CAFF
Conservation of Arctic Flora and Fauna

CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

CBMP-Marine Plan incorporating the DBO

Kathleen Crane and Reidar Hindrum

Expert Monitoring Groups (EMG):

- ***Marine (MEMG),***
- Coastal,
- ***Freshwater (FEMG),***
- Terrestrial Flora, and Fauna
- + ***Arctic Protected Areas Monitoring Scheme (APAMS)***

Participating institutions in the MEMG:

Fisheries and Oceans Canada
Pêches et Océans Canada

Environment Canada
Environnement Canada

Marine EMG members:

Co-leads:
- Dr Kathleen Crane, US
- Mr Reidar Hindrum, Norway

US:
- Dr Sue E. Moore
- Dr Russ Hopcroft
- Dr Katrin Iken

Russia:
- Dr Igor A. Melnikov
- Dr Boris I. Sirenko
- Dr Olga S. Liubina
- Dr Nina Denisenko

Greenland:
- Mr Fernando Ugarte
- Ms Aili Labansen

Iceland:
- Dr. Gudmundur Gudmundsson

Canada:
- Dr Jill Watkins
- Dr Jim D. Reist

Norway:
- Dr Ingrid Bysveen
- Mr Dag Vongraven
- Dr Per Arneberg

CBMP Secretariat:
- Mr Mike Gill

Aleut International Association:
- Ms Victoria Gofman

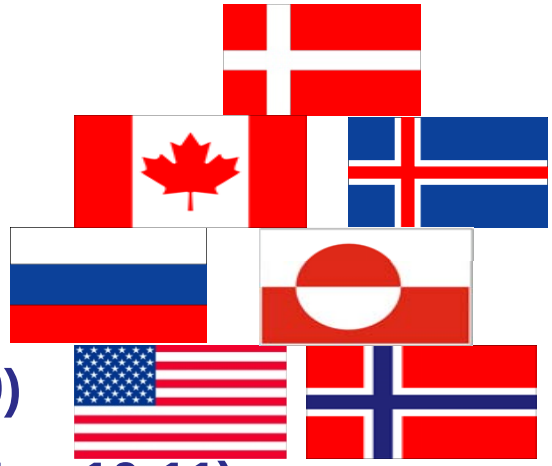
AMAP
- Mr Jason Stow

PAME:
- Ms Soffia Gudmundsdottir

CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

Developing a Marine IMP: Overall Process & Timeline

- ✓ Marine Expert Monitoring Group (MEMG) activated **(Aug'08)** – consisting of:
  - ✓ Norway & U.S. (Co-leads), Canada, Russia, Greenland/Denmark, Iceland, Aleut International Association (AIA), & Arctic Monitoring & Assessment Program (AMAP)
- ✓ Background paper **(Dec'08)**
- ✓ 1st Expert Workshop - Tromsø, Norway **(Jan'09)**
- ✓ 2nd Expert Workshop - Coral Gables, U.S. **(Nov'09)**
- ✓ Marine IMP 1st and 2nd Draft for review **(Jan'/June'10)**
- ✓ CBMP-Marine Plan for CAFF and SAO review **(Sep-Jan,10-11)**
- ✓ Arctic Council Endorsement & Implementation **(2011)**



Arctic Marine Biodiversity Monitoring Plan (CBMP-Marine Plan)

Final Draft – January 2011

Arctic Marine Biodiversity Monitoring Plan: Final Draft for Review / December 2010 1

Conservation of Arctic Flora and Fauna

ARCTIC MARINE BIODIVERSITY MONITORING PLAN
(CBMP-MARINE PLAN)

FINAL DRAFT

--JANUARY 2010--

Gill, M.J., K. Crane, R. Hindrum, P. Arneberg, I. Bysveen, N.V. Denisenko, V. Gofman, A. Grant-Friedman, G. Gudmundsson, R.R. Hopcroft, K. Iken, A. Labansen, O.S. Liubina, I.A. Melnikov, S.E. Moore, J.D. Reist, B.I. Sirenko, J. Stow, F. Ugarte, D. Vongraven, and J. Watkins.

Submitted by the

Marine Expert Monitoring Group

Circumpolar Biodiversity Monitoring Program

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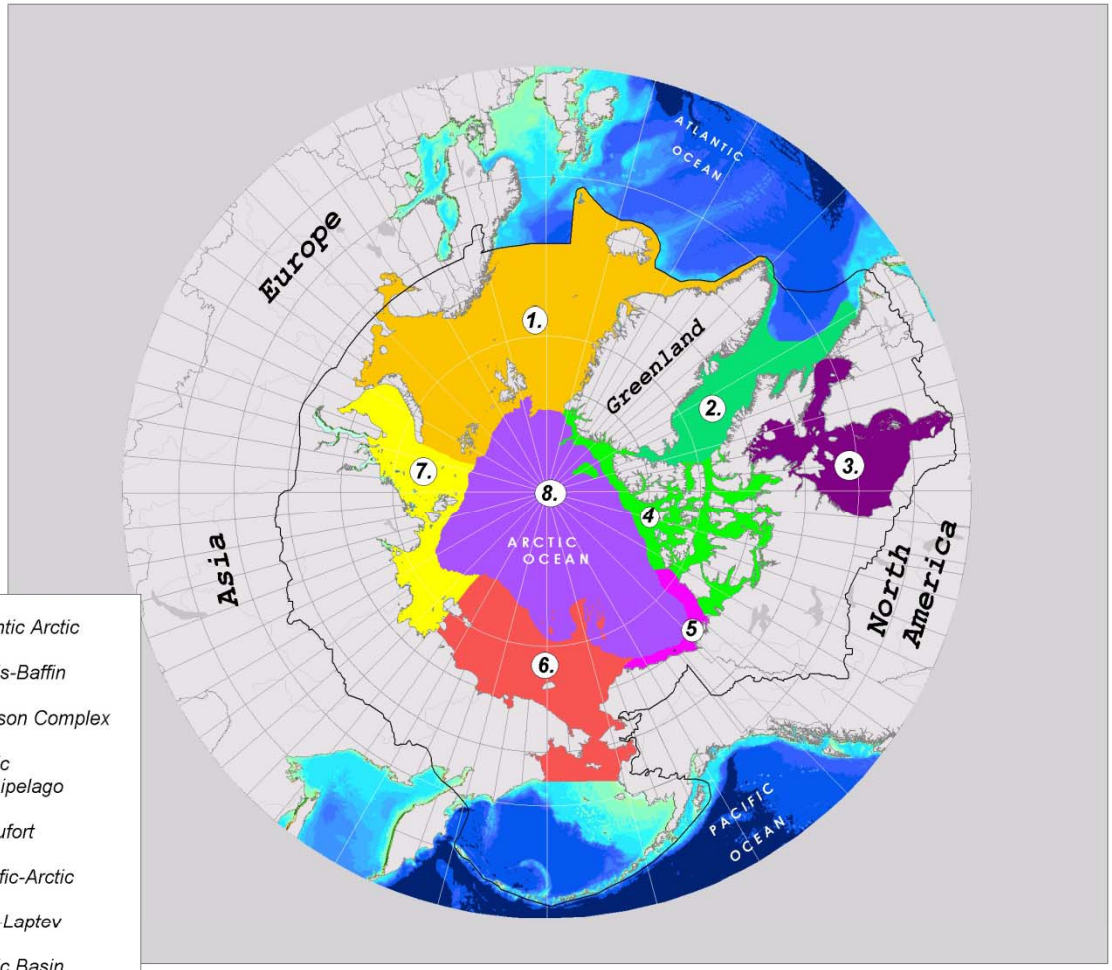
Arctic Marine Areas



