



Reconstruction of the Western Arctic Ocean water mass stratification during the last climatic cycle

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Arctic sea ice plays a critical role in modulating Earth's climate regime through its albedo effect, control on hydrological cycle and nutrient influx to oceans. The decline of sea ice has become more vigorous in Arctic Ocean, nevertheless, its driving mechanism is not fully elucidated. The halocline acts as a buffer layer separating Arctic sea ice and warm water mass, namely Atlantic Layer, which originated from North Atlantic Ocean. The halocline slows down heat transfer from warm Atlantic Layer to the sea ice, and thus, hampers sea ice retreat. Research proposed that the fluctuation of halocline thickness in the Arctic could be a plausible parameter limiting sea ice development. We, therefore, aim to evaluate the halocline's depth and its impact on sea ice cover in the last climatic cycle. By measuring Mg/Ca of ostracods' shells from sediment cores retrieved at different water depths (434m to 741m) in the Chukchi Plateau of Western Arctic Ocean, we aim to reconstruct the halocline thickness. In all cores we observed comparable water temperature in MIS1 and MIS3, which had been fluctuating between 0°C and 1.5°C, suggesting the presence of warm Atlantic Layer up to 434m. Therefore, it indicated a thinner and shallower halocline in MIS3 than results from previous research. Arctic sea ice decline in last climatic cycle might possibly be explained by the shift of halocline to a shallower depth.