Proxy development and application

Influence of Nordic Seas water mass properties on stable isotope ratios in planktic and benthic foraminifera

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Although isotopic/geochemical analyses and abundances of fossil foraminifera are common tools for paleoceanographic reconstructions, we still need to improve our understanding of the correlation between recent oceanic variability and the composition of shells of living calcareous microorganisms.

In this project we analyse plankton, sediment, and water samples from the Fram Strait (Fig. 1) in order to compare *in situ* conditions like salinity, temperature and stable isotopic ratios of the ambient water with the isotopic and geochemical composition of recent foraminfera from plankton tows (Fig. 3), sediment traps, and sea floor samples. Furthermore, we investigate the species distribution of planktic foraminifera (Fig. 2) to determine changes related to the variability of water temperature and salinity, water mass structure, and ice coverage.

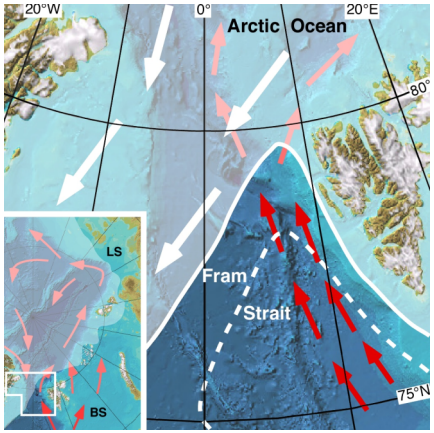

Fig.1 The study area between Svalbard and Greenland

The goal of our work is an improved understanding of how oceanic variability in the research area is reflected in calcareous microfossils. Analyzed proxies comprise the oxygen and carbon isotopic composition of water and microorganisms and, if possible in selected samples, the Mg/Ca ratio in the calcarous shells of planktic foraminifers.

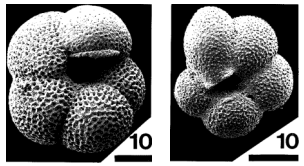

Fig.2 The two dominating planktic foraminifera species in the Fram Strait: *Neogloboquadrina pachyderma* (l.) and *Turborotalia quinqueloba* (r.)

Fig. 3 Plankton samples were collected with MultiNet sampler