



# International Arctic Science

A vision for the future

# The vision...

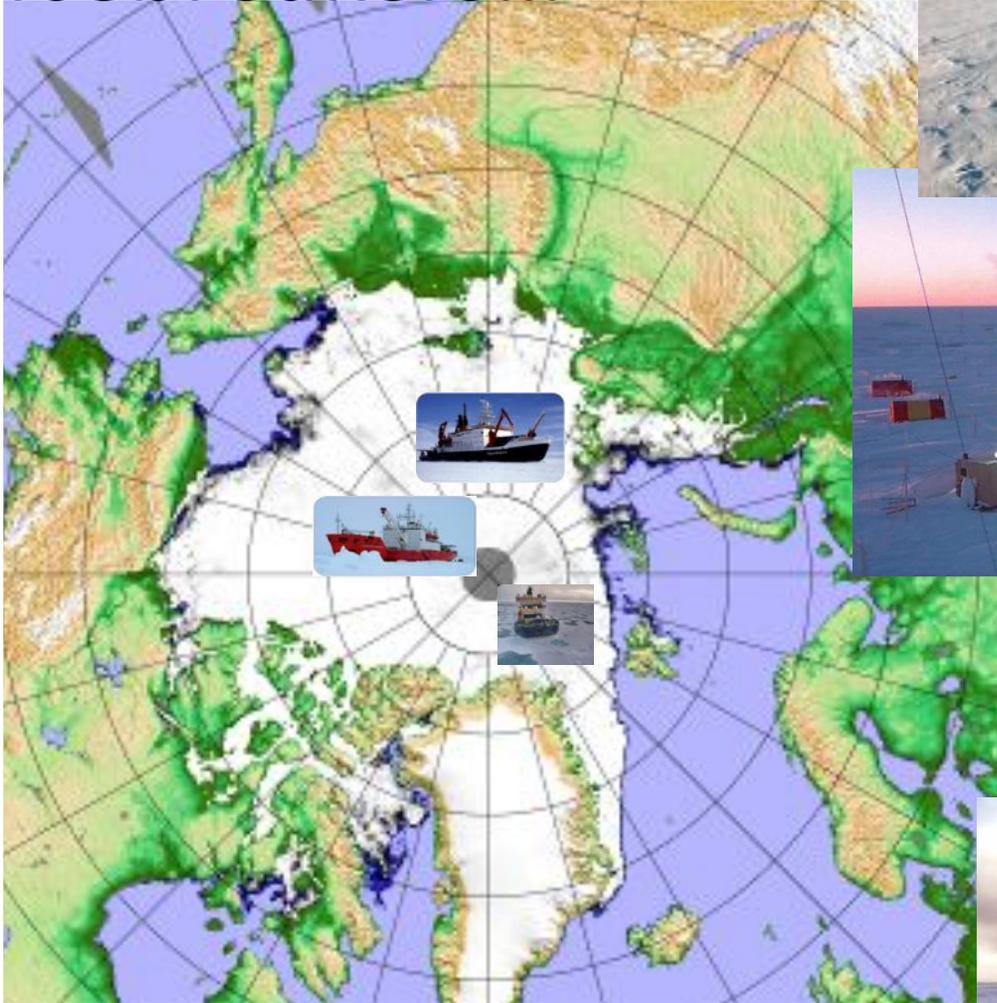


- An interdisciplinary international pan-Arctic research program that:
  - provides solutions to real world problems
  - incorporates basic science in different Arctic domains
  - integrates understanding into a holistic view of the Arctic system
  - moves beyond description, to understanding to responding to change
  - is funded at an international level

