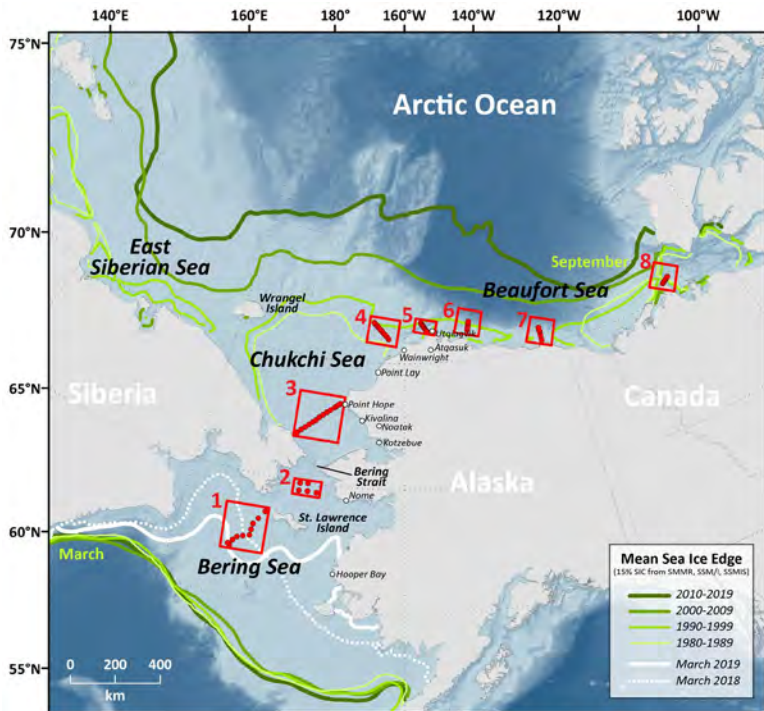


# The Distributed Biological Observatory-Northern Chukchi Integrated Study (DBO-NCIS)

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# Project Overview

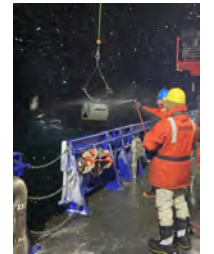


- DBO-NCIS program study of key environmental drivers (e.g. declining sea ice, warming seawater) on food web dynamics at time series sites in Pacific Arctic
- Collaboration with multiple programs, including the Arctic Marine Biodiversity Observing Network (AMBON), Chukchi Ecosystem Observatory (CEO) and the Ecosystems & Fisheries-Oceanography Coordinated Investigations (EcoFOCI) as part of observing network
- Coordination through international Pacific Arctic Group

Time series DBO stations at biological hotspots sampled seasonally and interannually as part of DBO national and international network

# Project Overview

- The DBO-NCIS project using oceanographic physical, chemical and biological field collections, mooring sensors, water samples, sediment traps, gliders and satellite input
- Predator-prey interactions are important for a healthy ecosystem as well as managing living resources
- The project facilitates collection of water column and benthic components for the Alaskan Harmful Algal Bloom network
- DBO is part of the Arctic Regional Programme being developed for endorsement in the UN Decade of Ocean Science for Sustainable Development

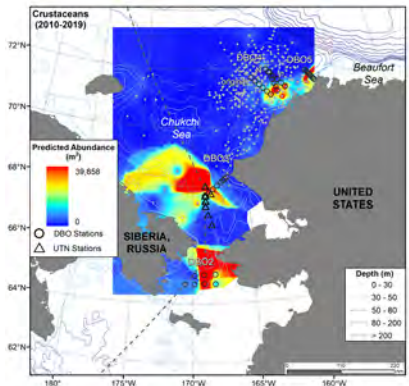
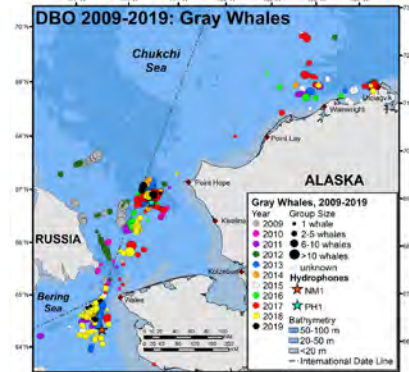


# GOMO Link to DBO-NCIS Project

- NOAA's Next Generation Strategic Plan: objectives to understand the marine Arctic ecosystem, support observing systems, and facilitate climate monitoring
- Office of Oceanic and Atmospheric Research (OAR) Strategy 2020-2026 supports studies of ecosystem health, food security and biodiversity, e.g., DBO has provided input to the Circumpolar Biodiversity Monitoring Program (CBMP) of the Arctic Council and its reports

# Achievement and Impacts: 2017-2021

- Tracking changes in physical drivers and trophic components in the marine system that can have regional to global impacts on climate, carbon cycling & food webs
- Addressing International Whaling Commission to understand commercial vessel impacts to baleen whales via ship strikes
- Developed national and international data sharing protocols
- Peer-reviewed journal articles, including DBO special issues
- Data provided for 2019 IPCC report and 2017-2021 Arctic Report Card articles on Arctic productivity
- Provided data to for synthesis and modeling activities relevant to decision makers and the public



[Moore et al. 2022 PLOS ONE, DBO issue]



# Future plans and opportunities

- *Next steps and future plans (next 5 years)*
  - Continued DBO-EcoFOCI annually coordinated studies for field sampling
  - Support inclusion of biochemical sensors on moorings in DBO sites, along with autonomous glider and Saildrone use, and satellite products
  - Synthesis activities and modeling activities to evaluate climate warming and associated impacts on ecosystem services
  
- *Advancing the ocean observing enterprise*
  - Data from seasonal and interannual time series observations through coordinated sampling programs for tracking ecosystem change
  - Currently the Pacific DBO is expanding to a pan-Arctic network via international development of Davis Strait and Atlantic sector DBOs

# Data access & Products

- Arctic Research Program website:  
<https://globalocean.noaa.gov/Research/Arctic-Research-Program>
- UMCES DBO project website: <https://dbo.cbl.umces.edu>
- Data archived at the National Centers for Environmental Information (NCEI), Arctic Data Center (ADC, with designated DBO data portal), NASA DBO data portal, Alaska Ocean Observing System AMBON data portal, North Pacific Seabird data portal & other international data portals
- Publications listed on UMCES DBO webportal
- Data used in national and international science planning activities, science presentations, and coastal community meetings