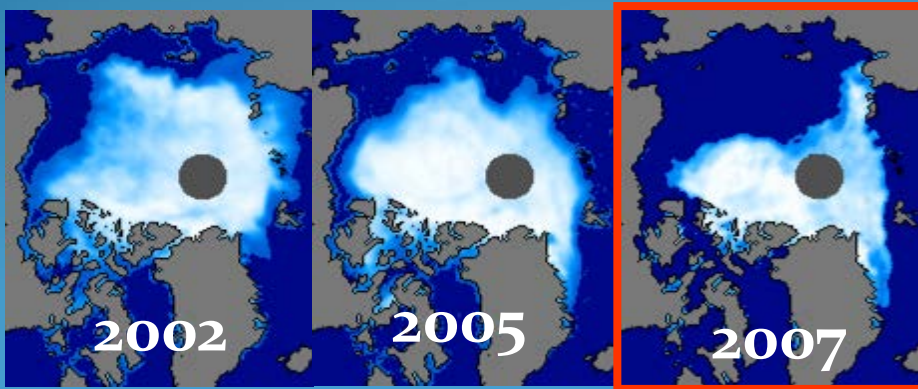




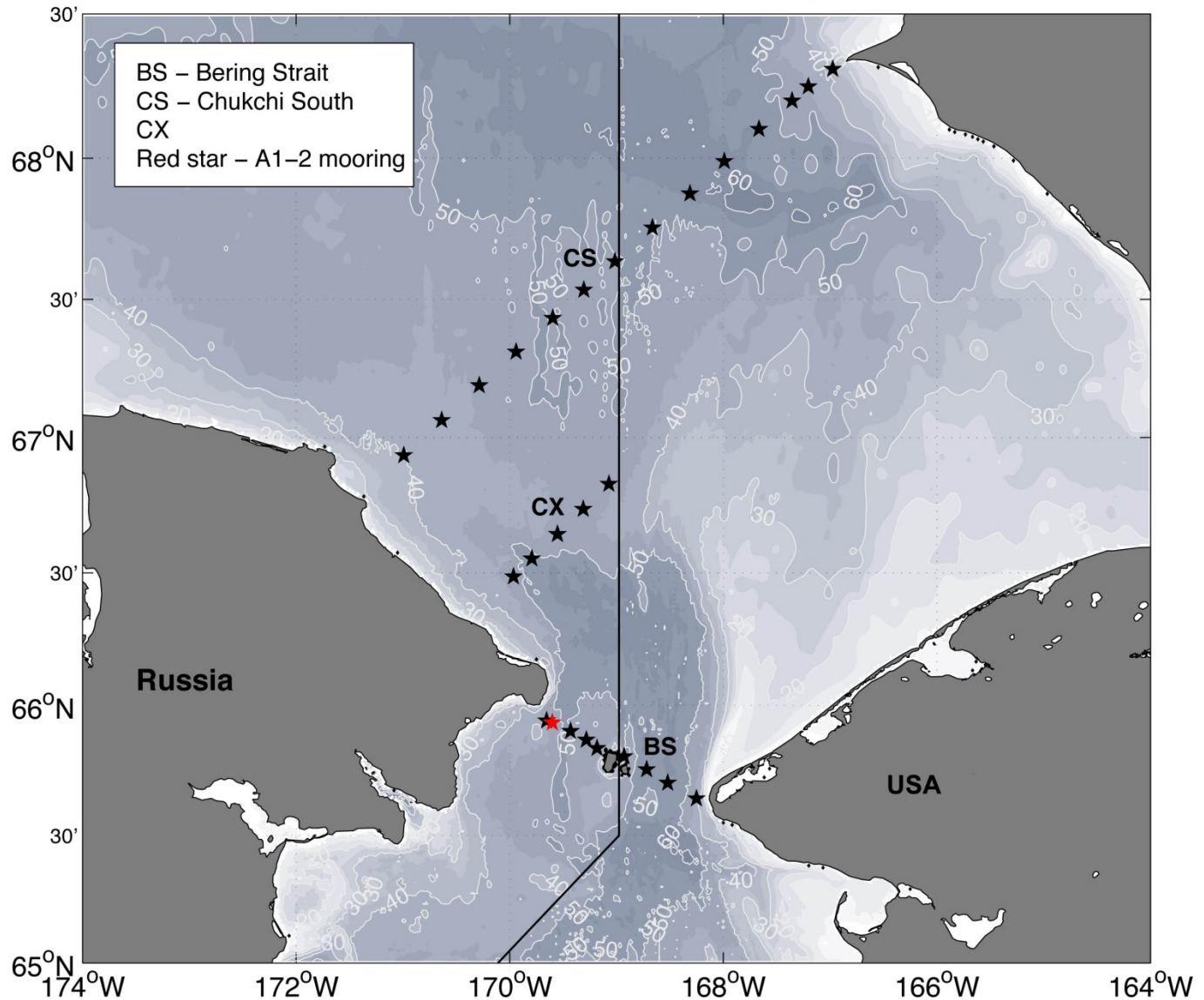
RUSALCA, Contributions to Southern and Northern Climate - Ecosystem Observatory in the Pacific Arctic:

An International Effort to Understand the Causes and Consequences of Sea
Ice Loss in the Pacific Arctic Ocean

