POSTER PRESENTATION

A RECONSTRUCTION OF PAST SEA ICE EXTENT AND PRIMARY PRODUCTIVITY AT IODP SITE U1339 (UMNAK PLATEAU, BERING SEA), BASED ON DIATOM AND STABLE ISOTOPE PROXY RECORDS

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The recent rapid decline in Arctic sea ice extent has prompted concerns about the fate of sea ice in the future, and the stability of sea ice-dependent ecosystems. By studying the natural variability of sea ice cover and primary productivity during past warm intervals, we can better understand the long-term response of sea ice to a warming climate. Proxy records from the Umnak Plateau (IODP Site U1339) in the Bering Sea afford the chance to examine changes in sea ice and primary productivity during a long-lived interglacial known as Marine Isotope Stage (MIS) 11 (424-374 ka), which is considered a good analogue for future change.

This work uses diatom assemblage counts and stable isotopic analyses to describe variability in sea ice extent and primary productivity at the Umnak Plateau during MIS 11. The presence of sea ice-associated diatoms throughout the core suggests that sea ice was consistently present in the Umnak Plateau region during MIS 11. Sea ice and open water diatom species co-exist in the sediments, indicating that the sea ice cover was most likely seasonal. A new sea ice proxy, based on a General Additive Model fitted with five diatom species, was used to reconstruct past sea ice concentrations.

Laminated sediments at the boundary between MIS 12 and 11 point toward intervals of enhanced seasonal productivity during deglaciation. High productivity during deglaciation is characterized by an increase in organic and inorganic carbon, and also by a significant increase in *Chaetoceros* resting spores, a diatom associated with high productivity. An increase in sedimentary $\delta^{15}N$ values during laminated intervals suggests that deglaciation may also have been characterized by more complete surface nitrate utilization. In addition, the onset of MIS 11 is marked by an increase in the relative abundance of the diatom *Neodenticula seminae*, which suggests a greater influence of warm Alaskan Stream water at the site. It is surprising to note that the relative percent abundance of sea ice diatoms shows a steady increase following deglaciation, reaching a maximum during the peak interglacial warmth of Late MIS 11.