

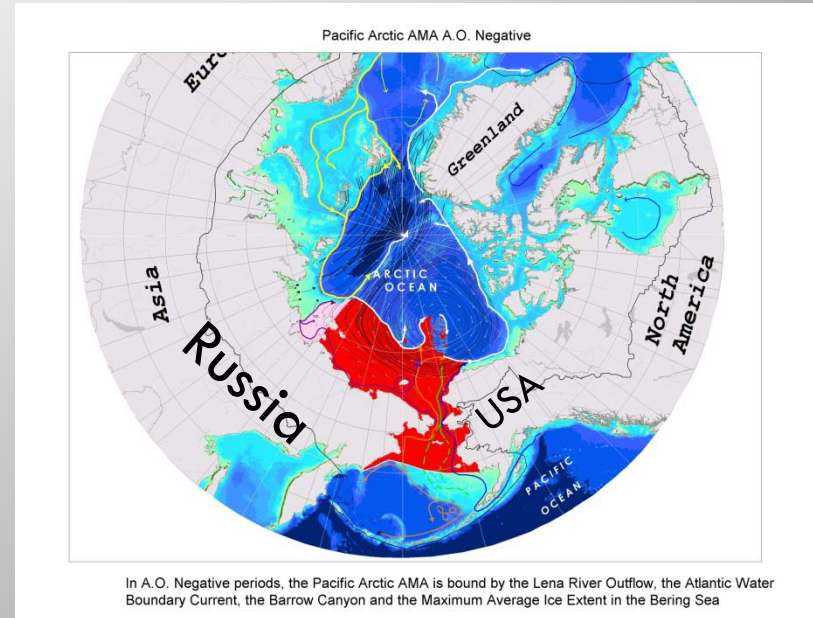
# NOAA'S 2012 ARCTIC Marine Activities

- Russian American Long-term Census of the Arctic (RUSALCA)
- Fairweather hydrographic mapping
- USCG Healy extended Continental Shelf operations (presented by L. Mayer)
- Distributed Biological Observatory (Laurier-Grebmeier)
- Chukchi Plateau sonar servicing (Laurier)
- BOEM-NOAA



# Russian American Long-term Census of the Arctic (RUSALCA)

1. Take observations Where Arctic sea ice reduction is a maximum in the Pacific Arctic
2. Monitor fresh water, heat, nutrient fluxes and transport pathways through the Pacific Gateway to the Arctic
3. Monitor ecosystem indicators of climate change in the Pacific Arctic
4. Model and forecast changes in ecosystems and Arctic wide physical systems that impact global climate and ecosystem stability
5. Improve Russian-U.S. Arctic science relations
6. Explore the unknown Arctic

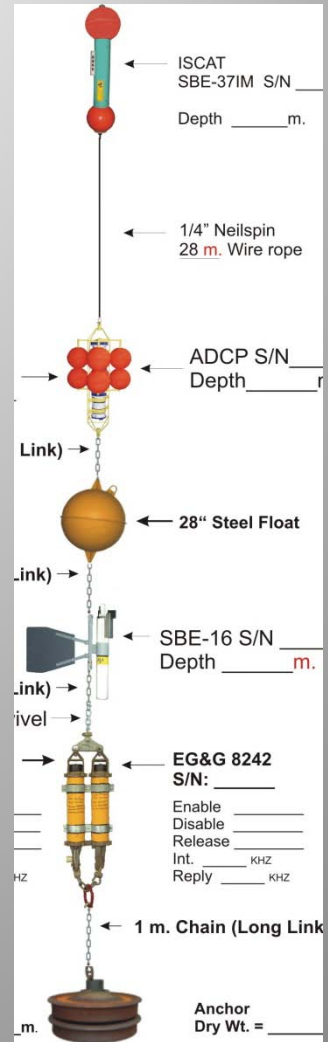
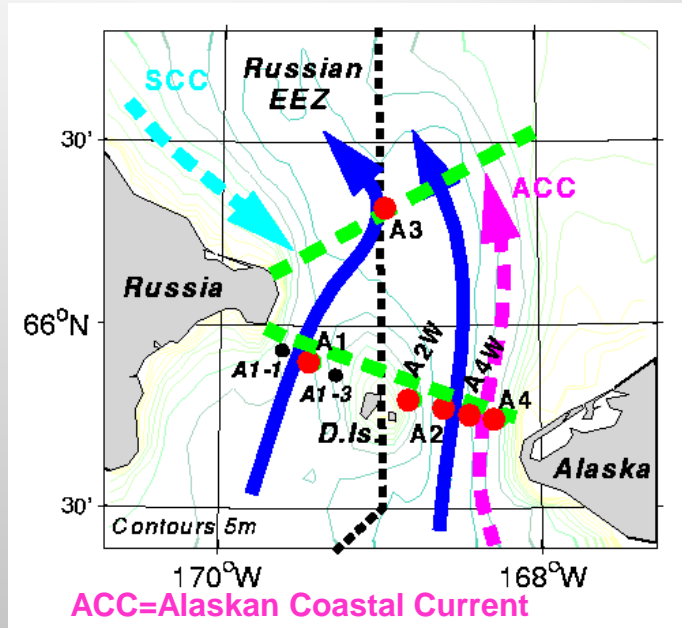
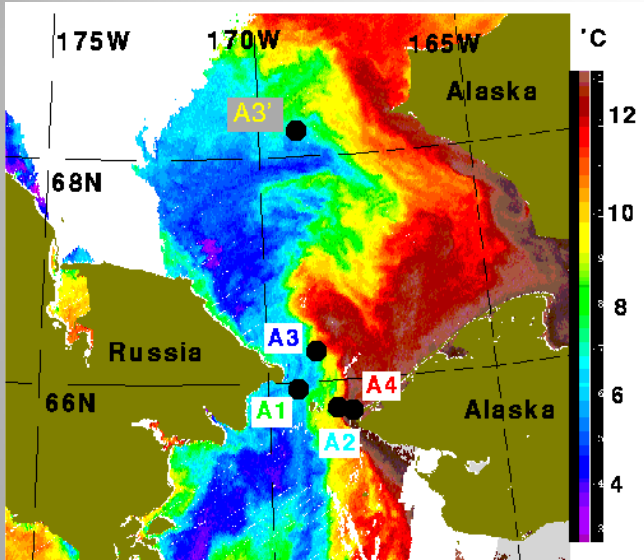