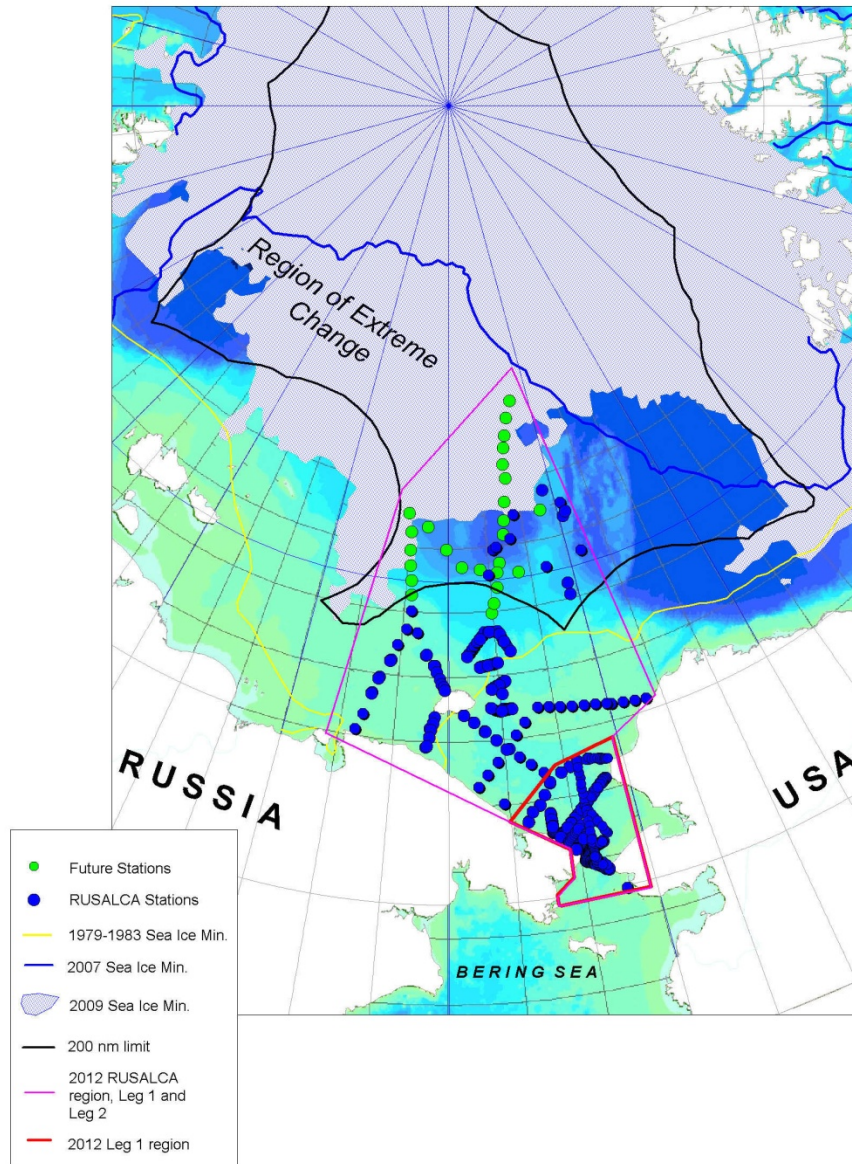
A. Ostrovskiy and K. Crane



RUSALCA 2015 stations plan



RUSSIA - USA COOPERATION





Pacific Arctic Group, PMEL, Seattle, October 28-29, 2014

Photo credit: Aleksey Ostrovskiy

THE PACIFIC ARCTIC GROUP (PAG) MEETING

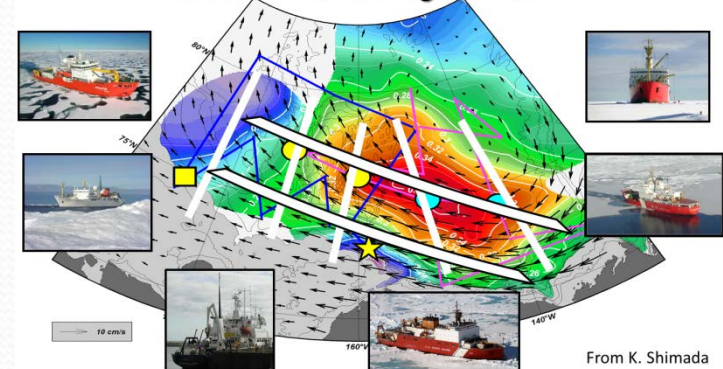
October 28-29, 2014
Seattle, Washington

Citation: Grebmeier, J.M, A. Bayard, L.S. Guy, and J. Lee (eds). 2015. The Pacific Arctic Group (PAG) Fall 2014 Meeting Report. CBL/UMCES, 24 pp.



- In October, 2014, the Pacific Arctic Group fall meeting focused on **a review of accomplishments during the previous summer and outlooks for the future research plans.**
- One major outcome of the meeting was **to engage in an expert-level discussion of observing needs in the higher Pacific Arctic** that could provide valuable data to forecasters and modelers of climate change impacts on and surrounding the Arctic reaching to the mid-latitudes.
- The area of observing interest includes the **outer shelf of the East Siberian and Chukchi Seas northwards to 80° N** and extending **from the Makarov Basin in the West to the Canada Basin in the East.**

Proposed international Pacific Arctic climate monitoring sections



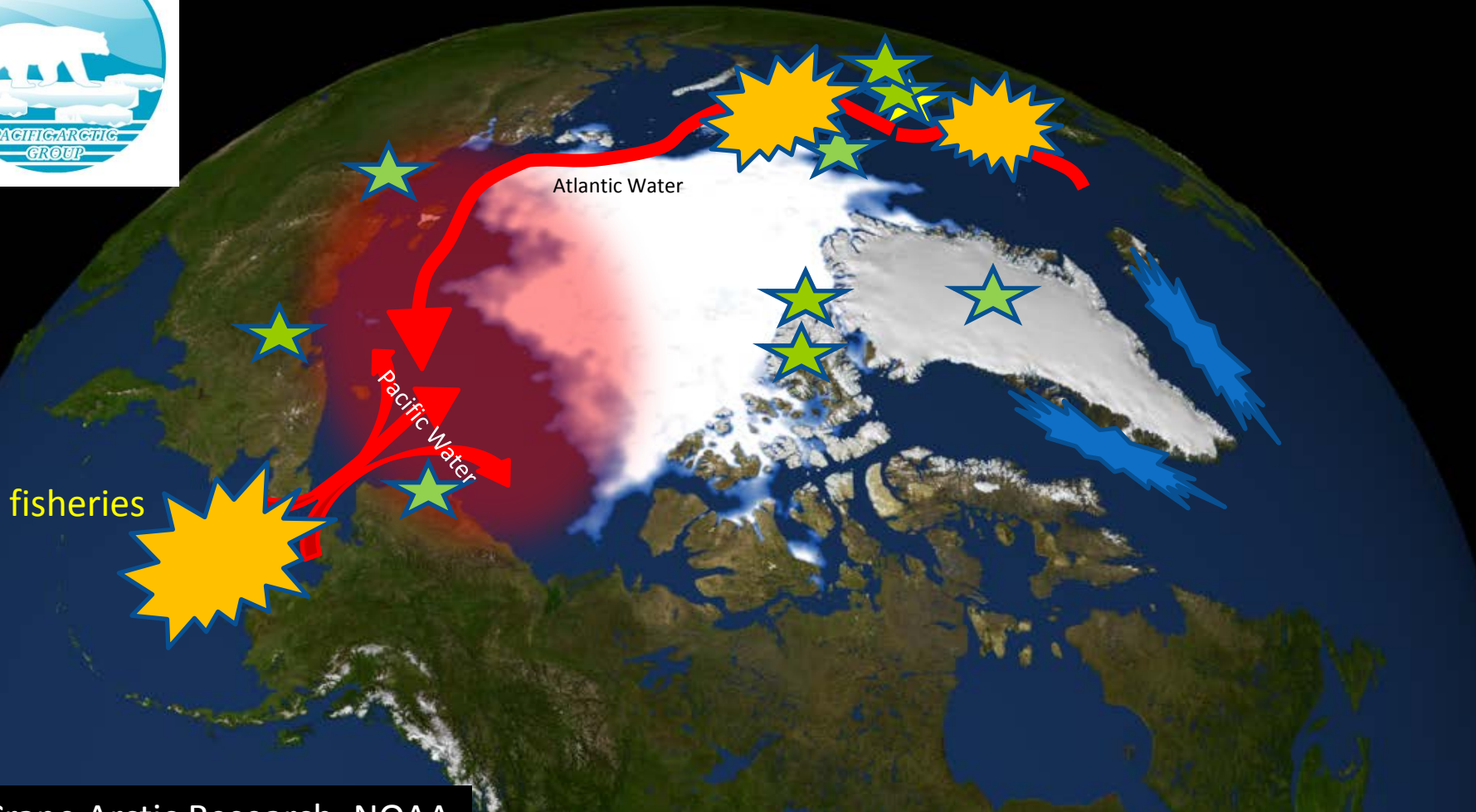
From K. Shimada

Background color: dynamic height at 100dbar relative to 800dbar from Mirai and Louis S. St-Laurent 2008 cruises (Oceanic Beaufort Gyre)

