Developing collaboration between scientists and (local) communities in the Arctic

Stein Sandven and Hanne Sagen

Nansen Environmental and Remote Sensing Center (NERSC)

How collaboration with different Arctic communities was developed in the EU H2020 projects INTAROS and CAPARDUS

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Hokkaido University
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Global Citizen Science programs extending to the Polar regions

The Arctic is becoming an attractive area for researchers as well as commercial interests connected to resource exploitation, tourism and shipping.

Several Citizen Science programs are expanding into the Arctic because more tourists are travelling there and they contribute with data collection. Examples are:

GLOBE program: clouds, land cover, trees, ++ supported by NASA

eBird: established 20 years ago and is run by Cornell Lab of Ornithology

In addition a number of Community-based monitoring programs contribute to environmental data collection

The communities involved in CAPARDUS include

Svalbard and surrounding seas:

- Shipping: coastguard, ice navigation/operations, expedition cruises
- Local municipality in Longyearbyen including governance bodies
- Tourist operators, tourists and cultural heritage management
- Research activities: Longyearbyen and Ny-Ålesund facilities (UNIS, ++)

Greenland:

- Local fishermen and hunters
- Resource management, decision making and safety of people
- Research activities: Greenlandic institutions and visiting scientists

Russia, Yakutya

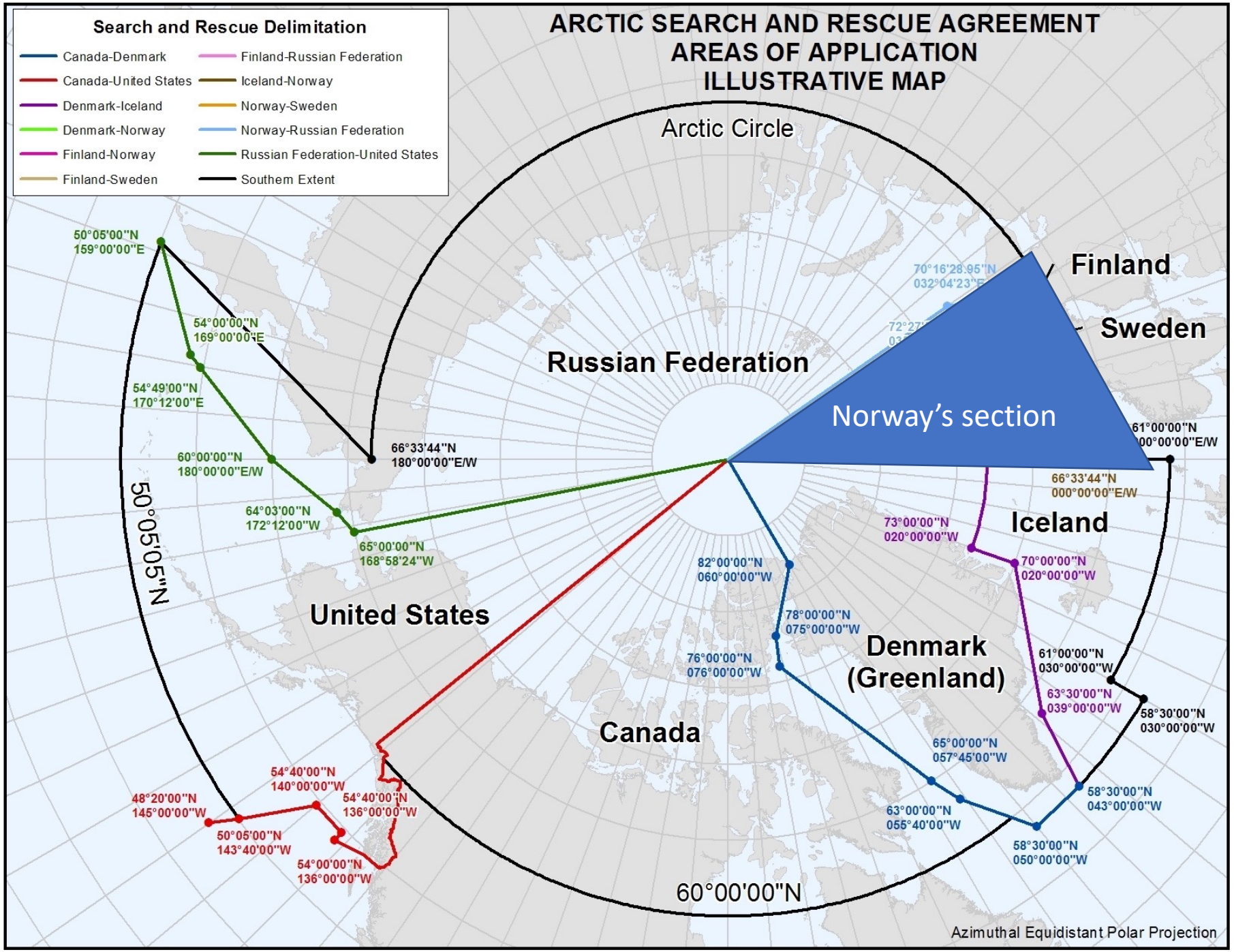
- Indigenous people and their organisations