1. Atlantic Arctic
2. Davis-Baffin
3. Hudson Complex
4. Arctic Archipelago
5. Beaufort
6. Pacific-Arctic
7. Kara-Laptev
8. Arctic Basin

Parameters by Arctic Marine Area

EXAMPLE:

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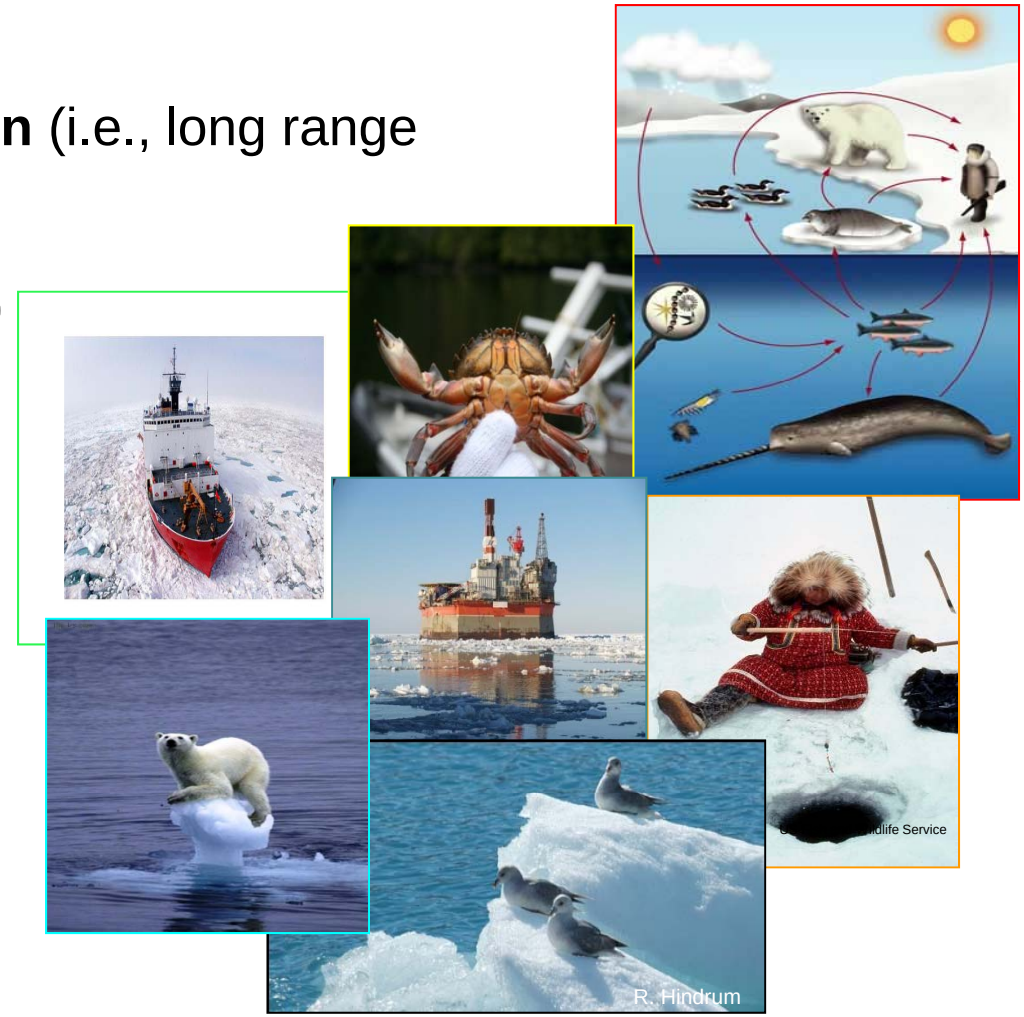
Focal Ecosystem Components	Key Parameters	Existing Monitoring Programs	Coverage
Phytoplankton	Chlorophyll	Marine Basic Zackenberg	Zackenberg , East Greenland
		Barents Sea Ecosystem (IMR+PINRO)	Barents Sea from 68-80°N, 5°W to Novaya Zemlya
		Assorted (NPI)	Svalbard and MIZ region
		Assorted (ARCTOS, e.g. CLEOPATRA, Arctic Tipping points)	Barents Sea, Svalbard, MIZ
		White Sea Labs (Katesh - ZIN, WSBS -Moscow State)	White Sea

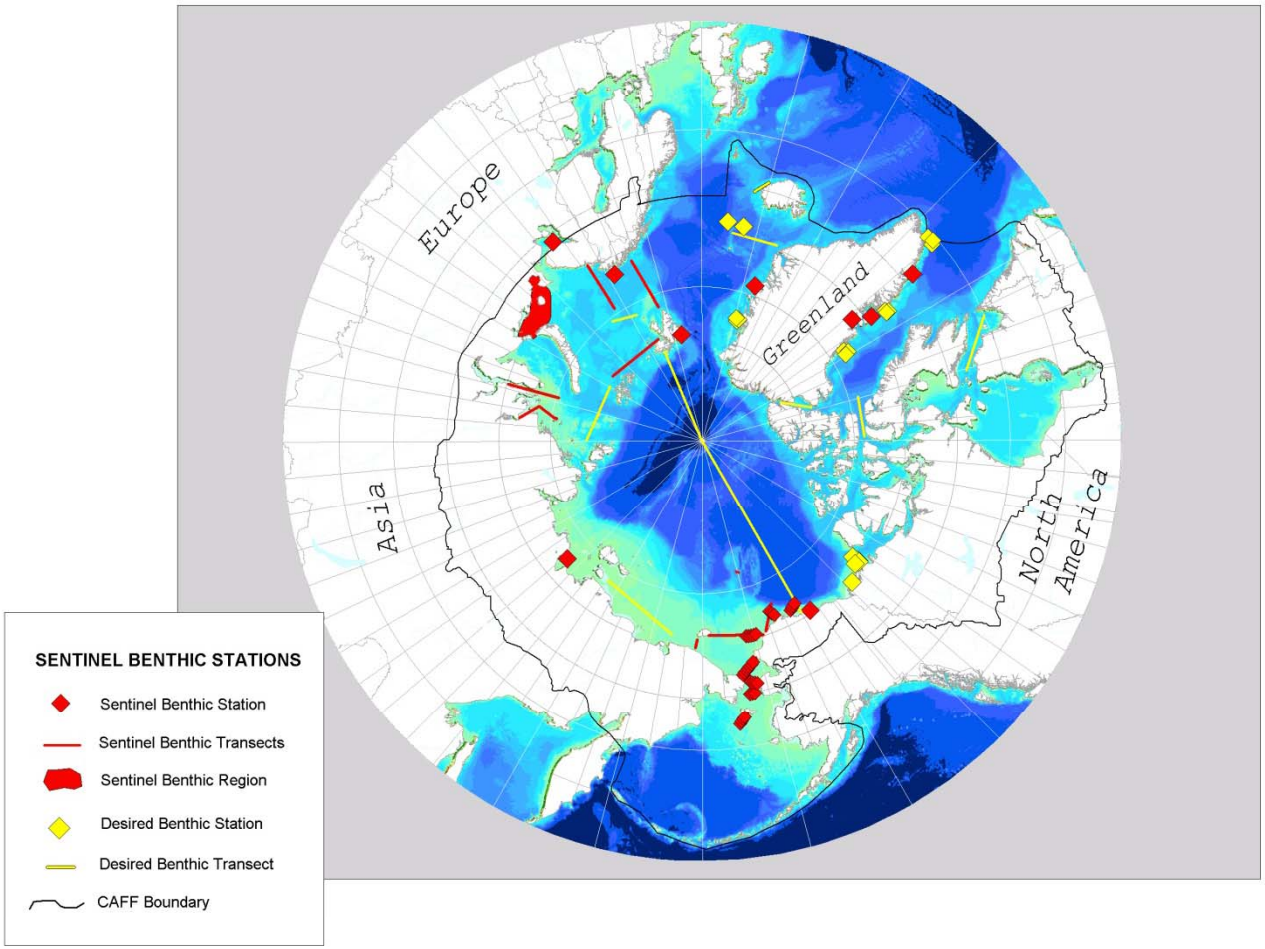
The most important drivers:

CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

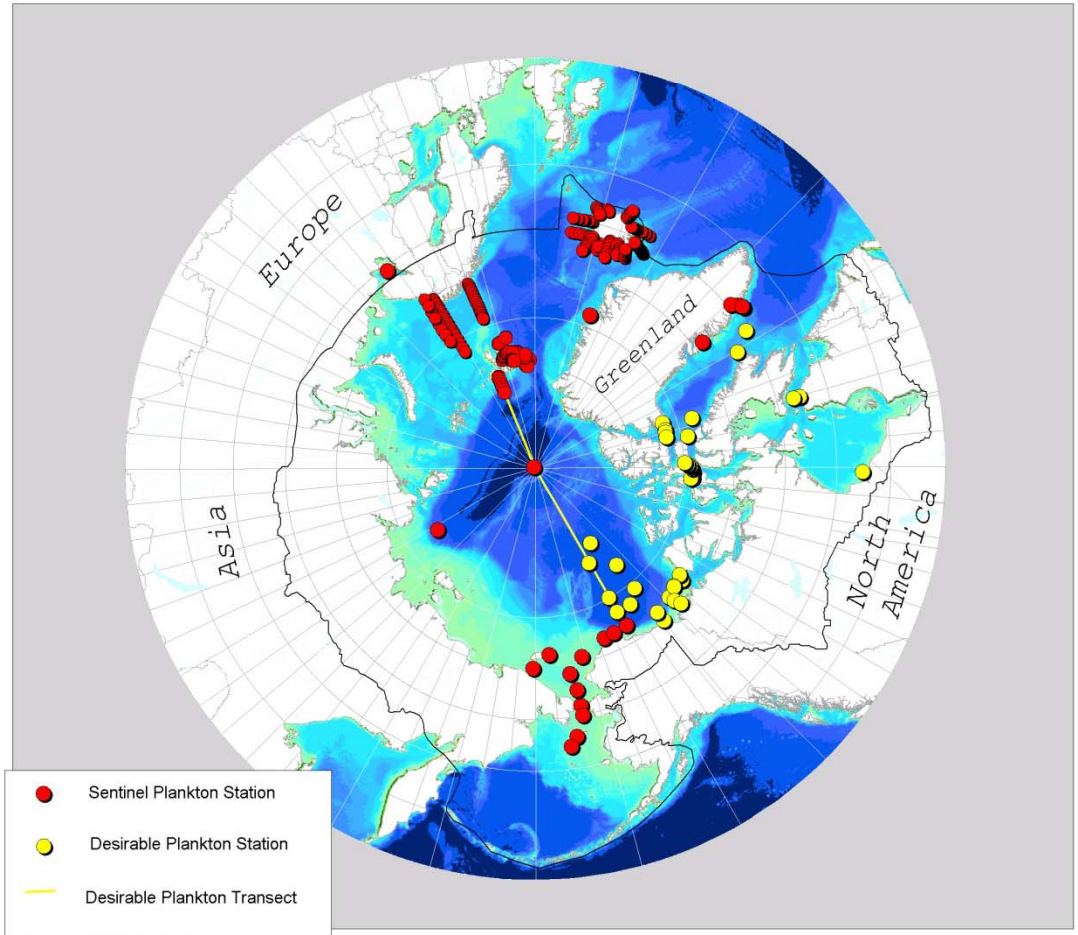
- ✓ **Environmental contamination** (i.e., long range transport of contaminants)
- ✓ **Invasive species** (non-native)
- ✓ **Increasing ship** & **air traffic**
- ✓ **Harvest**
- ✓ **Oil & gas exploration**
- ✓ **Climate change…**
  ...the most pervasive threat!



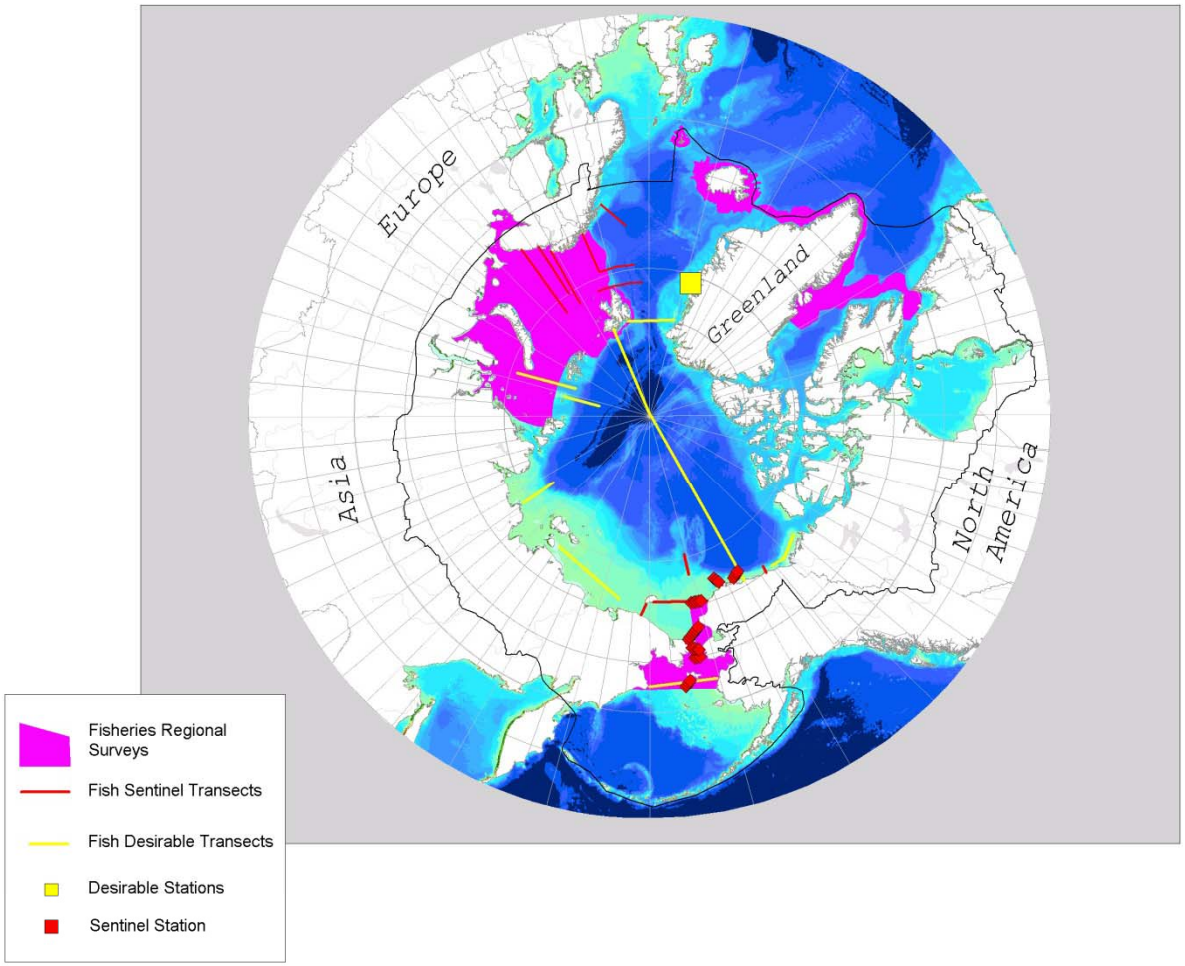
Sentinel Benthic Regions, Stations and Transects