Black vectors: average sea ice motion vectors for Nov. 2007- Apr. 2008 (Sea Ice Beaufort Gyre)

Symbols: Mooring array in 2012-2013 (TUMSAT/KOPRI/NIPR & WHOI)

Pacific Arctic Group Climate Observing Network: A long-term Plan to Address Causes and Consequences of Sea Ice Loss, Warming Atmosphere, and Changing Ecosystems



Sandy Pinned & Pushed West

Makings of a "Frankenstorm"



NORTH AMERICA

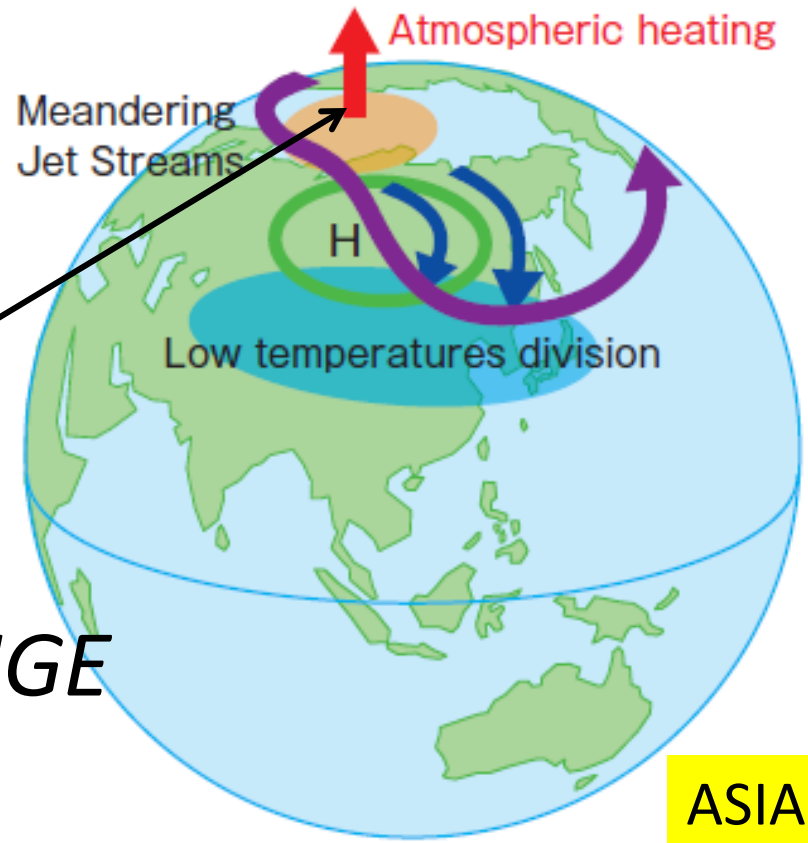
NEED OBSERVATIONS FROM THE PACIFIC ARCTIC HOT SPOT

IMPACTS OF ARCTIC CHANGE ON THE MID-LATITUDES

Which parts of the Globe are responding to Arctic Change



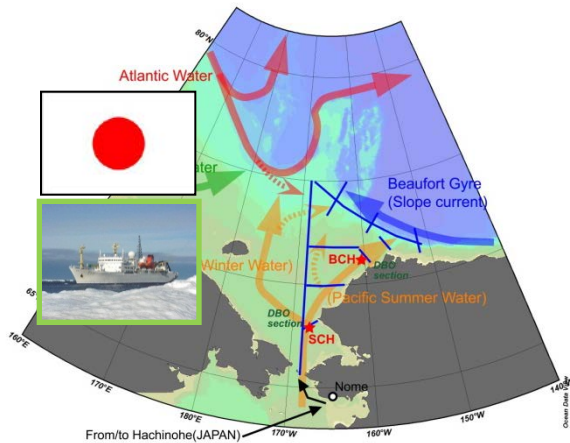
The impacts of Arctic changes on weather and climate in Japan