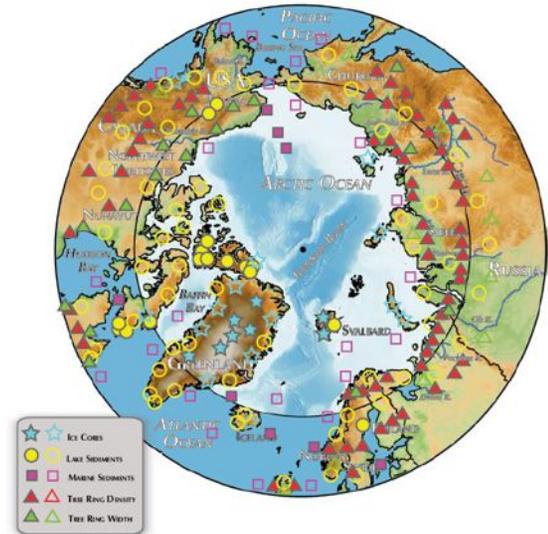
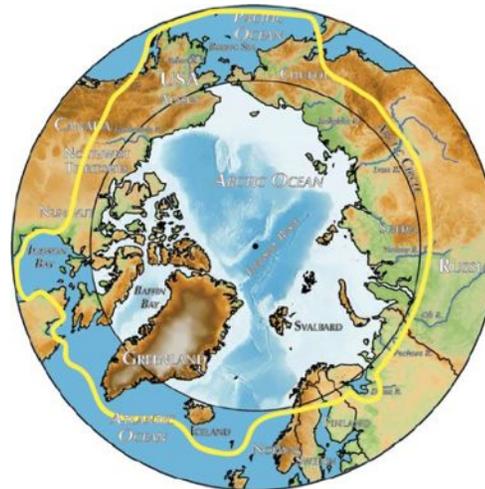
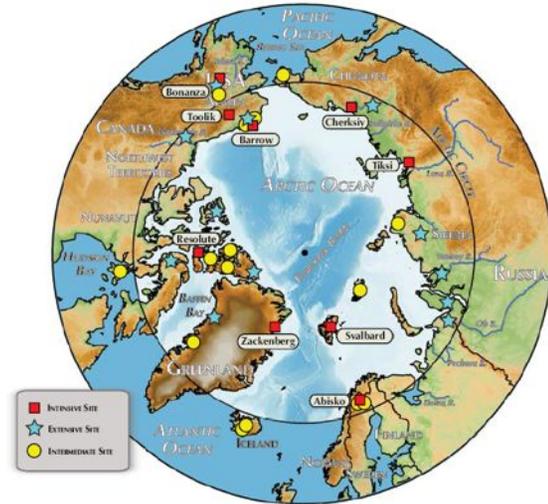
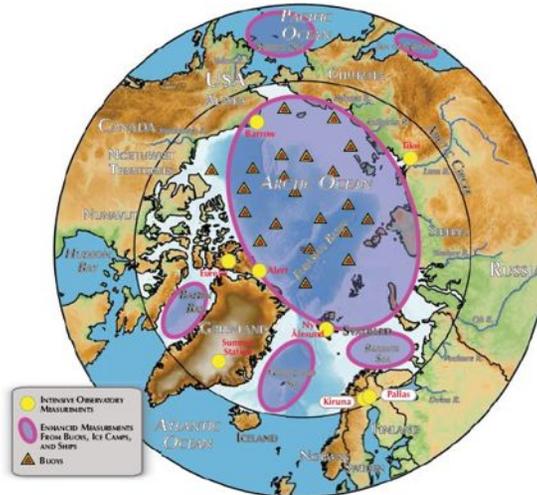


