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Sub-centennial Holocene fluctuations of surface water masses in the western Barents Sea

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The North Atlantic Current (NAC) brings warm and saline water into the Arctic, and the inflow is balanced by the outflow of cold surface water and by the formation of deep water to the south. This is part of the Atlantic Meridional Overturning Circulation (AMOC). Changes of the AMOC can greatly affect the global ocean circulation and climate, especially at high latitudes where the inflow of warm water and heat exchange is essential for environment and society. Hence, it is crucial to establish the natural range of oceanographic fluctuations within this area.

Here we investigate a continuous high resolution record from the Kveithola Through, western Barents Sea in order to elucidate the past variability of the flow of Atlantic Water during the Holocene. The results are compared to existing records north and south of our study site in order to map regional changes of the inflow of Atlantic Water.

The age model has been based on ten AMS C^{14} dates, and show sediment accumulation rates up to 0.034 mm/yr, enabling a sub-centennial resolution.The samples have been analyzed for their planktic foraminiferal faunal distribution. In addition analyses of stable isotopes (d18O, d13C) and Mg/Ca ratios will also be carried out further quantifying the surface water mass properties as SST and SSS. Finally, analyses of shell weights and fragments will be presented in order to evaluate the degree of preservation of the current paleoceanographic record.

Preliminary results show a planktic foraminiferal fauna consisting of two dominating species: the polar N. *pachyderma sinistral* and the sub-polar T. *quinqueloba*. The early Holocene records a relative distribution between 50 and 60 % of N. *pachyderma sinistral*, while throughout the mid and late Holocene T. *quinqueloba* dominates the fauna with values up to 75%. Further, several other species, such as N. *incompta*, G. *glutinata*, G. *bulloides* and G. *uvula*, are found less abundantly. During the last 1000 years *G. uvula* shows a remarkable increase, possibly indicating an advanced fresh water input.

The results of this studyconfirm a south-north time transgressive onset of Holocene warming as previously recorded in the region. However this study finds a general higher frequency ofT. *quinqueloba*reflecting a very close position to the Arctic Front.