

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



Environnement
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



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

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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

Contact: Mike Gill

Chair, Circumpolar Biodiversity Monitoring Program

Northern Conservation Division | Division de la conservation du Nord

Canadian Wildlife Service | Service Canadien de la faune

Environment Canada | Environnement Canada

91780 Alaska Highway | 91780 autoroute Alaska

Whitehorse, Yukon, Canada Y1A 5K7

mike.gill@ec.gc.ca

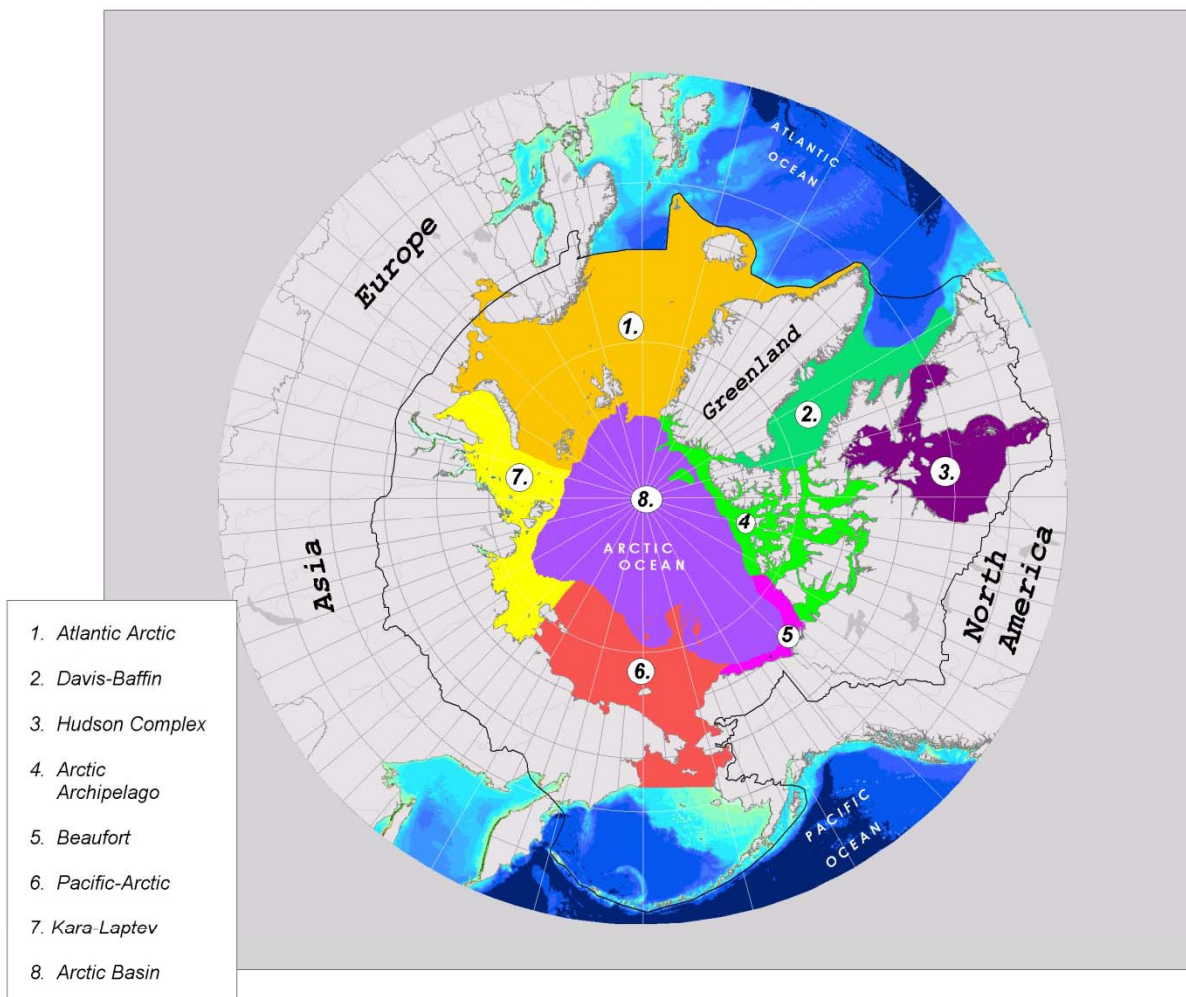
Telephone | Téléphone 867-393-6760

Facsimile | Télécopieur 867-393-7970



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Arctic Marine Areas



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

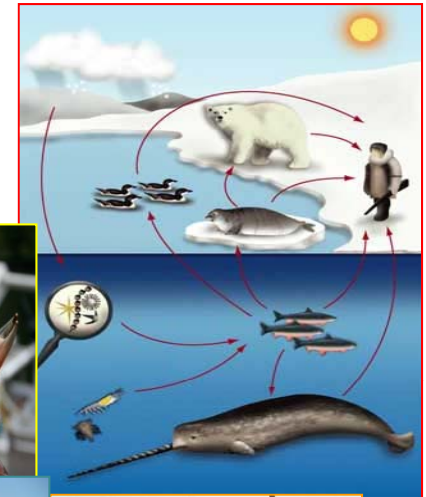


The most important drivers:

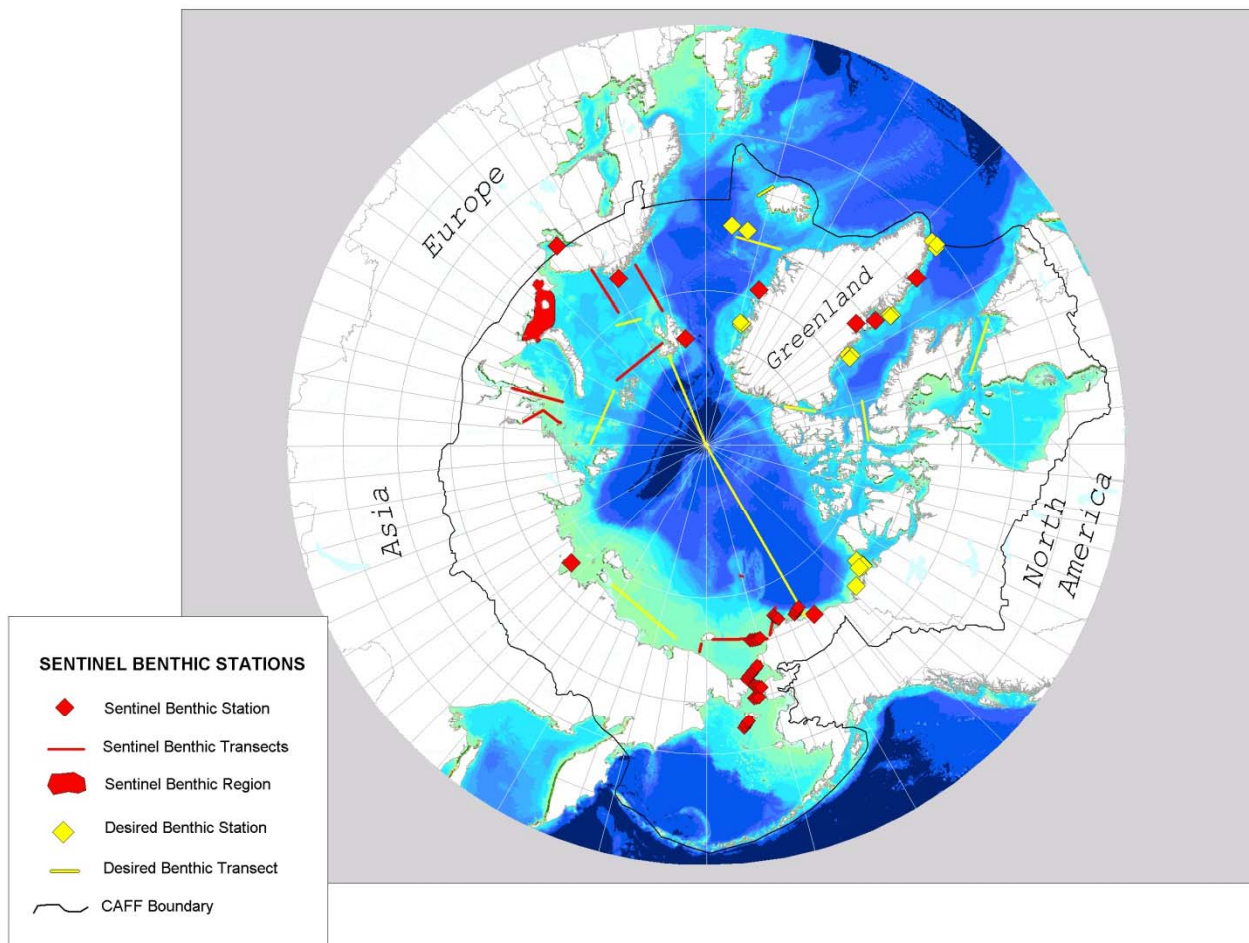
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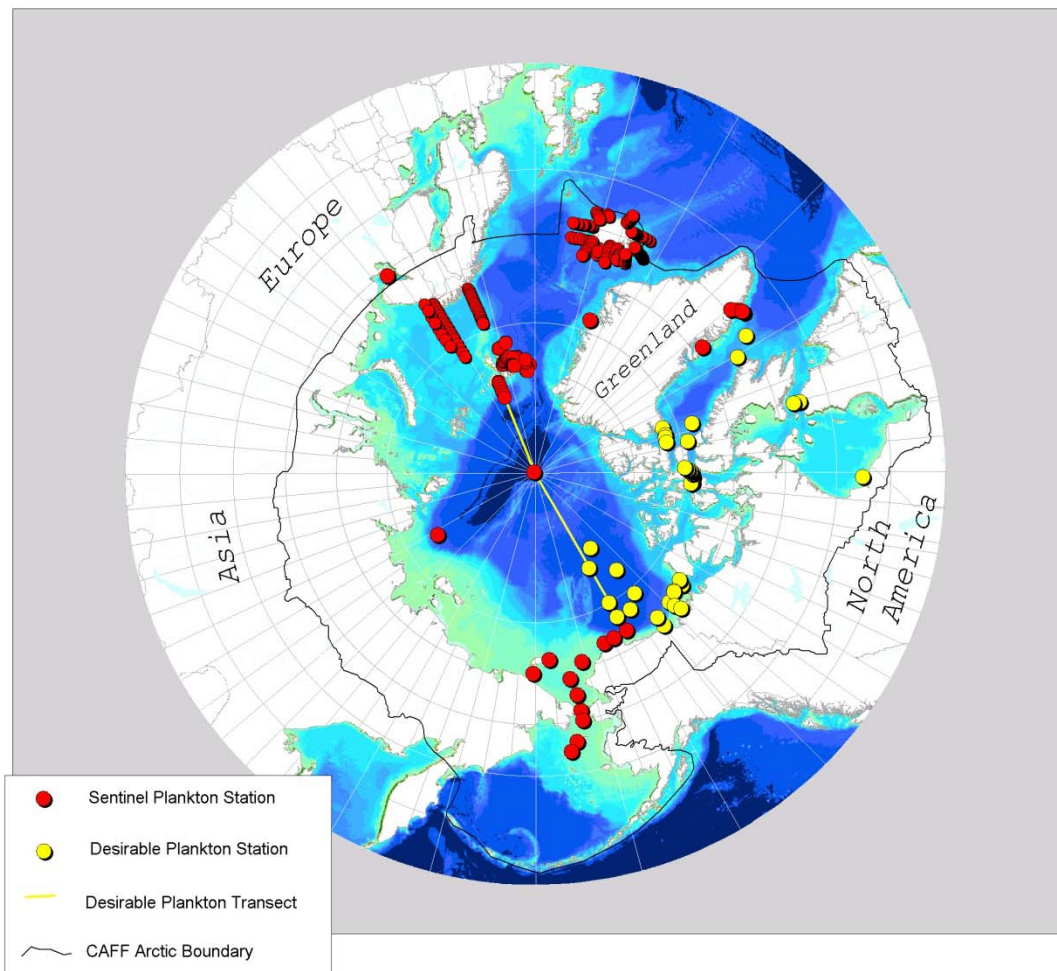
- ✓ **Environmental contamination** (i.e., long range transport of contaminants)
- ✓ **Invasive species** (non-native)
- ✓ **Increasing ship & air traffic**
- ✓ **Harvest**
- ✓ **Oil & gas exploration**
- ✓ **Climate change...**
...the most pervasive threat!