# Ice stations...

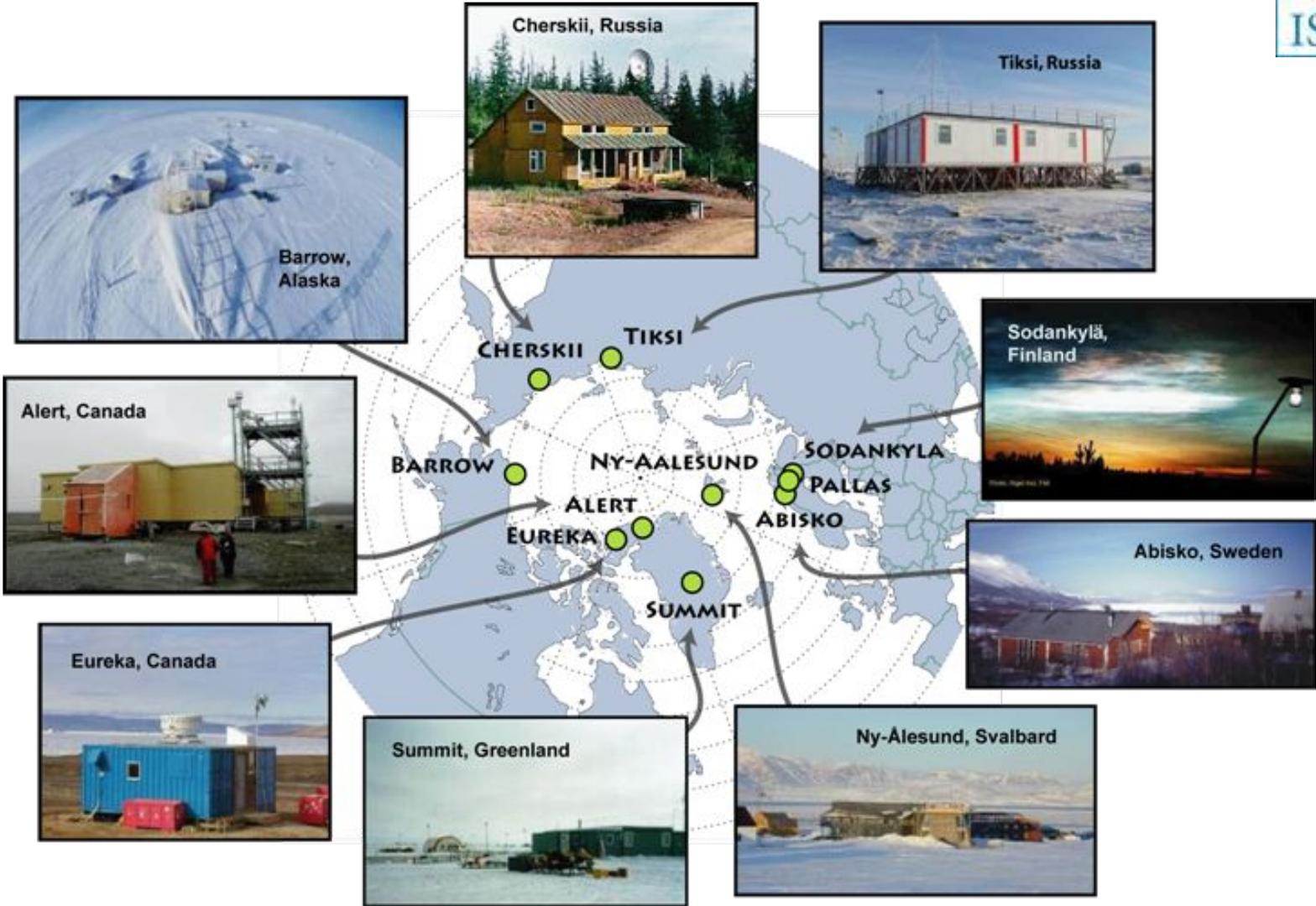
# Icebreakers...



