

Freshwater, Nutrients, and Sea Ice: A Physical Basis for Controlling Productivity on the Central Bering Shelf

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Program focus:

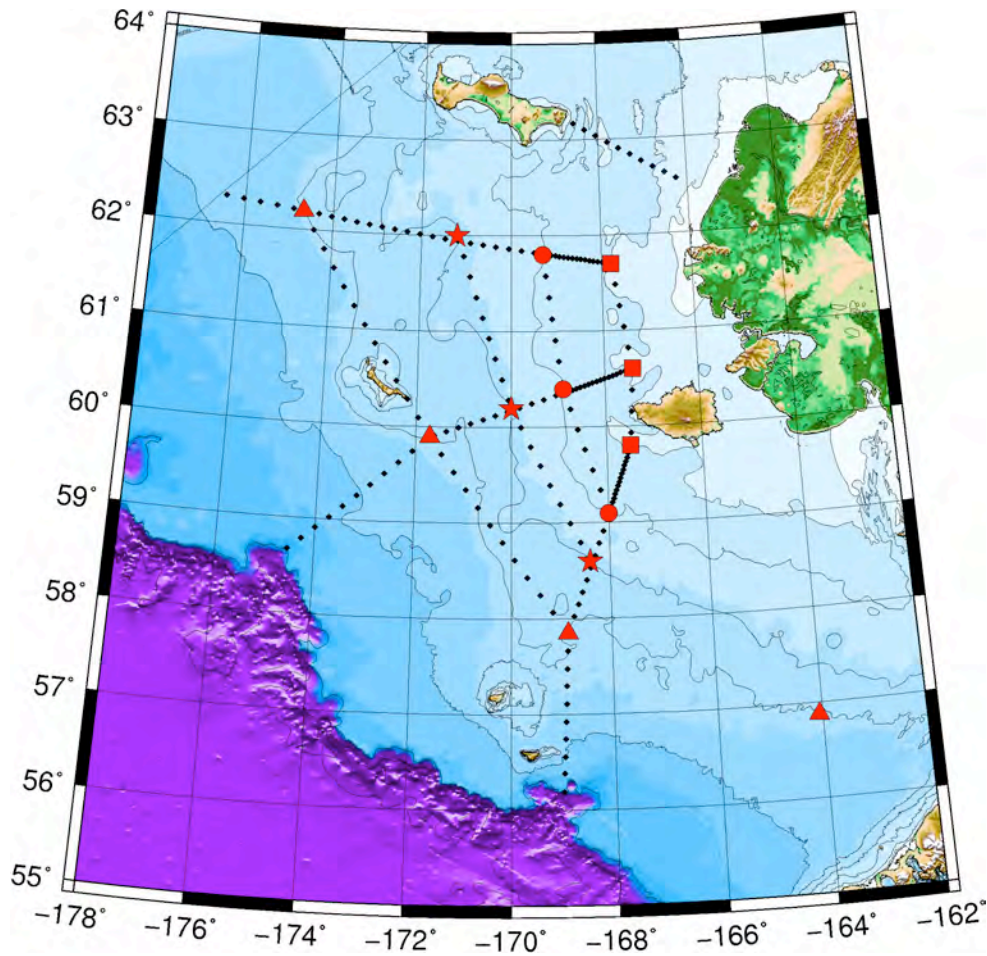
How freshwater, re-distributed by the shelf circulation or from sea ice, modifies stratification and nutrient distributions over the central Bering Sea Shelf.

To understand the factors that:

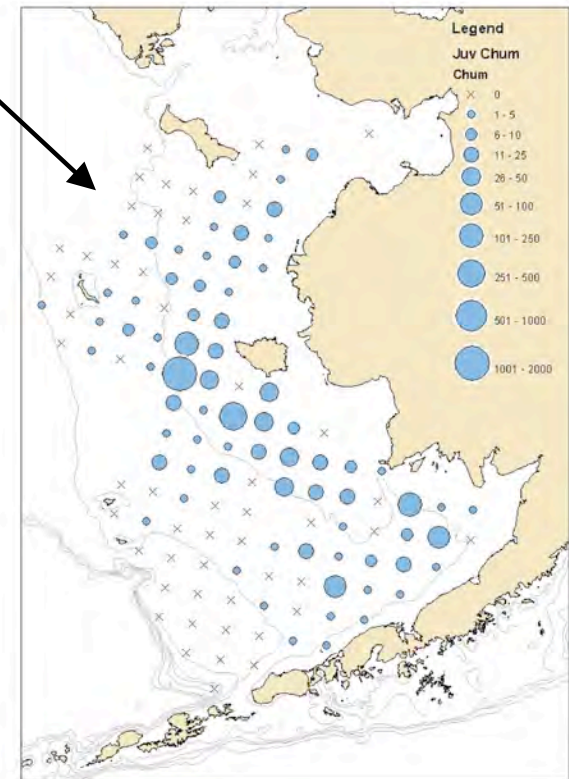
1. control variability in sea ice characteristics, water mass structure, stratification, and circulation that affect shelf trophic structure, and
2. affect availability of nutrients in response to variations in sea ice characteristics
(*Best Research priority areas*)

Observations and analyses will:

1. describe the cross-shelf and vertical structure of T/S, δO^{18} (freshwater sources), currents, & ice displacement in the coastal and mid-shelf domains;
2. examine the variability of these structures seasonally and interannually;
3. identify the physical mechanisms controlling the spatial distributions of freshwater and nutrients, including the exchange processes between the coastal and mid-shelf domains;
4. assess the relative roles of ice melt and meteoric waters (including runoff) in stratifying the shelf; and
5. assess how changes in these freshwater sources may modify the shelf ecosystem.



70 m: NOAA biophysical moorings
 55 m: TS at 10, 20, and 50 m + T-chain
 40 m: TS at 20 and 35 m
 25 m: TS at bottom
 Upward looking ADCPs on all moorings
 BEST Hydrography (Spring + Summer)
 BASIS Hydrography (Fall)



Our needs from BEST and BSIERP PIs:

1. Shipboard BEST hydrography (T,S, nuts, $\delta^{18}\text{O}$, detided VM-ADCP)
2. Ice core $\delta^{18}\text{O}$ (R. Gradinger + others)
3. NOAA PMEL M2, 4, 6, and 8 moorings