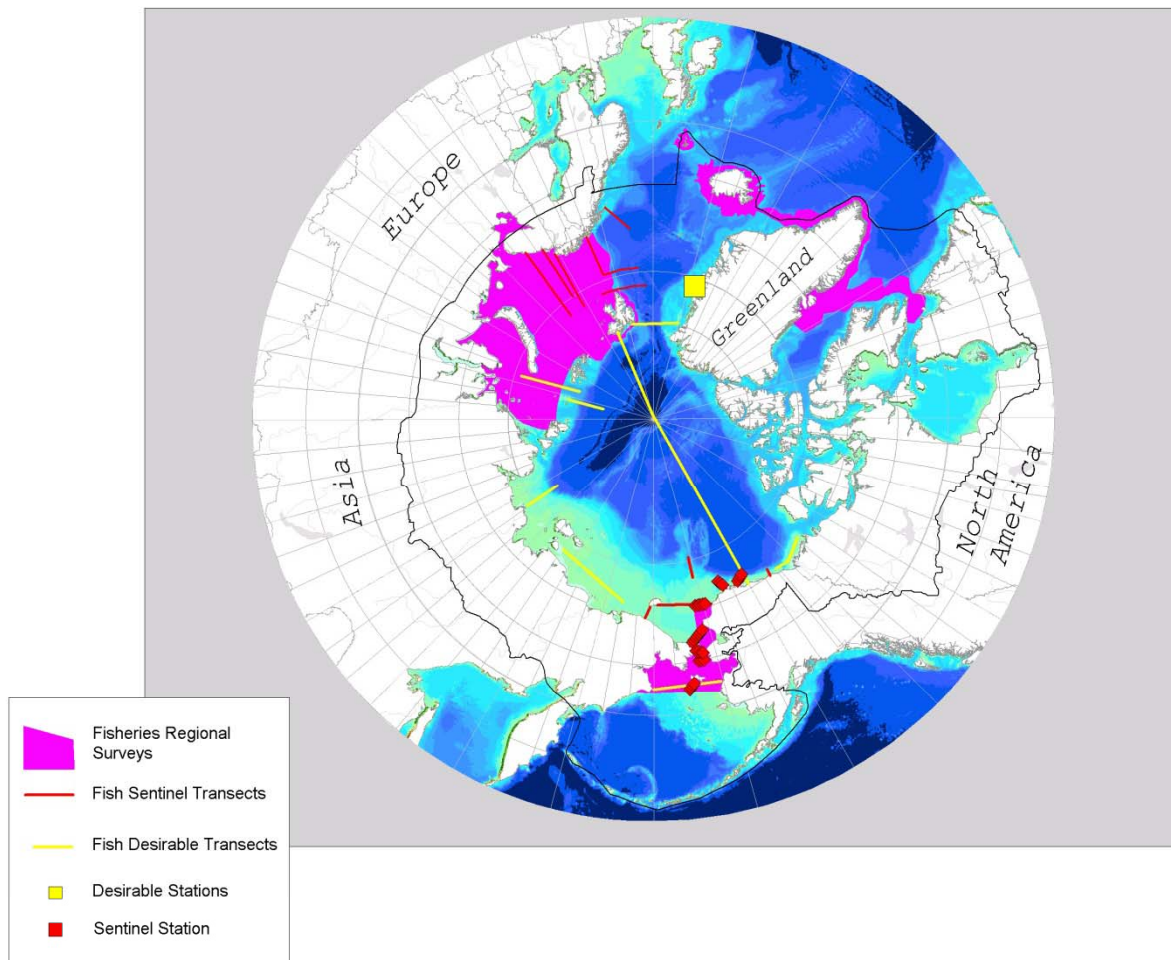
Sentinel Benthic Regions, Stations and Transects



