



Welcome to Live from IPY!

With Craig Kasemodel aboard the USCGC Healy in the Bering Sea



20 March 2008

9 am ADT [7 am HST, 10 am PDT, 11 am MDT, 12 pm CDT, 1 pm EDT]

www.polartrac.com
Bering Ecosystem Change



Welcome to HorizonWimba



Arctic Research Consortium of the United States

List of all participants

Raise your hand to ask a question

Return to the lobby or exit

Slides will be shown here

If using VOIP, press here to talk

'Chat' with one person or the entire group

The screenshot shows the HorizonWimba interface. At the top, a large blue banner displays the title 'Welcome to HorizonWimba' and the ARCUS logo. Below the banner is a toolbar with icons for chat, audio, video, and options. A 'TALK' button is circled in red. Below the toolbar is a chat window with a scrollable list of messages and a text input field. The chat window is also circled in red. To the right of the chat window is a 'People' list showing three participants: Janet_Warburton, ronnie, and tina. A hand icon next to the list is circled in red. At the bottom right, there are buttons for 'Exit - Lobby - Help', with 'Exit - Lobby - Help' circled in red.

Please note: Today's event will be recorded and archived at www.polarartrec.com.



What is PolarTREC?

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers in authentic polar research experiences.

In the next three years 36 teachers from around the United States will join scientists in the Arctic and Antarctic in celebration of the International Polar Year!

www.polartrac.com



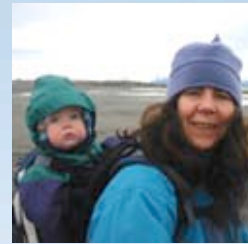
The PolarTREC Team



Wendy Warnick
PolarTREC PI
Executive Director



Helen Wiggins
Program Coordinator



Janet Warburton
PolarTREC
Project Manager



Kristin Timm
PolarTREC
Project Manager



Katie Breen
PolarTREC
Project Manager



Ronnie Owens
Web Developer



Ben Wade
Web Developer



Tina Buxbaum
Electronic Media
Project Manager



Zeb Polly
Systems Administrator



Joed Polly
Video Production

...with help from
the entire staff
at ARCUS



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International Polar Year (IPY)

2007-2009

The International Polar Year (2007-2009) is an exciting scientific campaign focusing on the world's polar regions!

IPY is a time for discovery, science, learning, and awareness about the polar regions with activities for youth, scientists, and the public.

www.ipy.org

www.polartrec.com
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Who are we talking with today?



Teacher

**Craig
Kasemodel**

Central Middle School
of Science
Anchorage, Alaska



Researcher

Lee Cooper

University of
Maryland



Outreach

Nora Deans

North Pacific Research
Board
Anchorage, Alaska



Researcher

**Rolf
Gradinger**

University of Alaska
Fairbanks
Fairbanks, Alaska

Film Director

Jeff Wilson

BBC

Researcher

Clarence Pautzke

North Pacific Research Board

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Bering Ecosystem Change

Goal of the project:

Scientists will be documenting late winter ocean conditions, studying the biological communities found in sea ice, examining the early spring plankton bloom, and investigating light penetration through open water and ice cover. Additionally, researchers will be examining the benthic communities living on the seafloor as well as observing an important benthic predator, the walrus. These benthic communities have been changing over the past several decades, perhaps as a result of competing fish species moving north as waters warm.

Dates:

11-28 March 2008

Location:

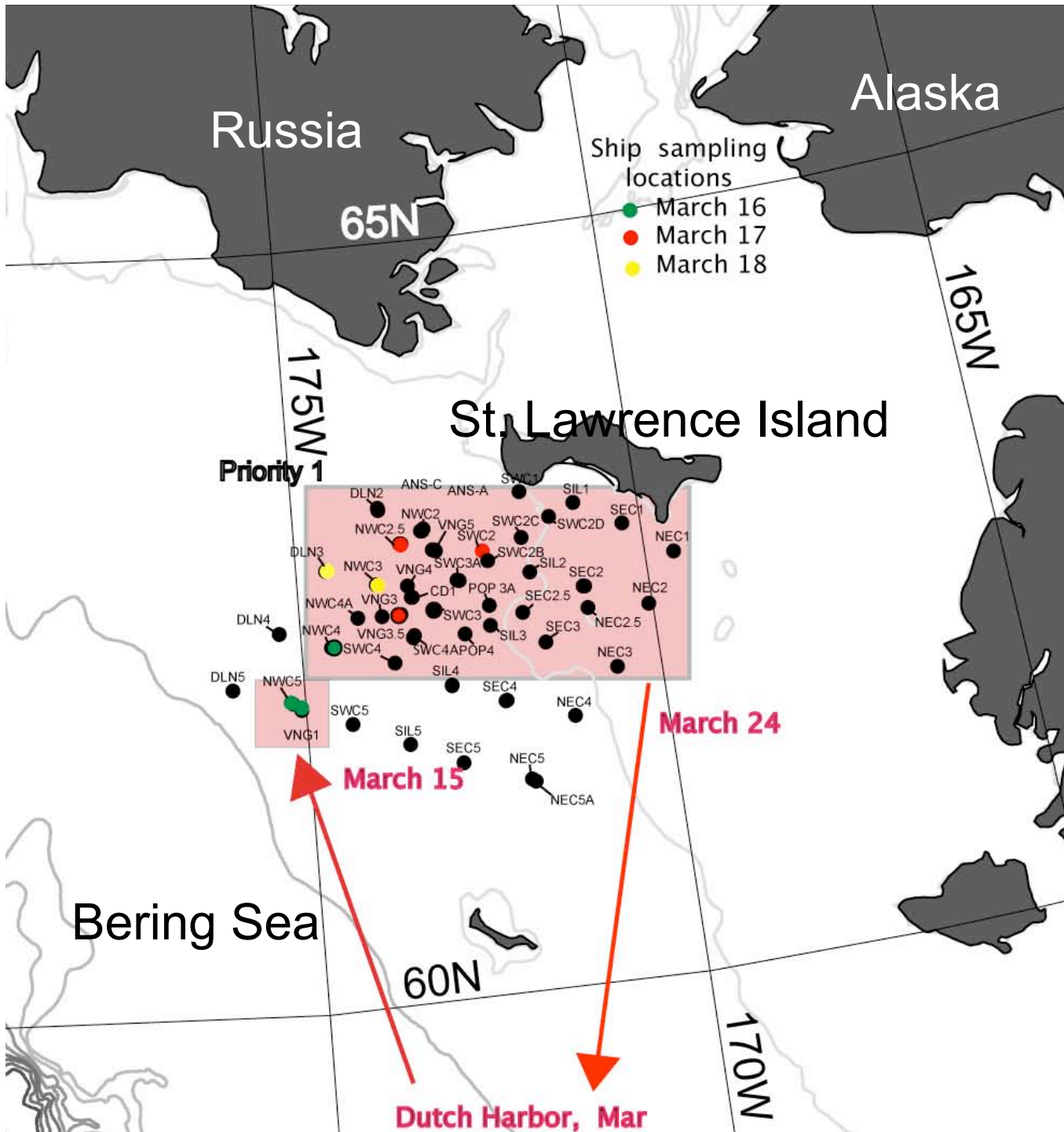
Aboard the USCGC Healy, in the Bering Sea