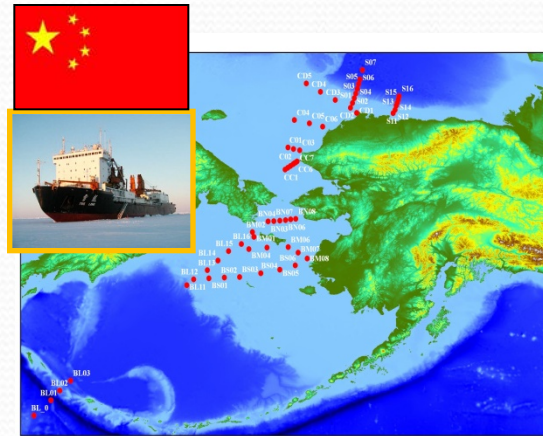
ASIA

PAG research cruises in the Pacific Arctic Region, 2004-2014

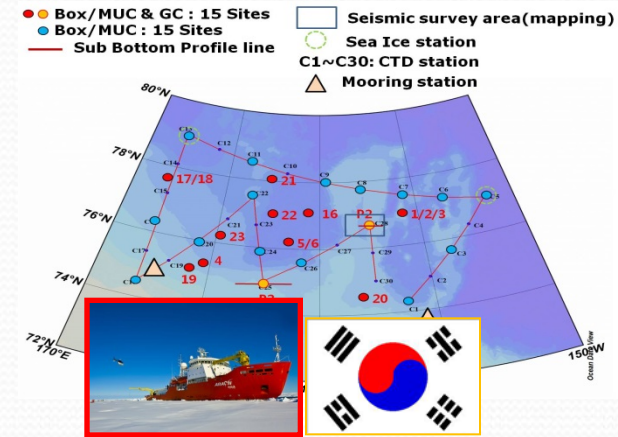
Japan: RV Mirai



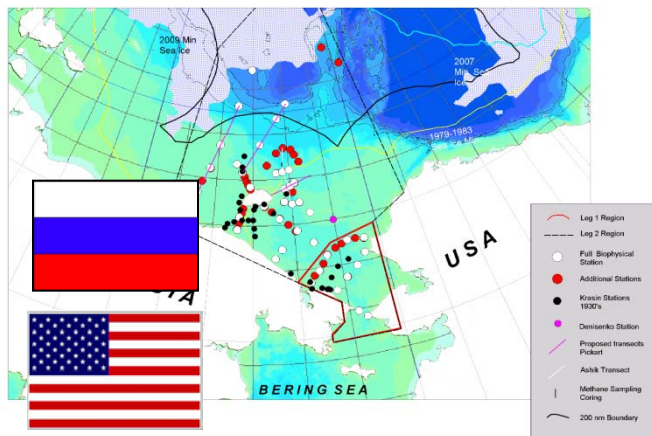
China: RV Xuelong



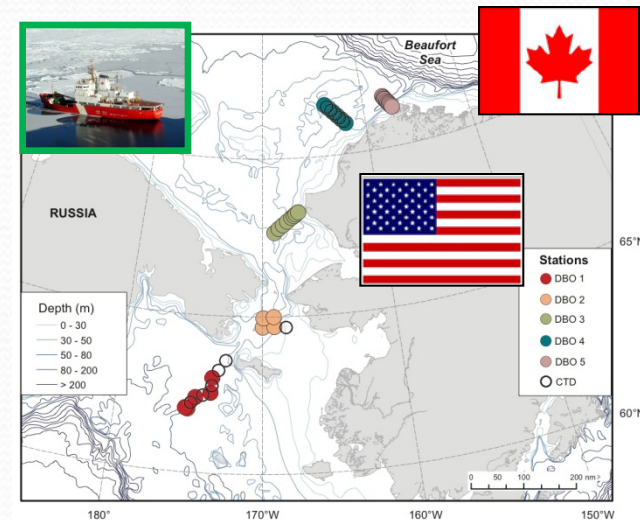
Korea: RV Araon



Russia-USA: RV Khromov



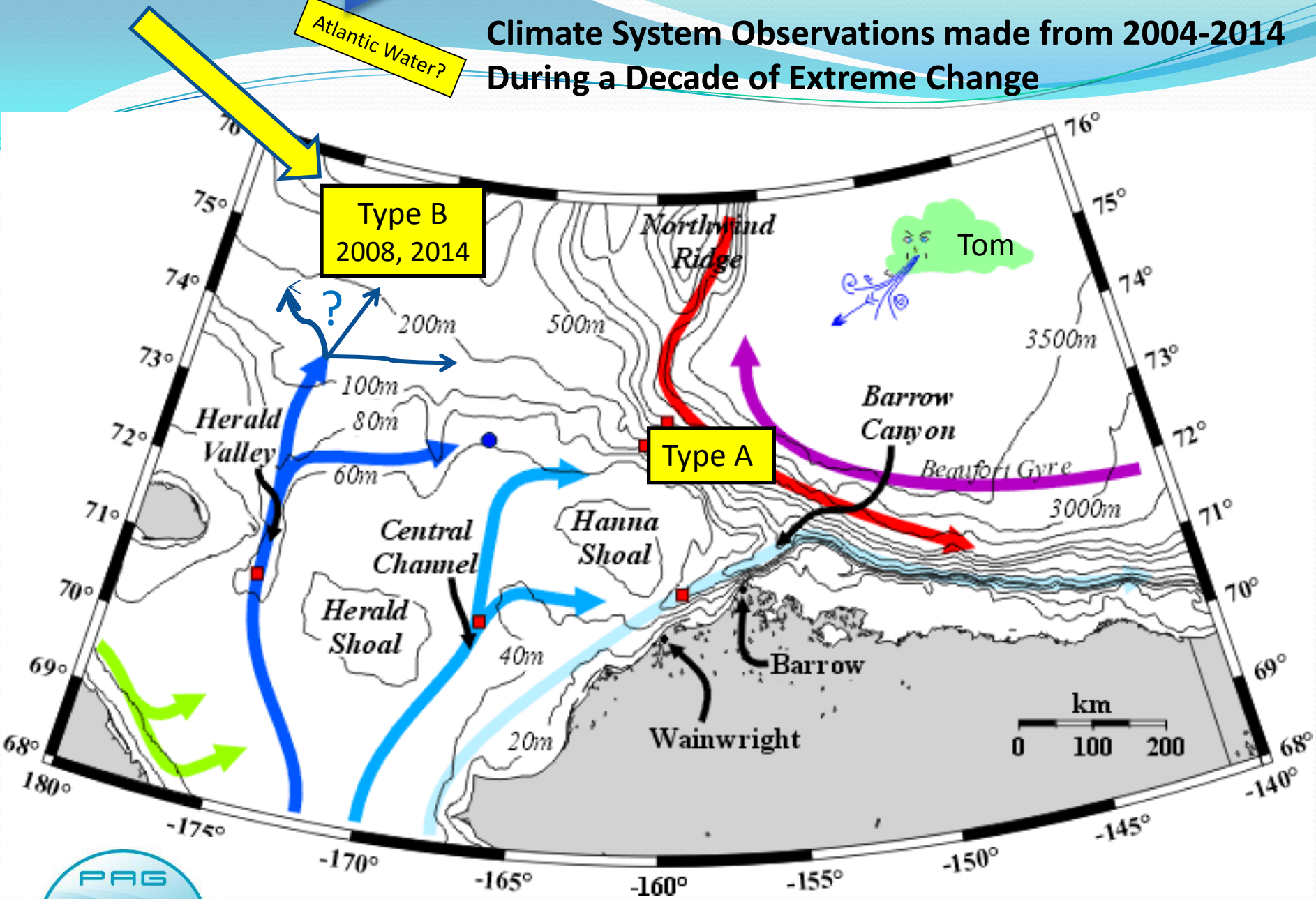
Canada: CCGS Sir Wilfrid Laurier, Louis St. Laurent



USA: Healy, RV Aquila, Brown etc.