Sentinel Plankton Stations and Transects

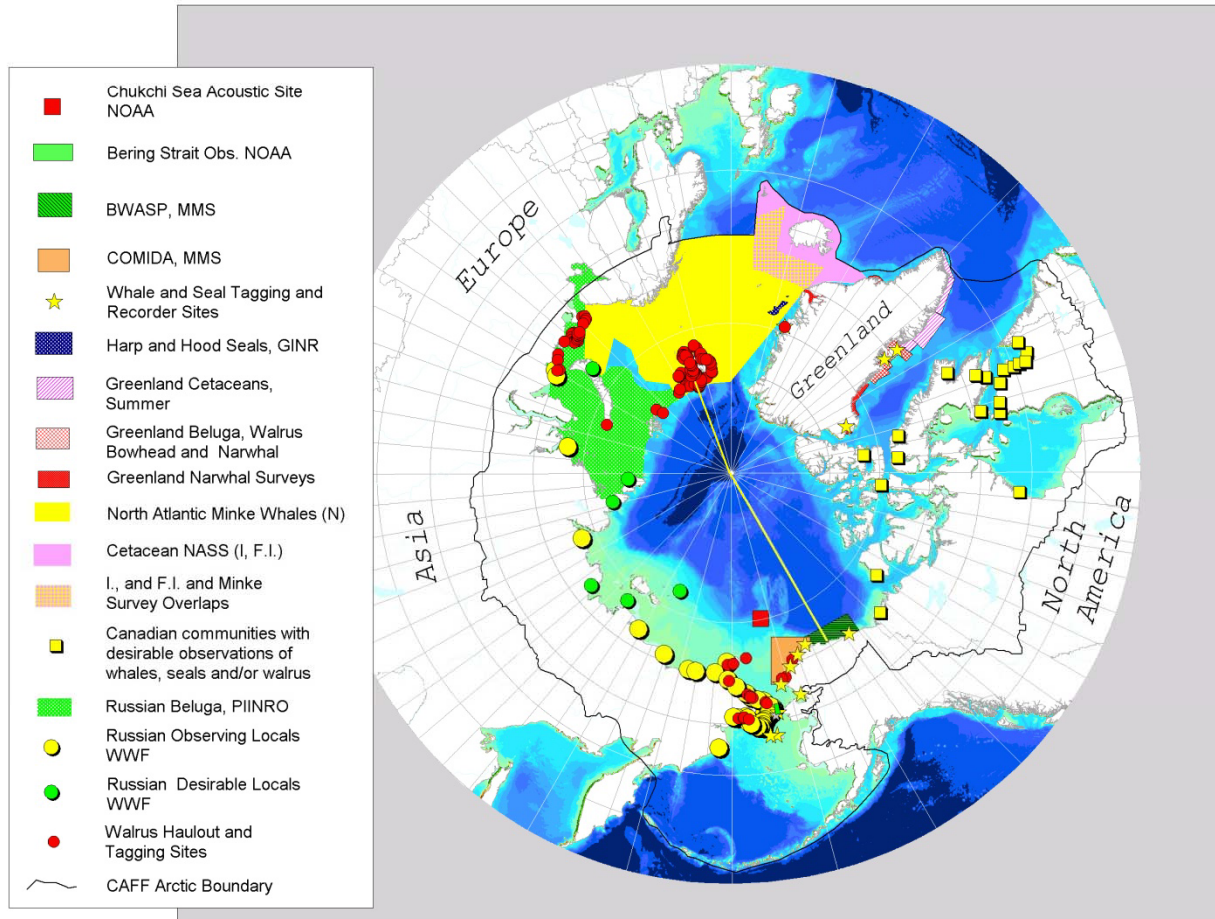


Sentinel Fish Regions, Transects, and Stations



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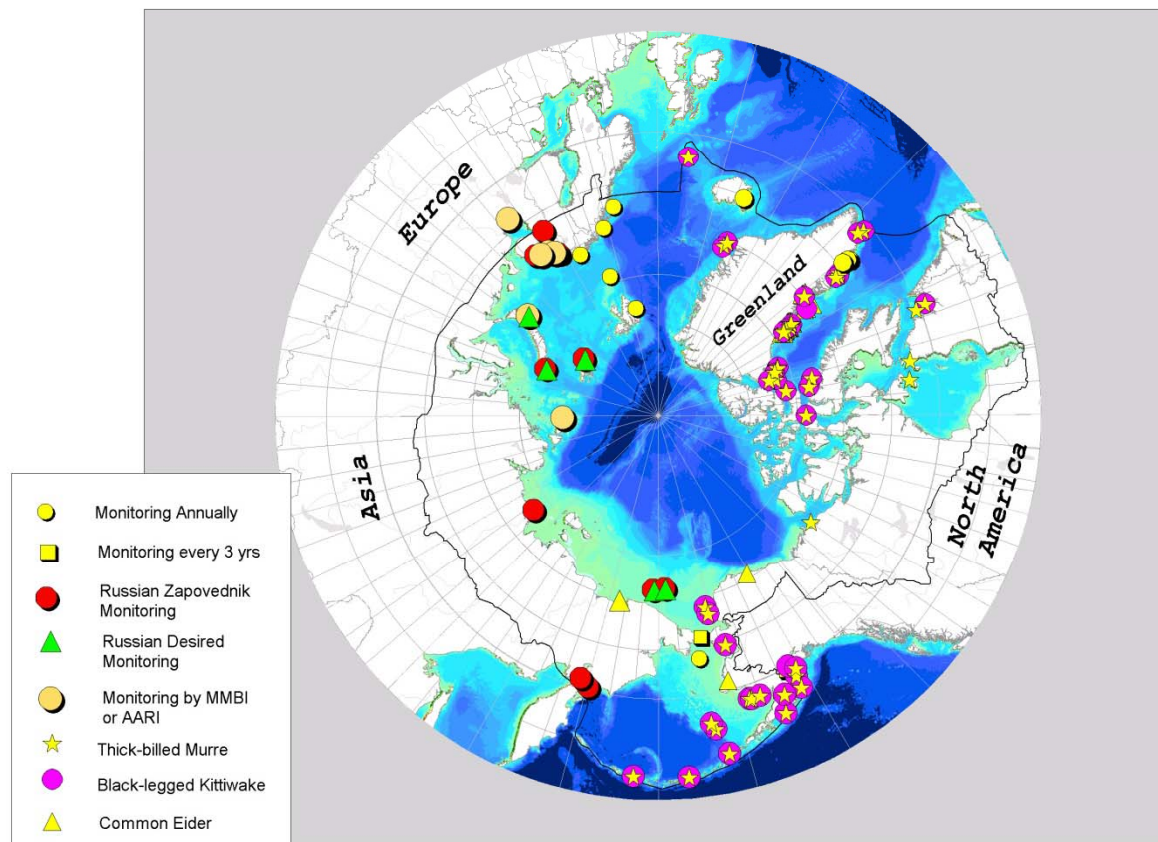
Sentinel Marine Mammal Regions and Tagging Sites