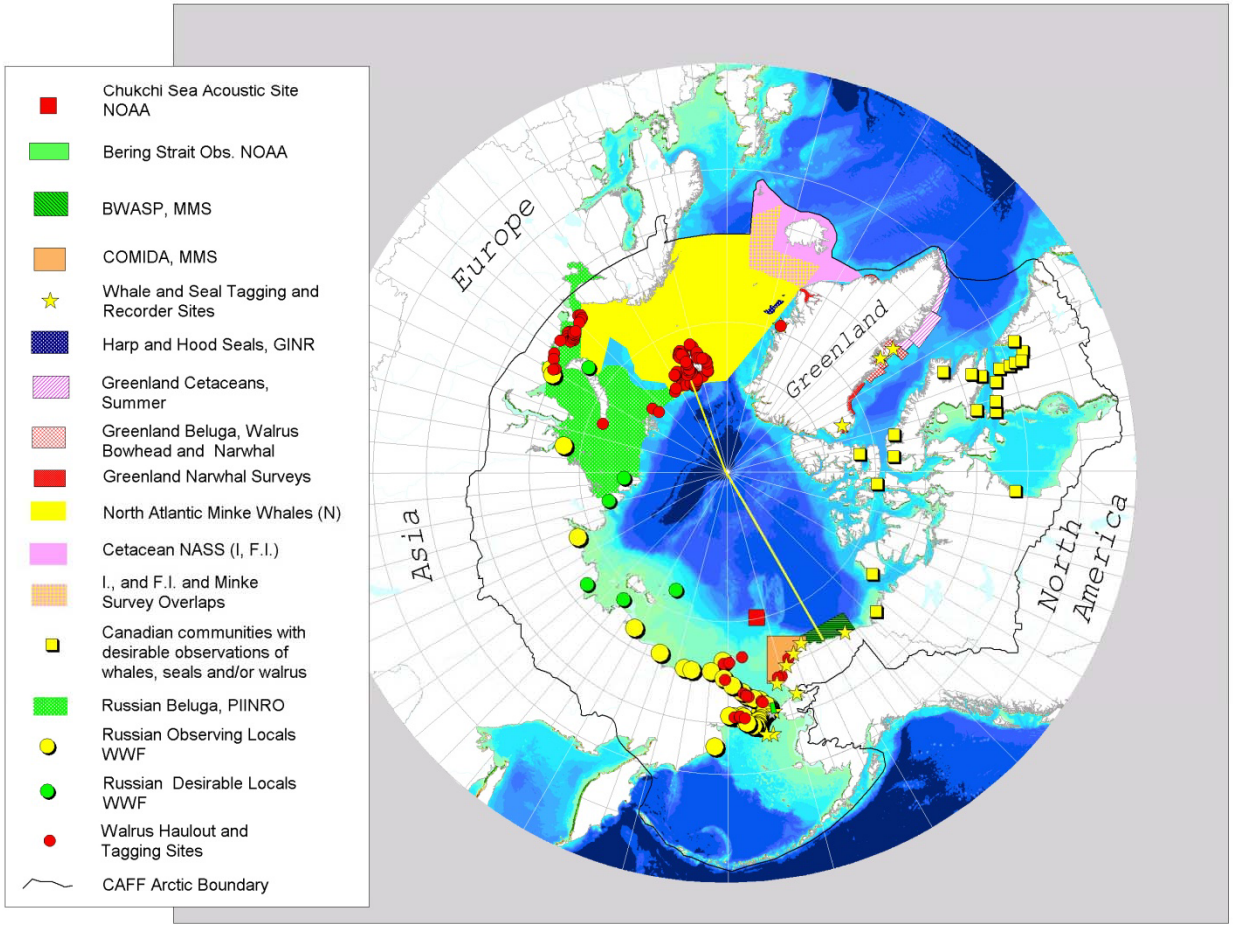
Sentinel Plankton Stations and Transects



