

ICAM8 Abstracts

Climate and the Cryosphere

Sea-Ice history in the Central Arctic during the last 800 ky (based on distribution of the heavy minerals)

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Heavy minerals (density > 2.89 g/cm³) are transported from the broad Arctic shelves and deposited on the submarine ridges of the Arctic Ocean by ice-rafting. The heavy mineral assemblages on the Arctic shelves differ in composition, and therefore, can be used as a proxy for sea-ice drift and the relative influence of seasonal and pack (multi-year) ice in the central Arctic. Here we present heavy mineral data (grains size 0.1-0.05 mm) from IODP-302 (ACEX) hole 4C on the central Lomonosov Ridge. 18 samples, spanning the last 800,000 years have been analysed.

A clear tendency towards an increase in clinopyroxene (a proxy for Kara Sea sediments) over hornblende (a marker for eastern Laptev Sea-East Siberian Sea) is observed. The content of clinopyroxenes, in general, increases upward, while hornblende, on the contrary, decreases. The results of the study suggest that pack ice dominated in the interval of 20-7 MIS (+ 5e ?!); pack and seasonal ice prevailed in 6 and 2 MIS; a reduced sea-ice cover existed during 5a, 3 and 4 MIS.