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



Sentinel Seabird Monitoring Sites



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Polar Bear Regions



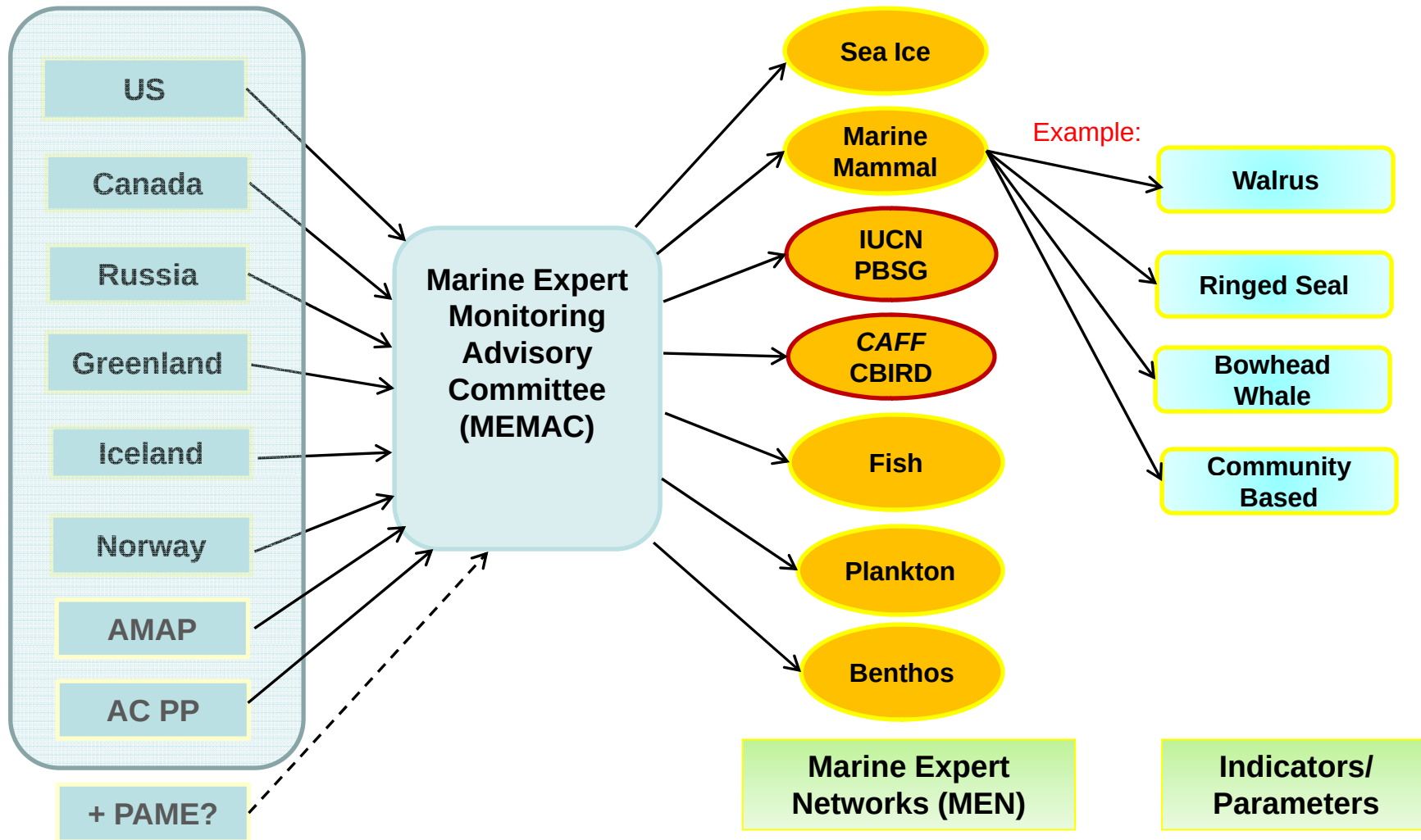
Data Management Approach

- 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

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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):

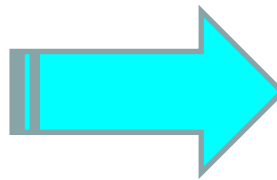
- ✓ Arctic Nations – Russia, USA, Canada, Greenland/Denmark, Iceland, & Norway (Possible addition of other Arctic Countries (such as Sweden and Finland))

Phase 2 (2015 - TBD):

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

Pacific Arctic Group (PAG) – organized under International Arctic Science Committee (IASC)

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.*

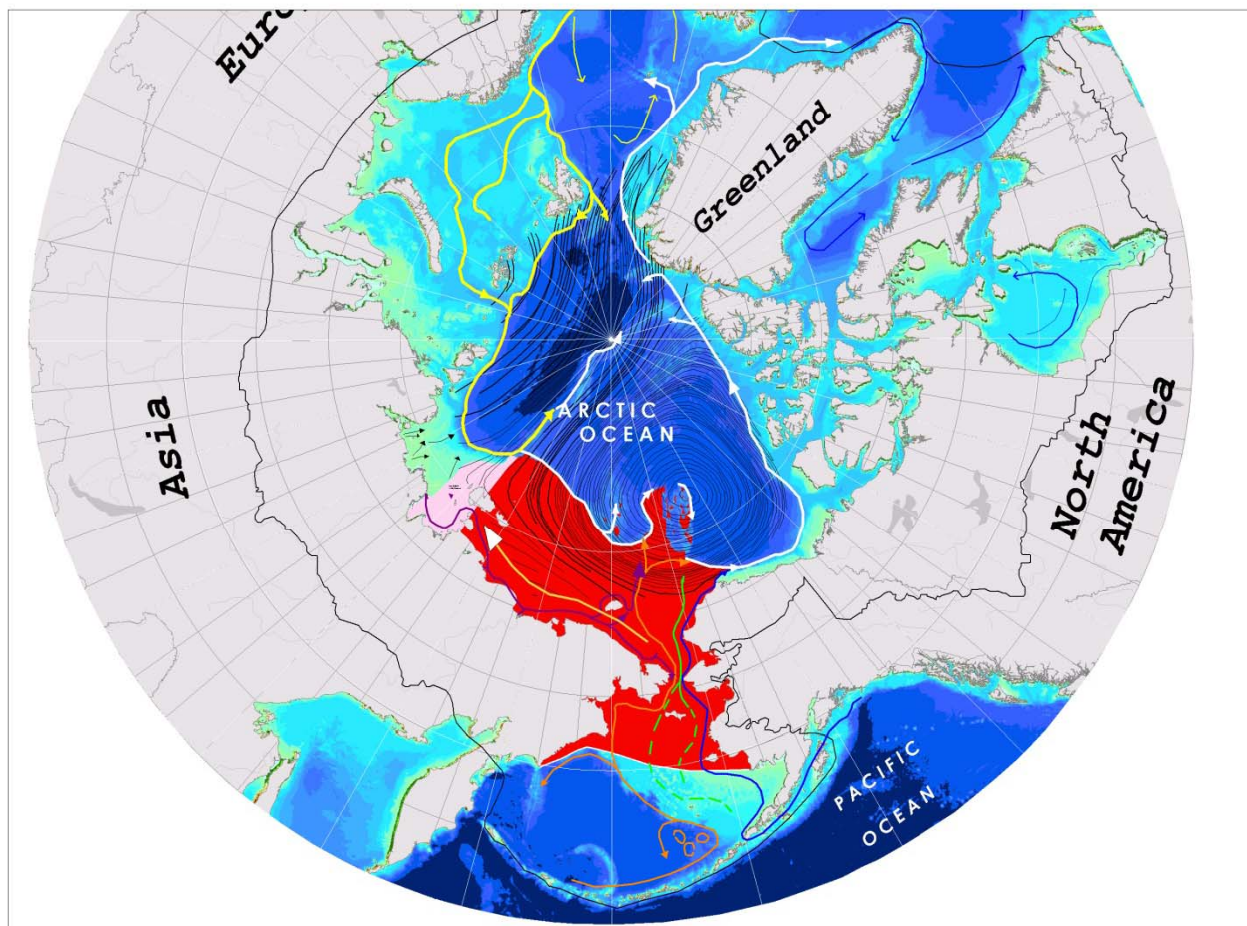
To attain that vision, SAON's *goal* is to enhance Arctic-wide observing activities by facilitating partnerships & synergies among existing 'building blocks', & promoting sharing & synthesis of data & information.