Generic Station Plan

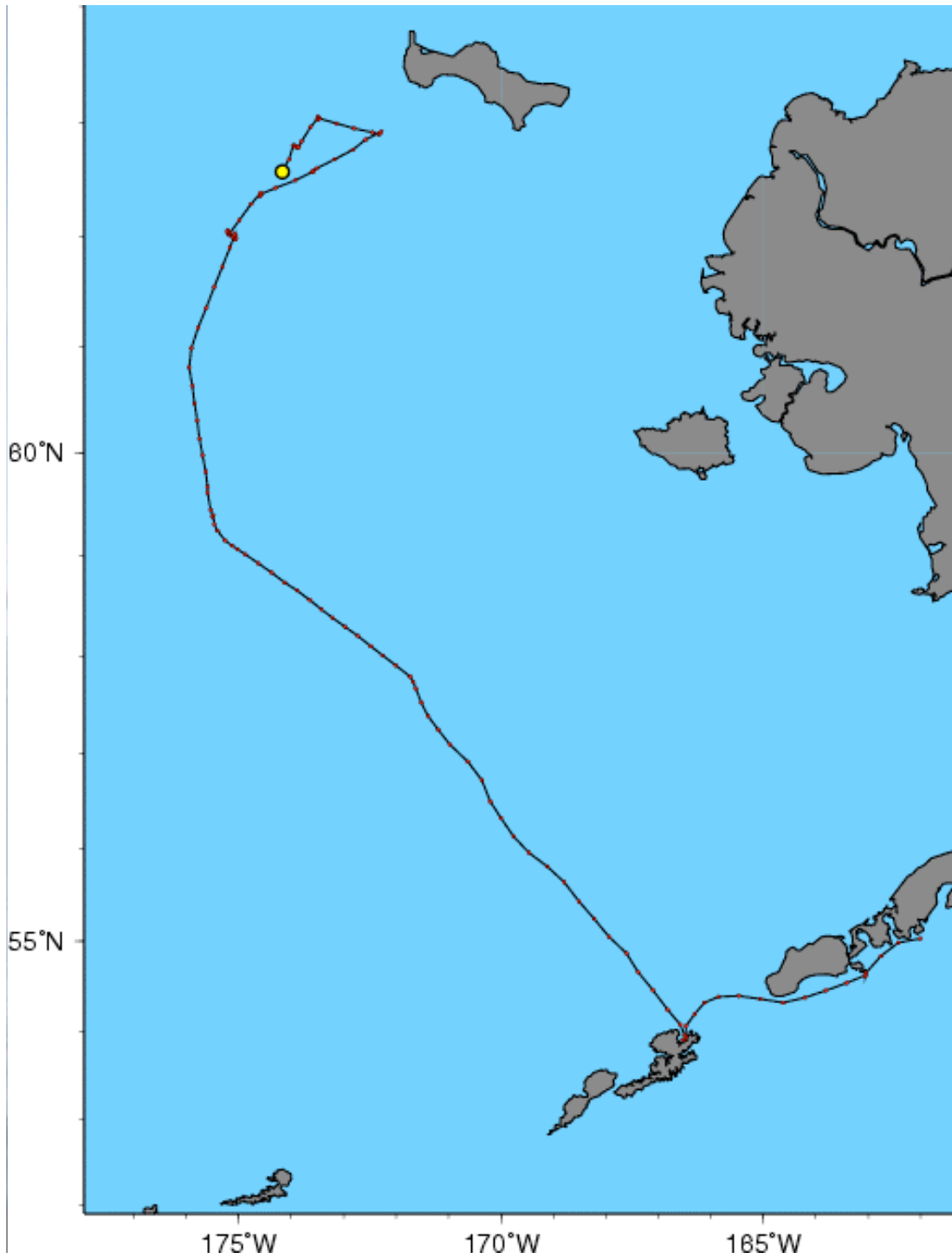
- **Position ship if possible to facilitate deployment of teams on ice from the port side of the ship (~once daily, daylight conditions; possibly more than once daily if requested)**
- **Starboard and aft shipboard operations underway while ice teams are deployed**
- **Helicopter operations interspersed, daylight hours**
- **CTD deployment from starboard winch (T/S, chlorophyll, nutrients, O-18, bottom water for respiration cores)**
- **Optics underway using Seamac winch; UV meter is hand-deployed; benthic camera system is also hand-deployed.**
- **Net collections using zooplankton net from stern**
- **Benthic collections (5 van Veen grabs, 2 HAPs multi-corer deployments)**
- **Recover ice teams from sea ice to ship**
- **Transit to next station**



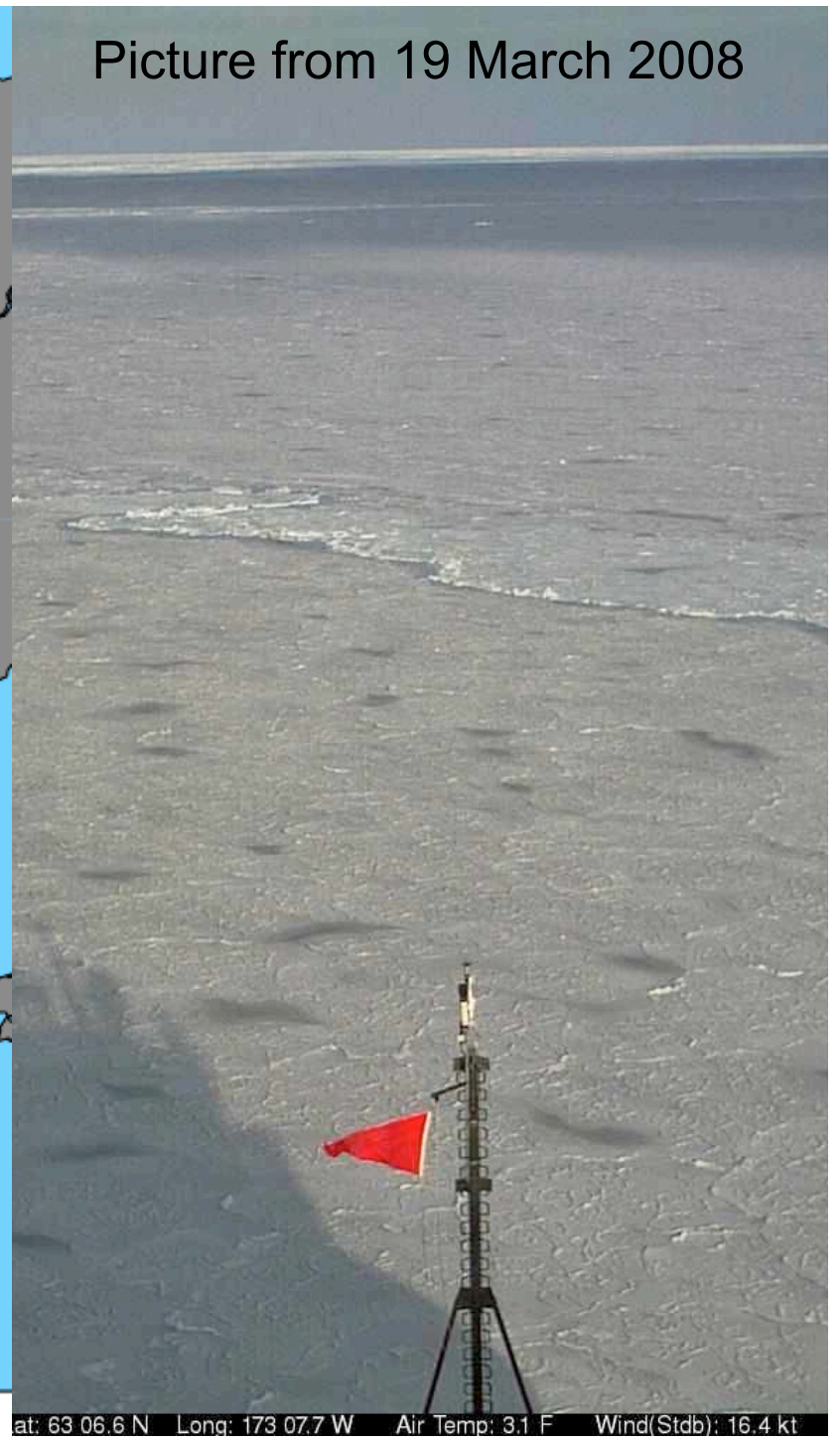


Where is Mr. Kasemodel and the team?



