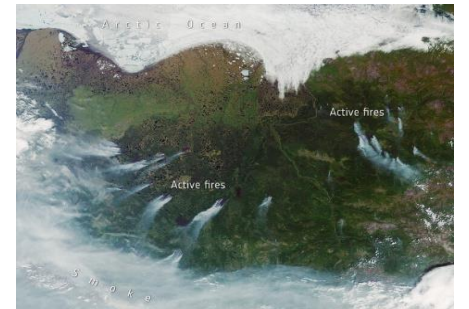




- Indigenous-led event database CBM, oral histories, IK and LK
- Pan-Arctic Permafrost change (e.g. near real-time maps of surface changes)
- 'State of the Arctic Environment' (Information hub for public and decision makers)
- Integrated Fire Risk Management – INFRA
- Local Atmospheric Pollutant Forecasts
- Improving Safety for Shipping in the Polar Seas
- Arctic marine climate change, noise pollution impacts on marine living resources
- Lake Ice change and safety (combining remote sensing and in-situ observations)



Snowchange



S. Olsen, DMI



ARCTIC
PASSION

Identify sets of observables that serve societal needs: Shared Arctic Variables (SAVs)



Concept based on SAON's ROADS and the Arctic Observing Summit (AOS).

Sets of observables that help tackling local/regional problems (based on science, IK & LK)

Arctic PASSION with Canadian partners and US RNA CoObs first projects to launch SAV processes and create Expert Panels



Three SAV themes of relevance

- Permafrost (Living on frozen ground)
- Wildfires
- Sea Ice





Alaska Centre for Climate Assessment and Policy;
City & Borough of Juneau;
Municipality of Anchorage



Environment and Climate Change Canada;
The Government of Yukon;
The Government of Northwest Territories;
The Government of Nunavut;
The Government of Newfoundland and Labrador;
Municipality of Yellowknife, NWT



Ministry for Agriculture, Self-Sufficiency,
Energy and Environment;
Avannaata Municipality



Ministry for the Environment and Natural Resources;
The Environment Agency of Iceland;
Westfjords Regional Development Office;
Municipality of Akureyri;
Municipality of Dalvik;
Municipality of Siglufjörður,
Municipality of Reykjavik (Greater Reykjavik Area)



Ministry of Local Government and Regional Development
Norwegian Centre for Climate Services
Troms and Finnmark County;
Tromsø Municipality;
Harstad Municipality;
Tana Municipality;
Vardø Municipality



County Administrative Board of Norrbotten;
Luleå Municipality



Regional Council of Lapland;
Lapland Centre for Economic Development,
Transport and the Environment;
Kuusamo Municipality
Kemi Municipality



P. Tkach/A.Stepien

- Organizing joint workshops
- Creating Policy Briefs
- Collaborating with the “Arctic Mayors Forum”



Where do we go from here?

Current thoughts:

- Transparent governance structure for a pan-Arctic observing system
- Increased integration & collaboration of the multitude of observing programmes
Examples in the making: : DBOs, INTERACT, Arctic GRA, SAON's ROADS
- A more functional Arctic data system (we are far from FAIR)
- More holistic approach in Arctic observing and inclusion of different knowledge systems (observing is not equal to knowing)
- Stronger inclusion of IK and LK in planning and implementation of Arctic Observing system, as well as in decision making
- Co-creation by observers and users of the information to derive the needed knowledge
- Sustainable funding of observing system components
- Equity from start on (funding for Indigenous and local inhabitants or representatives)
- Communication channels so local & regional needs are heard at and involved in (future) observing system governance structure
- More action needed to make an observing system useful for the full diversity of people



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