

# Session: Capacity sharing in Arctic Community-Based Monitoring

OBPS workshop VI -12 October 2022 1600-1730 CET

Chair: Stein Sandven, NERSC

Co-chair: Louise Mercer, Northumbria University

## Expected outcome

- Summary of experiences from some case studies of Community-Based Monitoring and Citizen Science projects
- Describe how these experiences best be documented and shared between communities
- Suggest how community-based observing can be strengthened in different Arctic communities

Introduction to the CAPARDUS H2020 project:

# Capacity-building in Arctic Standardisation Development

A Coordination and Support Action 2020-2023

Coordinator

Stein Sandven, Nansen Environmental and Remote Sensing Center



The CAPARDUS project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 869673.



# Objectives

- *Establish a framework for development, understanding and implementation of **Arctic standards***
- *Identify and document **standards, guidelines and practices** within resource management, local community planning, and selected economic activities*
- *Engage researchers, service providers, local communities, commercial operators and governance bodies to design an **Arctic Practice System**, building on the Ocean Best Practice System*



Fisheries is the most important economic activity and food source for local communities in Greenland.  
Photo by Gerth Nielsen



Buildings in Longyearbyen threatened by thawing permafrost. Photo: L. Iversen, NERSC

# Standardization continuum

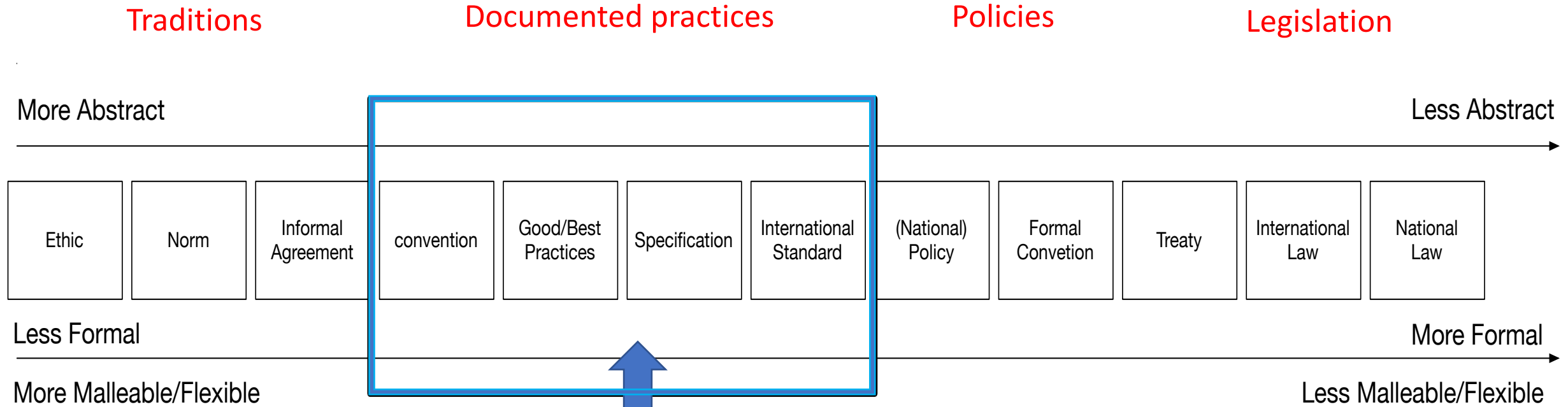


Diagram P. Pulsifer, based on Pulsifer et al. 2013

# Terminology (1)

Type	Provisional definition
Ethic	a system or set of moral principles; (in weaker sense) a set of social or personal values
Norm	a standard or pattern of social behaviour that is accepted in or expected of a group
Informal Agreement	an arrangement made between two or more parties and agreed by mutual consent
Convention	a rule or practice based upon general consent, or accepted and upheld by society at large
Guideline	a general rule, principle, or piece of advice
Standard Operating Procedure	a document which describes the regularly recurring operations to ensure that the operations are carried out correctly (quality) and consistently