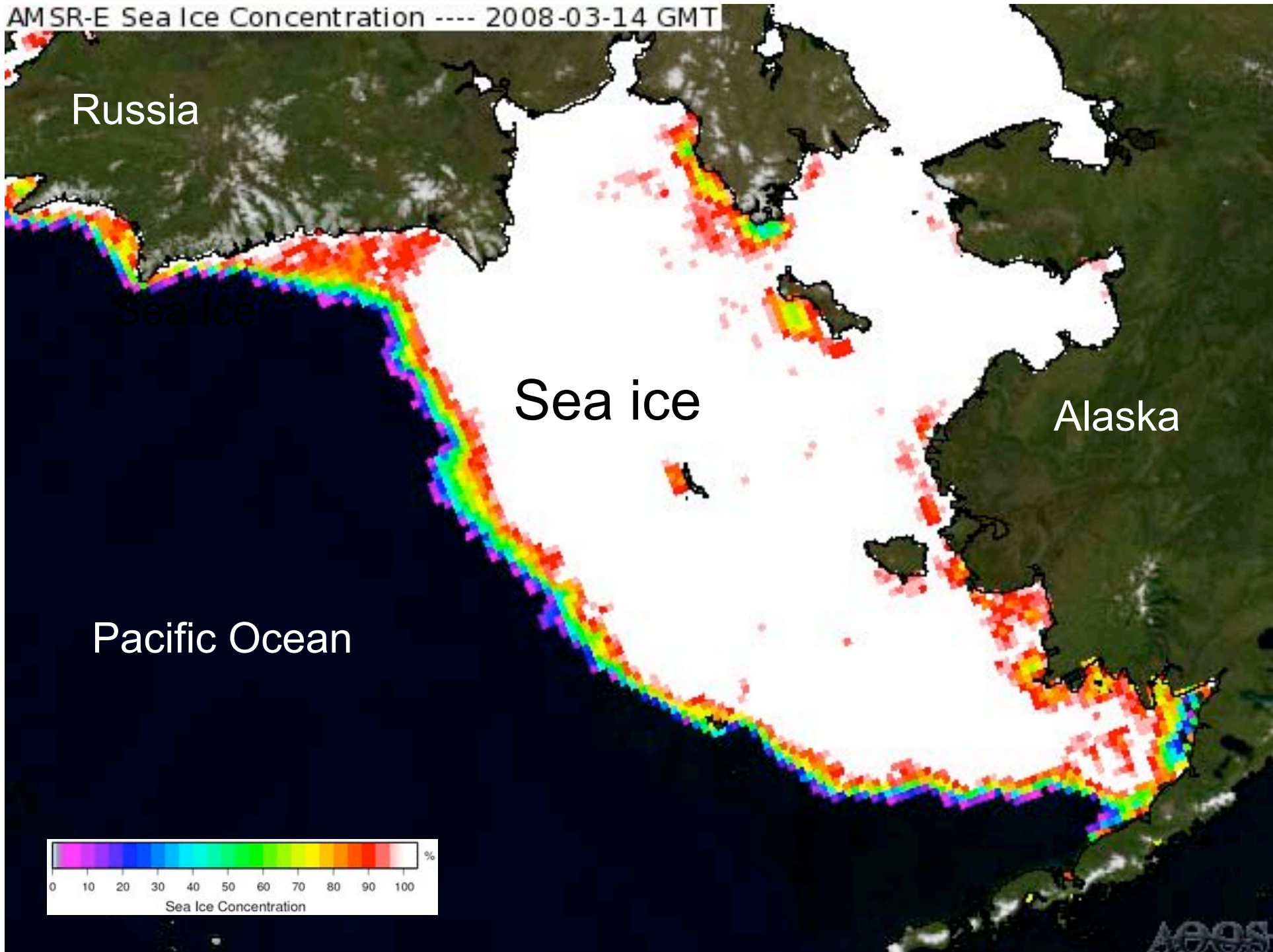


Picture from 19 March 2008



Lat: 63 06.6 N Long: 173 07.7 W Air Temp: 3.1 F Wind(Stdb): 16.4 kt

AMSR-E Sea Ice Concentration ---- 2008-03-14 GMT























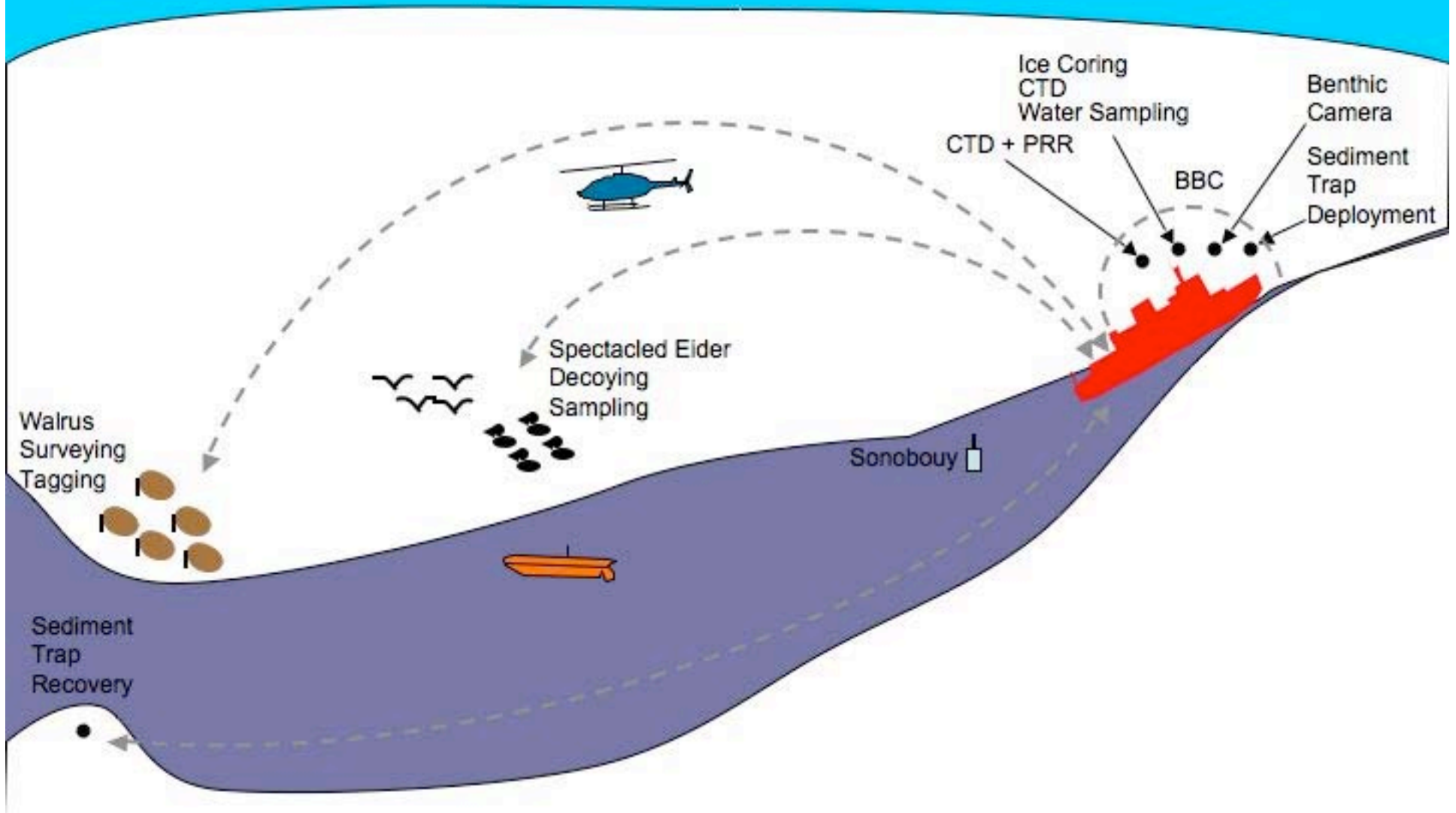




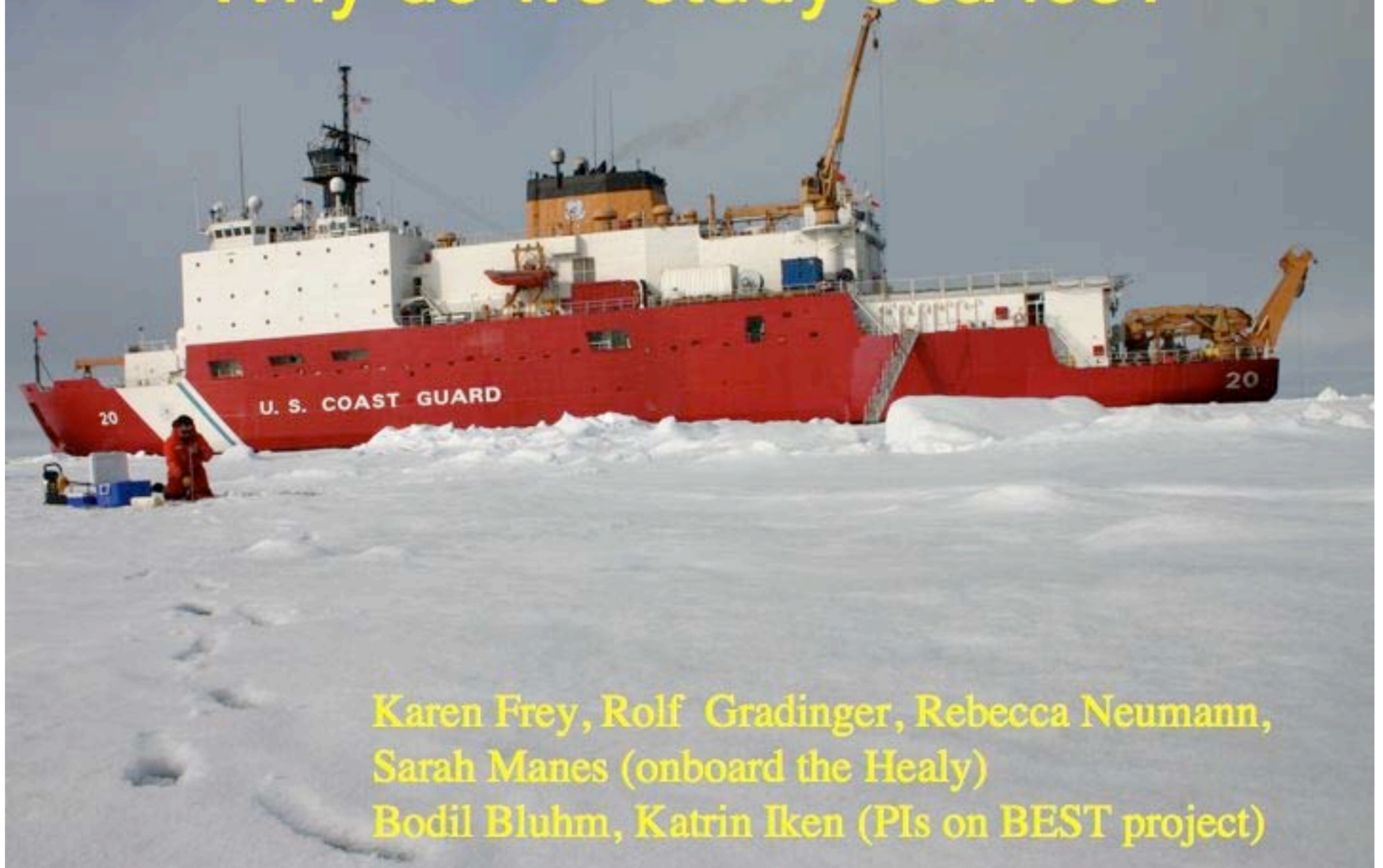


HLY-08-01 Operations View

(3/14/08)



