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Paleoceanographic reconstruction of the Holocene Arctic Chukchi Sea using fossil diatoms

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The Chukchi Sea, in the Arctic Ocean, receives the warm outflowing waters of the Bering Sea. These waters are one of the causes of Arctic sea ice decline, and change their flow according to the sea ice distribution in the Chukchi Sea. Sea ice in the global climate system has a significant impact on the global environment (e.g., atmospheric circulation, biological production and ocean circulation), due to the albedo effect, maintenance of low temperatures, and high salinity bottom waters. Therefore, the reconstruction of the past sea ice history of the Chukchi Sea is important in understanding the climate system of the Arctic Ocean as well as the global climate system. However, piston cores previously obtained from the Chukchi Sea were too short and/or contained few or no microfossils, making detailed paleoenvironmental analyses and age determinations difficult.

I started working on the diatom analysis of sediment cores taken during the HLY0501 cruise of the United States Coast Guard icebreaker cutter ”Healy” in 2005. They took 8 sediment cores, although diatoms were not obtained at six of the sites. So here I show the diatom analysis results from the remaining two cores (cores 5 and 8).

Keywords: Chukchi Sea, Diatom, Holocene