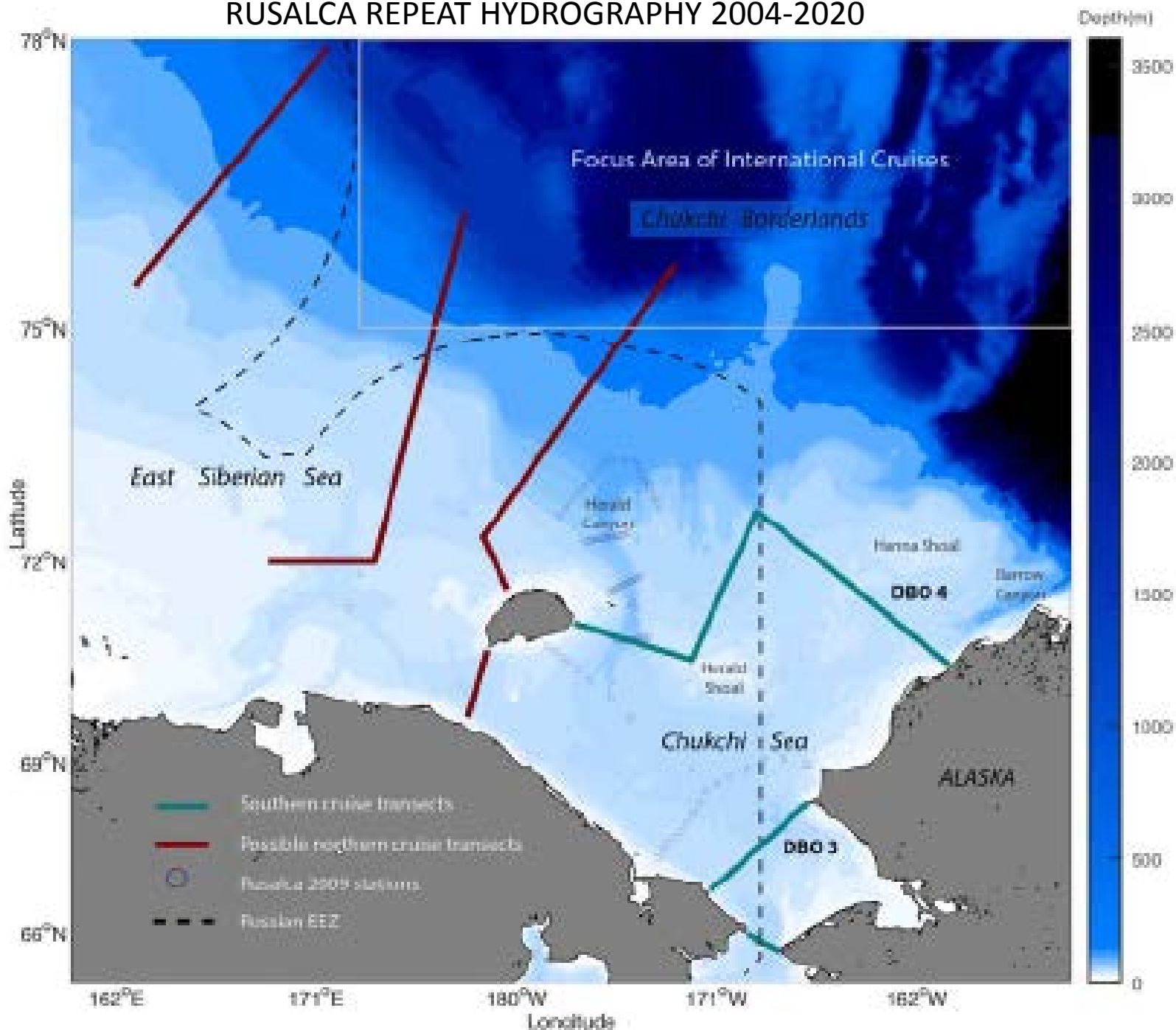


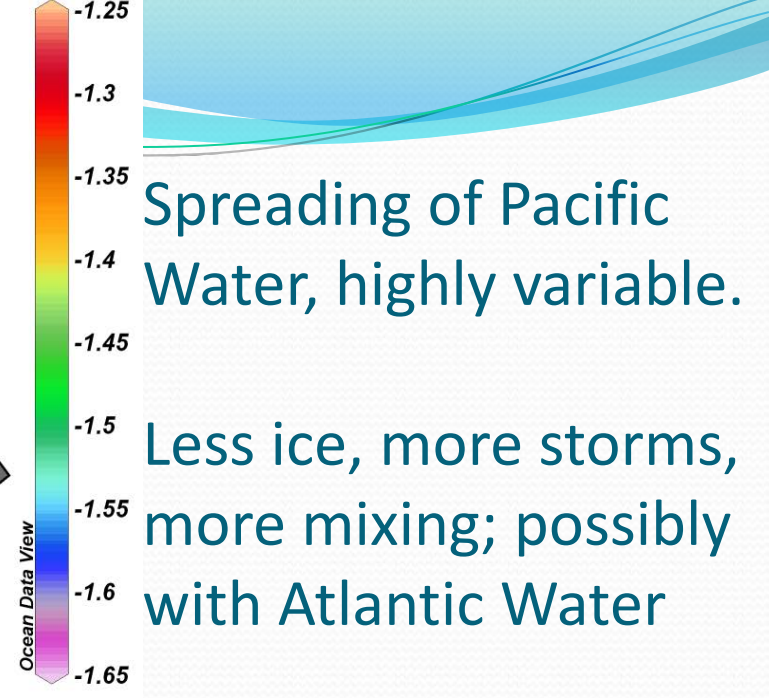
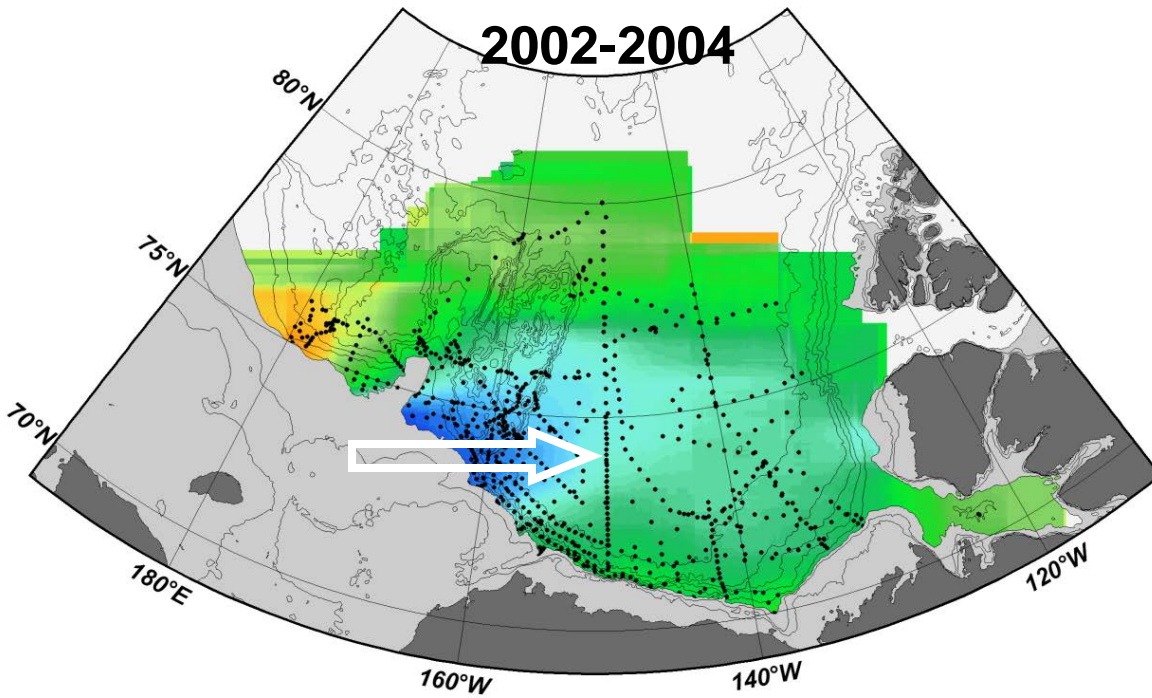
Climate System Observations made from 2004-2014 During a Decade of Extreme Change