# Terminology (2)

Type	Provisional definition
Common Practice	something that is done frequently within a community of practice and is considered normal
Good Practice	a good practice is a successful experience that has been tested and replicated in different contexts and can therefore be recommended as a model.
International Standard	an internationally recognized exemplar of correctness, perfection, or some definite degree of any quality
(National) Policy	a principle or course of action adopted or proposed as desirable, advantageous, or expedient; esp. one formally advocated by a government, political party, etc.)
Formal Convention	an agreement between different countries that is legally binding to the contracting States
Treaty	a contract between two or more states, relating to peace, truce, alliance, commerce, or other international relation



# CAPARDUS themes

- Observing system and data system
- Community planning & decision making
- Natural resource management
- Shipping, tourism, safety
- Ethics, norms, responsible research
- Other issues such as health, clean food and water

Community-based  
monitoring and  
Citizen Science

Developing an  
Arctic Practice  
System

Socio-ecological system:  
Developing BBN model for  
fisheries management

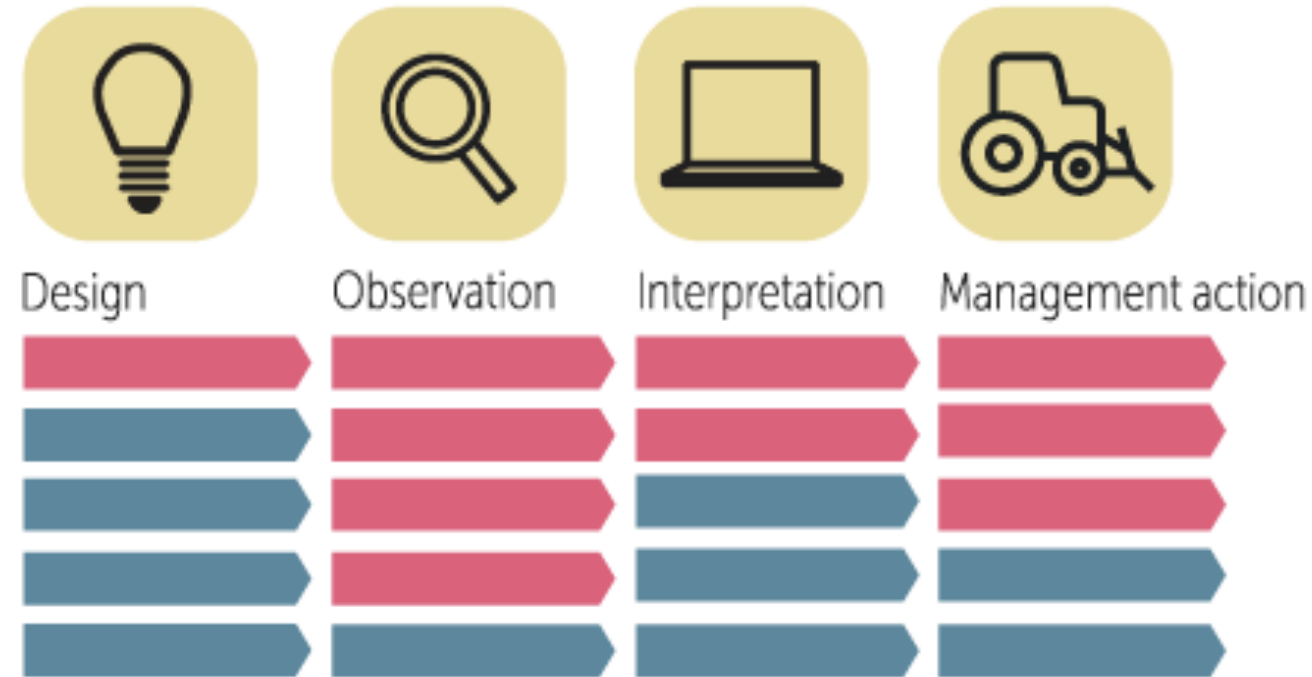
# Community-Based Monitoring versus Citizen Science

“Community-based Monitoring” - Monitoring where community members are the drivers and contribute with more than just observations (e.g. knowledge, interpretation)

“Citizen-science” - Research and monitoring involving community members (often used when community members, citizens, only contribute with data gathering)

■ = Community members  
■ = Scientists

Autonomous local monitoring  
Collaborative monitoring with local data interpretation  
Collaborative monitoring with external data interpretation  
Externally driven monitoring with local data collectors  
Scientist-executed monitoring