Sentinel Fish Regions, Transects, and Stations

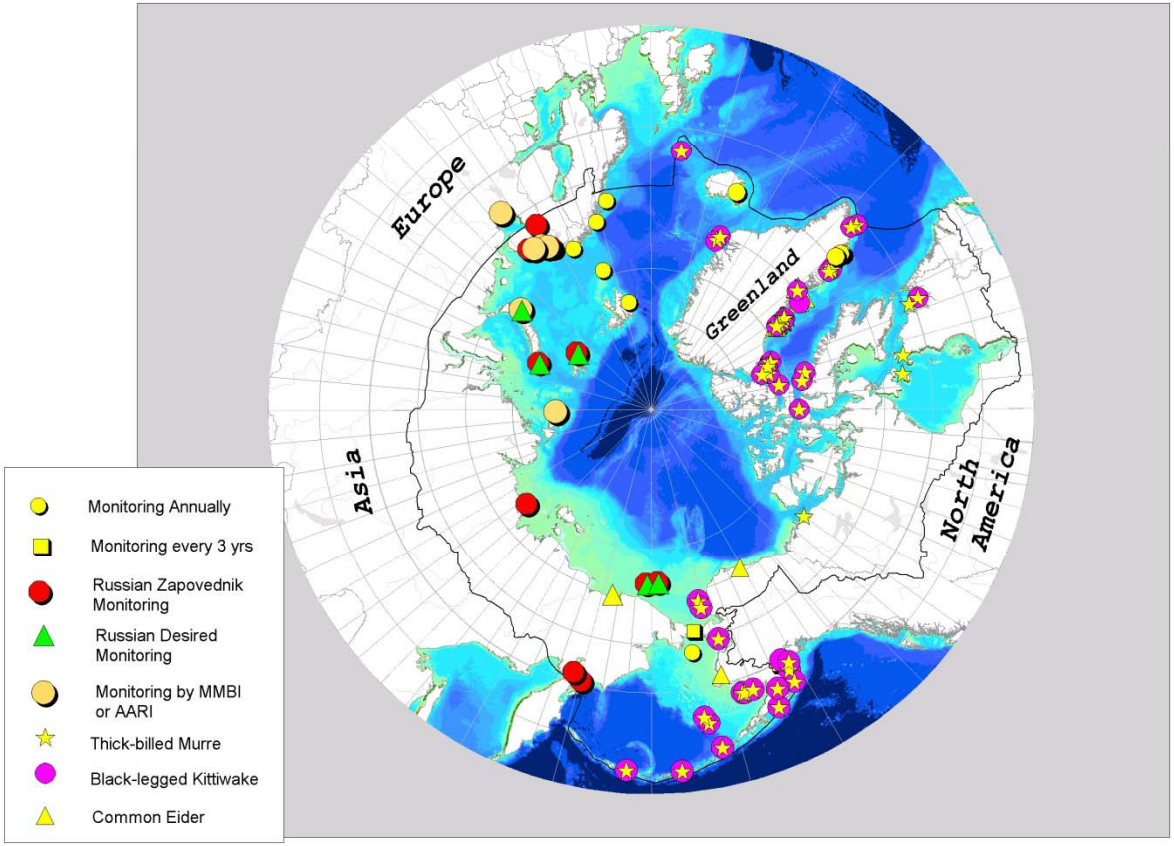


Sentinel Marine Mammal Regions and Tagging Sites

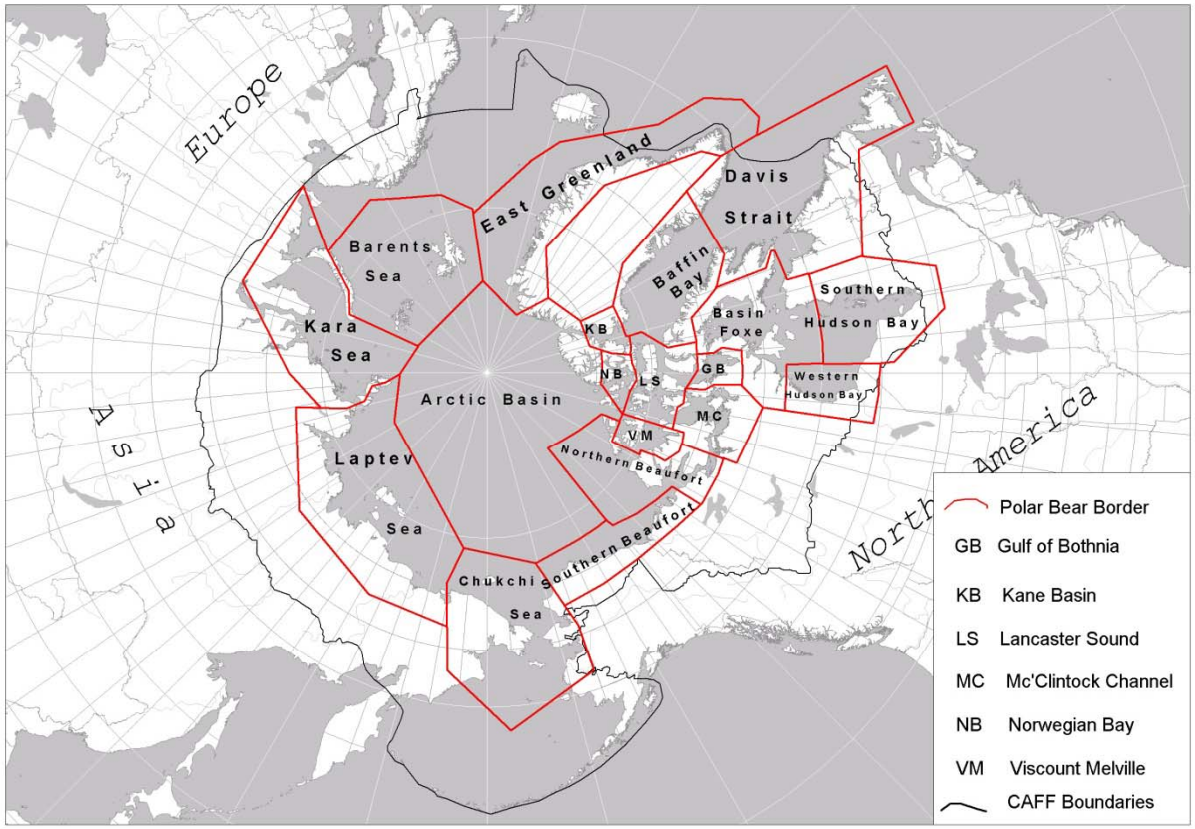


N., I., and F.I. (Norway, Iceland and Faroe Islands)

Sentinel Seabird Monitoring Sites



Polar Bear Regions



Data Management Approach

- Data Management (treatment, roles, national financing, links to SAON, objectives, etc.) Existing Node is for Seabirds (FWS sponsorship)
- CBMP Web-Based Portal and Data Nodes sponsored by Nations (agencies). These need to be determined.
- Data formats agreed upon by Data managers appointed by nations.
- Current data (status) to be compared to historical baselines – trends

CBMP-Marine

CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

US

Canada

Russia

Greenland

Iceland

Norway

AMAP

AC PP

+ PAME?

Marine Expert Monitoring Advisory Committee (MEMAC)

Sea Ice

Marine Mammal

IUCN PBSG

CAFF CBIRD

Fish

Plankton

Benthos

Example:

Walrus

Ringed Seal

Bowhead Whale

Community Based

Marine Expert Networks (MEN)

Indicators/ Parameters

Start up from 2011

- Marine Expert Networks (MEN's) supported by the nations will be established by the Marine Expert Monitoring Advisory Committee (MEMAC) (supported by nations)
- Task: Expert Networks will establish "baselines" from historical data (funding from individual nations)
- Task: Expert networks will aggregate existing Pan Arctic data sets.

Reporting timeline

Time	Reports	Frequency
2012	• Status of indicators • Performance reports and work-plans	bi-annually annually
2013	• Scientific publications and papers • Various summaries and other communications material	ongoing ongoing
2015	• State of Arctic Marine Biodiversity Report, including AMA status reports • Independent review of parameters, sampling approaches, data management approach, analysis and reporting	every 5-y every 5-y
⇩		

Circumpolar Marine Biodiversity Monitoring:
A Phased Approach to Planning & Implementation

Phase 1 (2008-2011):

- ✓ Arctic Nations – Russia, USA, Canada, Greenland/Denmark, Iceland, & Norway (Possible addition of other Arctic Countries (such as Sweden and Finland))

Phase 2 (2015 - TBD):

- ✓ Integration of Observer Countries into Phase 2 IMP (*f. ex. PAG Member Nations: Japan, China, & Korea*)

