

# **Distributed Biological Observatory (DBO) Workshop**

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

**Nov. 15-16, 2011**

**Institute of Ocean Sciences**

**Department of Fisheries and Oceans Canada**

**Sidney, BC**

Sponsored by the Pacific Arctic Group, the AOSB/Marine Working Group of IASC, and IOS/DFO

**Tuesday, Nov. 15**

**0830-0900**

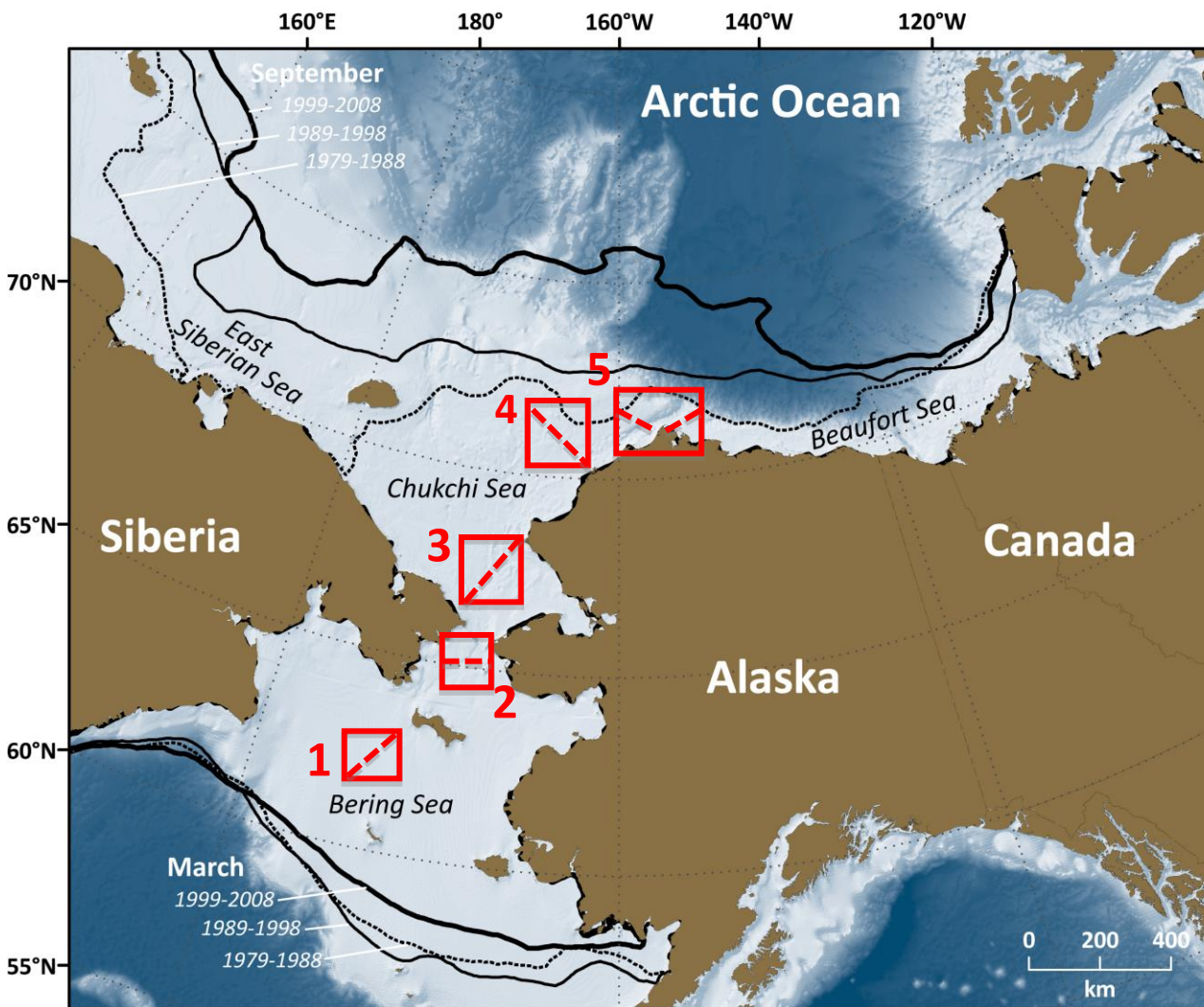
- **Welcome and Introductions** (*Jackie Grebmeier*)
  - Jackie Grebmeier, Chair DBO/PAG Science Steering Committee
  - Bill Williams, IOS/DFO
  - Robet Fudge, Director NCAARE (National Center of Arctic Aquatic Research Excellence); introduce Sally Wong (NCAARE)
  - Welcome on behalf John Calder and Kathy Crane; introduce Gillian Lichota (NOAA)
  - Sara Bowden, AOSB/MWG IASC
  
  - Introduction of participants and announcements
  - Brief DBO Overview: What and why a DBO?