# Survey of Community-Based Monitoring programs in the Arctic

## Results from the INTAROS H2020 project (2016-2022)

1. 170 CBM programs identified in the Arctic
2. 45 CBM programs were selected for analysis. Results are available in INTAROS reports\*
3. Topics of the CBM programs: Fisheries, Forestry, Herding and Hunting, Mineral and Hydrocarbon extraction, Shipping, Tourism
4. The collected data must provide information for decision-making in matters of importance for the community (e.g. food supply, safety)
5. CBM programs are significant contributors to international environmental agreements and the UN Sustainable Development Goals

# Library of Arctic CBM manuals and best practices

Community Based  
Monitoring

## LIBRARY

Programs and experiences:

[Home](#) [AAOKH](#) [Arctic Borderlands](#) [ION-Yukon River](#) [PISUNA](#) [SIWO](#) [Winterberry](#) [Yakutia CBM](#) [Contact](#)

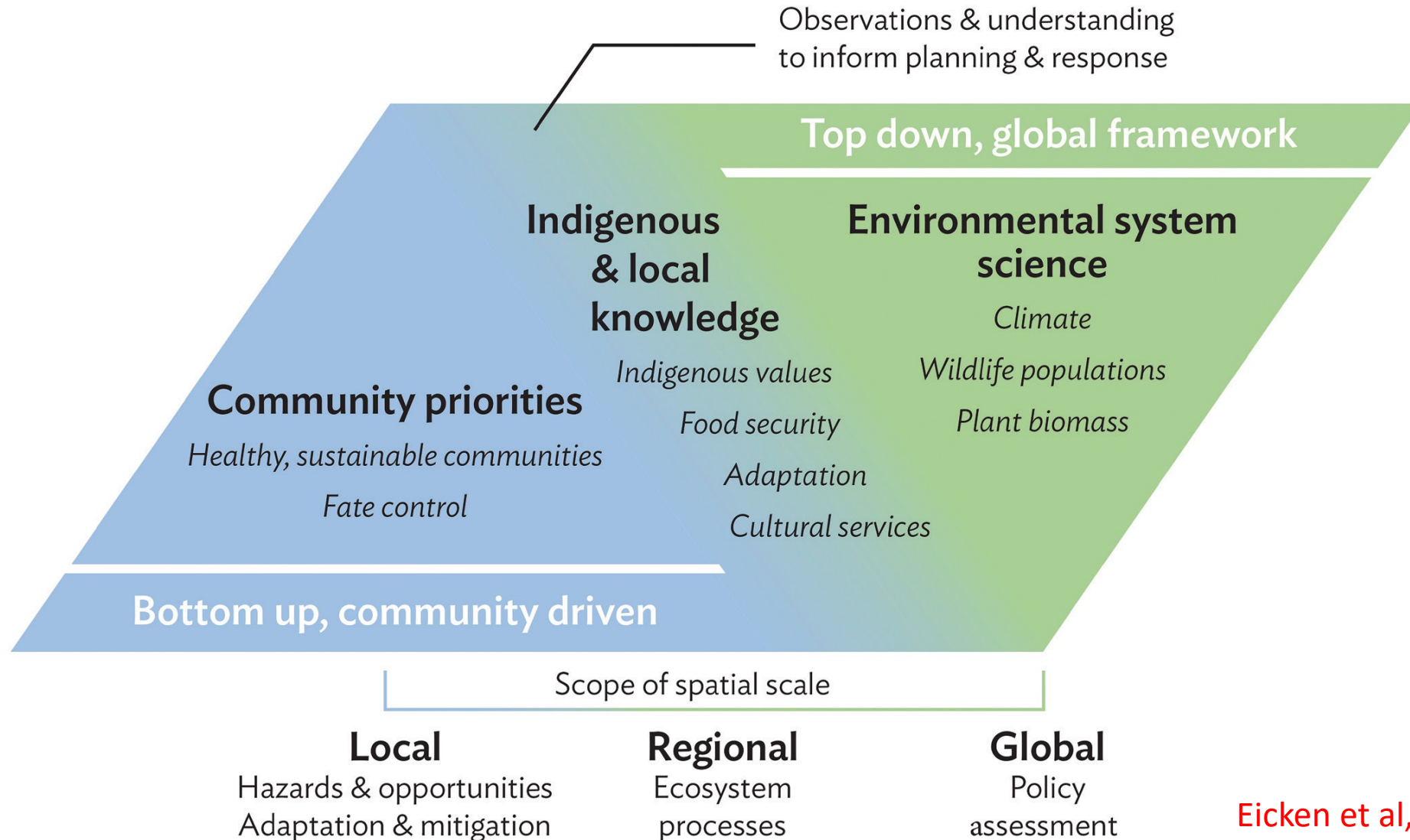
### Community Based Monitoring Library

Here you can find information about Arctic community based monitoring programs, including the manuals they use and an overview over the most important lessons learned.