Why do we study sea ice?



Karen Frey, Rolf Gradinger, Rebecca Neumann,
Sarah Manes (onboard the Healy)
Bodil Bluhm, Katrin Iken (PIs on BEST project)

Eight reasons to be interested in sea ice:

gives job (icebreakers)

extreme environment

great for snow machining

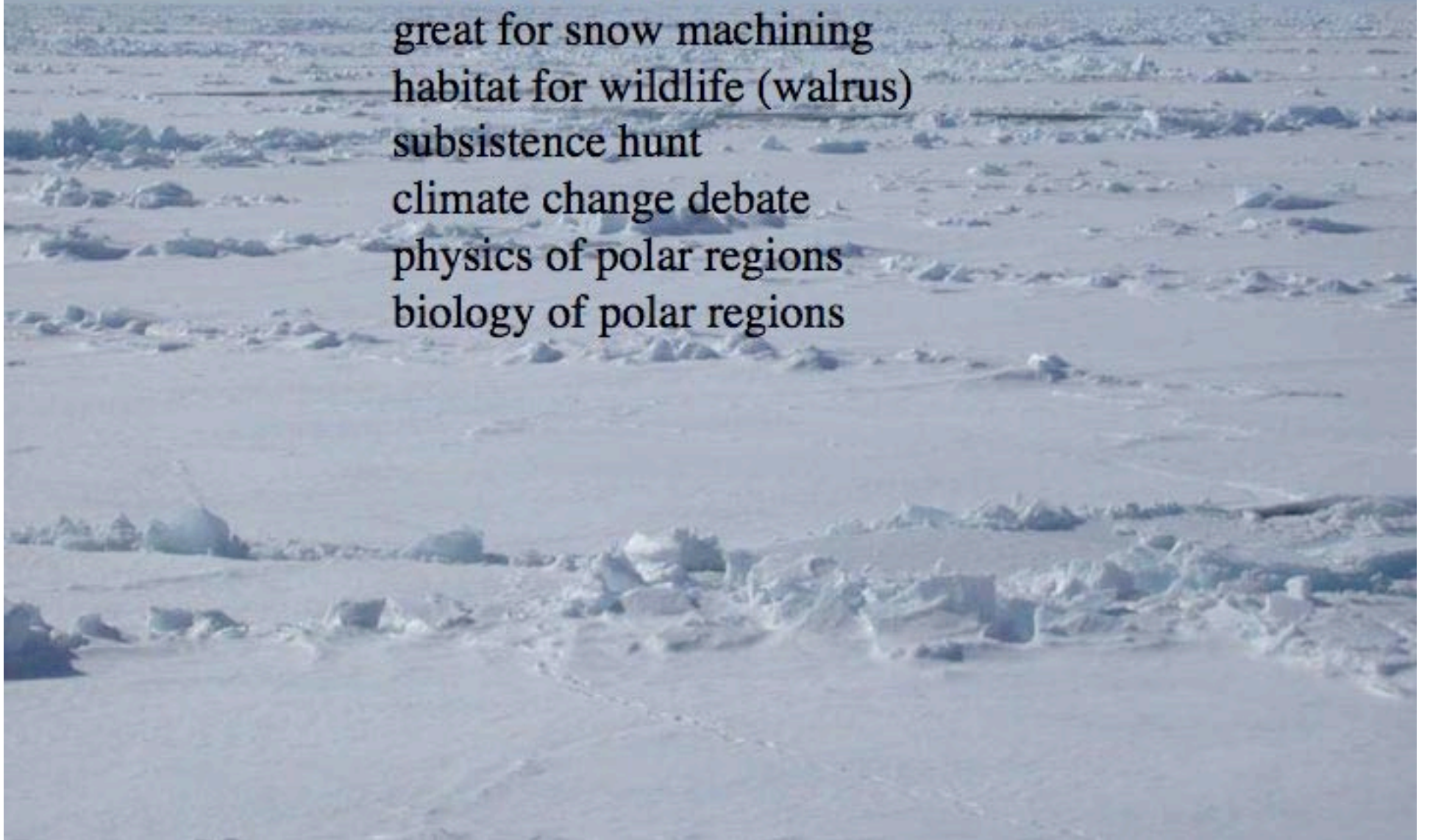
habitat for wildlife (walrus)

