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The Holocene record of surface and bottom waters on the northern Yermak Plateau (Arctic Ocean)

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We present a multi-proxy study of Holocene sediments obtained from the northwestern Yermak Plateau (Arctic Ocean, ca. 1000 m water depth) to reconstruct the Holocene changes of surface and bottom water masses on decadal-scale resolution. Stratigraphy is based on a series of ^{14}C-AMS datings. Proxies include oxygen and carbon isotope values of planktic and benthic foraminifers, planktic foraminifer abundances, and grain size distributions. From these data sets we are able to reconstruct the variability of Atlantic Water inflow to the Arctic Ocean at its upper and lower level.

Our results indicate a strong Atlantic Water inflow in the early Holocene (10-8 cal-ka) with equally strong bottom current activity and a sea ice margin situated on the Yermak Plateau. This interval was interrupted by a short-term interval corresponding to the 8.2 ka cold climatic event. By 7.5 ka, bottom currents had seized, but a strong surface water inflow of high salinity is indicated by high carbon and oxygen isotope values of planktic foraminifers, which reached maximum values at 5.8-3.5 ka. The Late Holocene environment was characterized by stronger bottom currents around 2 ka, less inflow during the "Little Ice Age"" and a strong warming in the "Industrial Period".