The materials have been prepared by the organizers of each community based monitoring program.



# Connecting Top-Down and Bottom-Up approaches in environmental observing



# From global to regional and local scale observations

## Global scale examples:

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

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

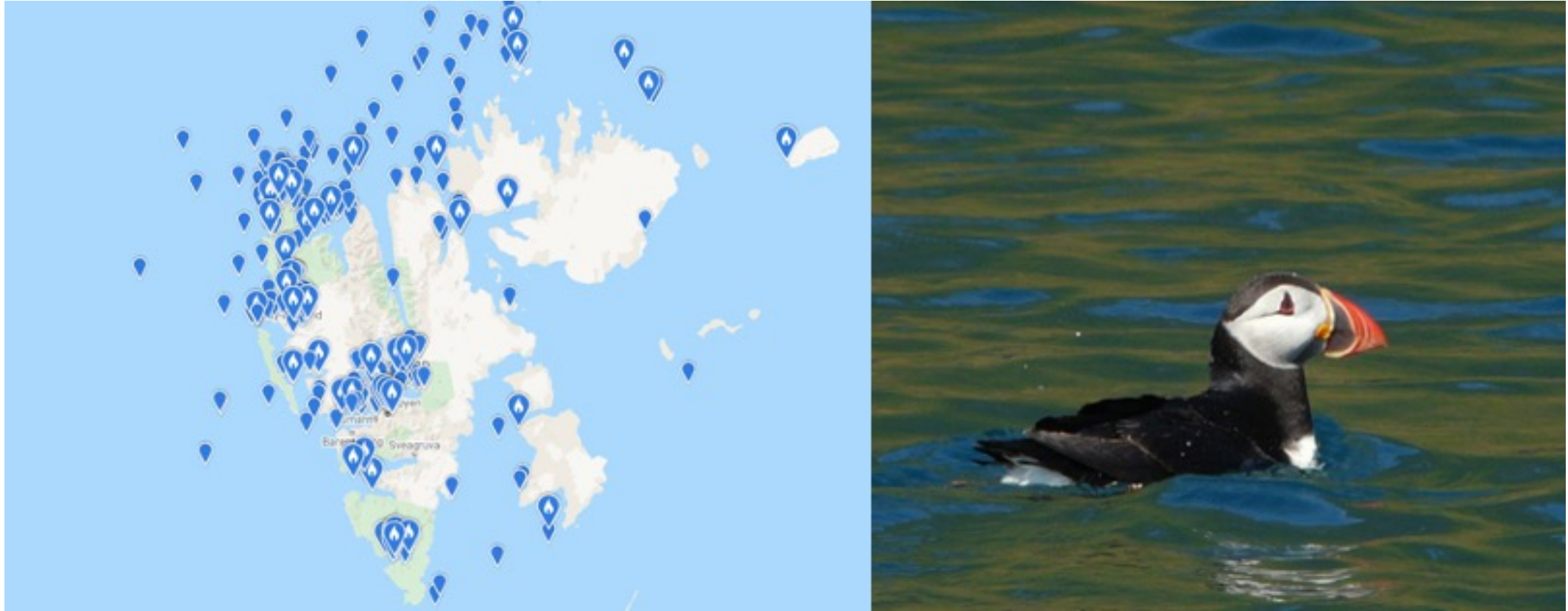
## Regional – local scale examples:

*PISUNA program in Greenland*: management of living resources: organised on governmental level, involving local hunters and fishers to register marine mammals, fish species, etc.