# Integrated observing system

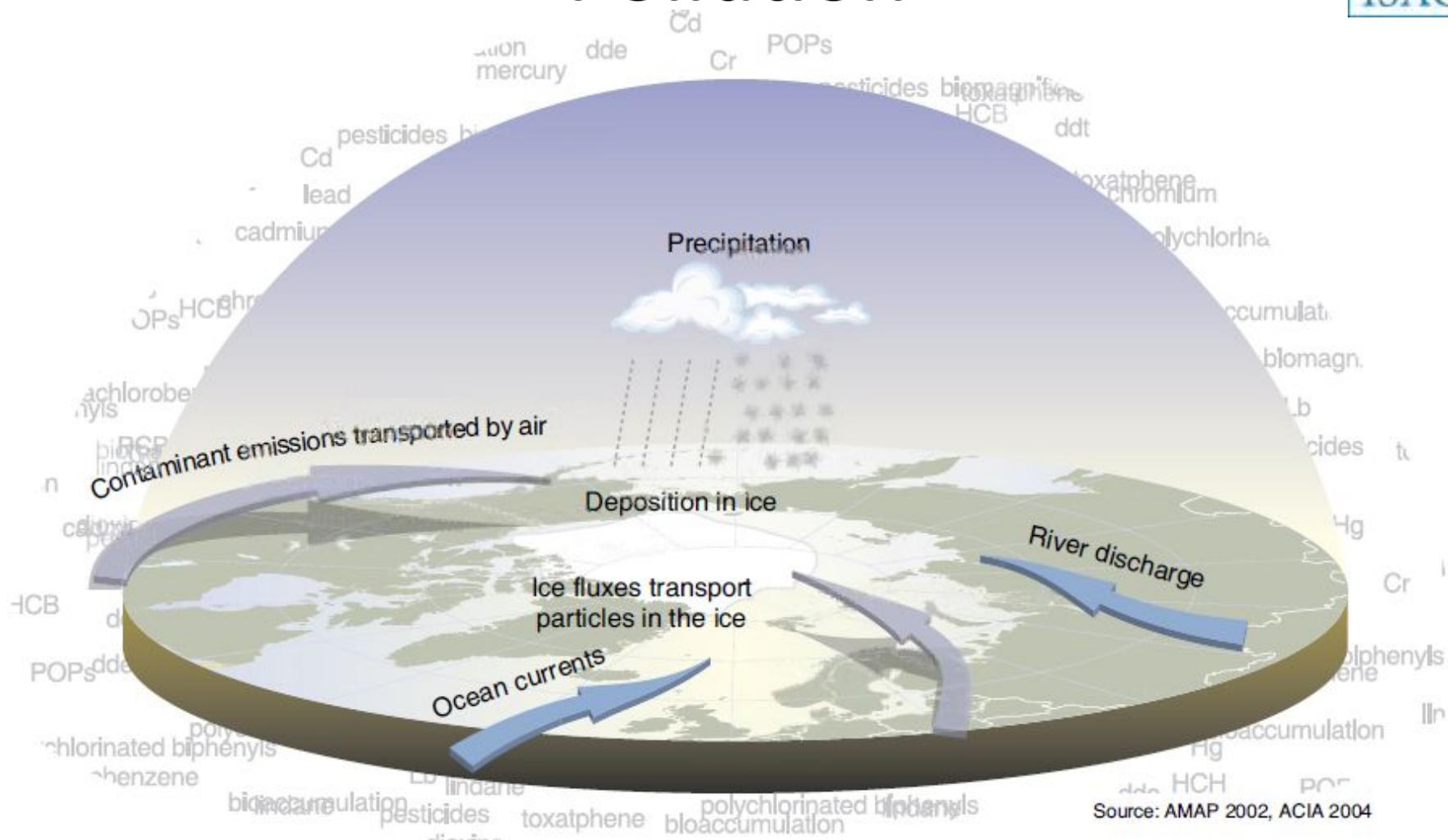


# Observatories



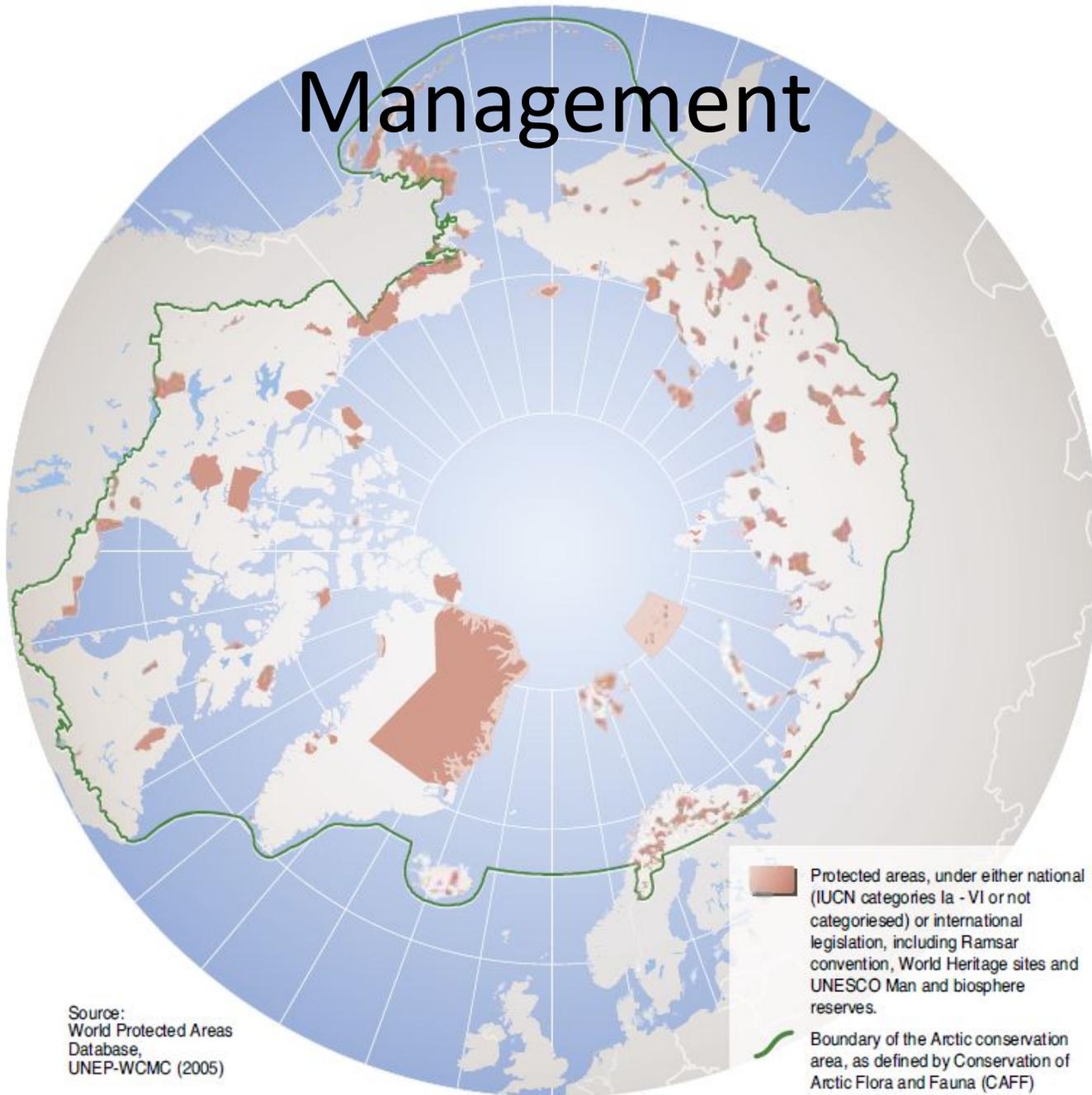