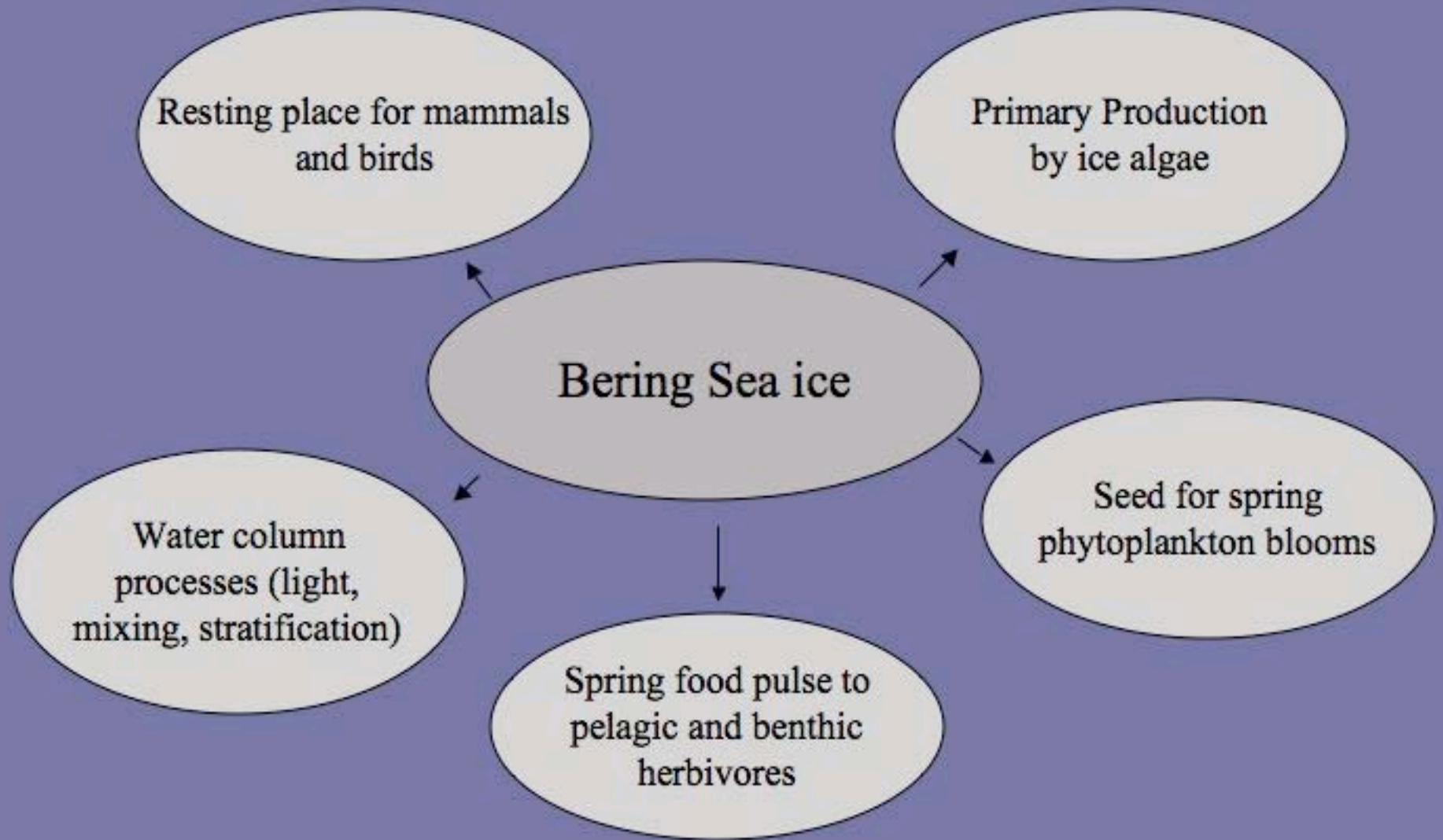
subsistence hunt

climate change debate

physics of polar regions

biology of polar regions

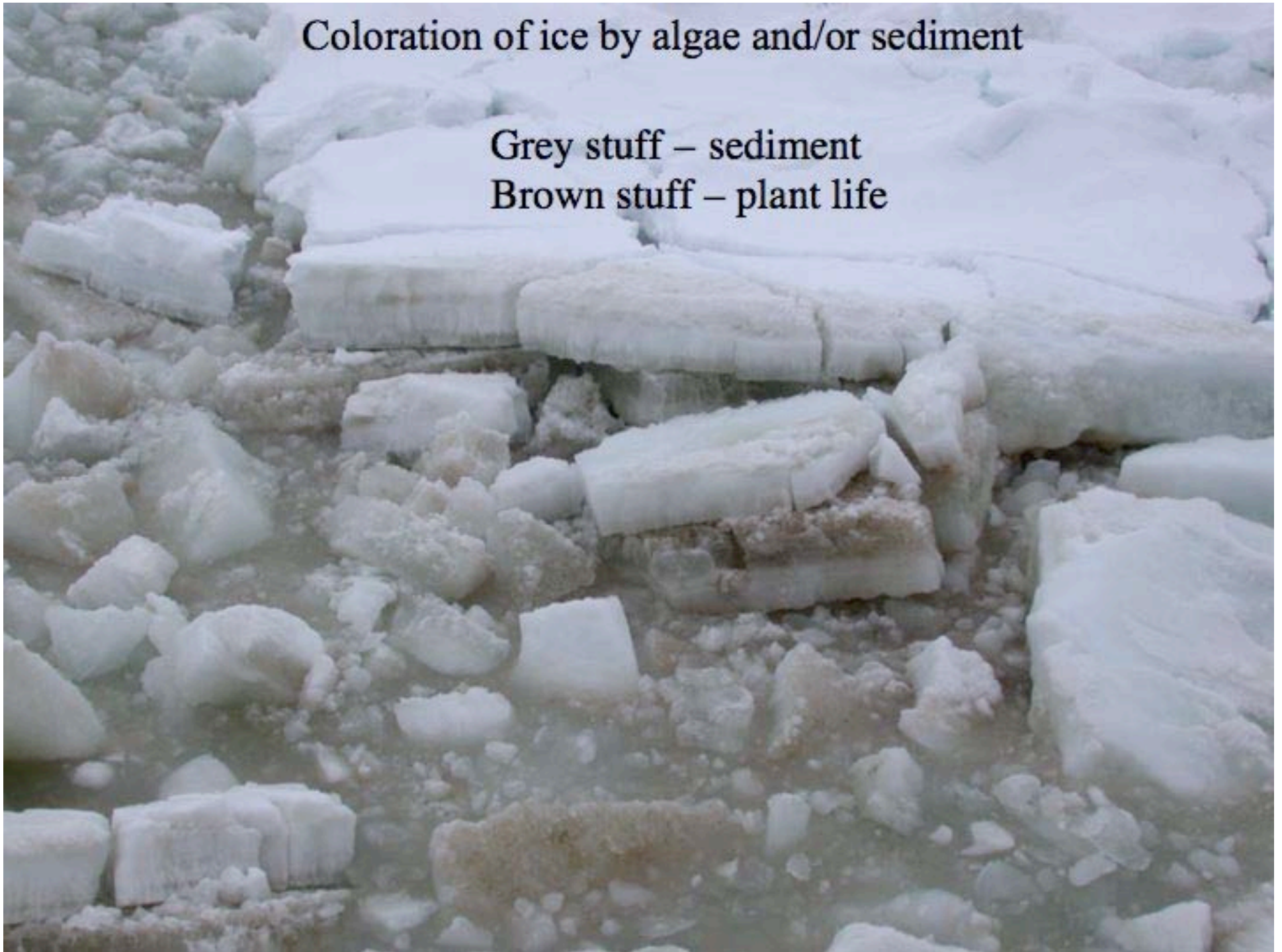




Coloration of ice by algae and/or sediment

Grey stuff – sediment

Brown stuff – plant life



Sea ice sampling



Work on sea ice



Questions

- How many plants and animals live in Bering Sea ice?
- How is their abundance controlled by ice properties?
- What is their fate, when the sea ice melts?

