Benthic macrofaunal biomass and sediment parameters on the 5 DBO lines (Lead: Jackie Grebmeier, co: Monika Kedra, others?

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Persistent biological hotspots maintained by deposition of *in situ* and advected carbon to the benthos



[Grebmeier et al. 2015, Prog. Oceangr.]

Distribution of benthic biomass and dominant fauna, with DBO bounding boxes



> 200

- Macrofaunal biomass increasing along a latitudinal gradient from northern Bering Sea to southern Chukchi Sea
- Recently hotspot areas sampled as part of Distributed Biological Observatory effort
- Sediment community oxygen consumption as indicator of carbon supply to the benthos

Latitudinal Trends in Macrofaunal Benthic Biomass and Carbon Supply



- High variability of macrofaunal biomass (green) in SE Chukchi Sea as bounding box covers both Bering Shelf-Anadyr Water (highest values) and Alaska Coastal Water (ACW) (lowest values) 2000-2012
- Finer sediments in offshore BSAW and coarser sediments in nearshore ACW indicates advective nature of overlying water flow and deposition patterns

Spatial gradient in benthic biomass (gC/m²) in the northern Bering Sea-high west to low east trend; northward focus high biomass zone





[Grebmeier and Cooper 2015, Springer Dual Career book chapter, in press]

Regional decline in dominant bivalve (*N. radiata*), with shift to smaller bivalve (*E. tenuis*) (SLIP-DBO1)

- Coincident decline in sediment community oxygen consumption indicative of reduced carbon supply to the benthos
- Impact on declining spectacled eider populations

100





170°W

170°W

"Footprint" of ampeliscid amphipod prey hotspot contracting spatially northward in Chirikov Basin (DBO2)



Spatial distribution of macrofaunal biomass in the Pacific Arctic (1973-2012), with time series line (RUSALCA CS=DBO3)



SE Chukchi Sea (DBO3)

Southern Chukchi



[Grebmeier et al. 2015 Oceanography]