Background: Figure of Tom Weingartner

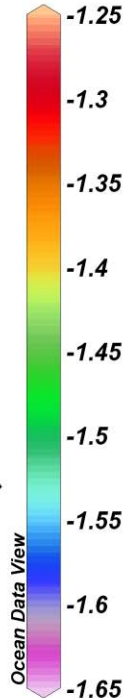
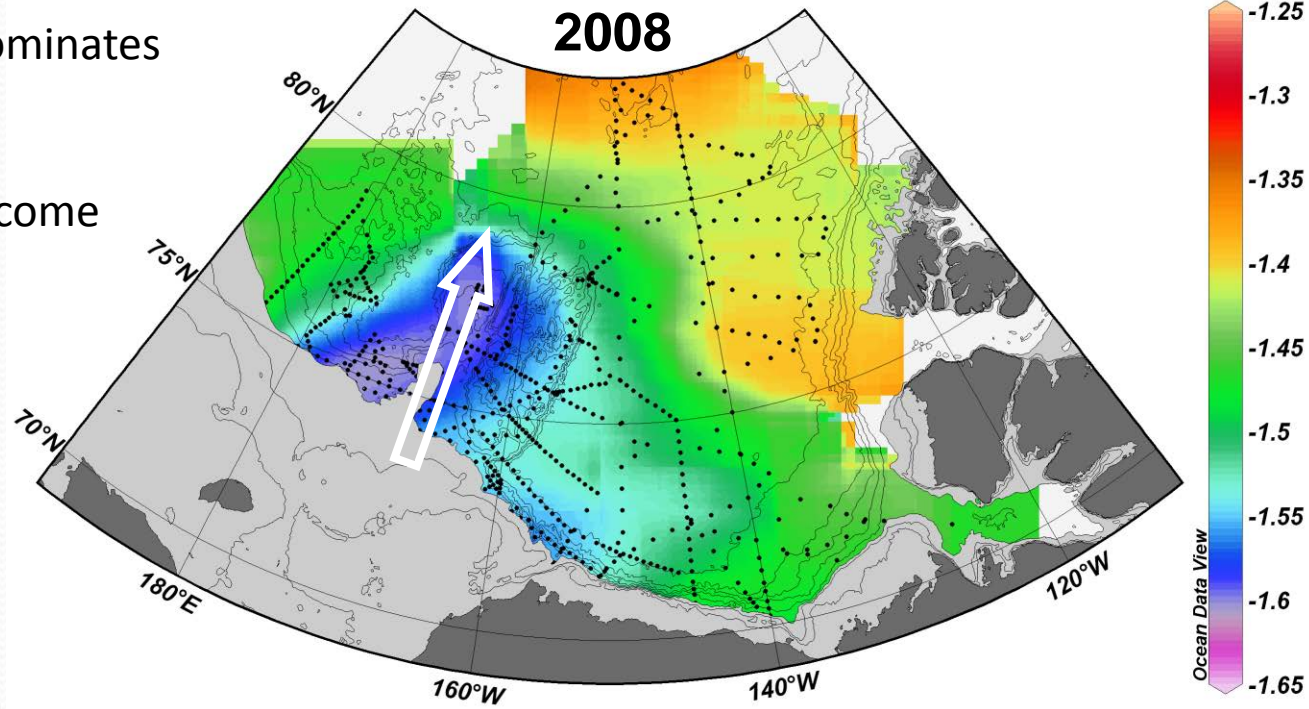
RUSALCA REPEAT HYDROGRAPHY 2004-2020