## The Pacific Arctic Region



Co-funding with NSF, RAS, FWS

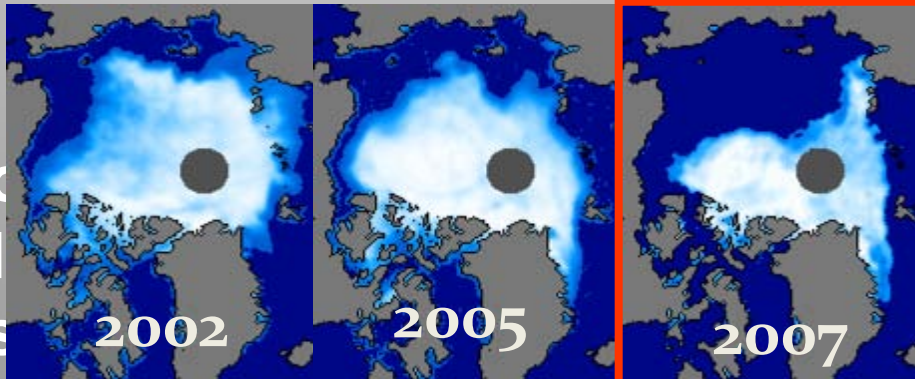
# Leg 1-Bering Strait Moorings



**Since 2007**  
*(International Polar Year)*  
**8 moorings with upper and lower sensors**  
**RUSSIAN AND USA SIDES LINKED**

With

- Nutrient sensors
- Whale Record
- pH and pCO<sub>2</sub> sensors



# BERING STRAIT MOORING RECOVERY

Anadyr



Kotzebue to Anadyr

Clearance in Provedenia

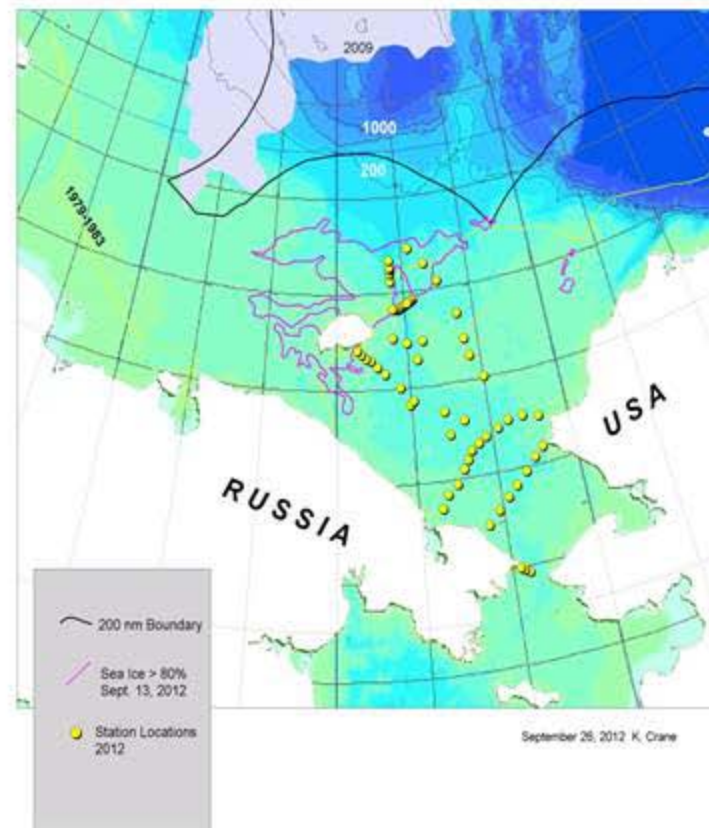


Two years of growth

# RUSALCA Leg 2 Stations



## 2012 RUSALCA Leg 2 Stations



Full permission was granted to carry out investigations in Russian Territorial waters