**0900-1000**

- **Data analysis and integration: individual field results from the DBO 2010 and 2011 effort; presentations by DBO field participants and collaborators (10 min talks)**
  - Satellite derived trends across the DBO
    - “Satellite derived trends across the DBO” (*Karen Frey*)
    - “Inter-annual variation of primary productivity in the Bering and Chukchi Seas from satellites using an absorption-based model” (*Toru Hirawake*)
  - Seasonal variation of water masses
    - “Biogeochemical and physical oceanographic sampling along DBO lines from CCGS Sir Wilfrid Laurier 2010 & 2011” (*Svein Vagle*)
    - “Bering Strait - up to RUSALCA 2011” (*Rebecca Woodgate*)
    - “Physical and biogeochemical results: Pilot DBO” (*Jackie Grebmeier and Bob Pickart*)
  - Phytoplankton collections

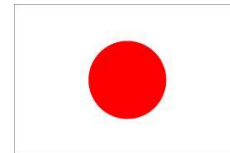
**1000-1030 Break**

# Distributed Biological Observatory (DBO) Sites



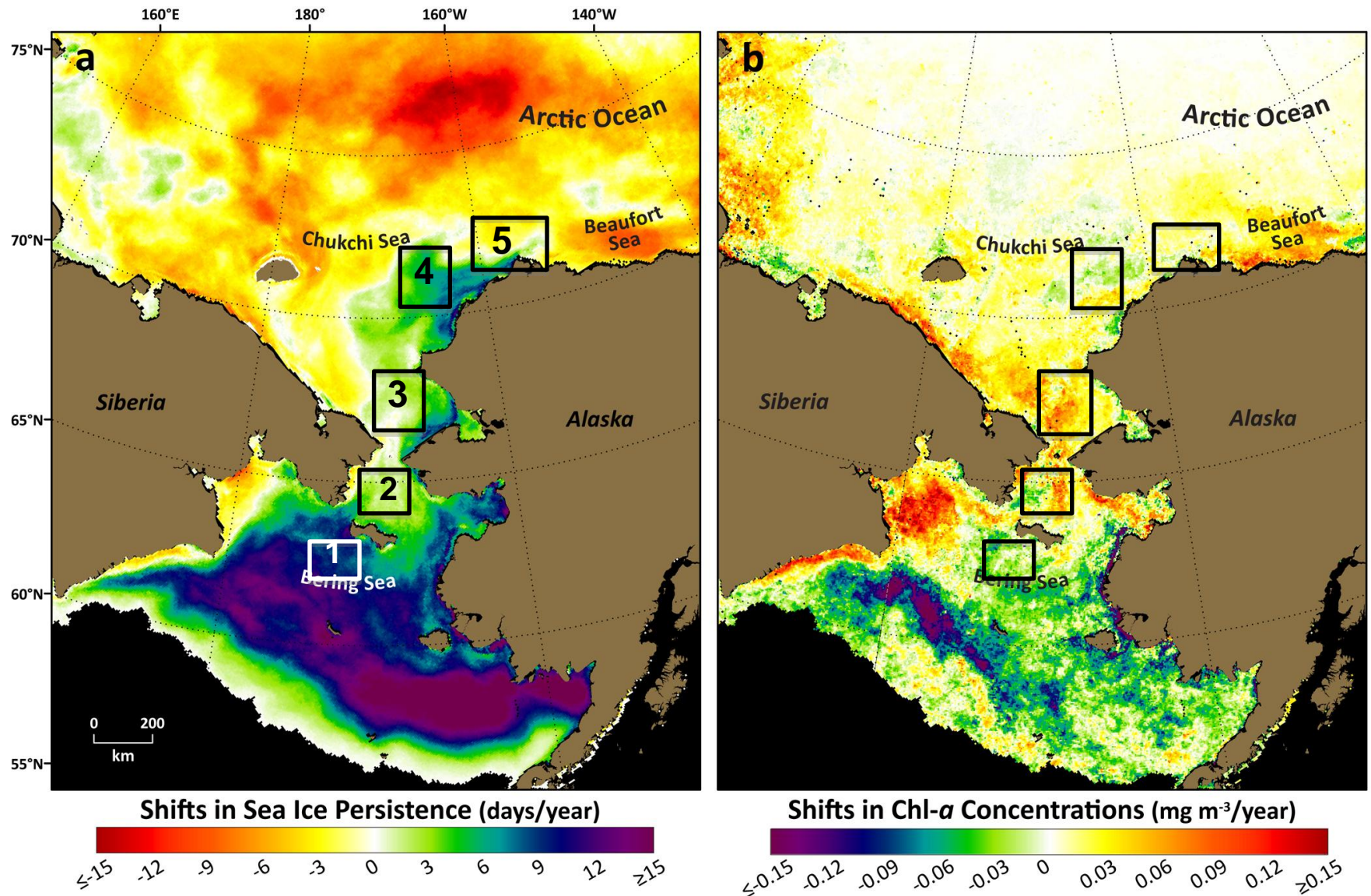
[modified by Karen Frey from Grebmeier et al. 2010, EOS 91]