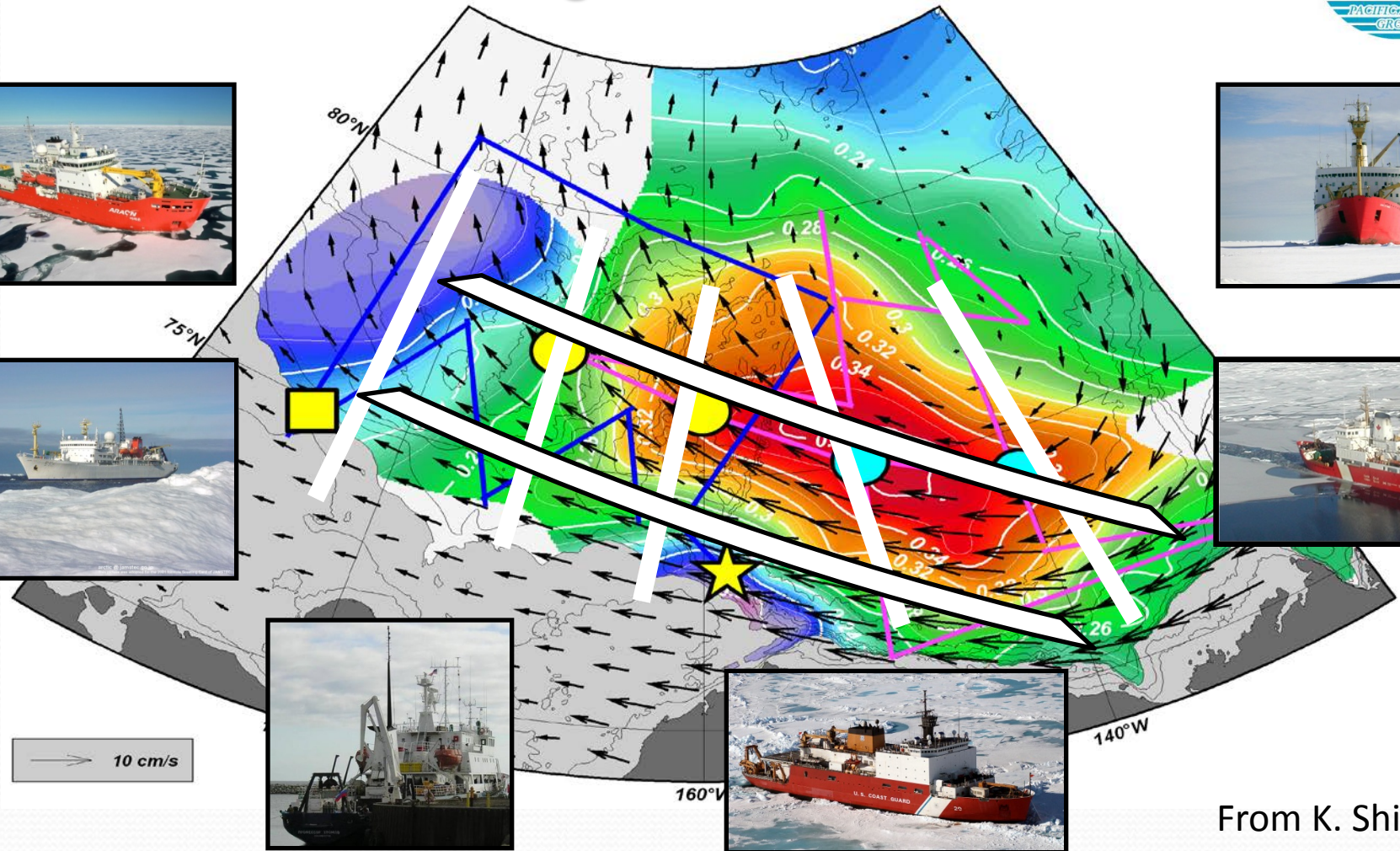


buoyancy driven currents dominates

Wind driven currents overcome buoyancy driven currents



Proposed international Pacific Arctic climate observing sections



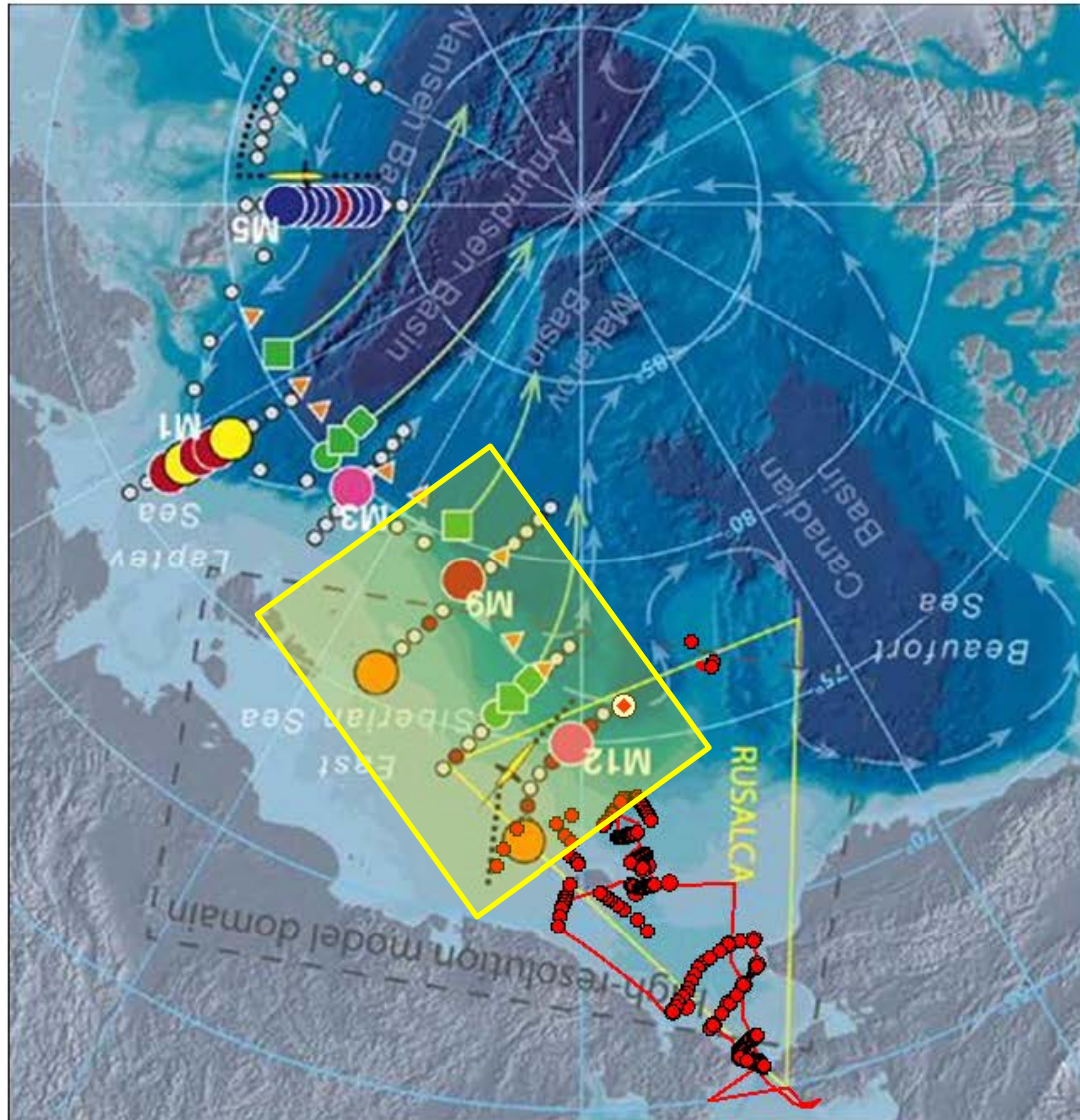
From K. Shimada

Background color: dynamic height at 100dbar relative to 800dbar from Mirai and Louis S. St-Laurent 2008 cruises (Oceanic Beaufort Gyre) Symbols: Mooring array in 2012-2013 (TUMSAT/KOPRI/NIPR & WHOI)