# Pollution





# Management



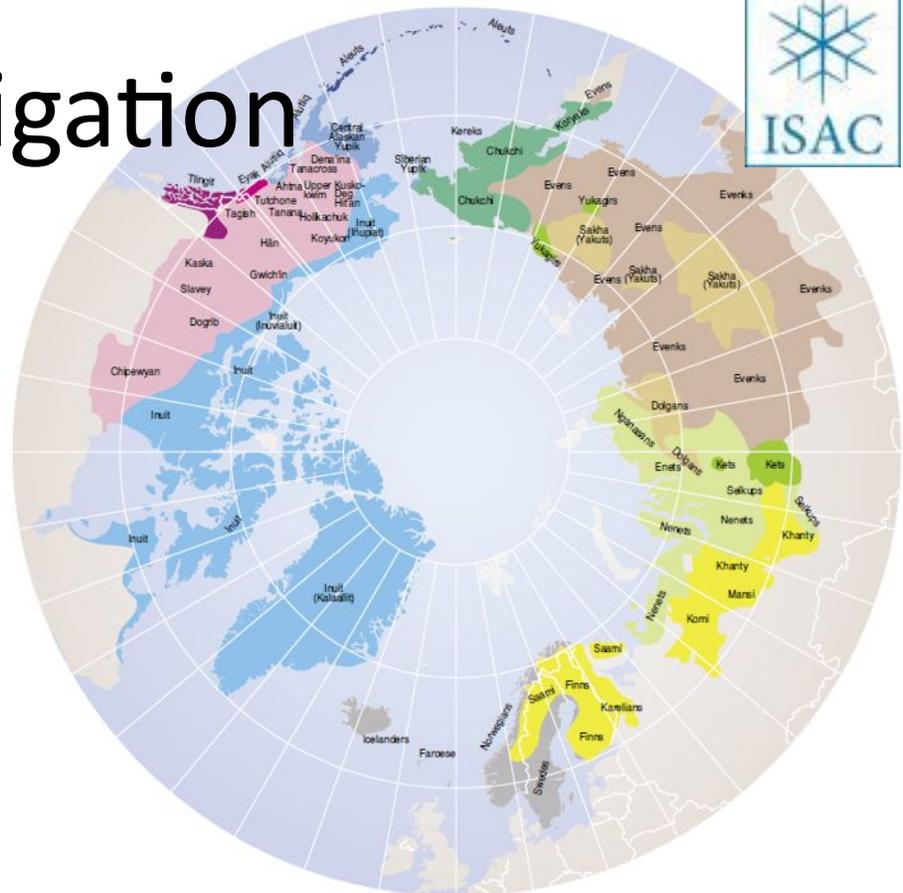
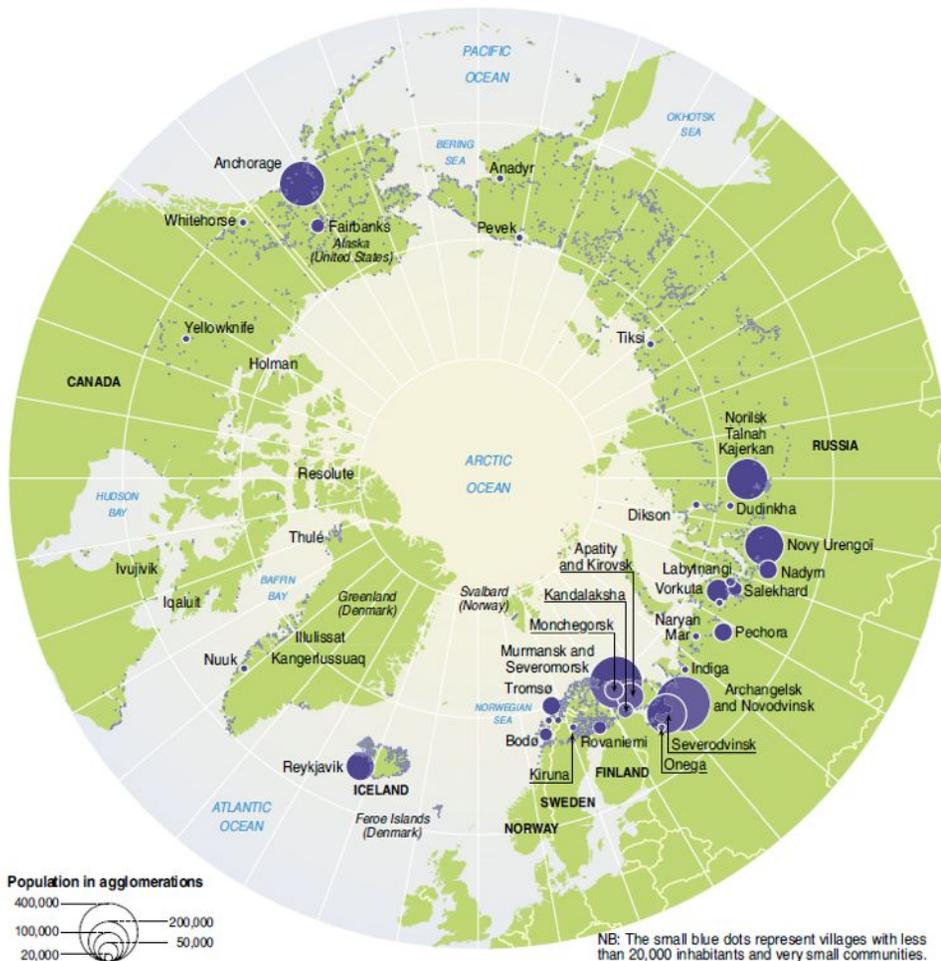
Source:  
World Protected Areas  
Database,  
UNEP-WCMC (2005)

