

Late Quaternary changes in surface and deep circulation in the Northwest Atlantic

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The two sediment cores from the Gloria Drift (AMK-4493) and the Snorri Drift (AMK-4453) were compared for reconstruction of variations in the surface and deep water circulation during the last two glacial-interglacial cycles. Foraminiferal records and derived from them paleoSSTs, as well as IRD, $\delta^{18}O$ and sortable silt mean size (SS) data were compared.

It was shown that during interglacial time surface circulation intensified leading to active ISOW formation in the Nordic Seas. Benthic foraminiferal distribution and grain size measurements indicate the strengthening of ISOW circulation at the investigated sites mainly during Holocene and MIS 5e, as well as during Terminations I and II. At the Gloria Drift region, Holocene was marked by active surface but slightly weakened deep water circulation. At that time, Antarctic Bottom Water (AABW) penetrated to the AMK-4493 core site. Intervals between Heinrich and Heinrich-like events were characterized by more or less active surface and deep circulation. The PF was shifted southward and located close to investigated sites. Deep current intensity was relatively high. However, the low-saline and poor-oxygen conditions, as well as frequently influence of AABW at the Gloria Drift region were observed. During the Heinrich and Heinrich-like events, AMOC was significantly weakened and PF shifted further south from the investigated sites. These data coincide with decrease in the deep currents intensity at that time. Our benthic foraminiferal data indicate poor-oxygen conditions at the Gloria and Snorri Drift regions.

During early MIS 6, MIS 5a and MIS 4, the Gloria Drift region was occupied by modified AABW what indicates intensification of its overflow through the Vema Channel.

The saw-tooth pattern of SS distribution in AMK-4493 core without correlation with climatic cyclicity of near bottom currents intensity and the similarity between AMK-4493 sediments and IRD containing hemiturbidites of Labrador Sea put in doubt the contourite origin of Gloria Drift.

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