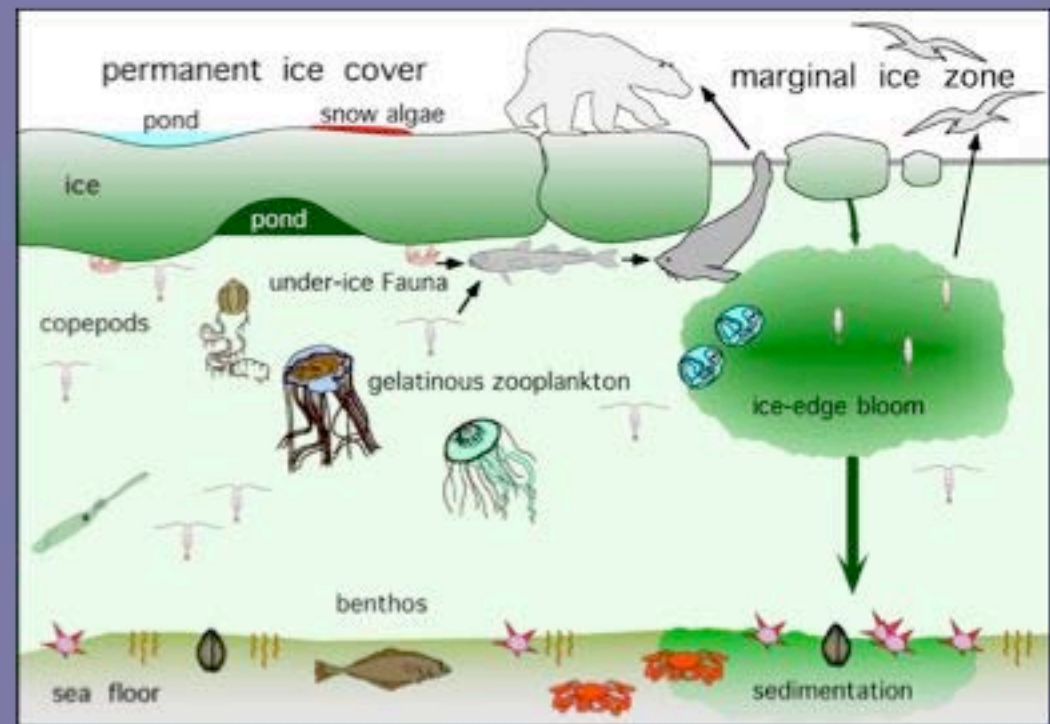


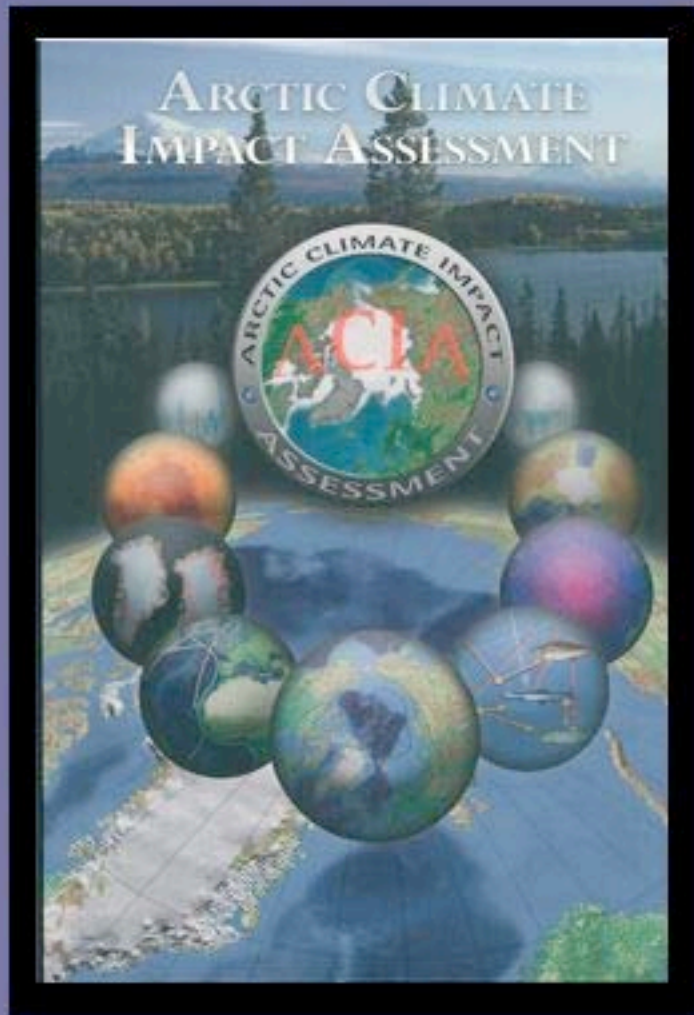
Figure 2. Schematic representation of the Arctic marine ecosystem and its interactions. Comprehensive taxonomic representatives and all interactions have not been included.

North Pacific Research
Board

National Science Foundation

*Partnering to Further the
Understanding of Ecosystem
Processes in the Bering Sea*

Arctic Climate Impact Assessment 2005



- Team of 300 international scientists
- Full examination of present state of knowledge of how Arctic systems function and how they may respond to climate change and warming

FINDINGS:

- Sea ice retreat
- Increase in wind-driven effects, currents, waves
- Possible northward shift in storm tracks and increased storm intensity
- 4-5 C increase in temperature over most of Arctic by 2080
- Sea surface temperatures also rise unless ice covered
- Bering Sea likely will be ice free by 2050

What are we doing?

North Pacific Research Board and National Science Foundation

Historic 5-year, \$52 million partnership to study
the Bering Sea ecosystem and its response to
climate change in 2008-2012



NSF BEST – Bering Ecosystem Study



NPRB BSIERP – Bering Sea Integrated Ecosystem Research
Program

Major Themes

North Pacific Research Board and National Science Foundation

NSF BEST – Bering Ecosystem Study

- Linking physical variability to ecosystem processes and structure
- Identifying external forcing functions for climate
- Ecosystem sustainability

NPRB BSIERP – Bering Sea Integrated Ecosystem Research Program

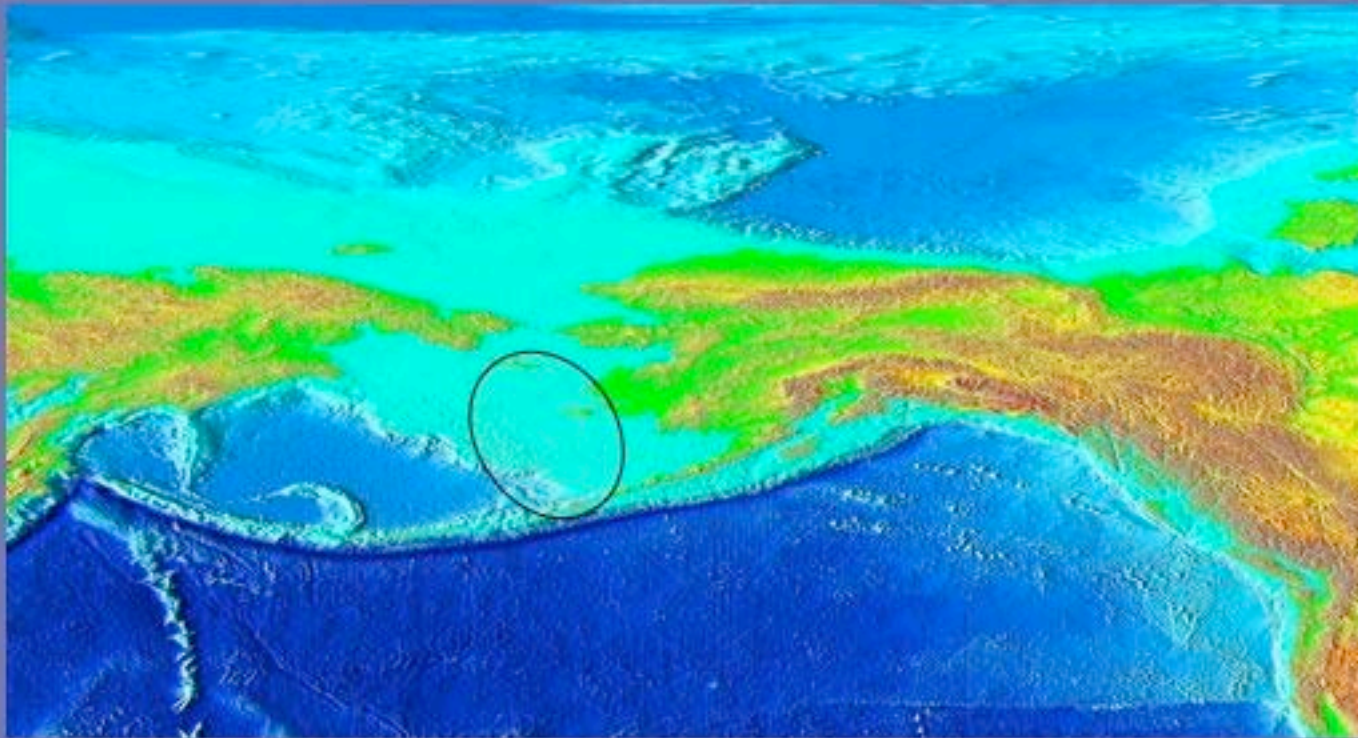
- Ocean habitat
- Productivity of upper trophic levels
- Broad scale and patch dynamics for seabirds, walrus and fur seals
- Impacts on humans

Who is involved?