# Management



Source:  
World Protected Areas  
Database, UNEP-WCMC  
(2005). The marine areas  
are marked for display  
based on expert  
judgement.

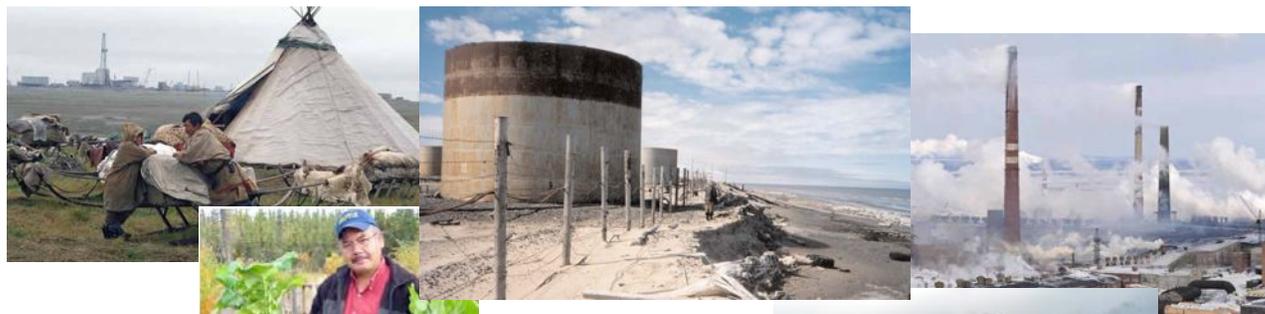
# Adaptation & Mitigation



- Indo-European family**
  - Germanic branch
  - Uralic family
    - Finnno-Ugric branch
    - Samoyedic branch
  - Altaic family
    - Turkic branch
    - Tungusic branch
  - Chukotko-Kamchatkan fam.
- Eskimo-Aleut family**
  - Inuit group (of Eskimo br.)
  - Yupik group (of Eskimo br.)
  - Aleut branch
- Na-Dene family**
  - Athabaskan branch
  - Eyak branch
  - Tingit branch
- Isolated languages** (Ketic and Yukagir)

**Notes:**  
 Areas show colours according to the original languages of the respective indigenous peoples, even if they do not speak their languages today.  
 Overlapping populations are not shown. The map does not claim to show exact boundaries between the individual language groups.  
 Typical colonial populations, which are not traditional Arctic populations, are not shown (Danes in Greenland, Russians in the Russian Federation, non-native Americans in North America).  
 Adopted from map by W.K. Dallmann published in Stefansson Arctic Institute, 2004. Arctic Human Development Report. Data and information compiled by W.K. Dallmann, Norwegian Polar Institute and P. Schweitzer, University of Alaska Fairbanks. Further modified after expert feedback.

