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MULTI-PROXIES FROM SURFACE SEDIMENTS IN THE WESTERN ARCTIC OCEAN AND ITS IMPLICATIONS FOR OCEANOGRAPHIC CHANGES

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During the ARK23/3 Expedition (2008) with the German icebreaker RV "Polarstern", box core sediments were taken by using the GKG (Giant Box Corer) at 20 geological stations along two transects from the Canada Basin across the Central Mendeleev Ridge towards the Makarov Basin and the Lomonosov Ridge in the Eurasian Arctic (northern transect along 80 30'N, southern one along 77 30'N). For this study, a total of 20 surface sediment samples were collected on board from the box core sediments in order to investigate recent environmental changes related to global warming in the western Arctic Ocean, and to delineate associated paleoceanographic changes during the Holocene subatlantic period. Here, we present first results of multi-proxy data (TOC, C/N org, CaCO3, δ13Corg and δ15Nbulk & org, biogenic Opal, δ18O and δ13C of planktonic and benthic foraminifers N. pachyderma and C. wuellerstorfi) analyzed from the surface sediments. We also estimated AMS 14C ages for the 3 surface sediments (0 to 1 cm thick) collected along the northern transect which were dated at about 5.80 - 6.57 to 10.67 14C ka BP. These relatively old AMS 14C ages from the surface sediments are probably due to strong bioturbation of benthic organisms, the reservoir effect, sediment reworking and/or low sedimentation rate during the present-day warm periods.

In general, multi-proxy data estimated from the 20 surface sediments clearly show different regional patterns in terms of the oceanographic and environmental conditions in the western Arctic. The δ18O and δ13C compositions of planktonic foraminifer N. pachyderma generally show relatively light values compared to those recorded in the eastern Arctic, strongly resulting from meltwater and/or freshwater and rejected brine associated with sea ice-melting/river discharge and sea ice growth, respectively. The δ18O and δ13C compositions of benthic foraminifer C. wuellerstorfi reflect bottom water environments. Furthermore, organic carbon contents, Corg/Norg ratio, and δ13Corg and δ15Norg values together with biogenic opal contents might reflect changes in surface water productivity, sea-ice coverage and /or melting, and

supply of terrigenous organic matter to the Arctic sediments.