*CRUISE & SCIENCE*: involving tourists in marine data collection around Svalbard in collaboration with scientists at UNIS (University Centre in Svalbard)



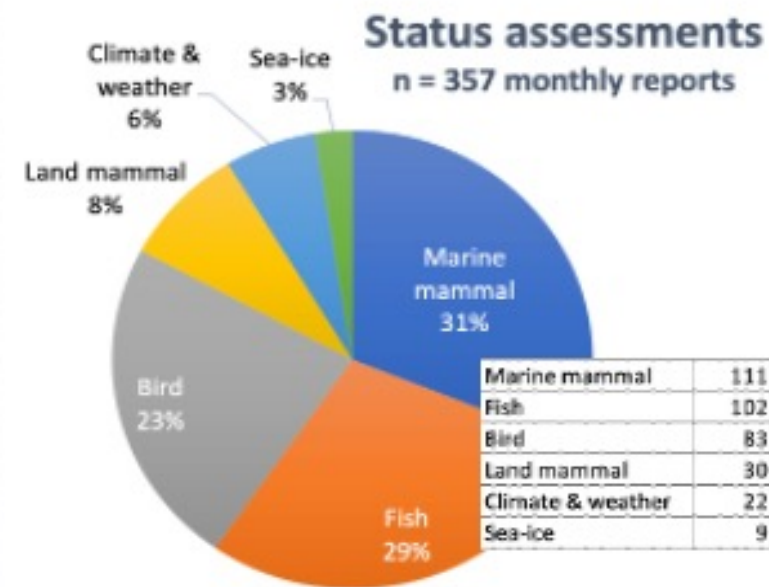
# Example of data from Svalbard area registered in eBird



*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 highlighted with a white flame are from eBird hotspots, areas with “many” checklists. Insert photo by Henrik Kisbye.*

# Example of data from West Greenland in the PISUNA network



- Community-based monitoring (CBM) is a method where indigenous and local communities are directly involved in environmental data collection and registration in databases.



# Citizen science on Arctic cruise ships

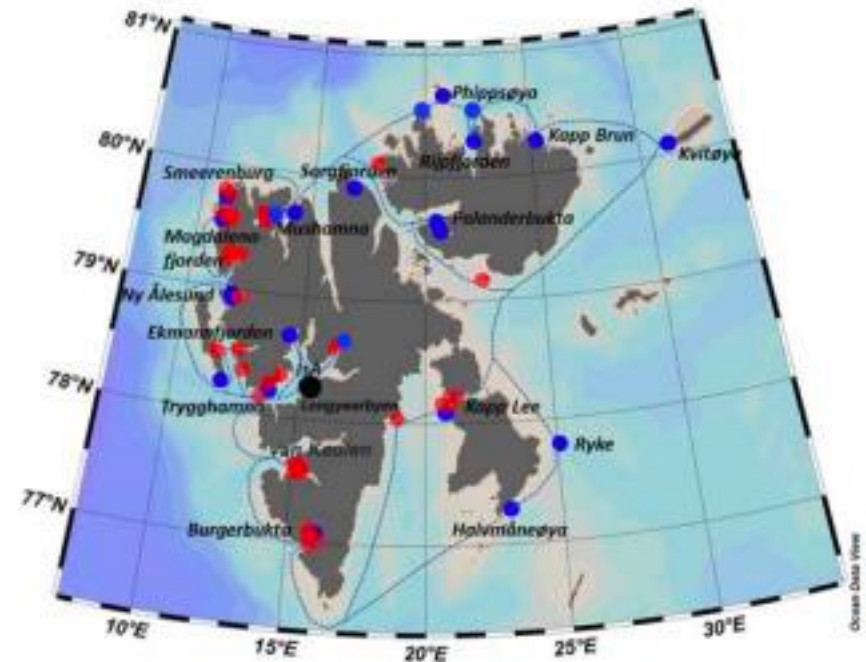
(CRUISE#SCIENCE)

Børge Damsgård

Anna Vader

Janne Søreide

Kirsa Nørregaard



Courtesy: Janne Søreide and Børge Damsgård, UNIS



# Association of Arctic Expedition Cruise Operators (AECO)



Established in 2003  
63 international members  
57 operating vessels  
1500 guides  
64 guidelines  
Contributor to several  
Citizen Science programs



Courtesy: G. Gudmundsdottir, AECO



Association of  
Arctic Expedition Cruise  
Operators **AECO**!

AECO's activities in Community-based  
observing and Citizen Science

CAPARDUS

AECO.NO

# Protection of cultural heritage in the Arctic

Can tourists and citizen science contribute ?