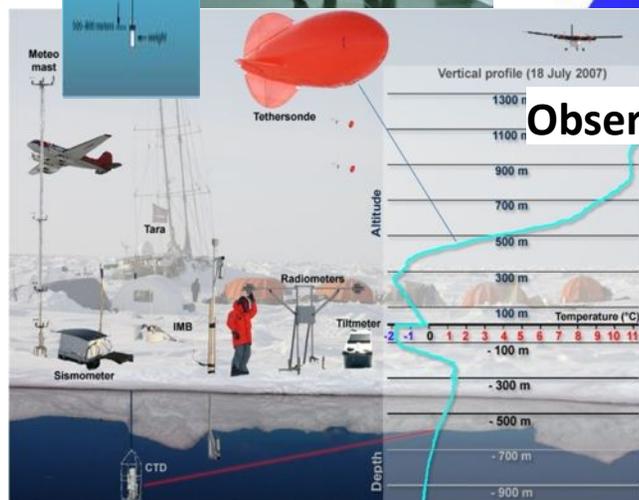
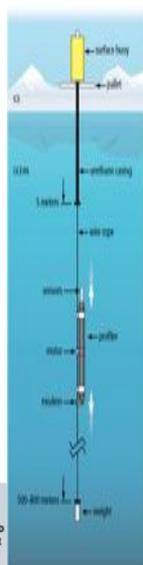
Sources : United States: US Census Bureau, 2002 and United States department of commerce 1993; Canada: Statistics Canada, 1995 and 2002; Greenland: Statistics Greenland, 1994 and 2002; Faroe Islands: Faroe Islands Statistics, 2002; Iceland: Statistics Iceland, 2002; Norway: Statistics Norway, 2002; Sweden: Statistics Sweden, 2002; Finland: Statistics Finland, 2002; Russia: State Committee for Statistics, 2003; Republican information and publication center, 1992; State committee of the Russian Federation for statistics 1992 ; World Wild Fund (WWF) Norway.



Responding

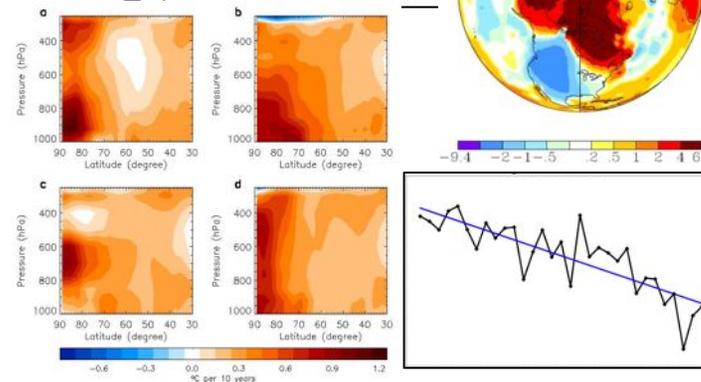
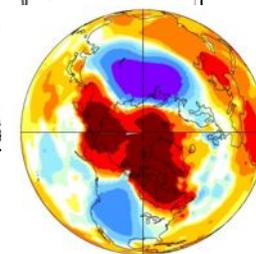
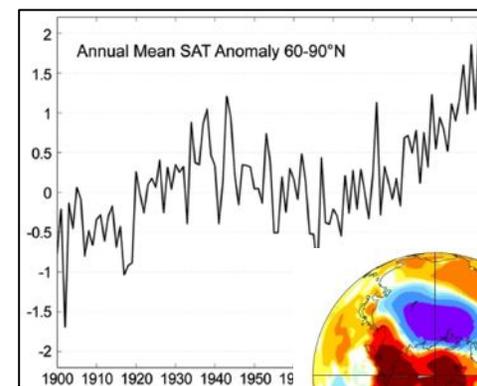


