

Distributed Biological Observatory (DBO)

Linking Physics & Biology in the Arctic

5th DBO Data Workshop

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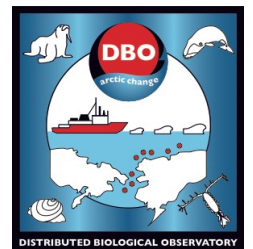
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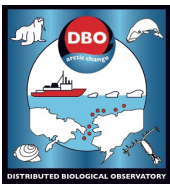
January 22, 2020

Seattle, Washington, USA

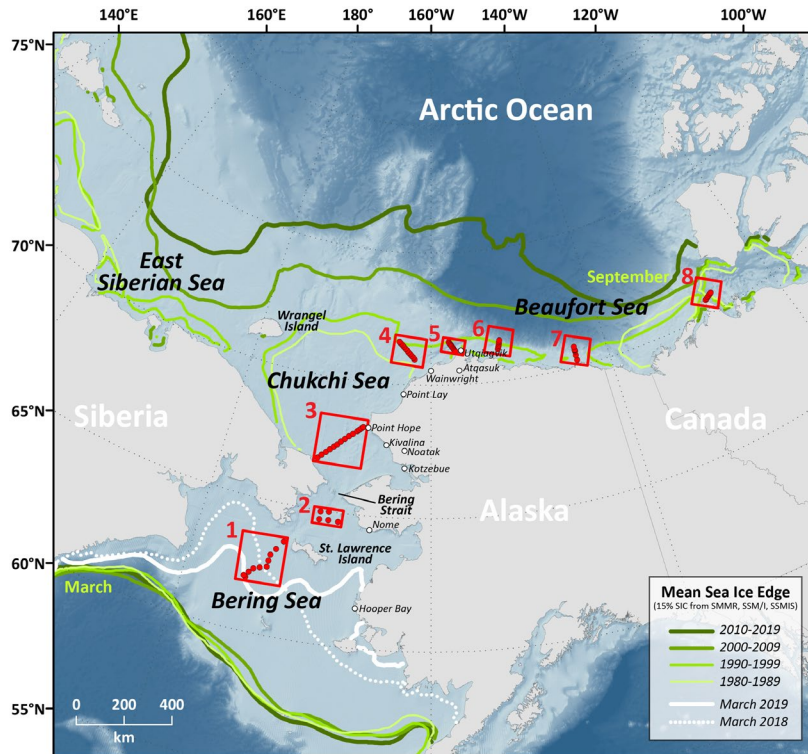


<http://www.arctic.noaa.gov/dbo/>





The Distributed Biological Observatory (DBO): Linking Physics to Biology



[updated from Grebmeier et al. 2019, DBO DSR Special Issue 162:1-7]

➤ Core Ship-based sampling:

- CTD and ADCP
- Chlorophyll, nutrients, carbon products
- Plankton (size, biomass and composition)
- Benthos (size, biomass and composition)
- Seabird and marine mammal surveys
- Fishery acoustics
- Bottom trawling (every 3-5 years)

➤ Autonomous sensor sampling:

