

A 200 years record of multidecadal oceanographic changes from offshore North Iceland

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During the cruise GS15-198 of the RV G.O. Sars in summer 2015, new sediments cores have been collected from the North Iceland shelf at 66°N, an area known for its high sedimentation rates. Here, offshore North Iceland an offshoot of the East Greenland Current, the surface flowing East Icelandic Current (EIC) transports a mixture of cooled Atlantic Water and cold/fresh Polar Water eastwards and at intermediate depths (100-350 m water depth), flows the relatively warm (4-7°C) North Irminger Icelandic Current (NIIC). Beneath this Atlantic Water layer, less saline and cooled (<3°C) Arctic Intermediate Water is found. Our study area offshore North Iceland is suitably located to investigate multidecadal changes in the southward fluxes of freshwater from the EGC, via the EIC and in the relative contribution/water mass characteristics (i.e. temperature and salinity) of the NIIC and shifts in the location of the Polar Front. Oceanographic variability recorded offshore North Iceland is closely linked to broader scale climatic and oceanographic shifts/variability in the North Atlantic region. Samples for foraminiferal analyses were wet sieved at 63 μm and counted at 1-2 cm intervals, which equals a resolution of ~ 2 years. The foraminiferal assemblage is characterized by a diverse fauna and a total of 76 foraminiferal species were identified, 6 planktic, 19 agglutinated and 51 calcareous species. The absolute abundance of foraminifera averages 400 specimens per 1g of wet sediment. Our high-resolution palaeoceanographic reconstructions reveal distinct multidecadal oceanographic variability that relate to climatic changes during the last 200 years, i.e. transition from the Little Ice Age into the modern warm phase.