**CHANGES**



Observing

Understanding



# Responding to Change



- ❖ Understand **how ecosystems are structured** and **how they function** in near and distant future
- ❖ Develop strategies that consider **potential alternatives**
- ❖ Ensure **stakeholder participation** in building research leading solutions
- ❖ Develop of **co-management and risk mitigation strategies, hazard assessments, and planning**
- ❖ Provide **technologically, linguistically, and culturally accessible data in real-time**
- ❖ **Translate and disseminate good scientific** information to a wide audience



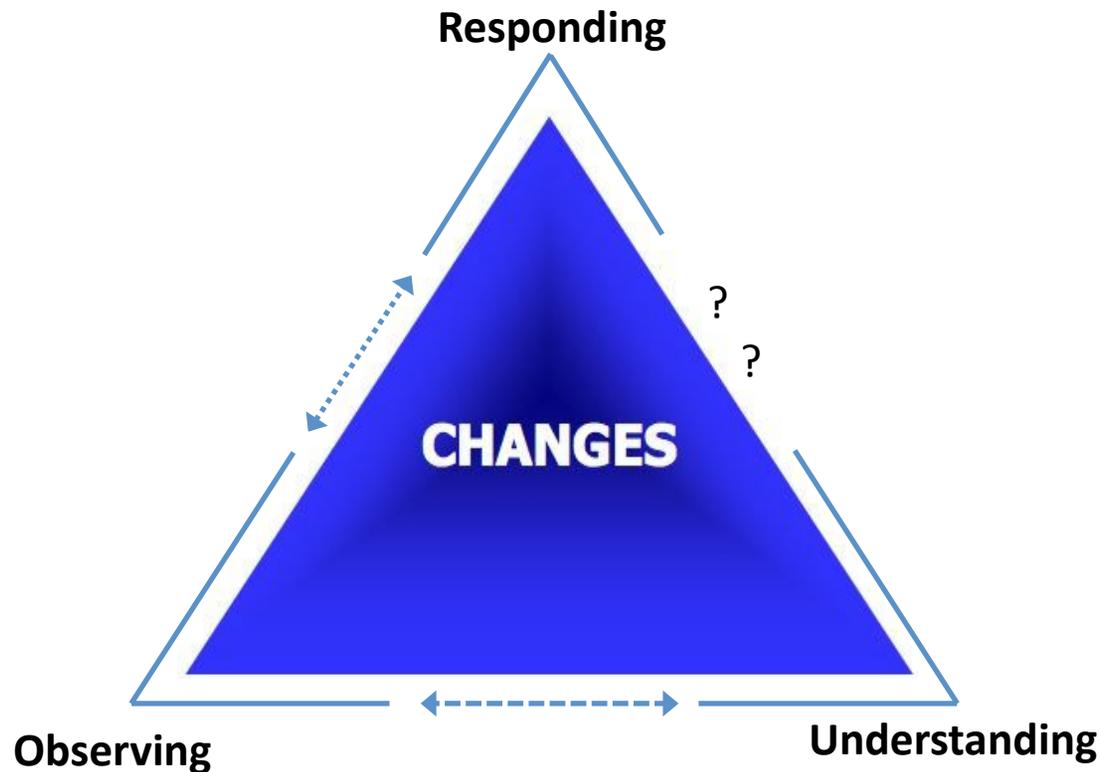
*In Alaska, important fishing and hunting areas are often managed under state or federal jurisdiction. This sign stands at the Minto Village boat launch, which is within the boundaries of a state game refuge. During prime hunting and fishing seasons, boat launches such as this overflow with tourist activity, and local residents face much competition for, and witness much waste of, the wild food resources on which they depend. Photo: P. Loring*





Needs to be

- informed by science
- informing science
- stakeholder driven



Needs to be

- scientifically based
- detailed & flexible
- in all domains
- pan-Arctic & sustained

Needs to be

- based on observations
- in all domains
- improved models
- upscaling & downscaling

# *Visions and issues...*



- ❖ Science-based and multi-disciplinary  
Exploring the system AND its components
- ❖ Useful information - not just scientifically interesting  
Doing what needs to be done rather than what can be done  
Design observation system that answers urgent questions  
Need to couple to understanding (assimilation/reanalysis) & responding
- ❖ Pan-Arctic - International collaboration  
International collaboration is easy – it always happens  
Designing international programs from scratch is *not* so easy  
Working with different national, regional and international organisations  
Working with national and regional funding agencies and structures
- ❖ Science education & Training  
Where is the new generation of interdisciplinary Arctic scientists?
- ❖ Success requires a science-driven process,  
pushed by the science community

# Back to the vision...



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- ISAC – the “International Study of Arctic Change” – is dedicated to this vision