# 10 yr REVIEW of the RUSALCA Program

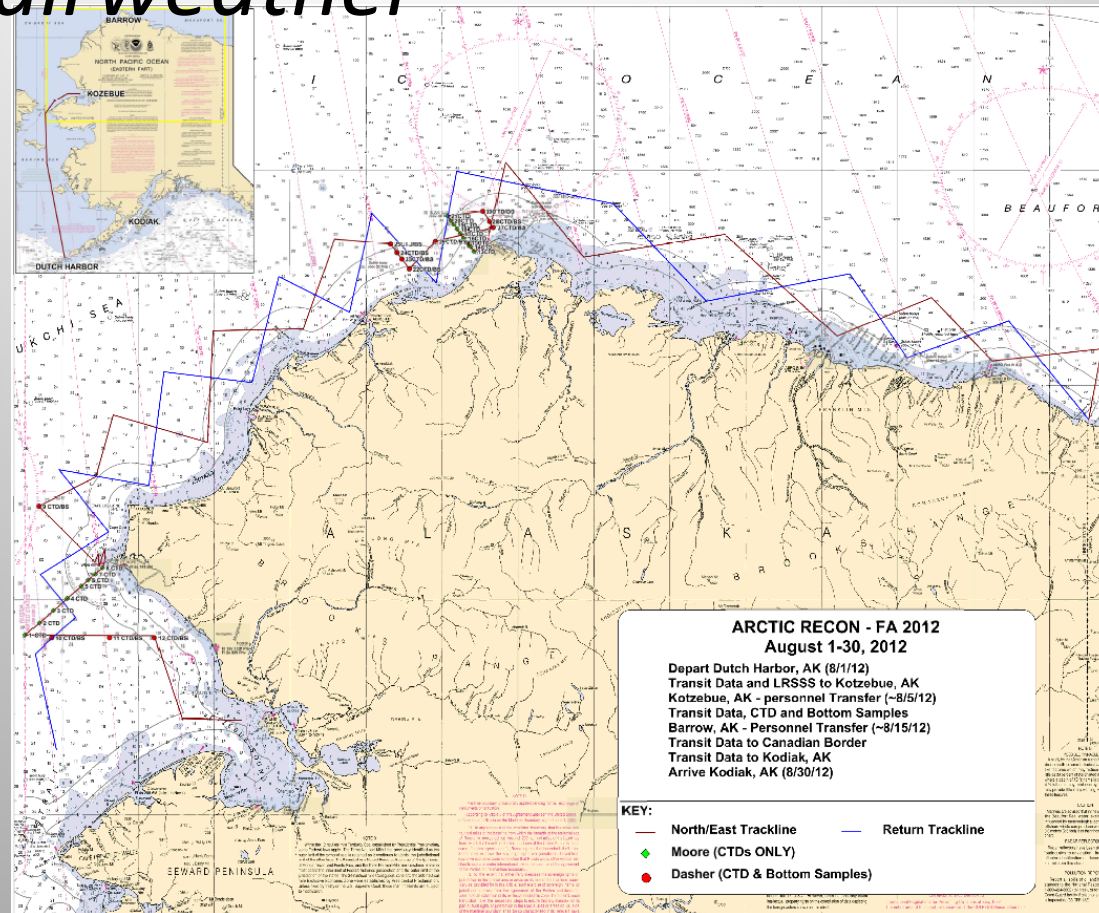
- ▣ 2013- program review
- ▣ Data analysis and synthesis for two years
- ▣ Potential Restructuring of the program science plan
- ▣ Question: Should we maintain the Bering Strait mooring array?  
Should NOAA only be responsible for part of the mooring array?
- ▣ How will we integrate NSF and ONR into the US operations performed by NOAA?
- ▣ RUSALCA Should continue to be an umbrella for joint US-Russian projects to work in the Pacific Arctic.
- ▣ Opportunities to have GEOTRACES (NSF funded) work under the umbrella of RUSALCA - to track changes in oceanographic transport pathways as a consequence of climate change in the Arctic - 2014 or 2015