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



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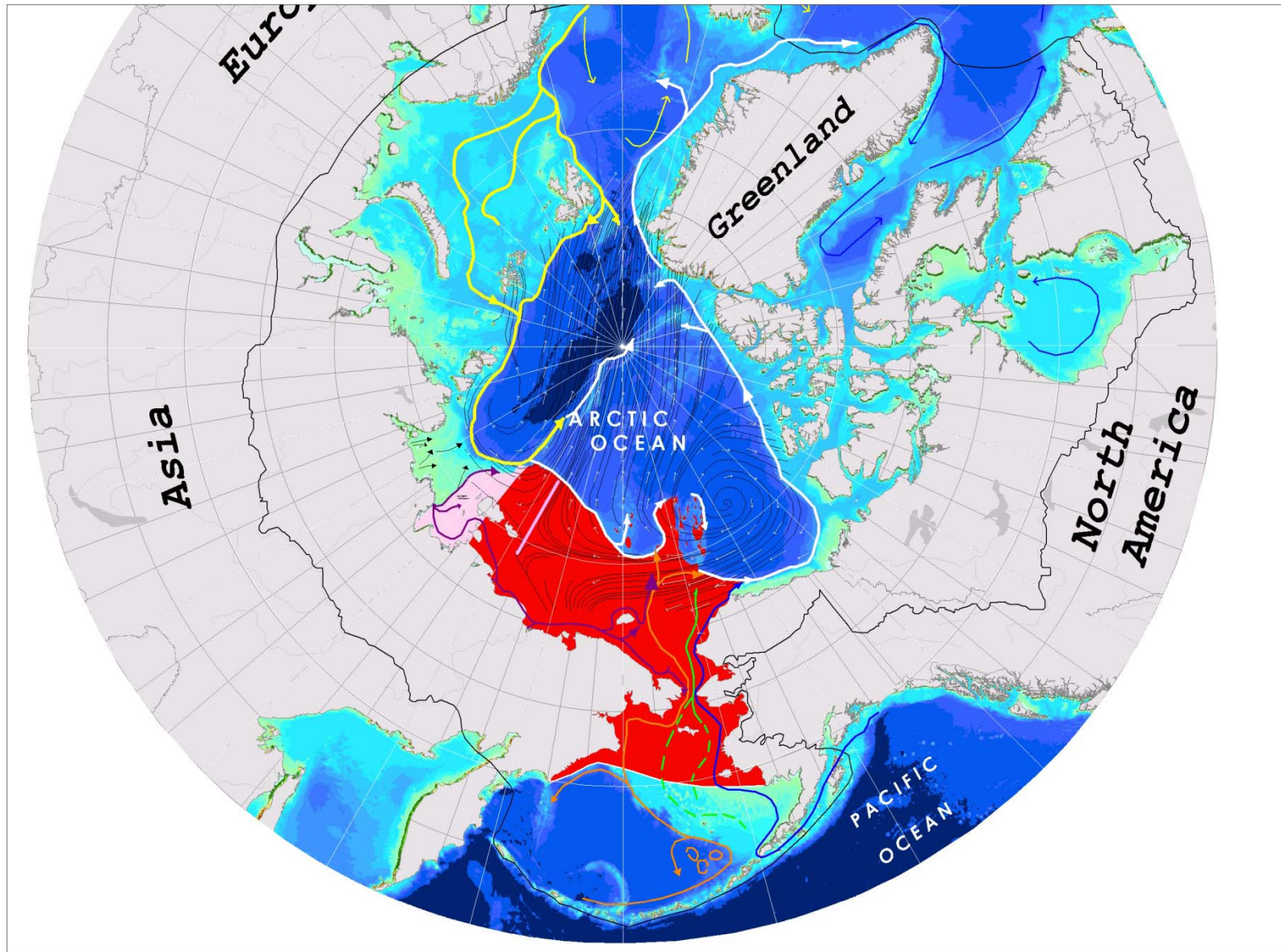
Pacific Arctic AMA A.O. Negative



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



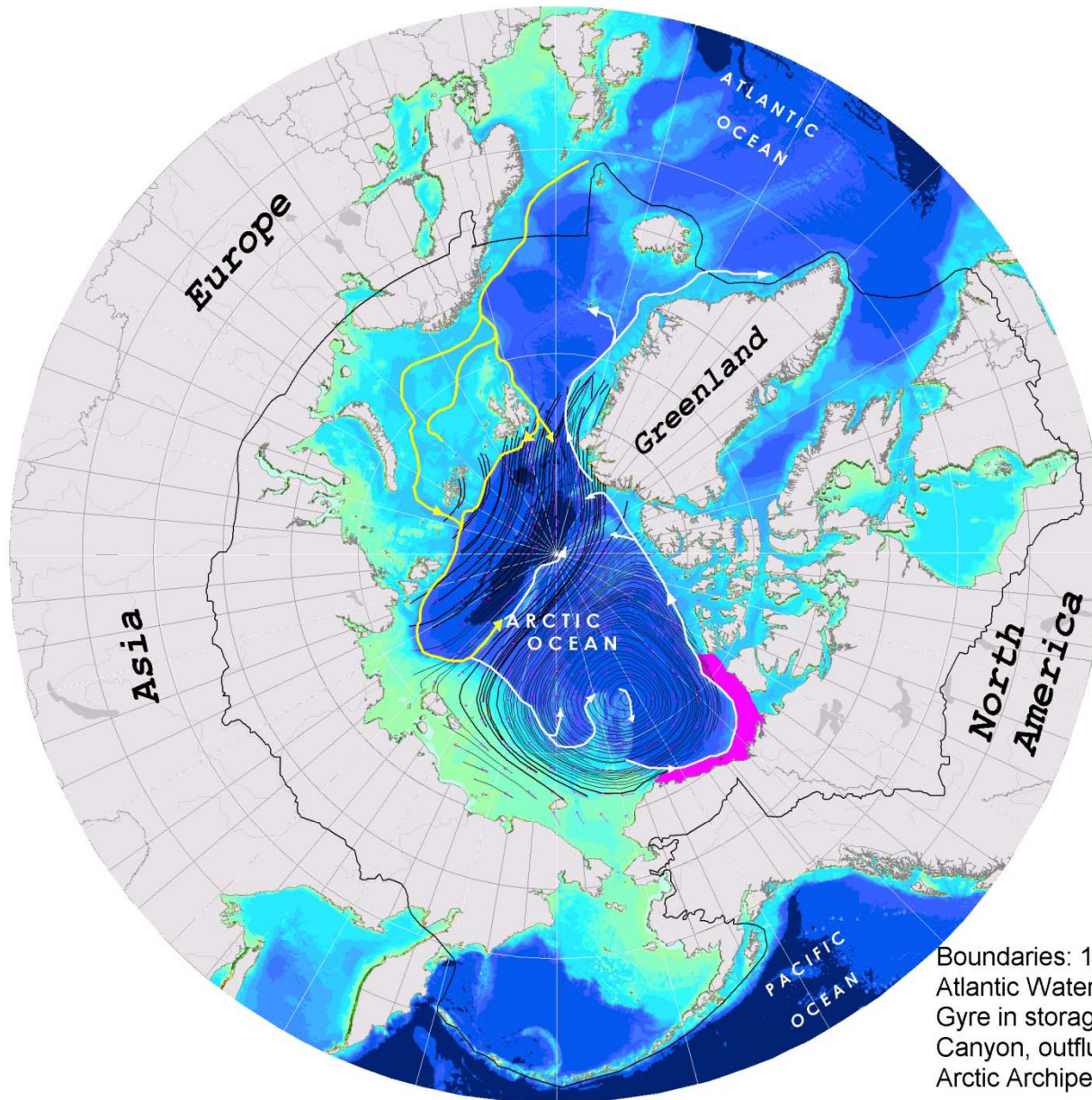
Pacific Arctic AMA in A.O. Positive Periods