Circumpolar Marine Biodiversity Monitoring Plan

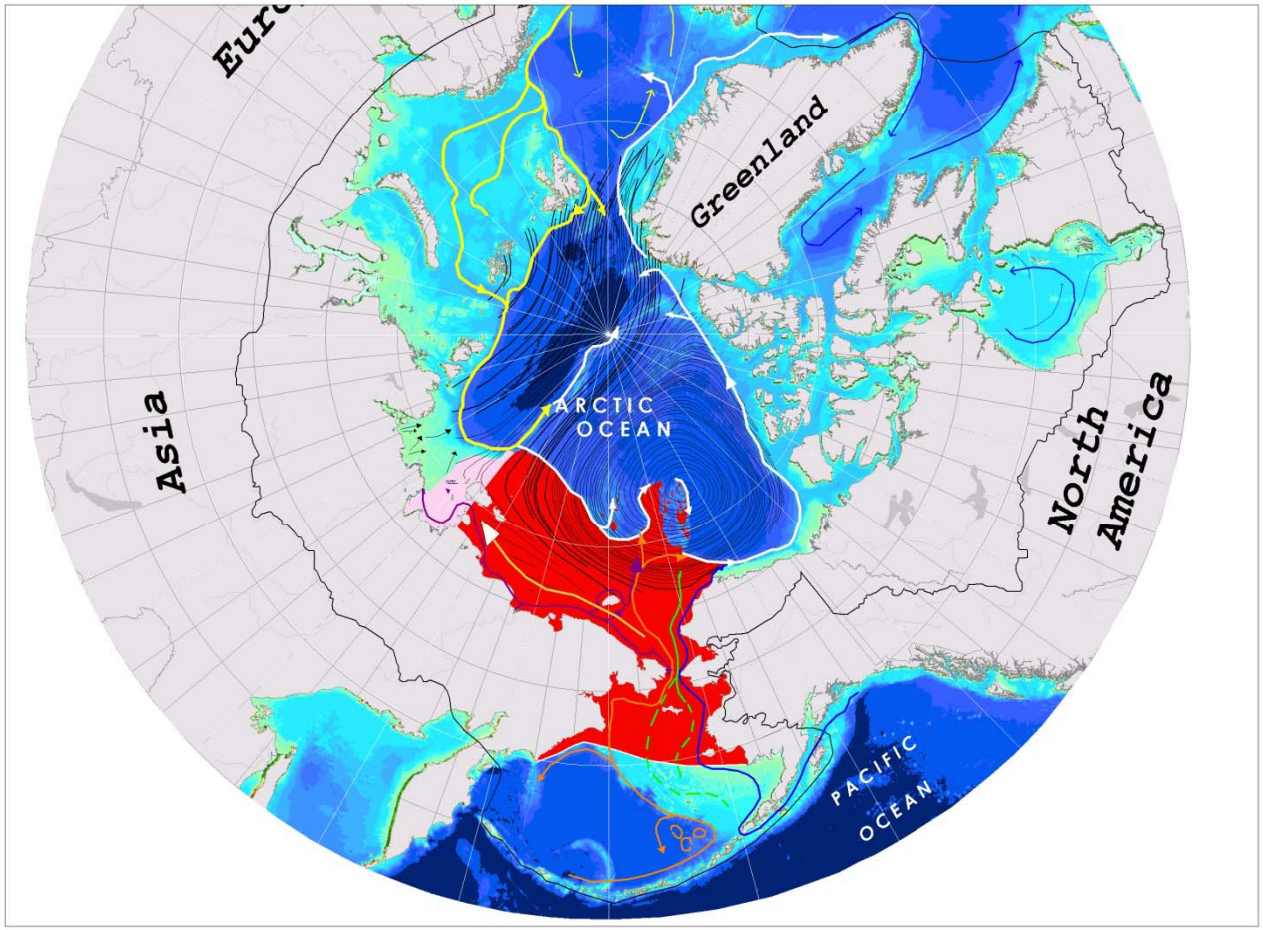
Sustaining Arctic Observing Network (SAON)

The SAON *vision* is that users should *have access to free, open & high quality data that will realize pan-Arctic & global value-added services & provide societal benefits*.

To attain that vision, SAON's goal is to enhance Arctic-wide observing activities by facilitating partnerships & synergies among existing 'building blocks', & promoting sharing & synthesis of data & information.

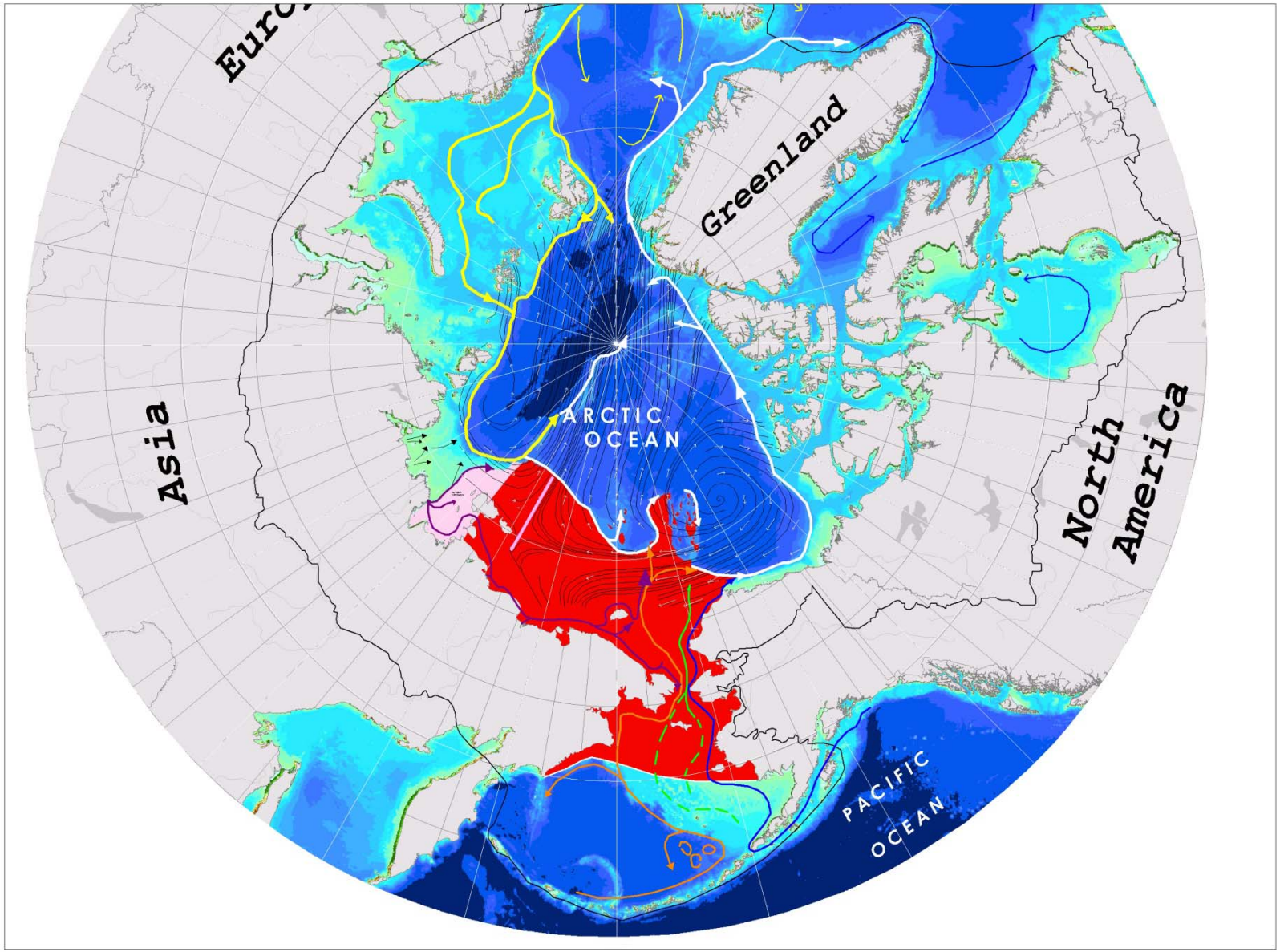
The CBMP MEMG directly supports the SAON vision & goal using the Circumpolar Marine Biodiversity Monitoring Plan as a tool to achieve this