Norwegian Coastguard icebreaker KV Svalbard

- Built in 2001
- Displacement 6300 t

- L= 104m, Br= 19,4m, D=6,5m
- 2 x Azipod (5MW each)
- Helicopter
- Crew: 50 - 60

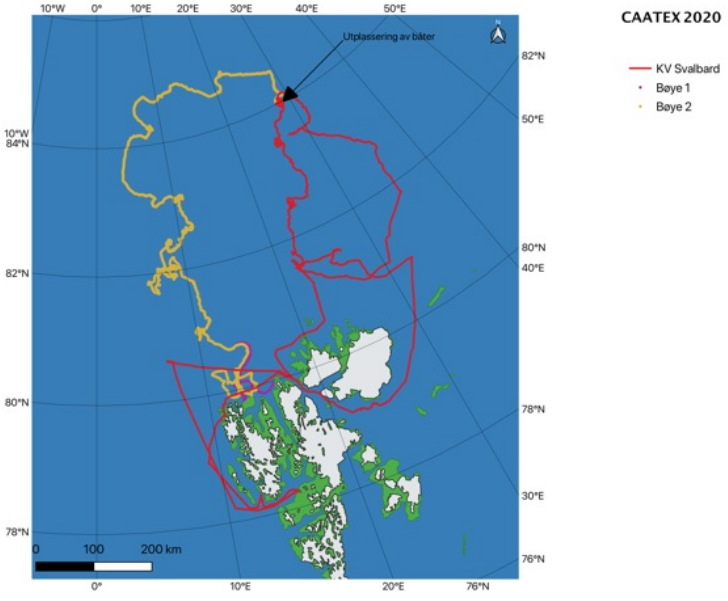
Norway has responsibility for Search and Rescue in a sector up the North Pole, where the Coastguard vessels play the key role