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



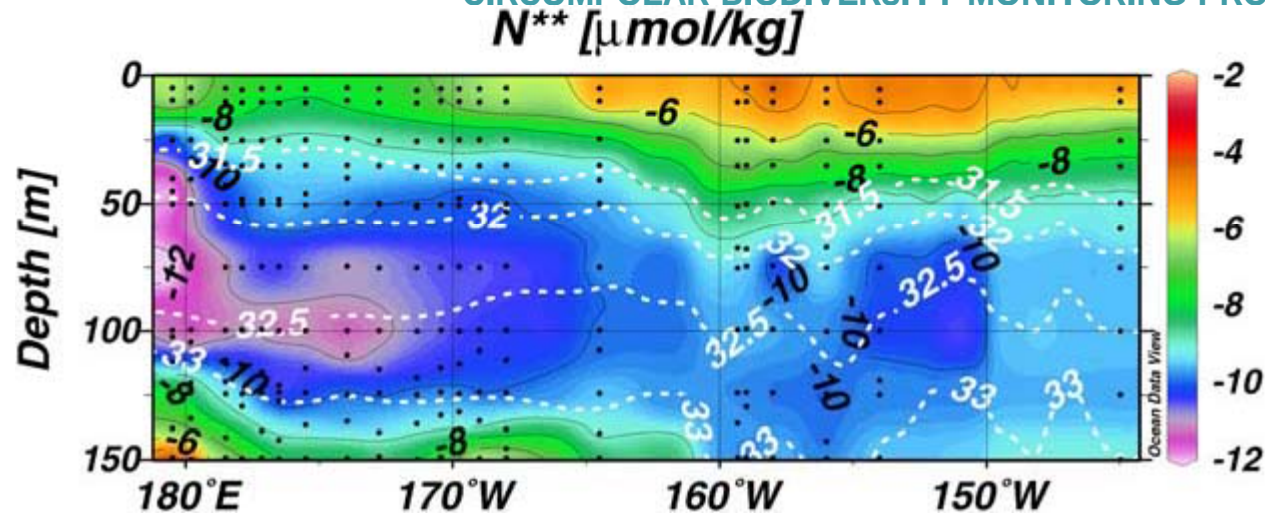
Beaufort Shelf Arctic Marine Area



Boundaries: 1000 m contour,
Atlantic Water core, Beaufort
Gyre in storage mode, Barrow
Canyon, outflux of water through
Arctic Archipelago



