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Department of Marine Sciences  
Presents a Seminar by

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## **Carbon, nutrients, and productivity in a changing Arctic**

The extensive, productive shallow shelves that characterize Arctic margins are undergoing profound physical changes. Thinner ice, earlier ice retreat and later onset, and a longer openwater growing season are changing the phenology of phytoplankton blooms, with attendant biogeochemical and ecological consequences. Remote sensing studies estimate a 30% increase in Arctic primary productivity, although there are pronounced differences in spatial and temporal trends between regions. As Arctic shelves, and in particular, inflow shelves such as the Chukchi Sea, are responsible for the highest rates of annual production on an area basis as well as some of the largest rates of change as observed from satellites, it is imperative to better understand how climate-driven trends in physical settings manifest in light- and nutrient- driven trends in primary production in this region. Recent work has highlighted the importance of under-ice blooms in spring as a direct response to reduced light limitation through a thinning ice pack. However, after ice retreat and the immediate onset of strong, meltwater-induced stratification, surface waters of the Chukchi become oligotrophic. Consequently, much of the late-summer and fall productivity in this region occurs either below the surface, and thus is invisible to remote sensing, or results from episodic, wind-driven mixing of nutrients toward surface waters. I'll discuss recent, high-resolution observations of dissolved gas tracers ( $O_2$ ,  $O_2/Ar$ ), particulate organic carbon, inorganic carbon, and nutrients and the insights gained regarding "late season" productivity from these unique biogeochemical data.

**Host:** Penny Vlahos

**Time & Date:** 11:00 am, Friday, February 26, 2021

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