Pacific Arctic AMA A.O. Negative



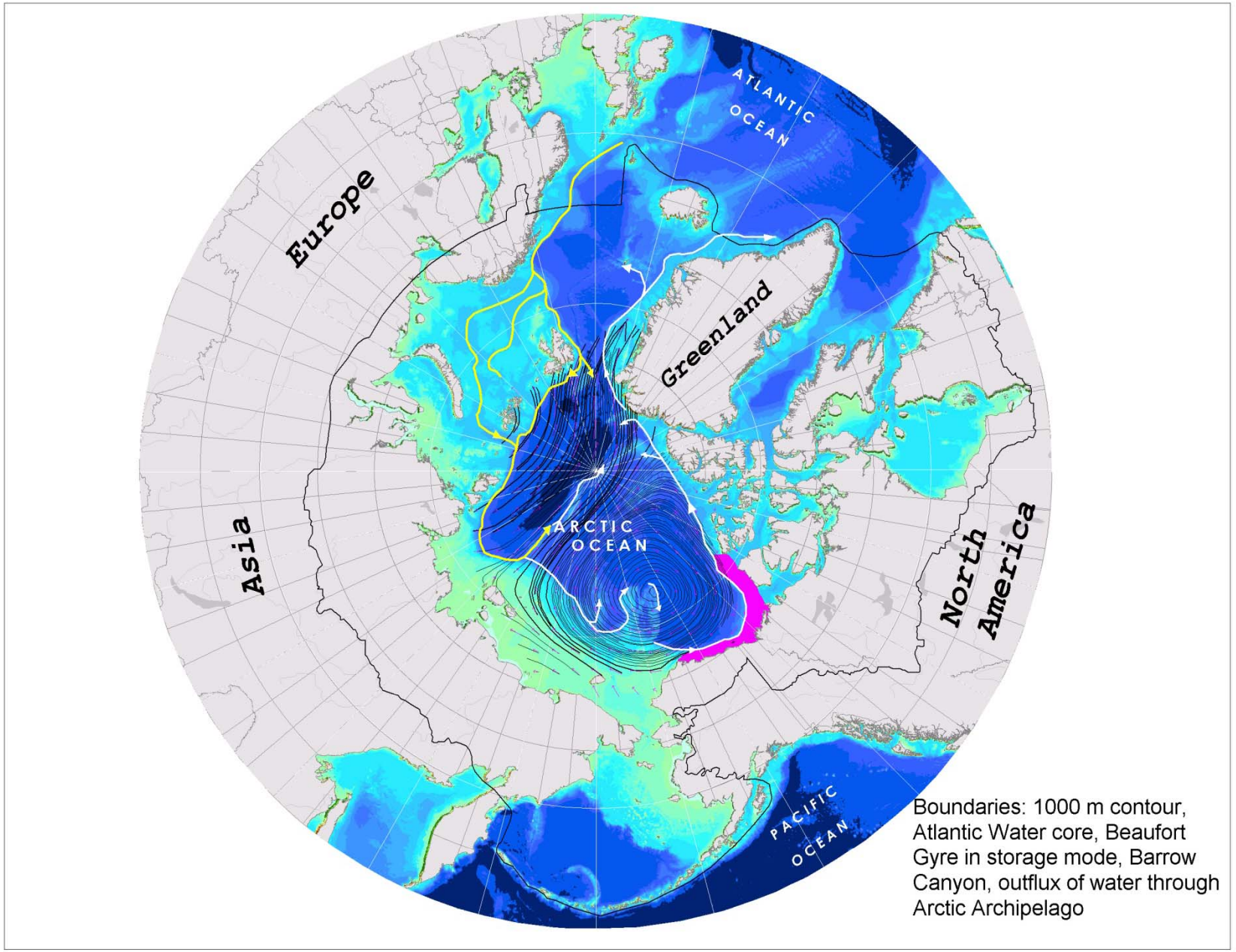
In A.O. Negative periods, the Pacific Arctic AMA is bound by the Lena River Outflow, the Atlantic Water Boundary Current, the Barrow Canyon and the Maximum Average Ice Extent in the Bering Sea

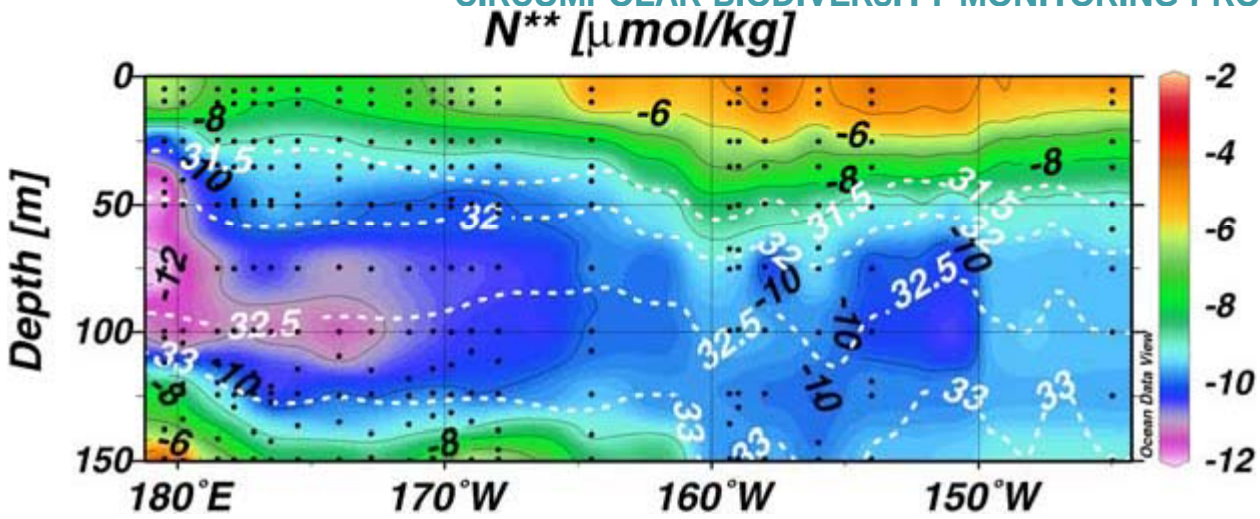
Pacific Arctic AMA in A.O. Positive Periods



Boundaries: A.O. Positive western extent of Pacific Water, Atlantic Water Boundary Current, 1,000 m contour
Barrow Canyon and Southernmost extent of the Sea Ice Cover