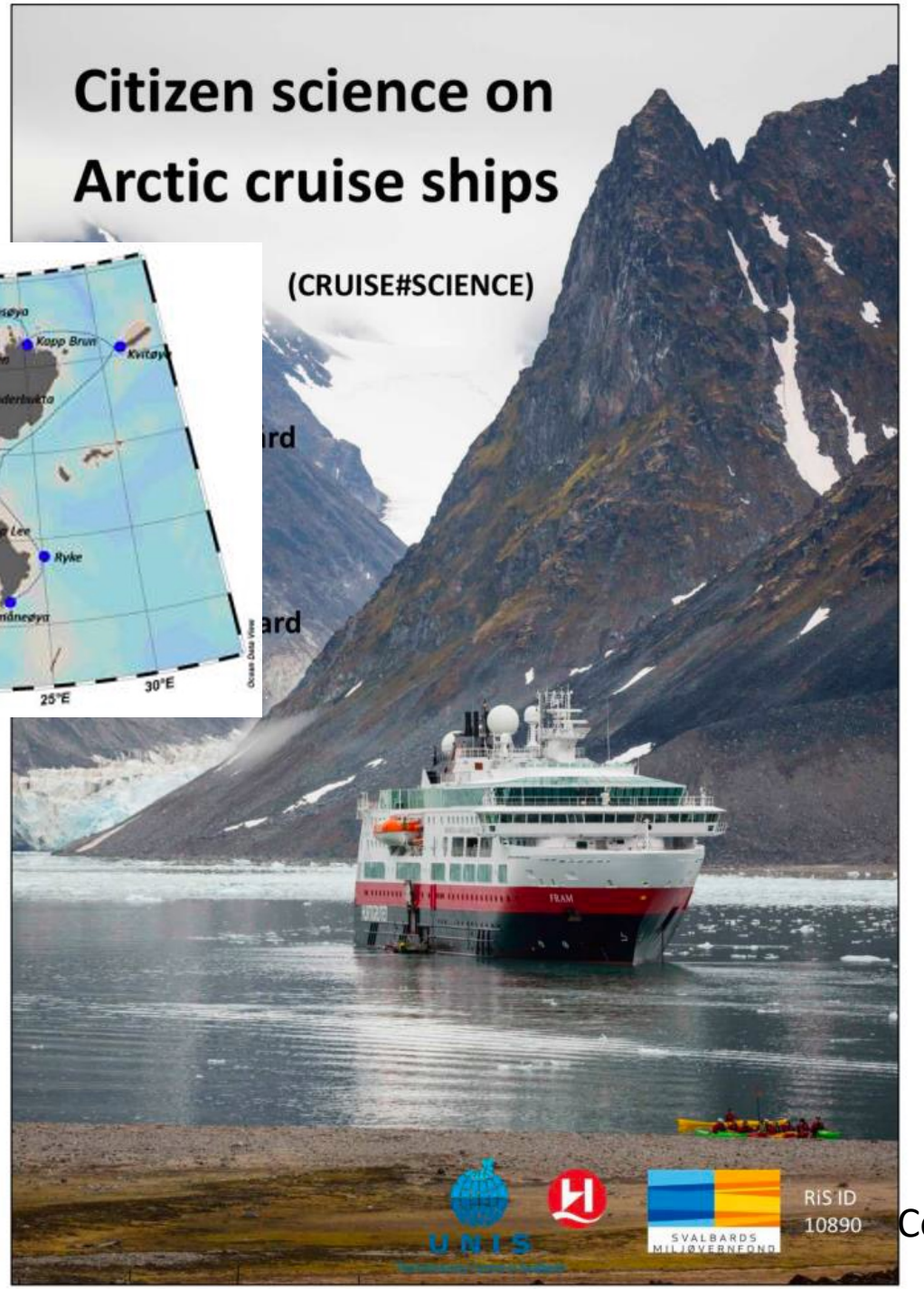
Ref. Arctic Portal

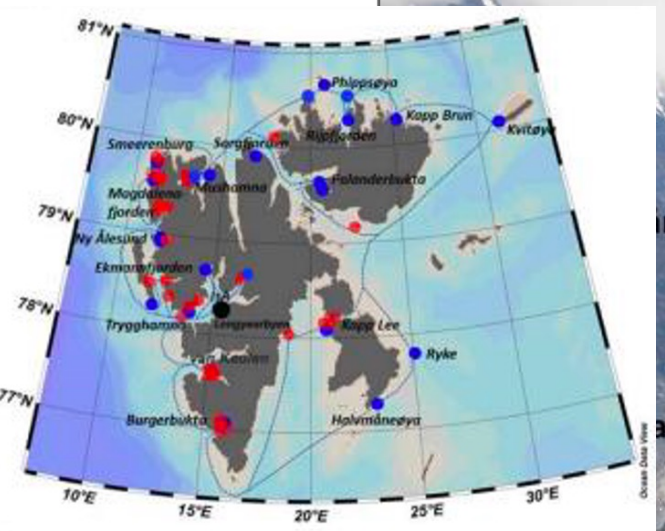
Complex ice operations with KV Svalbard to deploy deepsea moorings