# Association of Arctic Expedition Cruise Operators (AECO)

## AECO's guidelines

The backbone of AECO's work

- Operational Guidelines
- Visitor Guidelines
- Cleanup Guidelines
- Community Guidelines
- Biosecurity Guidelines
- Vegetation Guidelines
- Cultural Remains Guidelines

## Citizen Science



### Comments from the guests on board:

*"...added great value to the educational program on board"*

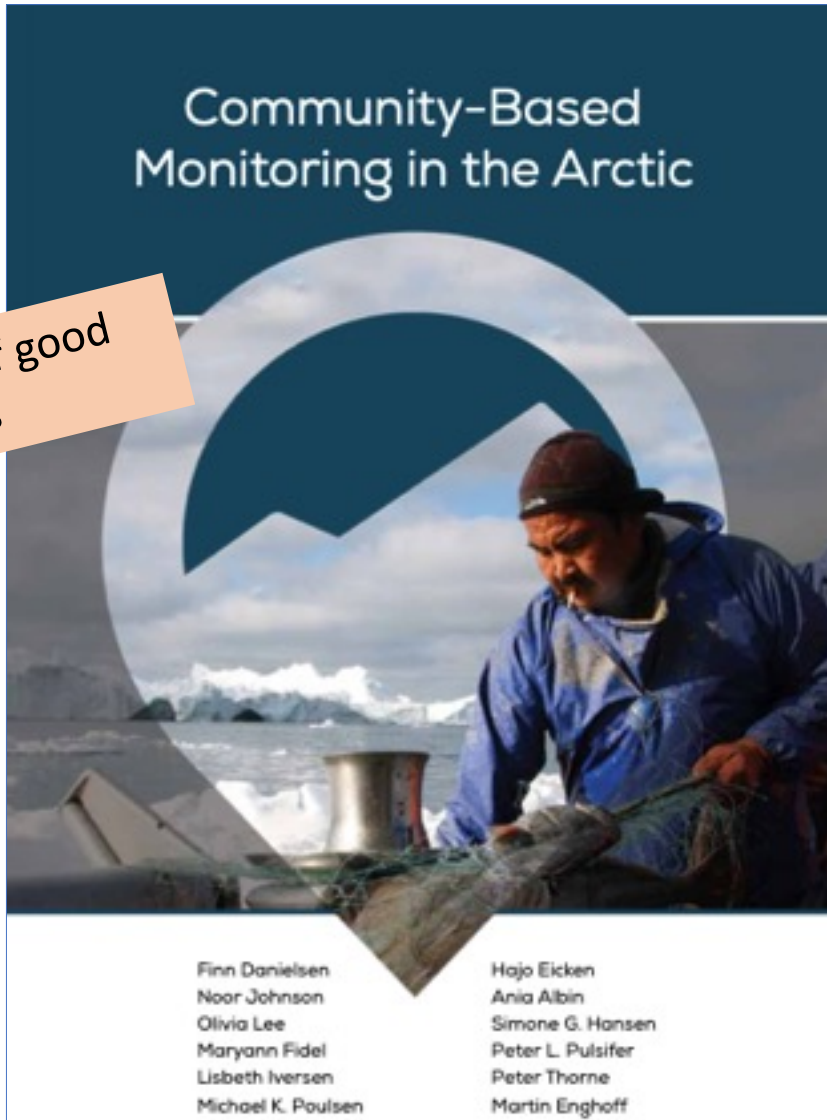
*"...linked the lectures to science projects"*