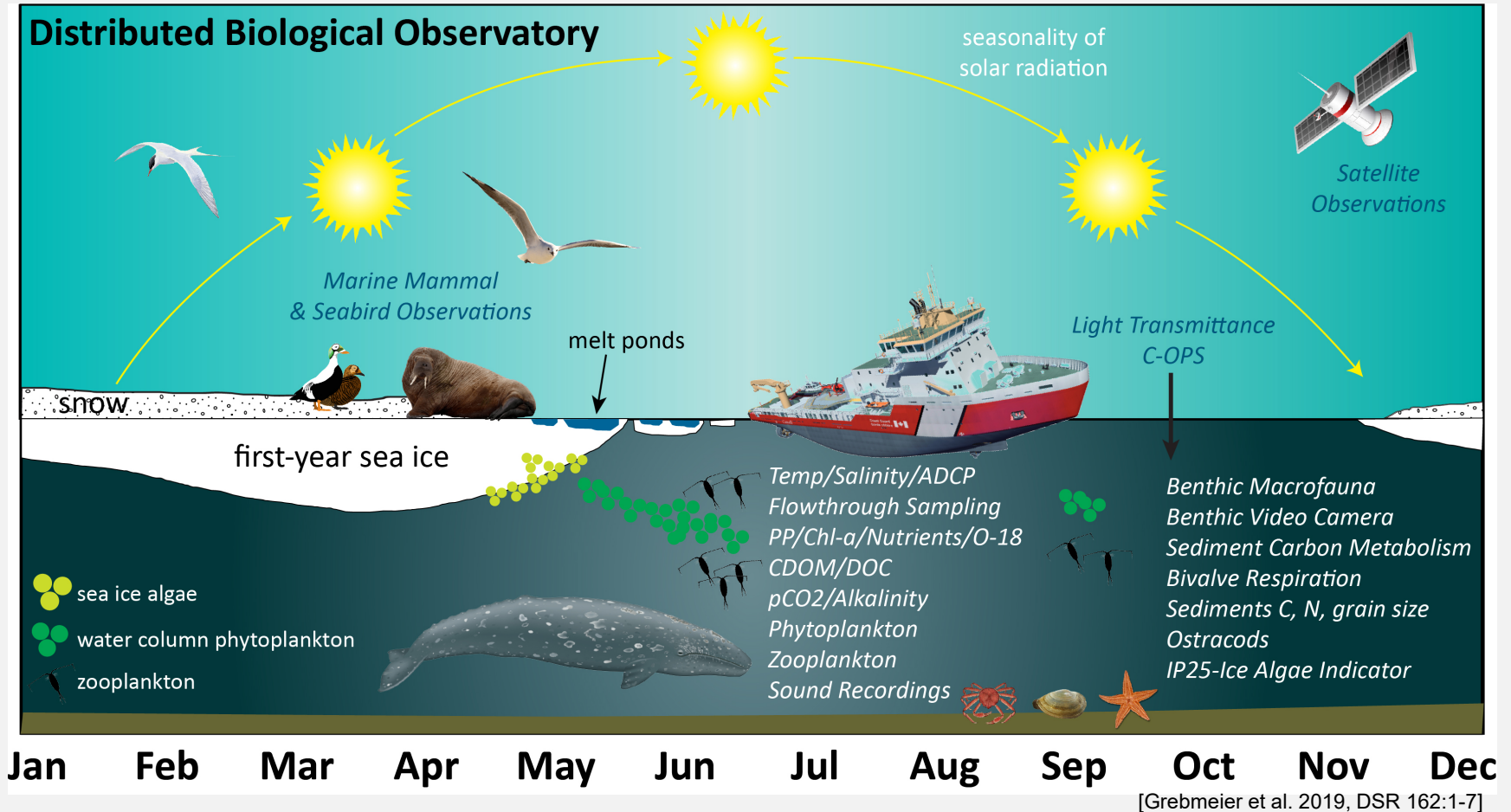
- Gliders, moorings, saildrone
- Satellite observations

➤ DBO lines also embedded in process cruises

- DBO sites (red boxes) are regional “hotspot” transect lines and stations, based on high productivity, biodiversity, and/or overall rates of change
- DBO serves as a change detection array for consistent monitoring of biophysical responses
- Sites occupied by national and international entities with shared data plan



Sampling Components of the Distributed Biological Observatory



Key: C-OPS=Compact-Optical Profiling System, Temp= Temperature, ADCP= Acoustic Doppler Current Profiler, C=Carbon, CDOM=Chromophoric Dissolved Organic Matter, Chl-a=Chlorophyll a, DOC=Dissolved Organic Carbon, IP-25=Ice proxy with 25 C atoms, N=Nitrogen, O-18=Oxygen-18/16 ratios, PP=Primary Production. All lower taxa analyses include composition, abundance and biomass data.

5th DBO Data Meeting Final Agenda
January 22-23, 2020, NOAA/PMEL, Seattle, WA, USA

January 22, 2020 – Wednesday (0800 – van transport from Silver Cloud Hotel to PMEL for check-in)

0900 Welcome and Logistics: Jessica Cross, PMEL/NOAA

0910 1. Meeting Objectives and Overview of the DBO (Jackie Grebmeier)

0920 2. Highlights of DBO 2010-2019 data time series (~5-10 min presentations max from each speaker; more composite time if a group talk (e.g. Upper trophics); (BOLD is discussion Lead)

Remote sensing, hydrography and moorings (Phyllis Stabeno)

- Optical, biogeochemical, and satellite remote sensing observations across the DBO (Karen Frey)**
- Satellite-detected fall phytoplankton blooms in the DBO regions (Hisatomo Waga)**
- Physical oceanography/moorings**
 - **DBO1 results from M8 (Phyllis Stabeno)**
 - **What's new in the Bering Strait (Rebecca Woodgate)**
 - **The Atlantic water boundary current from repeat DBO6 occupations (Robert Pickart)**
 - **DBO8-Cape Bathurst (Bill Williams)**
 - **Japanese activities for DBO: hydrography and moorings (Shigeto Nishino)**

10:30 Coffee Break

Day 1 Agenda (cont).

