



Update and Future Plans

Arctic Icebreaker Coordinating Committee | January 2020

Matthew Baker | NPRB Science Director

Arctic IERP Background

- Funding partners:
NPRB, Bureau of Ocean Energy Management, North Slope Borough/Shell Baseline Studies Program, Office of Naval Research Marine Mammals and Biology Program
- In-kind support:
NOAA, University of Alaska Fairbanks, National Science Foundation, U.S. Fish & Wildlife Service
- \$18.6 million investment 2016-2021





How will reductions in Arctic sea ice and the associated changes in the physical environment influence the flow of energy through the ecosystem in the Chukchi Sea?

Arctic IERP

Arctic Shelf Growth, Advection, Respiration and Deposition (ASGARD) Rate Measurements

Sikuliaq in northern Bering and southern Chukchi Seas in June 2017 & 2018

Rate process measurements, physical, chemical, biological oceanography

10 process stations, experiments on plankton and sediment growth and respiration incubations

75 survey stations, CTD, phytoplankton, zooplankton, bongo, midwater, trawl

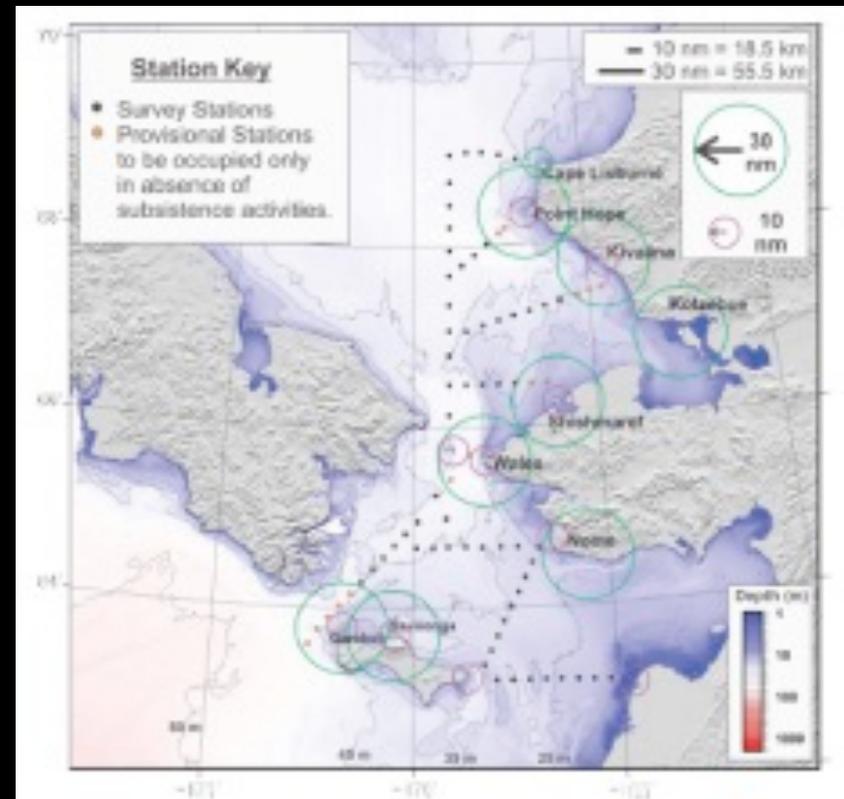


Figure 1: Map showing proposed ship stations and mooring locations of the Arctic Shelf Growth, Advection, Respiration and Deposition (ASGARD) measurements.