- In 2020 the KV Svalbard were used to recover 11 moorings with more than 400 acoustic and oceanographic instruments.
- NERSC and the NoCG know each other well through the long-standing collaboration (since 2008)
- Organised complex operations in Fram Strait, North Pole and Beaufort Sea.
- Proper preparations and communication between the NoCG and the cruise leader /science party.
- A significant effort was put in to creating a safe flexible, and realistic plan for the cruise. Take into account shifting environmental conditions, limitations of the ship, and adequate equipment.
- Coast guard need training in **smart navigation** in ice under different weather regimes as well as procedures for operations in ice. Procedures for thee has been developed during the research cruises.
- Research projects get their systems deployed and recovered together with experienced crew.



Le Commandant Charcot
at the North Pole 06.09.21

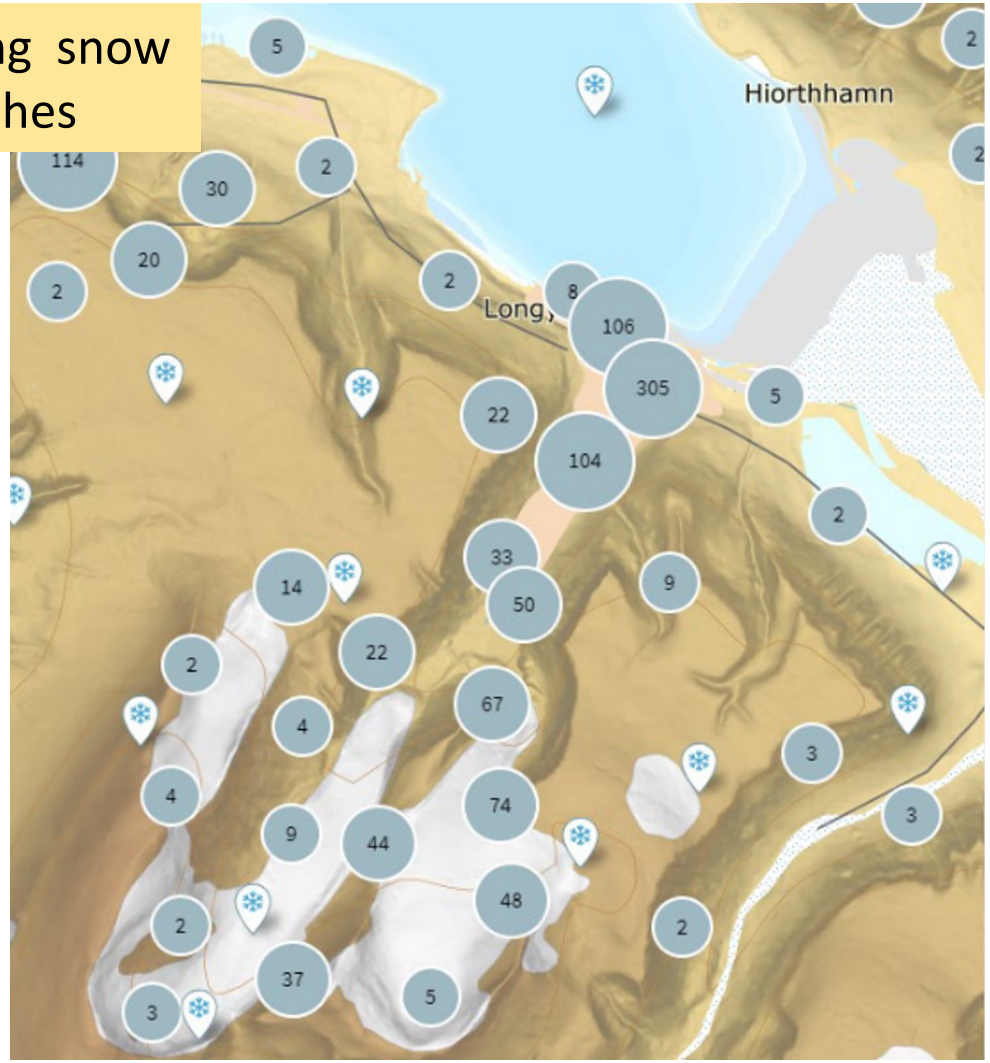




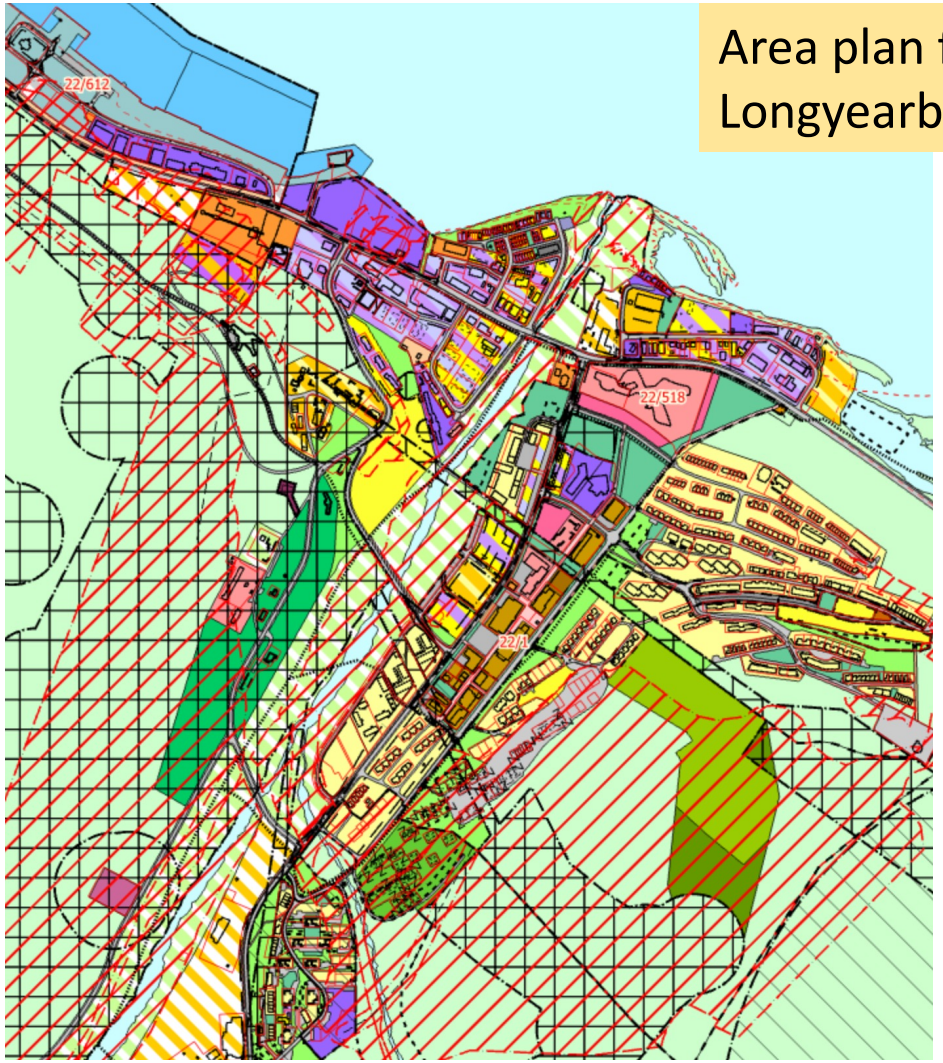
Courtesey: Janne Søreide and Børge Damsgård,UNIS

