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### **Zooplankton and export around the world**

The marine pelagic food web plays a central role in regulating the exchange of carbon dioxide between the atmosphere and the surface ocean, as well as the transfer of organic carbon into the deep sea. Within this food web, zooplankton serve both as trophic links between primary producers and higher trophic levels (such as fish) and as recyclers that transform particulate carbon and nutrients into dissolved pools. This seminar will explore the fundamental and multi-faceted roles zooplankton play in the biological pump- the suite of biological processes that mediate transport of carbon from the upper ocean to depth. Zooplankton egest fecal pellets, which can rapidly sink to depth. Diel vertical migrators feed in surface waters at night and metabolize the food they ingested in the mesopelagic zone during the day; seasonal vertical migrations also occur. Carcasses of dead zooplankton such as bloom-forming gelatinous zooplankton give rise to rapidly sinking jelly falls to the deep benthos. Zooplankton in the mesopelagic zone intercept, ingest and metabolize sinking particles, reducing export with depth. I will illustrate these roles and processes using examples across regions– from the western Antarctic Peninsula, to the Amazon River Plume, to the North Pacific and Atlantic Oceans and Chesapeake Bay. The importance of zooplankton community structure in export will be stressed (which species are there matters), and long-term and future changes in zooplankton carbon cycling due to climate change considered.