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Barrow Canyon

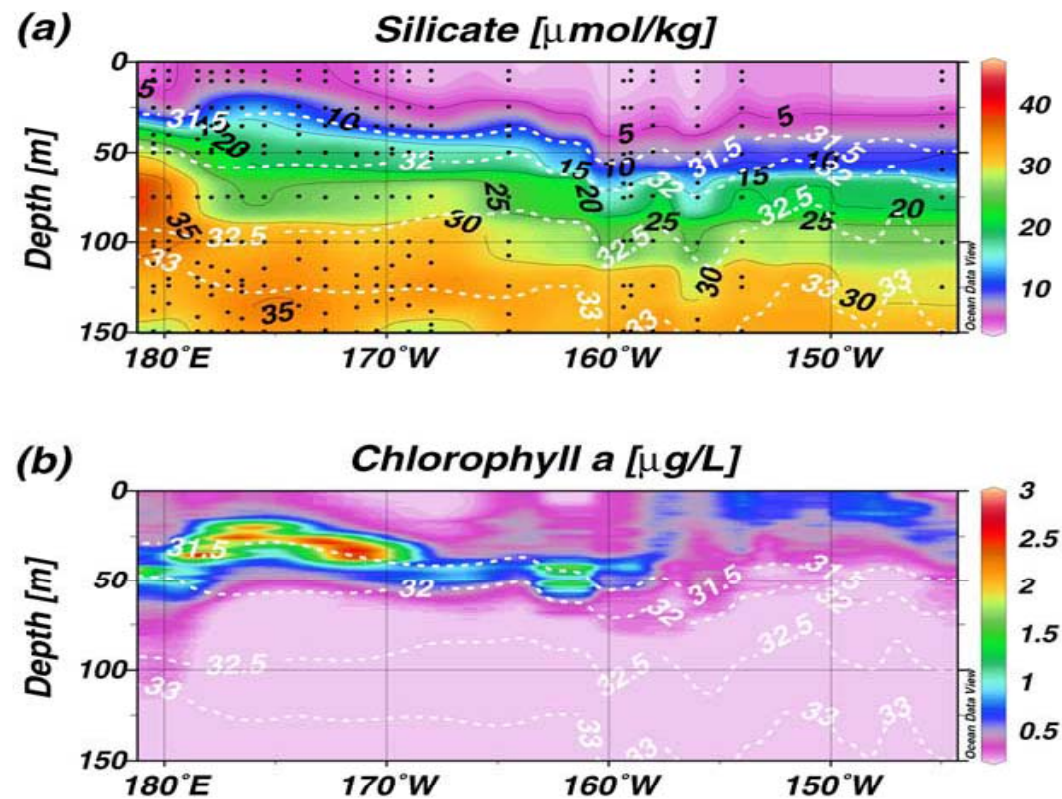
Pacific Arctic

Beaufort

Nishino et al., 2008



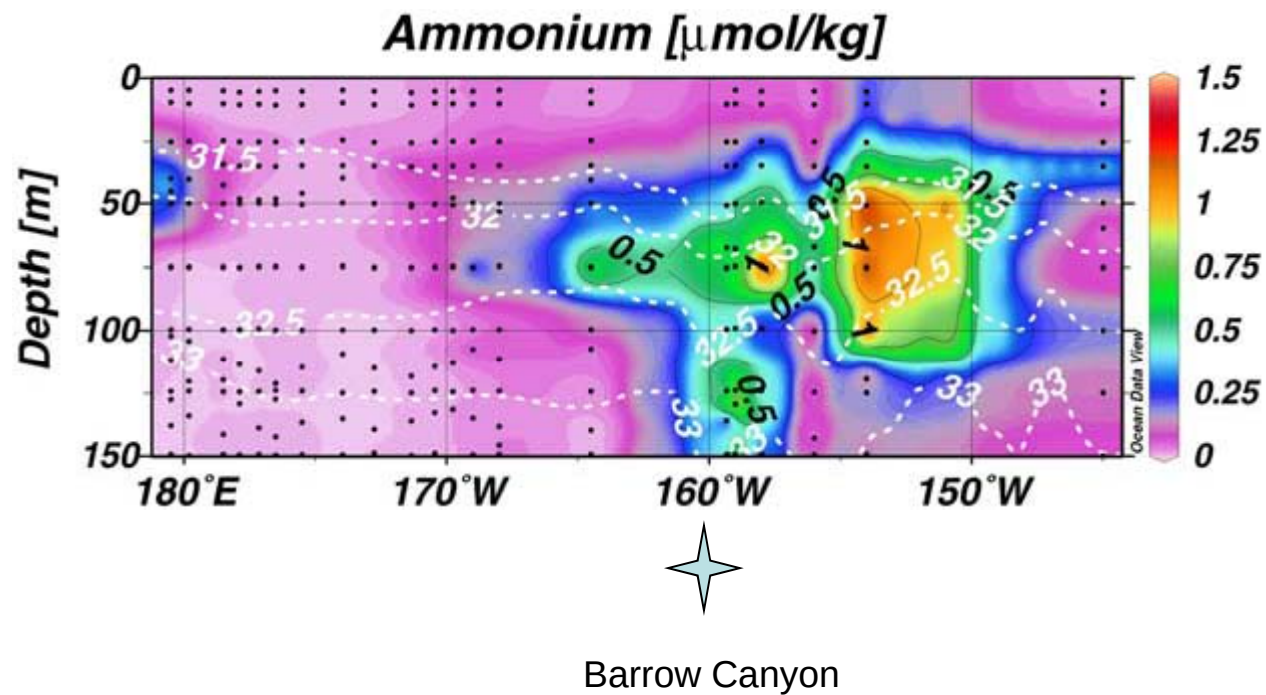
Pacific Arctic-Beaufort



Nishino et al., 2008



Pacific Arctic-Beaufort

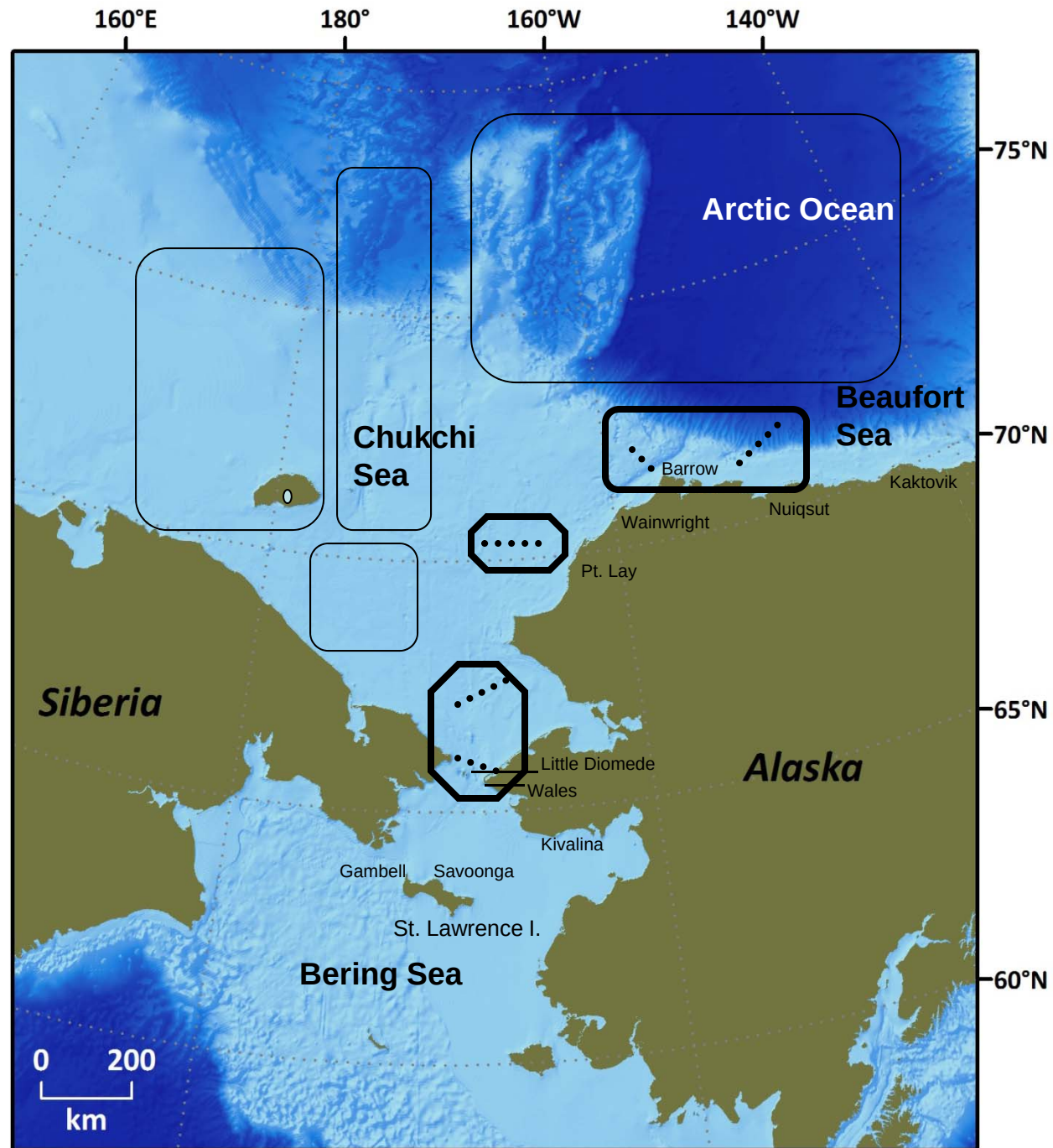


Nishino et al., 2008

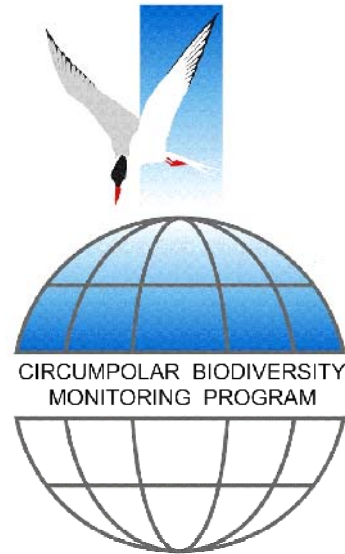




DBO
(Including
RUSALCA and
other PAG
observations)



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Thank you!