# Arctic Hydrographic Reconnaissance Project

## NOAA Ship *Fairweather*

August 1 to 30, 2012

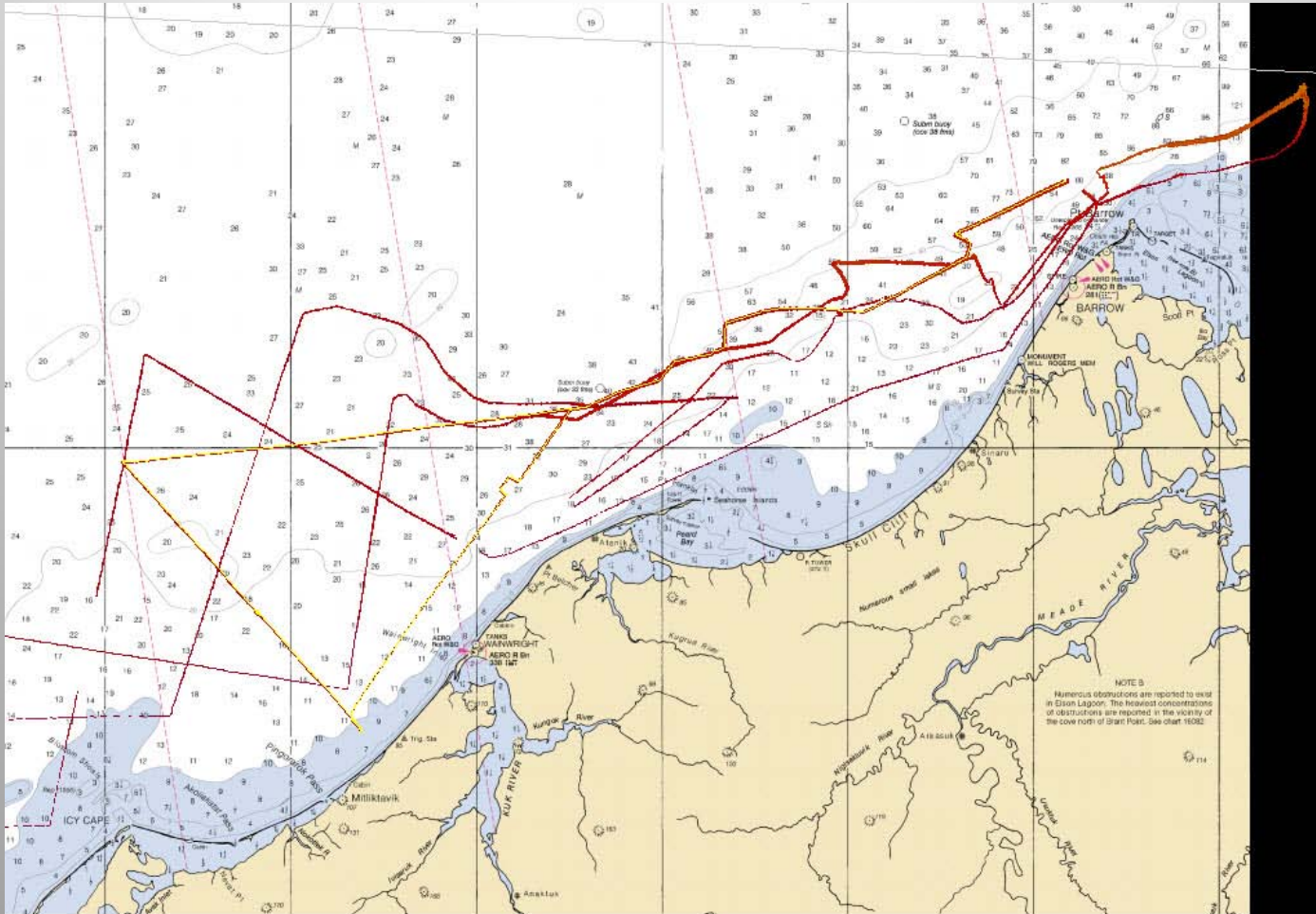
Commander James M.  
Crocker, NOAA



### Project Overview

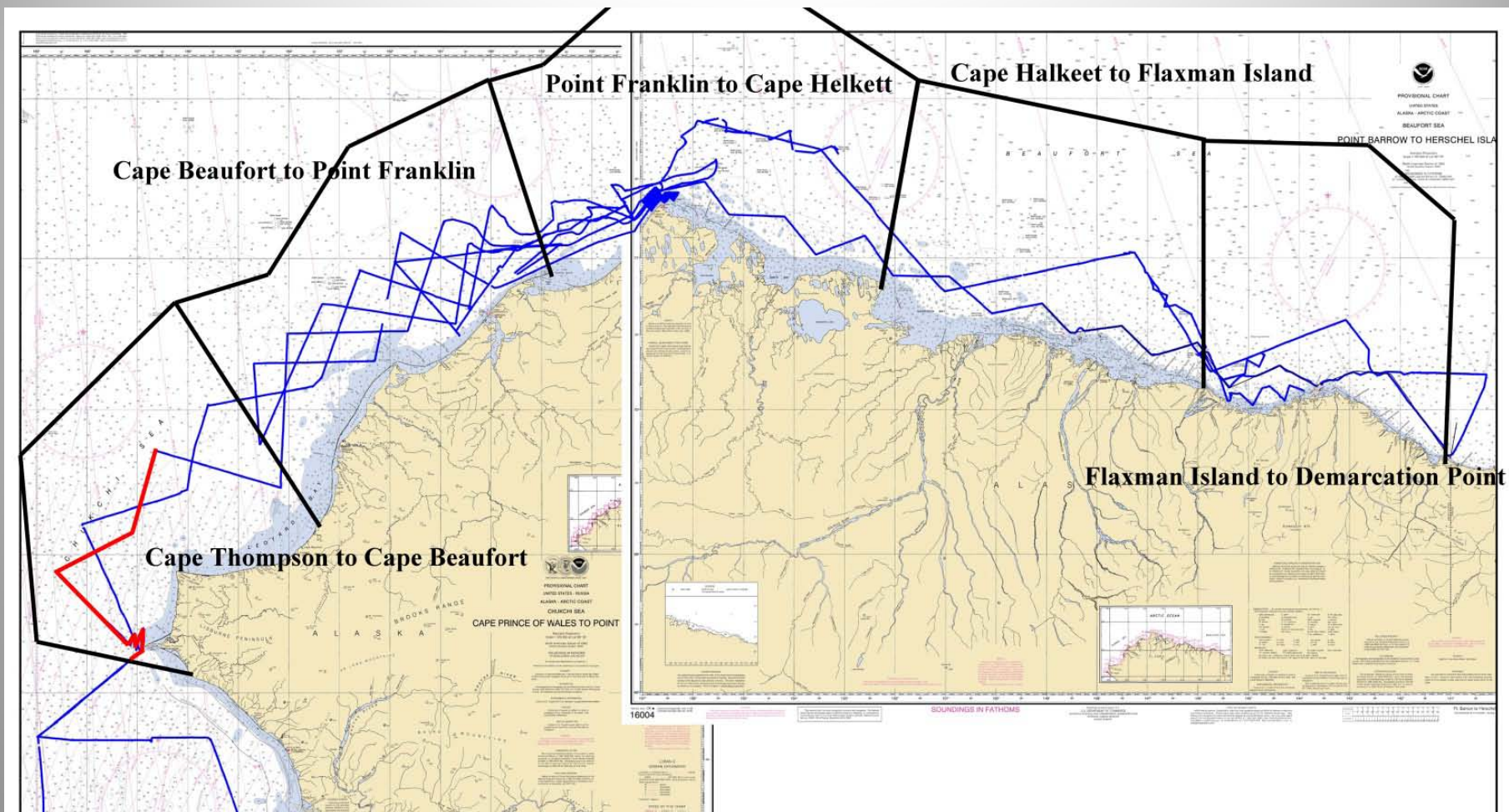
The purpose of this reconnaissance project was to acquire data during the *Fairweather's* transit from Dutch Harbor, Alaska to Demarcation Point, Alaska via the Bering Sea, Chukchi Sea, Beaufort Sea and back. The data acquired will be used to support safe navigation by identifying dangers to navigation and areas in need of updating. The data collected are also being used to validate previously collected data by other organizations.

In conjunction with the ship collecting transit data other institutes such as University of Alaska