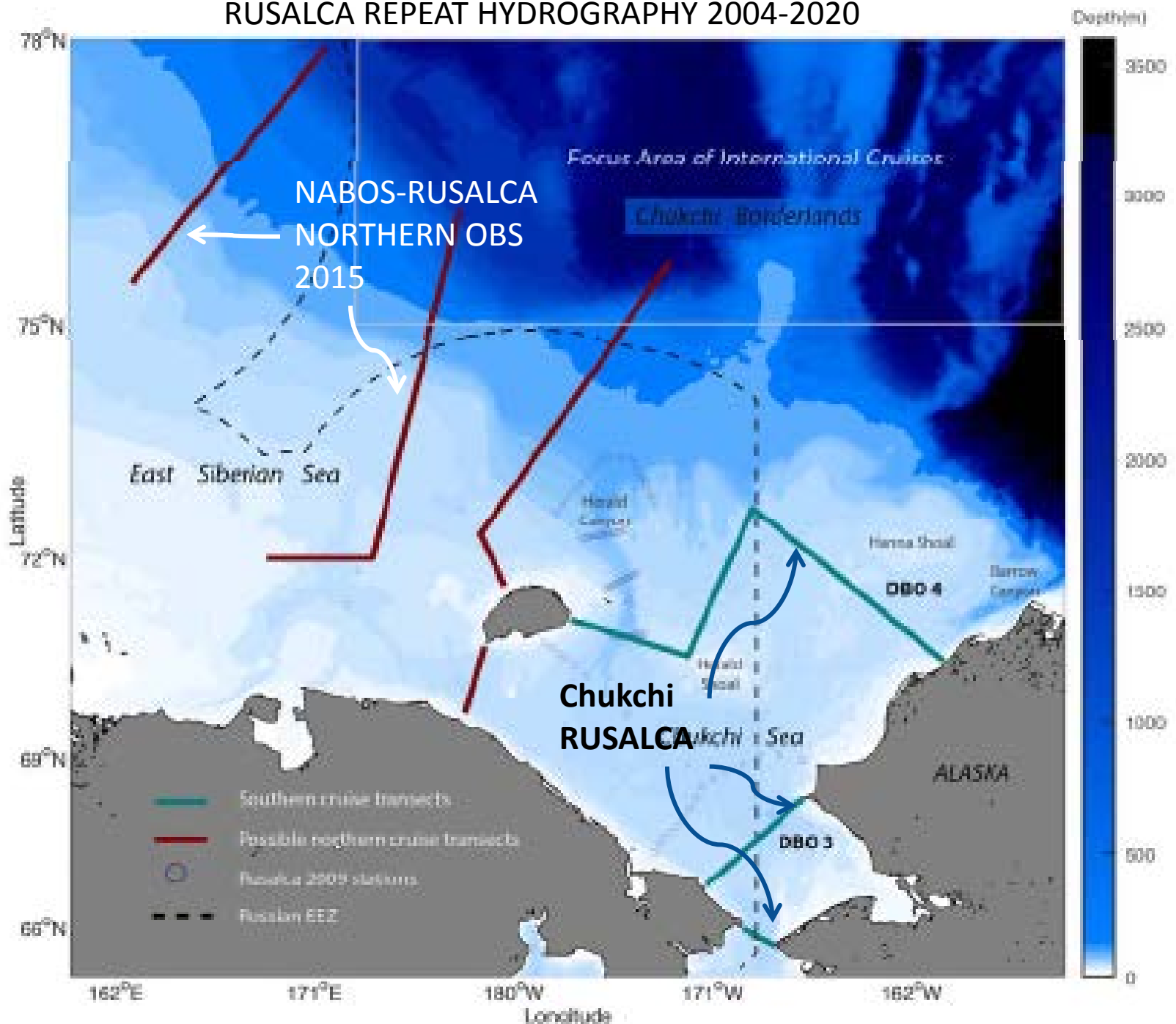


New W-E PAG Climate Observing Linkage in the Pacific Arctic Region

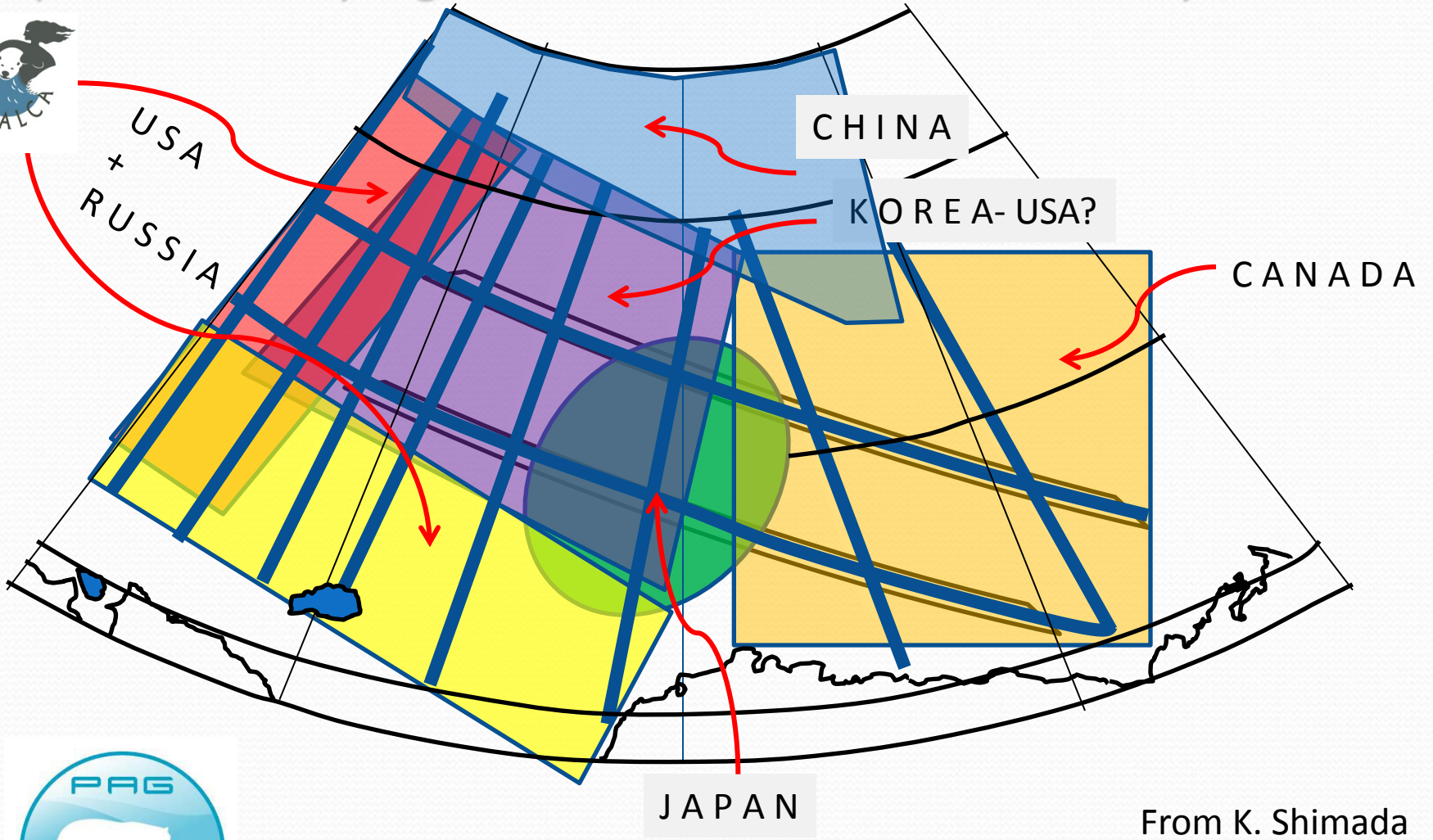
A merger of NABOS and RUSALCA



RUSALCA REPEAT HYDROGRAPHY 2004-2020



Possible international Pacific Arctic climate observing domain: possible survey regions : To Discuss 2015-2020 and beyond.



From K. Shimada

JOINT STATEMENT

Letter of Intent Cooperation of the Pacific Arctic Group Members on: Developing a Pacific Arctic Climate –Ecosystem Observatory

April 23, 2015
Toyama, Japan

The Pacific Arctic Group (PAG) is an informal group of organizations and individuals having a Pacific perspective on Arctic science. Originally organized under the International Arctic Science Committee (IASC), the PAG is now an independent affiliate of the IASC and has as its mission to serve as a Pacific Arctic regional partnership to plan, coordinate and collaborate on science activities of mutual interest. **The PAG has established five objectives:**

- To **identify gaps** in knowledge and priority research needs across the Pacific Arctic Region and seek means to implement programs and activities that address them.
- To **facilitate and coordinate science operations** among PAG member countries.
- To promote and **facilitate data accessibility** and integrated data bases for the region.
- To serve as a **forum for information exchange** on Pacific Arctic Region (PAR) science programs.
- To establish and maintain a direct **link between PAG and other relevant science organisations.**

In October, 2014, the Pacific Arctic Group fall meeting focused on a review of accomplishments during the previous summer and outlooks for the future research plans.

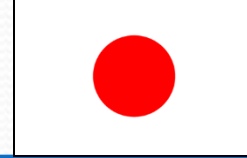
The goals are:

- To carry out **atmospheric, sea ice and upper ocean observations to determine the causes of rapid sea ice loss in the region and its impact on ecosystems and local and global climate.** This effort will also incorporate atmospheric observations to support the WMO's Polar Prediction Project (PPP).
- To study the **evolution, structure, and variability of Pacific Arctic upper ocean water masses, including heat transport of Atlantic Water and its interaction with northward flowing Pacific Water.**
- To carry out **repeat observations of the marine ecosystem, from lower to higher trophics,** documenting status and trends and identifying indicator species and their relationship to physical forcing and biogeochemical conditions.
- To carry out **time-series observations from long-term moorings** to reveal annual and inter-annual variability.
- To coordinate this work with the vessels of our respective countries from 2015-2020 and beyond, **to provide a unique suite of synoptically collected data made available for joint analysis and assessment** via the mechanisms already set up within the Pacific Arctic Group.

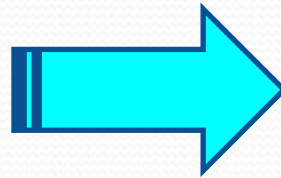
www.pag.arcticportal.org



Fisheries and Oceans Canada



PACIFIC ARCTIC DATA



**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.