Engagement with the Local Council in Longyearbyen

Mapping snow avalanches



Area plan for Longyearbyen



Manually observed snow avalanches in Longyearbyen area in Svalbard. The numbers are observed incidents registered in www.regobs.no

https://lokalstyre.maps.arcgis.com/apps/webappviewer/index.html?id=91ec98bf5ff44ac188ae06eac98b0b9d

eBird registred Atlantic puffin in Svalbard area

Records of Atlantic puffin Fratercula arctica (n = 622 records) from Svalbard 2002-2019 in the eBird database

Puffin is listed as globally threatened by the World Conservation Union in the category Vulnerable. Records shown in the map are from eBird hotspots, areas with “many” checklists. Insert photo by Henrik Kisbye.

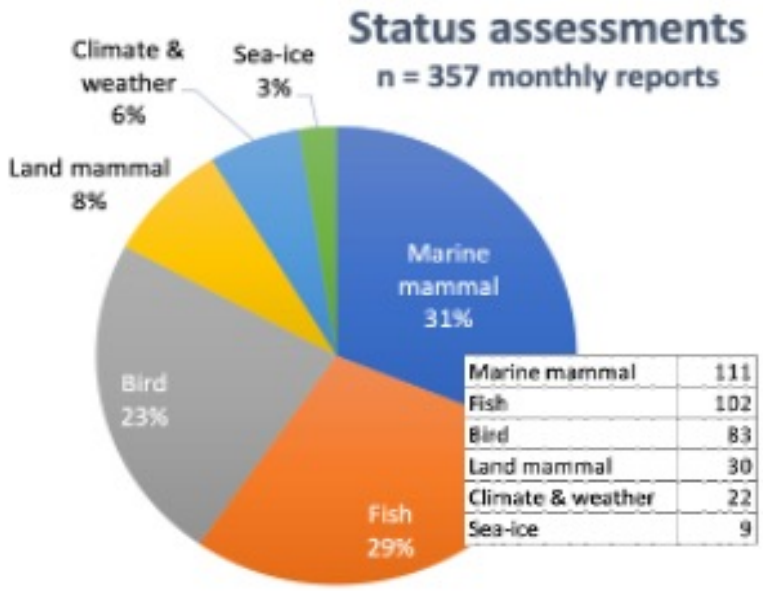
Earthquake observations in private houses

Gerth Olsen, Akunnaaq, before installing the seismometer in his house.

A raspberryshake seismometer was used during INTAROS in detection and location of cryo-generated seismic events and earthquakes and other events that generate seismic signals. The data went into a global seismology data center (https://raspberryshake.org/legacy-data/)

Courtesy: Peter Voss, GEUS

Community-based monitoring of environment to support food supply in villages in Greenland



- Community-based monitoring (CBM) is a method where indigenous and local communities are directly involved in environmenta data collection. Example above is from North-West Greenland

CBM observation of fish resources in Lena River in Yakutia

Evenk community groups have documented that Siberian and Arctic cisco (Coregonus sardinella, C. autumnalis; top left) are increasingly found at greater water depths of Lena river than before (left). It was therefore difficult to catch the fish with the permitted net types. This finding has been used by the Republic Indigenous Peoples organisation to influence changes in permitted net types. A visitor welcome ritual in the Evenk community (right). Photos by Martin Enghoff and David M. Runfola, FishBase

Managing cultural heritage at Svalbard: Goals and contradictions

Political goals

Economy: tourism is a wanted industry

Protetion of nature and cultural heritage

Ref. Anne-Cathrine Flyen, NIKU

Protection of cultural heritage in the Arctic

How can tourists and citizen science methods contribute ?

With funding from The Research Council of Norway

Conclusion: Scientists can benefit significantly by improved collaboration with various communities connected to the Arctic

- Research becomes more relevant and can help communities in planning for sustainable development (contribute to the SDG's)
- Communities can provide more data, knowledge and expertise compared to what scientists can do alone
- Citizen Science and Community-based Monitoring can play more important role in science
- Communities will strengthen their role in decision-making and planning their future