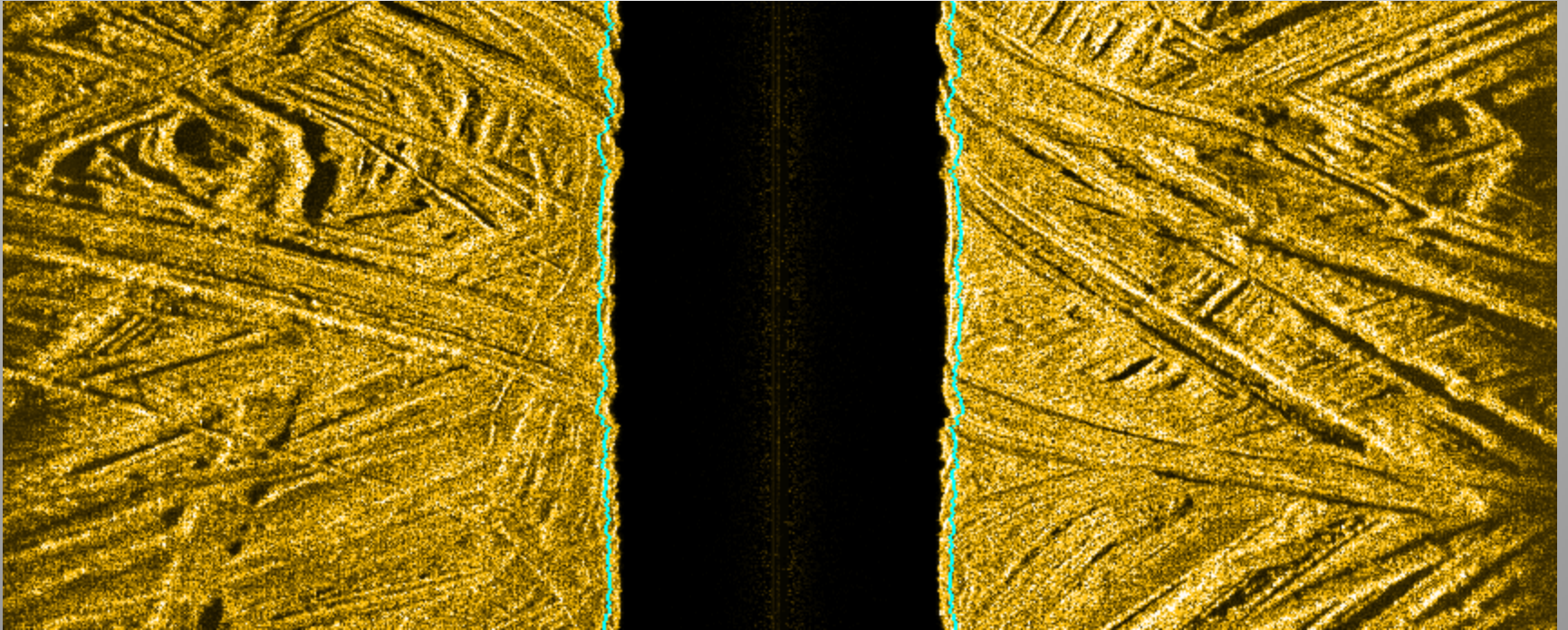
**Near Shore Sea Ice Forced Track Changes West of Barrow.**