Beaufort Shelf Arctic Marine Area





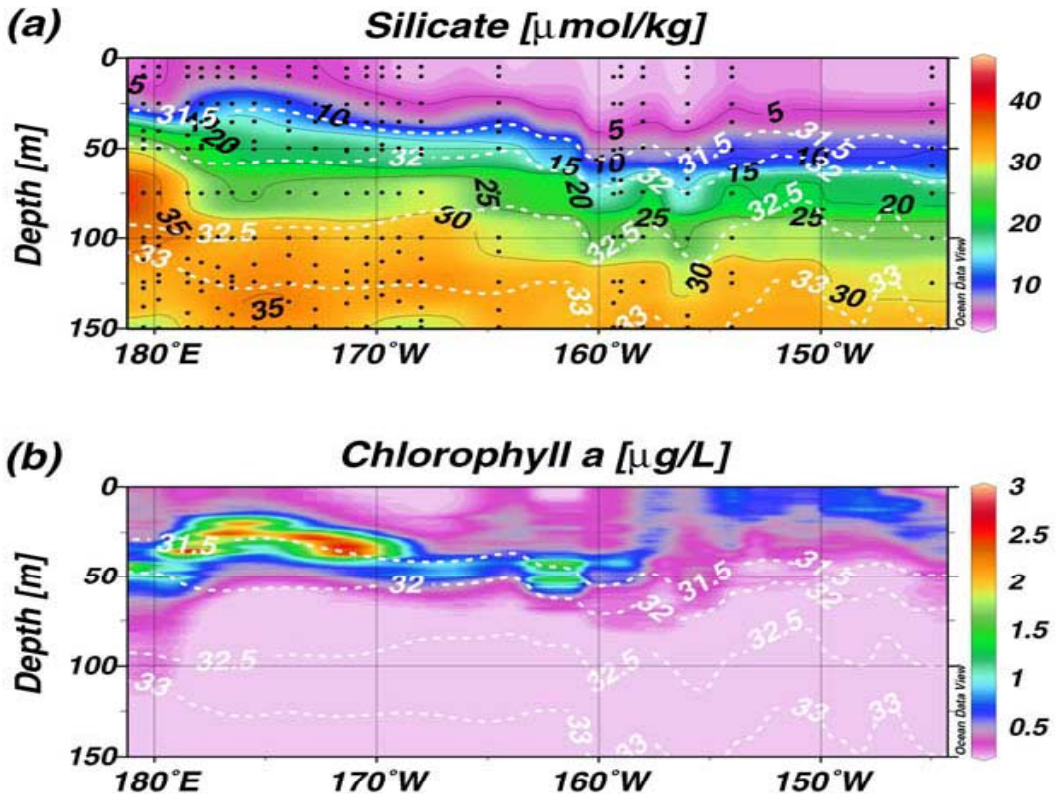
Barrow Canyon

Pacific Arctic

Beaufort

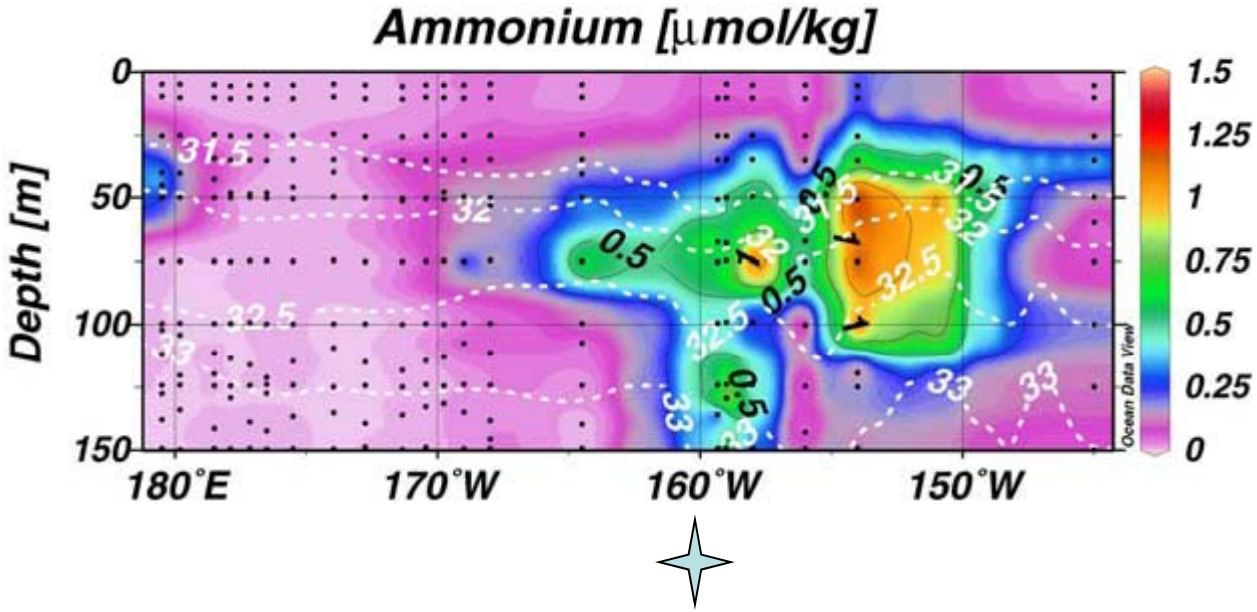
Nishino et al., 2008

Pacific Arctic-Beaufort



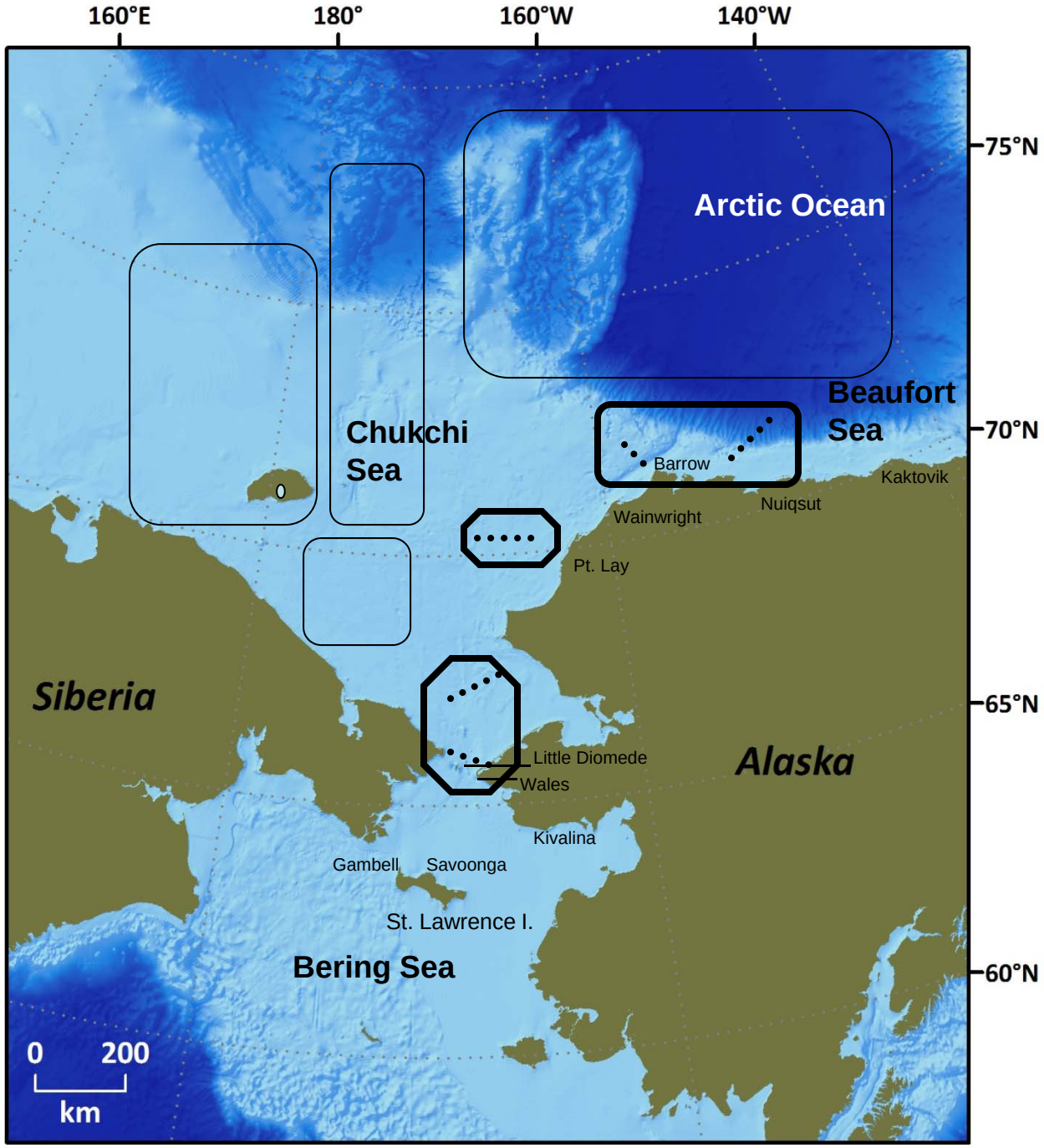
Nishino et al., 2008

Pacific Arctic-Beaufort



Barrow Canyon

Nishino et al., 2008



DBO (Including RUSALCA and other PAG observations)

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Thank you!