*"...feel part of something important, not just cruising"*

# Recent publications on CBM and CS

## Community-Based Monitoring in the Arctic

Review of good practices



## The Concept, Practice, Application, and Results of Locally Based Monitoring of the Environment

Special section in BioScience, May 2021

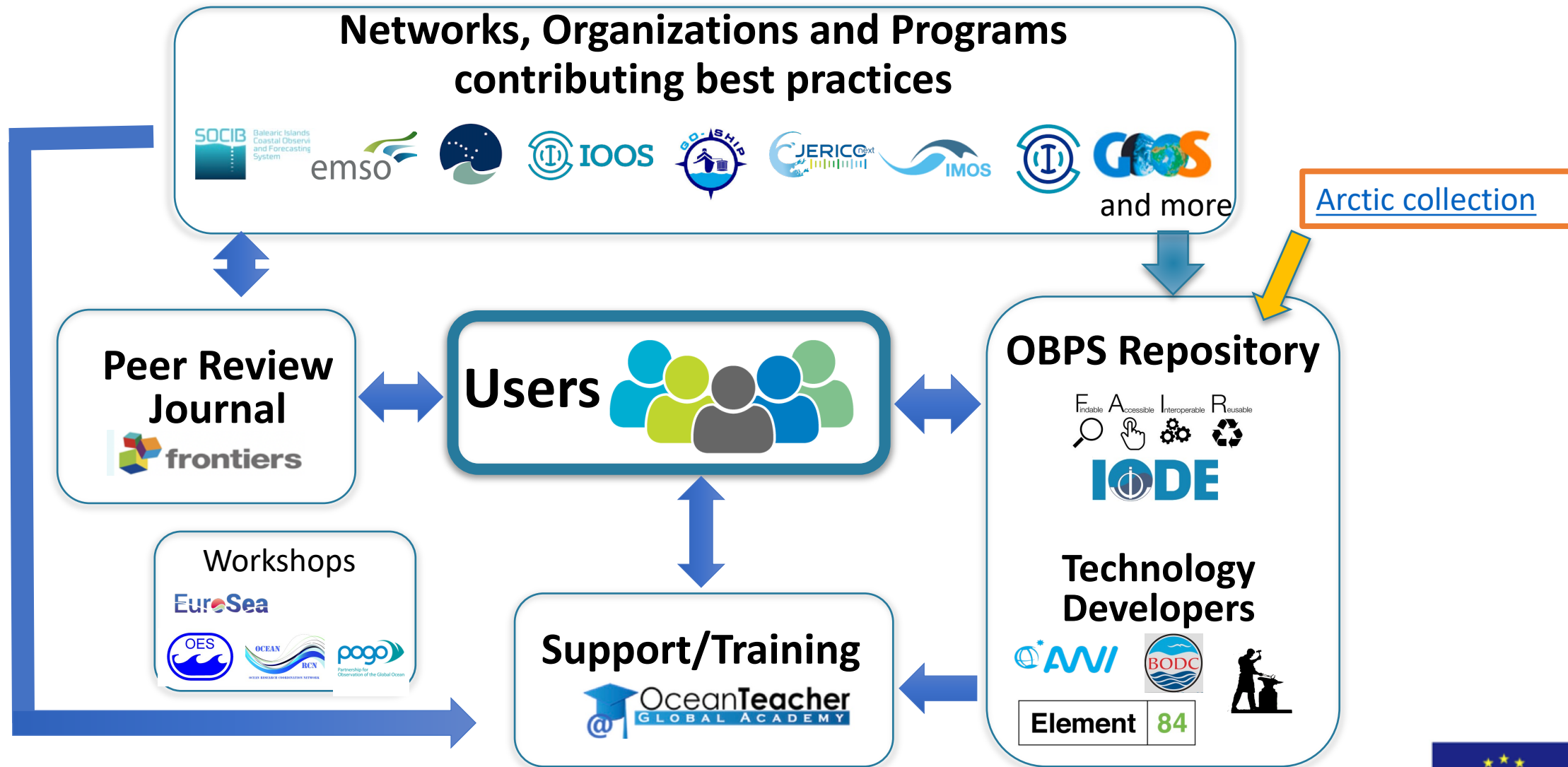
## Connecting Top-Down and Bottom-Up Approaches in Environmental Observation