- 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





# Shifts in sea ice persistence and Chl-a concentration from 2003-2009



Based on SSM/I Sea Ice Concentrations and the GlobColour (SeaWiFS, MODIS, MERIS) satellite time series, courtesy Karen Frey

# Distributed Biological Observatory: Linking Physics to Biology

Core standardized ship-based sampling:

- CTD
- Chlorophyll
- Nutrients
- Ice algae/Phytoplankton (size, biomass and composition)
- Zooplankton (size, biomass and composition)
- Benthos (size, biomass and composition)
- Seabird (standard transects, no additional shiptime)
- Marine mammal observations (no additional ship time)

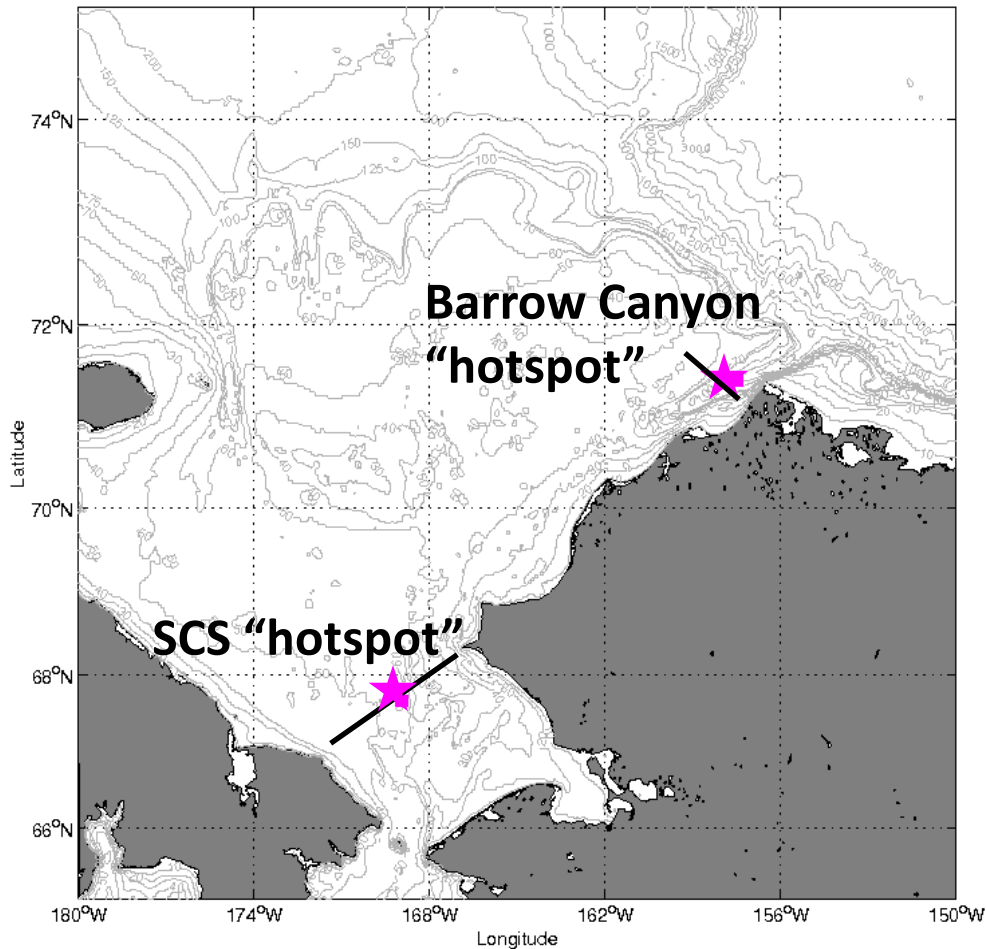
“Change detection array” – same measurements every year, process information in near real time <6 mos; detect regime shifts in rapid changes