Arctic IERP

Arctic Shelf Growth, Advection, Respiration and Deposition (ASGARD) Rate Measurements

Moorings and underwater instrumentation

- marine mammal underwater calls, ship noises, and other sounds
- ocean temperature, salinity, and nutrient concentrations;
- amount and composition of water in flow
- amount of nutrients and algae in the water column
- deposition
- winds



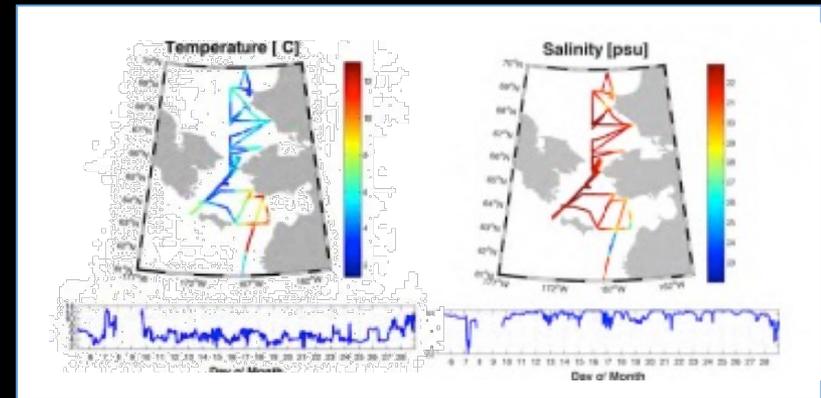
Arctic IERP

Arctic Shelf Growth, Advection, Respiration and Deposition (ASGARD) Rate Measurements

Surface oceanographic measurements

Hydrographic transects

Marine bird and mammal transects



Arctic IERP

Integrated Ecosystem Survey (Arctic IES)

- NOAA cruises in the Chukchi Sea, Aug-Oct 2017 & 2019
quantify physical and chemical environment; water mass, heat, nutrients; phytoplankton communities and growth rates; composition, abundance, biomass, and energy content of zooplankton and benthic, pelagic, and surface fishes, and the composition and relative abundance of marine birds/mammals



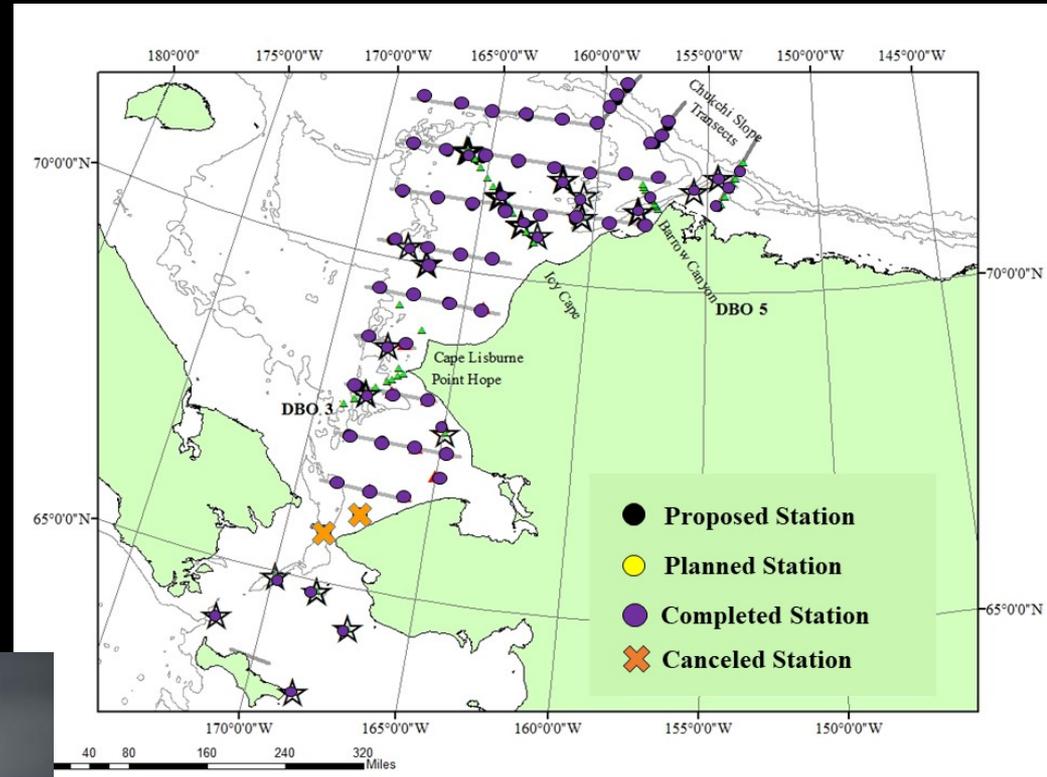
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Integrated Ecosystem Survey (Arctic IES)