Over 90 scientists from many institutions
across the US & Canada
joining together into an integrated,
multidisciplinary team!

Study Location

Bering Sea shelf from Aleutian Islands north
to St. Lawrence Island



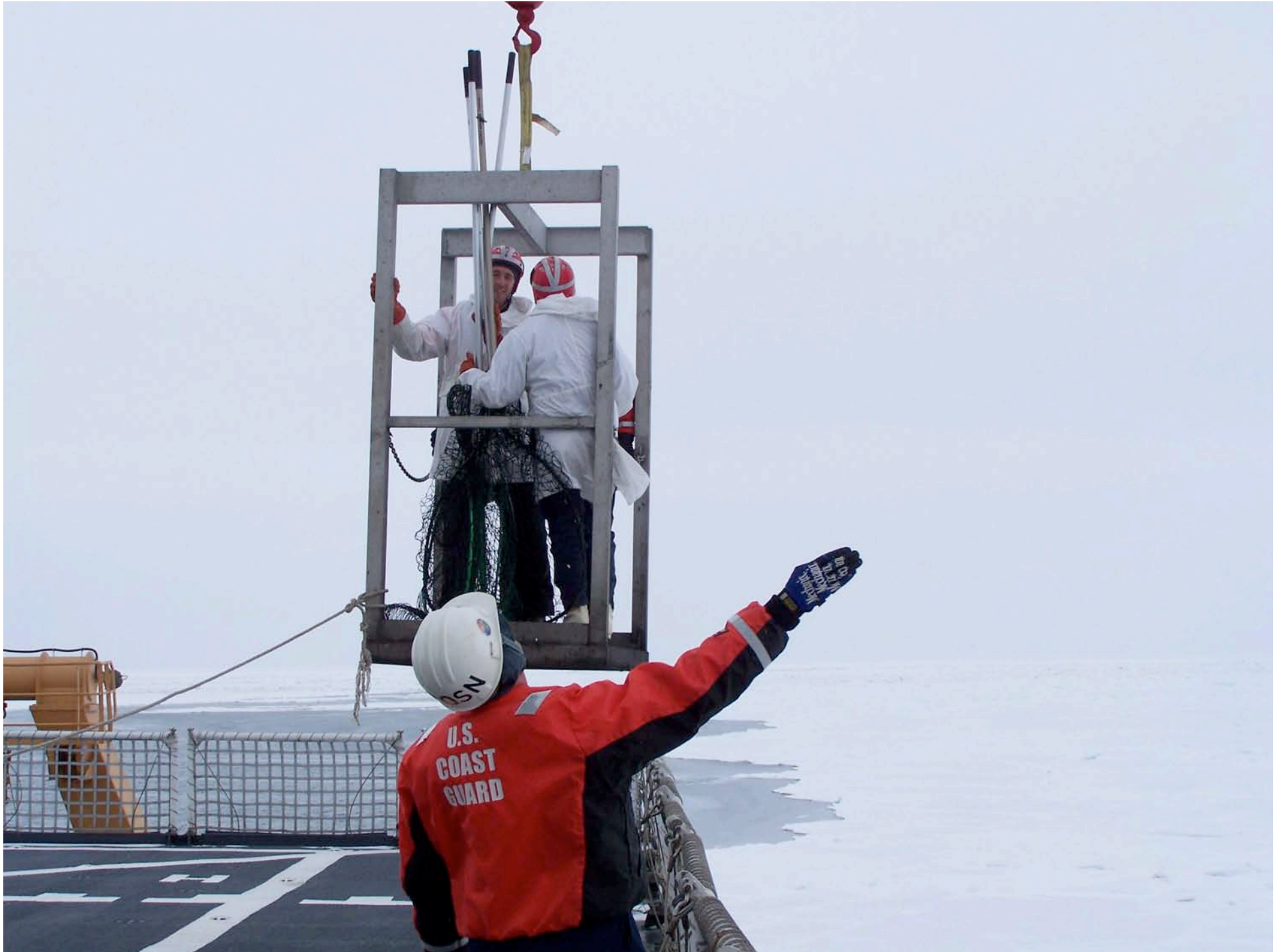
Restating Questions as Hypotheses

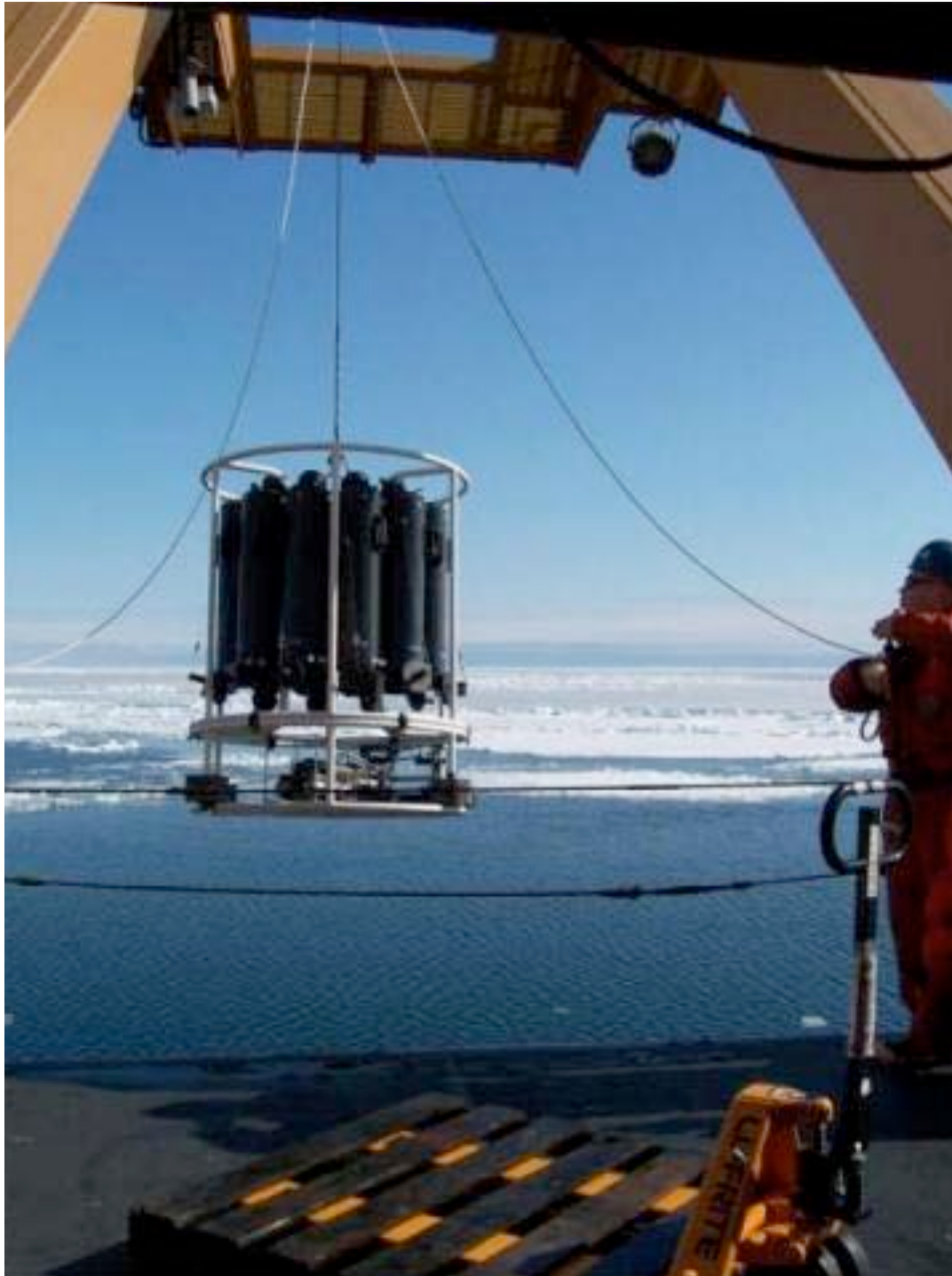
1. Changes in atmospheric and ocean forcing cause changes in timing and location of food production, domain boundaries, stratification and circulation of the Bering Sea.
2. Changing currents, domain boundaries and patterns of food availability have immediate consequences for spatial, temporal and feeding dynamics of pelagic fish.
3. This results in top-down control of pelagic communities with attendant reductions in populations of place-based seabirds and mammals.
4. Certain populations of fish, birds and mammals will be reduced or dislocated.
5. These changes will have profound socioeconomic implications for all people who depend on the living resources of the Bering Sea.

