



## **High resolution Holocene sea ice records from Herald Canyon, Chukchi Sea**

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Arctic Ocean sea ice plays a critical role in the Earth's climate system because of the positive ice-albedo feedback mechanisms as well as its control on ocean-atmospheric heat exchange and potential influence on the thermohaline circulation. Key to improving our understanding of Arctic sea ice cover and its reaction to external forcing is the reconstruction of past variability through paleo-records such as marine sediment cores. Although the observed recent sea ice loss seems to be the strongest of the last millennia, it is still uncertain whether the shift from perennial to seasonal ice cover expected for the near future was unprecedented during the current interglacial. High resolution sea ice reconstructions from the Arctic Ocean are rare, and specifically records from the Russian Arctic are underrepresented. In this study, we present results from marine sediment cores from the Herald Canyon in the East Siberian Sea. The area is one of the major conduits of Pacific water entering the Arctic Ocean basin from the Bering Strait and is thus an ideal place to study past variability of the inflow of these nutrient rich waters. Radiocarbon dating of mollusks indicates very high sedimentation rates at the coring sites which allowed for analyses at centennial resolution up to decadal resolution in the late Holocene. Core samples were analyzed for the biomarker IP25, which is produced by diatoms living in sea ice and is used as a proxy of past seasonal sea ice concentrations. Preliminary results indicate the presence of seasonal sea ice during the entire Late Holocene and show a significant increase of sea ice concentrations during the last millennia.