## Creating Synergies between Citizen Science and Indigenous and Local Knowledge

## The Use of Digital Platforms for Community-Based Monitoring

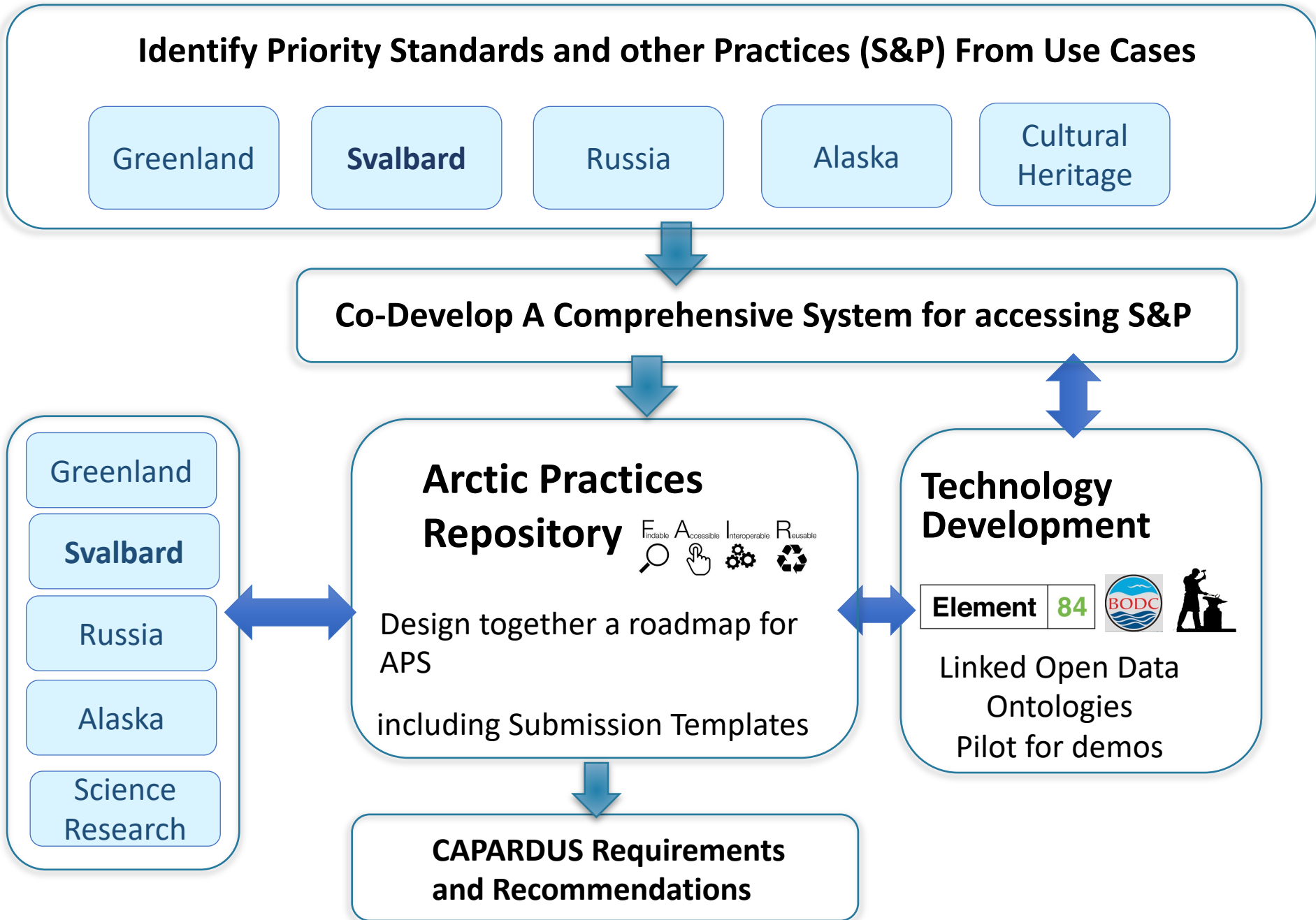
<https://upcolorado.com/university-of-alaska-press/item/6022-community-based-monitoring-in-the-arctic>

# Ocean Best Practices System – Pilot for Arctic Practices System



[Arctic collection](#)





# Questions for discussion

1. Who should an Arctic Practice System be designed for? Different users groups will need different systems, or at least different user interfaces for using the system.
2. What should be the contents and functionality of an APS to be useful in different regions of the Arctic?
3. What should the OBPS store in its [Arctic collection](#), which we build up in CAPARDUS as a precursor to an APS?
4. What will the CAPARDUS team suggest that systems like the OBPS can or must do to work in the Arctic region?
5. How can methodology management systems, such as the APS and OBPS, align their operations and strategy to link their holdings and communities?
6. How can we maintain (meta)data-level interoperability and help data systems in the Arctic and Ocean sustainably interact?
7. What activities and capacities are needed to support methodological exchange between community-based monitoring and citizen science initiatives in both the APS and OBPS?