Arctic IERP

Integrated Ecosystem Survey (Arctic IES)



Arctic IERP

Integrated Ecosystem Survey (Arctic IES)



Arctic IERP

Moorings and underwater recorders for year-round data collection

- Acoustic recorders on moorings in Bering Strait and southern Chukchi Sea
- Community observers onboard
- Russian scientists onboard



Photo: M. Baker



Photo: B Smith

Coastal Communities Team

Social science study on Chukchi Coastal Communities' Understanding of and Responses to Environmental Change

Henry Huntington, Huntington Consulting

Julie Raymond-Yakoubian, Kawerak



Community representatives:

- Northwest Arctic Borough
- North Slope Borough
- Savoonga
- Little Diomedede
- Buckland
- Kotzebue
- Kivalina
- Point Hope
- Point Lay
- Wainwright



Communication

- Hub meetings prior to operations
- Marine radio updates every 6 hours
- Daily email reports from vessels
- Social media
- Reports at stakeholder meetings before/after operations
- Cruise report distribution

Communication

Annual/semi-annual presentations to:

- Arctic Waterways Safety Committee
- Alaska Eskimo Whaling Commission
- Indigenous People's Council on Marine Mammals



Future IERP in the Northern Bering Sea



October 7, 2019

NPRB Increases Funds for Arctic IERP Synthesis, Commits to Future IERP, and Seeks Funding Partners

The North Pacific Research Board decided at its Fall 2019 meeting to increase the funding allocated to the synthesis phase of the Arctic Integrated Ecosystem Research Program (IERP) from \$1 M to \$1.4 M. At the same time, it broadened the intended scope of the synthesis to include a pre-assessment phase for a new IERP that would continue integrated work in the Bering and Chukchi centered in, but not limited to, the Northern Bering Sea. The Board's decision stated:

"The Board wishes to augment by \$400,000 the \$1,000,000 already set aside for the Arctic IERP synthesis to not only leverage the IERP's data and insights for new analyses in the Arctic, but also serve as a pre-assessment phase for a new IERP that would continue integrated work in the Bering and Chukchi centered in the Northern Bering Sea. Items of interest include how shifts in environmental conditions and processes may influence species of commercial, ecological and subsistence importance, and implications for state and federal fisheries management and communities that depend on these resources. These dedicated funds, and this express commitment by the NPRB Board to fund a future IERP, will be used by staff to leverage additional financial and other support from potential partners."

Future IERP in the Northern Bering Sea



Investment \$1.4 M

Synthesis

- leverage data and insights for new analyses in the Arctic
- develop new collaborations with existing data

Assessment

- develop framework to inform new IERP (NBS)
- continue integrated work in the Bering and Chukchi
- areas of interest include:
 - how shifts in environmental conditions and processes influence species of commercial, ecological and subsistence importance
 - implications for state and federal fisheries management
 - implications for coastal communities
- express commitment by NPRB to fund a future IERP
- interest in partnerships, investment, support from partners

Timeline for future activities

- Arctic IERP synthesis 2022-2024
- New IERP kickoff 2025
- Coordinated field campaigns tentatively 2026-2028

Contact Information

- Matthew Baker, NPRB Science Director
Matthew.Baker@NPRB.org, 907-644-6713
- Danielle Dickson, NPRB Senior Program Manager
Danielle.Dickson@NPRB.org, 907-644-6716