Plio-Pleistocene water mass exchange and climate variability in the northernmost Atlantic and Arctic Ocean

PI`s:
M. Frank (GEOMAR)
B.A. Haley (COAS)

PhD student:
C. Teschner (GEOMAR)

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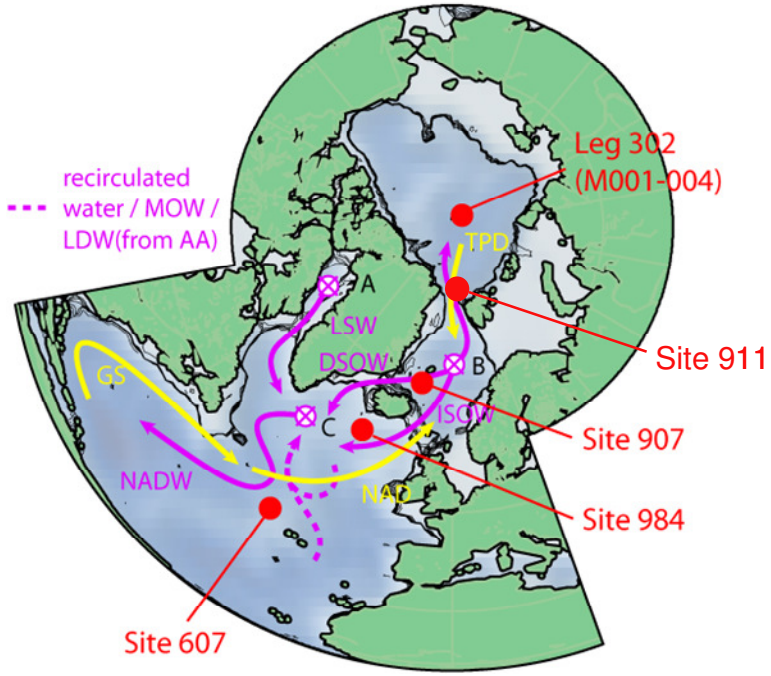

Figure 1: Circulation patterns and site locations.
***Surface currents (yellow)*:**
GS: Gulf stream; **NAD**: North Atlantic Drift; **TPD**: Trans-Polar Drift
***Deep currents (pink)*:**
LSW: Labrador Sea Water; **DSOW**: Denmark Strait Overflow Water; **ISOW**: Iceland-Scotland Overflow Water; **MOW**: Mediterranean Outflow Water; **NADW**: North Atlantic Deep Water

The Arctic Ocean and Norwegian-Greenland Seas play an important role for the global thermohaline circulation and climate. By means of radiogenic isotope signatures changes in sources and mixing of the relevant deep and intermediate water masses in this area will be reconstructed from long sediment cores (ODP-IODP programme). Our investigations focus on the reconstruction of water mass dynamics on timescales from millions of years to glacial/interglacial variability during the climatically highly relevant periods of the major Intensification of Northern Hemisphere Glaciation (INHG, ~2.7 Ma) and the Mid-Pleistocene Transition (MPT, 1.5-0.5 Ma). On different sediment cores (Figure 1), the paleovariability of the radiogenic neodymium (Nd), lead (Pb) and strontium (Sr) isotope compositions of deep water masses is determined from the authigenic metal oxide phase of the sediments, as well as of Nd isotope compositions from foraminiferal calcite and its coatings. Our main goal is to improve our understanding of the role of changes in ocean circulation and glaciations in controlling and responding to climate changes.