Patch Dynamics Study

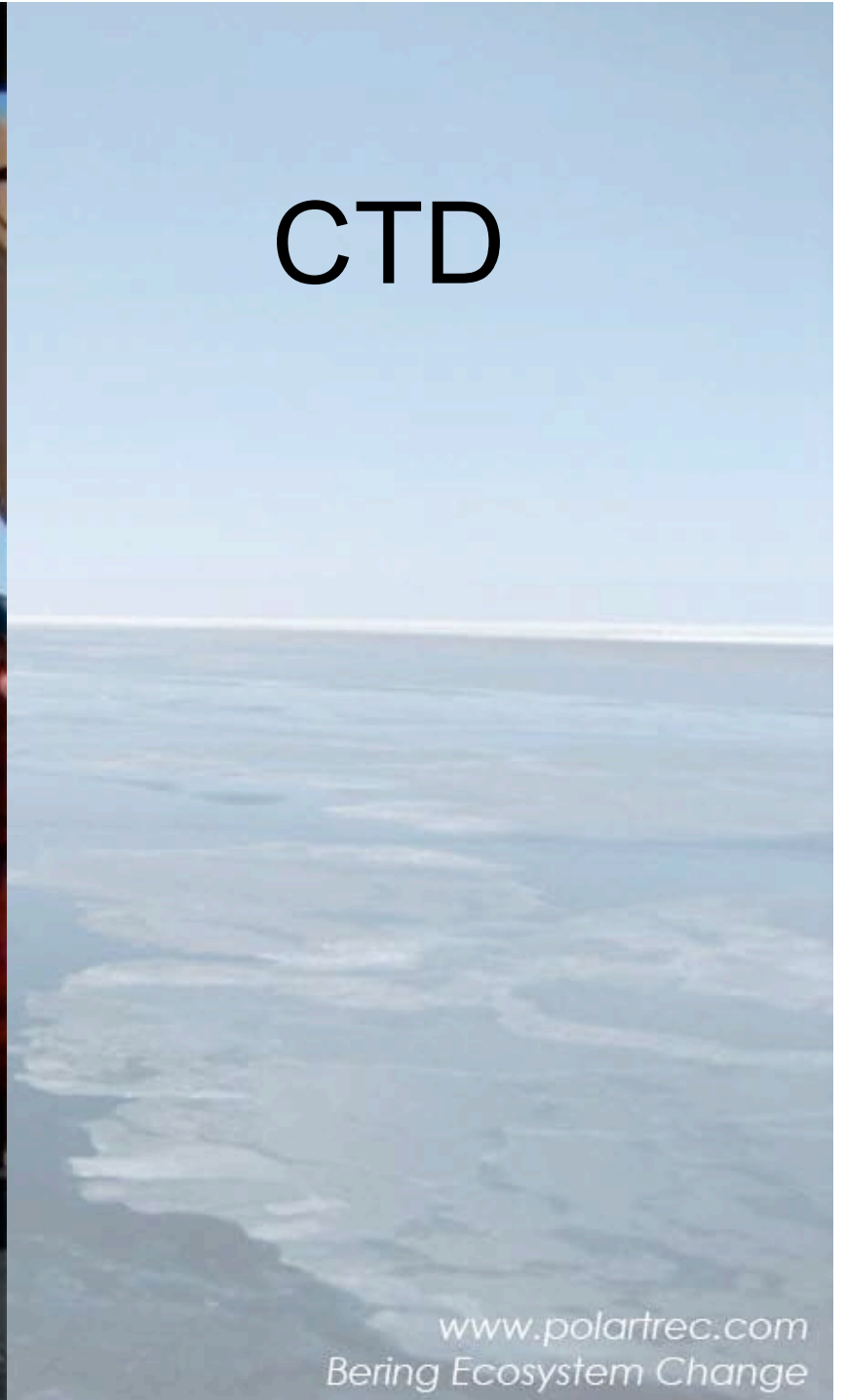
- Emphasizes unevenness of habitat within a system
- Prey patches could be critical to foraging success
- Study walrus feeding on benthos near St. Lawrence Island
- Study fur seal foraging from Pribilofs and Bogoslof Islands
- Learn what controls abundance and distribution of top predators







CTD



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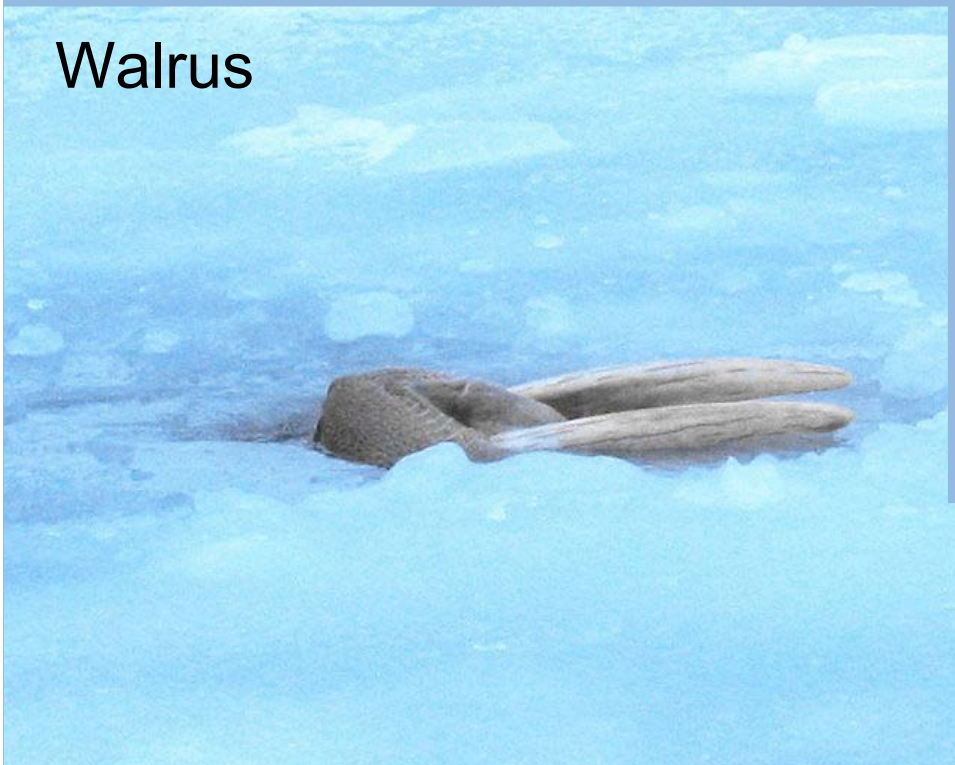






Species of Concern

Walrus



Spectacled Eider



Questions?

- Who is your question for?
- What is your name?
- What is your school?
- Say your question loudly and clearly.



Check out and register for upcoming events!



Watch for additional events at: www.polarrec.com.

Thank You!



For more information, please
visit www.polartrec.com

Or Call 907-474-1600

Email: infr@polartrec.com