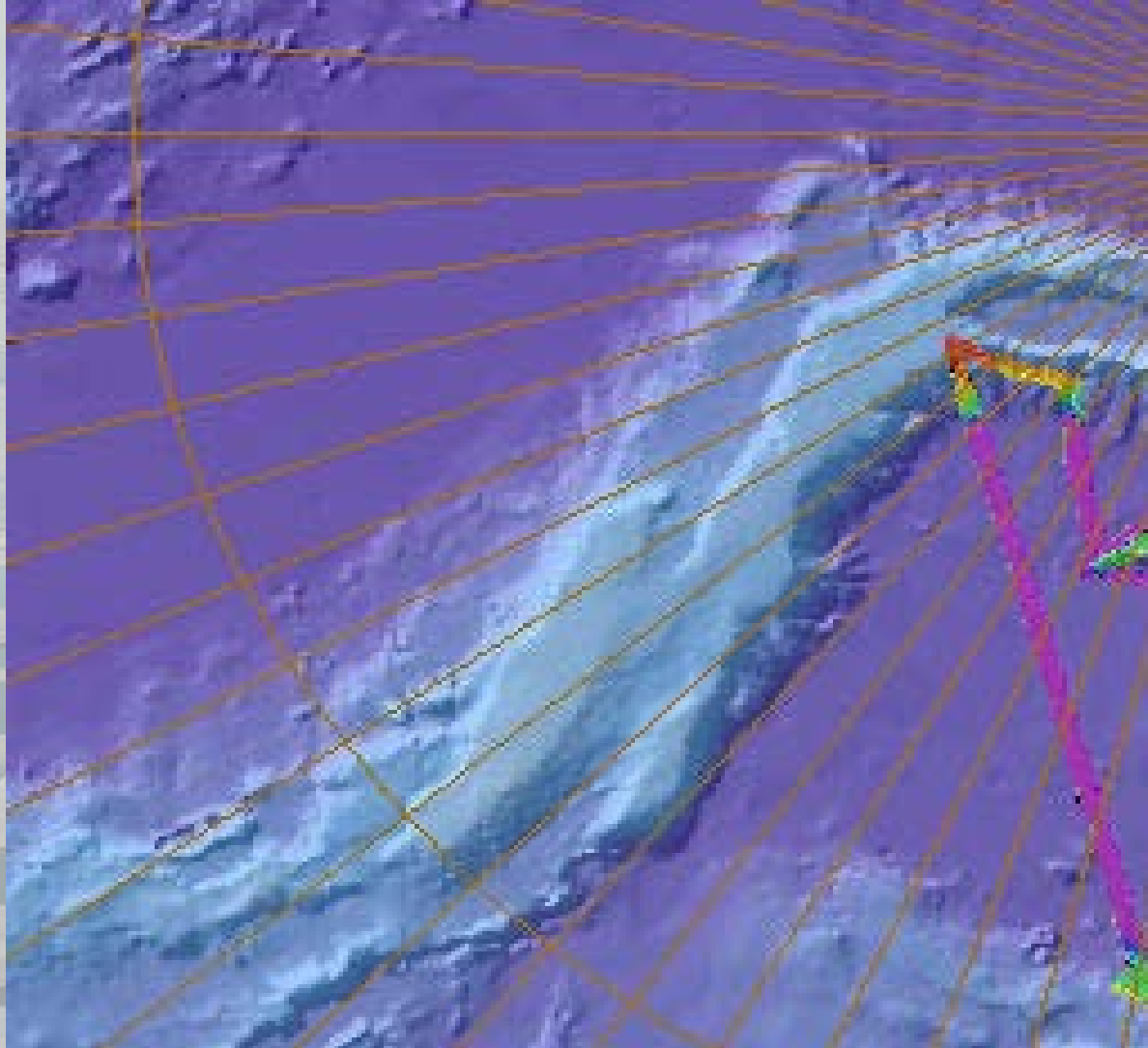


Sea ice coverage west of Barrow and in the Beaufort Sea was not favorable for the ship's planned operations requiring the ship to work along the ice edge making several attempts to reach assigned stations that were covered by heavy concentrations of sea ice. Due to the sea ice, the project plan was modified to make the best use of time while waiting for the ice conditions to change. The ship was able to complete all of the southern stations and only 50% of the station west of Barrow before the scientists departed on August 15th in Barrow.