1100 Hydrography (Jessica Cross)

- Hydrography results from recent July DBO cruises aboard the CCGS Sir Wilfrid Laurier (Sarah Zimmerman)
- Oxygen-18 as a water mass tracer in the Pacific Arctic (Lee Cooper)
- Flow through system results from the CCGS Sir Wilfrid Laurier DBO cruises (John Nelson)

11:30 **Continue Highlight Presentations: Export Fluxes, Lower and Upper Trophic levels (Jackie Grebmeier)**

- Annual cycles of export fluxes of biogenic matter in the Bering and Chukchi Seas (Catherine Lalande)
- Lower trophics
 - Phytoplankton community structure and satellite-based sea ice melt pond observations across the Distributed Biological Observatory (DBO) (Luisa Young)
 - Harmful algal blooms in the Bering, Chukchi, and Beaufort Seas in 2018 and 2019 (Don Anderson/Robert Pickart)
 - Exploring the production, contributions and utilization of sea ice algae in DBO using IP25 and other lipid biomarkers (Chelsea Wegner)
 - Time series benthic biomass and composition in the DBO regions (Jackie Grebmeier)

1220 **Lunch (NOAA Cafeteria, no host)**

1330 **Continue Highlight Presentations**

Lower trophics (Jackie Grebmeier)

- Sediment oxygen consumption in the Pacific Arctic: Impacts of increased temperature and food supply on the benthic community and individual dominant organisms (Christina Goethel)
- The fate of cold-water carbonate: the scale of time averaging of molluscan aragonite on the productive Alaskan Arctic shelf (Caitlin Meadows)

1350 **Upper trophics (Catherine Berchok)**

- Catherine Berchok, Libby Logerwell, Janet Clark) et al. (Catherine Berchok)
- Seabirds in the DBO – 2019 Update (Kathy Kuletz by Jackie Grebmeier)

1440 **3. Connection to societal issues and coastal observing (Jackie Grebmeier)**

- Linking coupled human and natural systems approaches with the Distributed Biological Observatory (Kelly Kapsar)

1500 Coffee break

1530 **4. Status of efforts for pan-Arctic DBO (Atlantic, Beaufort Sea, Baffin Bay) (Jackie Grebmeier)**

- Atlantic DBO and connection to Nansen Legacy project (Bodil Bluhm UiT)
- Canadian Beaufort Sea Marine Ecosystem Assessment (CBS-MEA): ship-based and mooring trophic studies on DBO8 (Christie Morrison, Andrea Niemi, Andrew Majewski)
- NTRAIN (2019-2022)-Nutrient transports and living marine resources across the Inuit Nunangat updates (Jean-Éric Tremblay et al. by Jackie Grebmeier)

1630 Discussion & wrap up

1700 End day and van transport to hotel - **Group Dinner (no host, 7 pm, location Piatti Restaurant in University Village)**

January 23, 2020 – Thursday (0800-van transport from Silver Cloud Hotel to PMEL)

0900 Overview of Day 1 and plan for Day 2 (Jackie Grebmeier)

0915 5. Modeling efforts within the DBO (Lee Cooper)

- Modeling the biological response to changing sea ice and ocean conditions in the Beaufort and Chukchi Seas (Mike Steele)
- Modeling the changing physical and biological drivers for the northern Bering and Chukchi continental shelf (Zhixuan Zhang by Jackie Grebmeier)

0945 6. Data access and management: National and International Data Access (Jackie Grebmeier)

- DBO data parameters file (Jackie Grebmeier)
- Introduction to the NSF Arctic Data Center (Jeanette Clark)
- NOAA Data Submissions (Eugene Burger)
- Japanese Data Centers, DARWIN and ADS (Shigeto Nishino)

1030 7. Charge to Break-out groups (Jackie Grebmeier), then Coffee break

1100 Breakout groups to discuss DBO sampling and data protocols, coordination activities (physical oceanography, hydrography, lower and upper trophics, modeling, future activities) (Jackie Grebmeier)

1230 Lunch (NOAA Cafeteria, no host)

Day 2 Agenda (cont).

1345 Brief out from breakout groups and open discussion

- physical oceanography
- hydrography
- lower trophics
- upper trophics
- modeling

1430 8. Sustained DBO sampling (Jackie Grebmeier)

- DBO Data Users/Providers community can interface with the Arctic Observing Summit 2020 and SAON (Hajo Eicken)
- DBO as one of Pacific Arctic Group's core activities (Jackie Grebmeier)
- DBO within the US-IARPC Marine Ecosystem Collaborative Team and planning for next US 5 yr. IARPC plan (Jackie Grebmeier)

1500 Coffee break

1530 9. 2nd DBO DSR special issue discussions (Jackie Grebmeier)

1600: 10. Upcoming DBO discussions (Jackie Grebmeier)

- AGU/ASLO Ocean Sciences Meeting, San Diego, CA, USA-February 2020 (Jackie Grebmeier)
- ISAR-6, SAS session and side meeting, Tokyo, Japan-March 2020 (Shigeto Nishino)
- ASSW2020, Akureyri, Iceland, March 2020 (Jackie Grebmeier)

1615 Action Items & Timeline: future plans, open discussion (Jackie Grebmeier)

1700 End of workshop and van transport to hotel