

Late Quaternary environments on the western Lomonosov Ridge (Arctic Ocean) – first results from RV Polarstern expedition PS87 (2014)

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The interior Arctic Ocean is still one of the least known parts of the earth's surface. In particular this holds true for the deep-sea area north of Greenland which has been reached by research ships only within the last decade. The region is of special interest for climate researchers because numerical climate models predict that under future global warming the shrinking summer sea ice cover will find a place of refuge here until it totally disappears. In summer 2014 several short and long undisturbed large-volume sediment cores were obtained from the western Lomonosov Ridge between 86.5°N and the North Pole. Here we present first results from site PS87/030 situated at 88°40'N. The combined sedimentary record of a box core and a kasten core analyzed so far is interpreted to represent the environmental variability in the last ca. 200,000 years and can be correlated to comparable records from the eastern Lomonosov Ridge and the Morris Jesup Rise. The well-defined coarse layers with abundant ice-rafted detritus reflect the history of circum-Arctic ice sheets. Planktic foraminifers with a distinct dominance of the polar species were found in most of the analyzed samples and allow to reconstruct the water mass history for this part of the Arctic Ocean. Planktic oxygen and carbon isotope records allow to identify several freshwater events which can be correlated to the decay of ice sheets surrounding the Arctic Ocean. The results presented are, however, preliminary and will be refined by future work including an improved temporal resolution of the records and the addition of further proxy records.