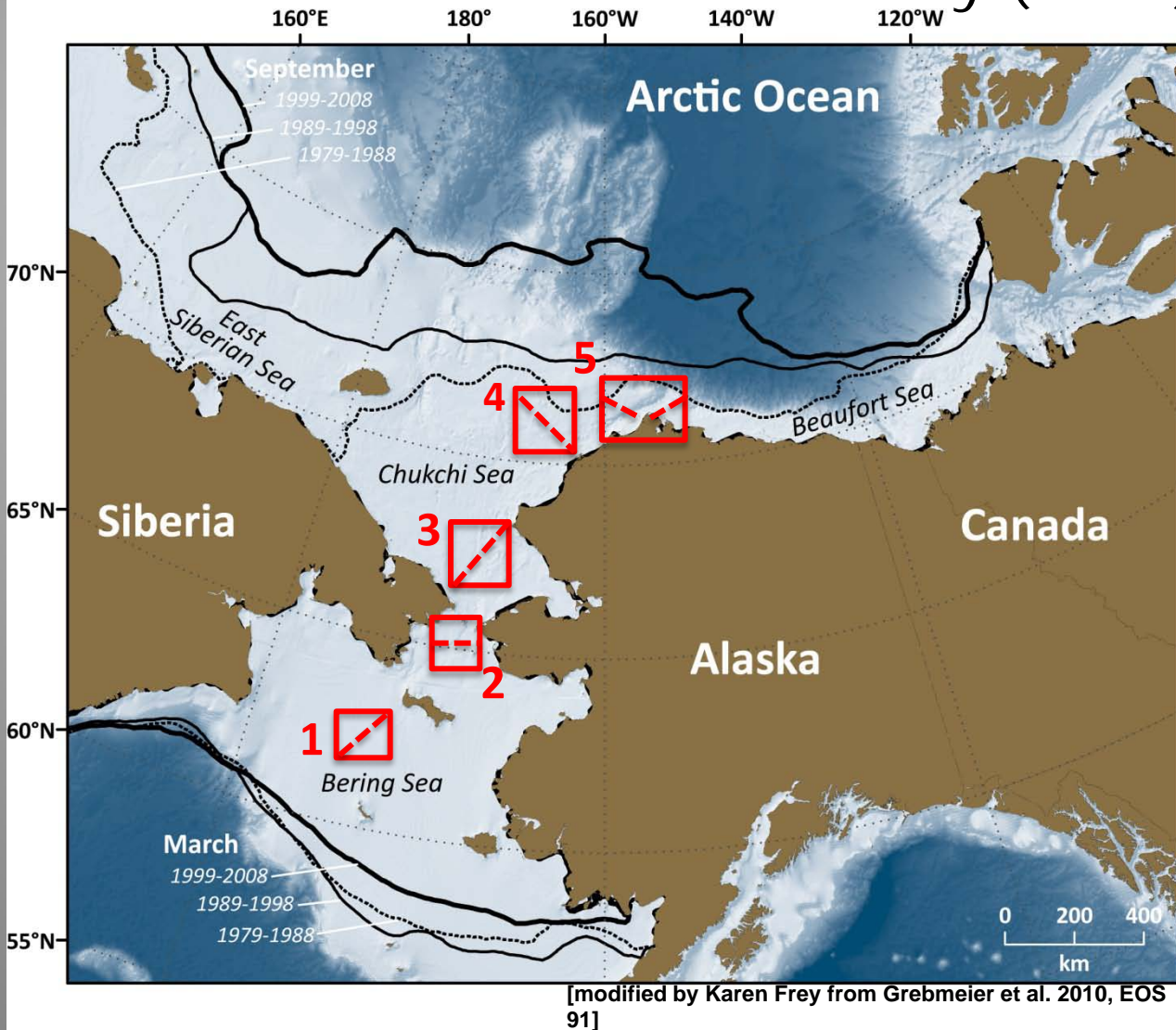
# Ice Gouging off of Barrow



# USCGC Healy: Arctic Extended Continental Shelf: L. Mayer



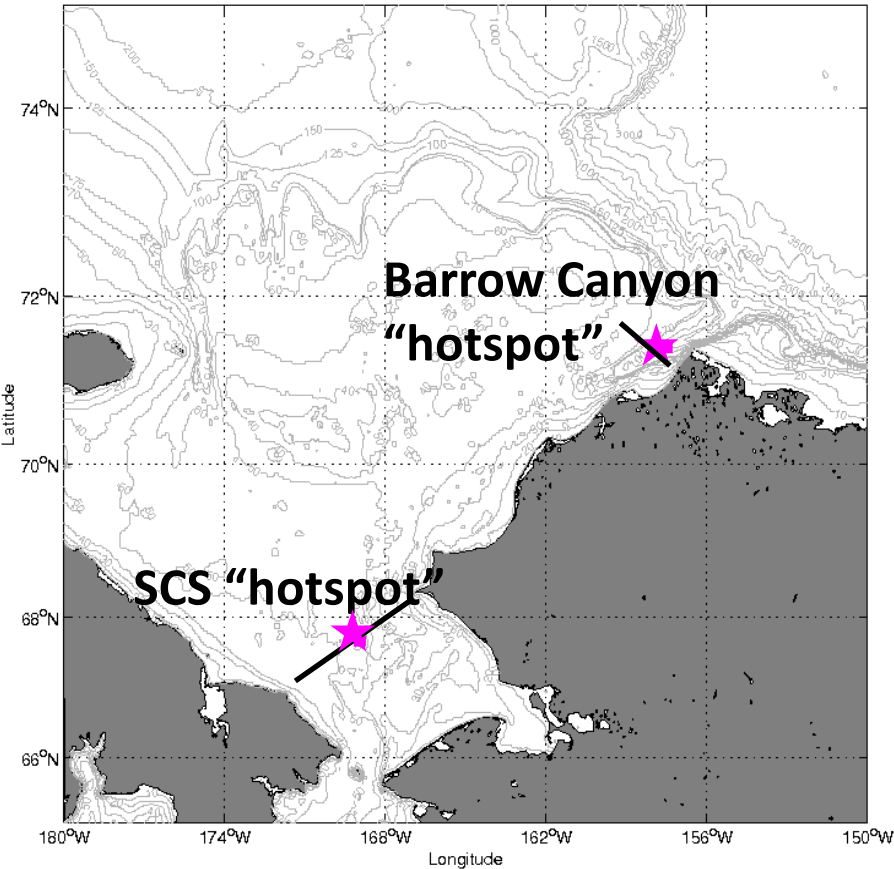
# Linking Physics to Biology: the Distributed Biological Observatory (DBO)



- DBO sites (red boxes) are regional “hotspot” transect lines and stations located along a latitudinal gradient
- DBO sites are considered to exhibit high productivity, biodiversity, and overall rates of change
- DBO sites will serve as a change detection array for the identification and consistent monitoring of biophysical responses
- Sites occupied by national and international entities with shared data plan



# DBO 2010 -2012 “Pilot Program”



Vessel	Country	PI
<i>Moana Wave, Healy</i>	USA	Grebmeier
<i>Healy</i>	USA	Arrigo
<i>Xuelong</i>	China	He
<i>Mirai</i>	Japan	Itoh (2010) Kikuchi (2012)
<i>Laurier</i>	Canada	Vagle
<i>Araon</i>	Korea	Chung
<i>Khromov</i>	Russia and USA	Woodgate
<i>Alaskan Enterprise</i>	USA	Napp
<i>Annika Marie</i>	USA	Ashjian

<http://www.arctic.noaa.gov/dbo/>

<http://pag.arcticportal.org>

# DBO Monitoring in the Future

- It is anticipated that interagency programs will support observations along the DBO transects.
- Outgrowth of IARPC implementation plans
- Planned activity under the Arctic Council's and IASC SAON working groups.
- Many international partners
- Contact: Jackie Grebmeier and Robert Pickart