Second tier ship-based sampling:

- Fishery acoustics (less effort than standardized bottom trawling)
- Bottom trawling (every 3-5 years)

DBO occupations by national and international science programs

# DBO 2010 and 2011 “Pilot” Season: International cruises to Pacific Arctic (\*\*both years)



Vessel	Country	PI
<i>Moana Wave</i>	USA	Grebmeier
<i>Healy (**)</i>	USA	Arrigo
<i>Xue Long</i>	China	He
<i>Mirai</i>	Japan	Itoh
<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
<i>Healy (**)</i>	USA	Pickart
<i>Westward Wind</i>	USA	Day



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## 1030-1200

- **Continued DBO data analysis and integration (10 min talks)**
  - Zooplankton collections
    - “Zooplankton collections within the DBO effort” (*John Nelson*)
    - “RUSALCA and industry zooplankton study efforts” (*Russ Hopcroft*)
  - Benthic collections
    - “Benthic time series collections within the DBO effort” (*Jackie Grebmeier*)
    - “Benthic species diversity and dynamics along the DBO sites” (*Monika Kedra*)
  - Marine mammal, seabird and fish observations
    - “Fish, seabird and marine mammal observations during the 2010-2011 pilot DBO” (*Sue Moore*)
  - Other data sets from DBO participants?
- Open discussion period

## 1200-1330 Lunch Break-**IOS** cafeteria

## 1330-1430

- DBO Plans for 2012 onwards
  - “New Japanese project on sea ice reduction/variability and its impact to Arctic marine ecosystem” (*Takashi Kikuchi/JAMSTEC*)
  - “Planned US and international DBO efforts” (*Jackie Grebmeier*)
  - Other country plans related to DBO?
- Open discussion period for collaborations and publication planning

## 1430-1500 Coffee Break



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## 1500-1545

- International data collection, use and archiving topics
  - “A-CADIS (Advanced-Cooperative Arctic Data and Information Service”) data archiving of DBO field data” (*Jim Moore*)
  - Open discussion national and international data use issues, need for data plan, common data portal
  - ACTION: Formation of DBO data working group

## 1545-1715

- **Program expansion, outreach and interfaces for pan-Arctic DBO (10 min talks)**
  - “Arctic Resilience Report/Arctic Council effort” (*Eddy Carmack*)
  - “Twenty year observation series from Norwegian and Greenland Seas, and Fram Strait” (*Monika Kedra*)
  - “Time series for an East Siberian Sea DBO?” (*Igor Semiletov*)
  - “DBO Extensions: Canada Basin (JOIS) and Cape Bathurst ‘hotspot’ and beyond” (*Bill Williams*)
  - “Hausgarten and Svalbard Observatory” (*Michael Klages*) and “Future DBO collaboration in the EusAsian Arctic” (*Marit Reigstad*) (*both presented by Jackie Grebmeier*)
  - “The DBO within the CBMP (Circumpolar Marine Biodiversity Monitoring Plan) and SAON (Sustaining Arctic Observing Network) (*John Calder and Kathy Crane, presented by Jackie Grebmeier*)
  - DBO as a NSF Research Coordination Network? (*Jackie Grebmeier*)
  - **Concluding remarks and end Day 1 DBO workshop**

**1900 Group dinner at Sabhai Thai restaurant in Sidney, BC (2493 Beacon Ave, 2 blocks on the main street from the meeting hotel) for DBO workshop participants; hosted by IASC AOSB/Marine Working Group**

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