Offshore Neodymium isotope recordings of neoglacial ice advance over South Western Greenland

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The Greenland Ice Sheet (GIS) is the largest freshwater storage on the northern hemisphere. It has retreated and advanced on changing rates during the Holocene, which led to changes in freshwater runoff, further resulting in changes in sediment and nutrient supply, and sea surface temperatures and salinities. Marine sediments from the West Greenland margin represent high-resolution archives of Holocene climate history, past ice sheet movements and changes in meltwater discharge and surface water conditions.

Radiogenic isotopes such as strontium (Sr) and neodymium (Nd) serve as tracers for detrital sediment provenances. Changes in source region of sediment discharged into the ocean reveal insights on transport pathways via ocean currents, sea ice, and meltwater discharge.

We present Nd and Sr data of the detrital sediment fraction from a marine sedimentary record deposited in Nuuk Trough, Labrador Sea. While Sr isotope ratios indicate a comparably small and continous shift towards more radiogenic values, Nd isotopes reveal a pronounced shift towards more negative values from around 4 ka BP onwards. The proposed time interval coincides with the transition into the Neoglacial, the onset of the modern Labrador Sea circulation pattern [1], and GIS advances [2]. We suggest that the shift in Nd isotopes indicates a combination of increased input of local detrital sediment sources, likely caused by ice sheet advances, and a decreased input of distal sediment sources by ocean currents, in relation with the Holocene progressive inception of the modern Atlantic Meridional Circulation.

[1] Fagel *et al*. (2004) *Paleoceanography* **19**, PA3002. [2] Funder *et al*. (2011) *Developments in Quaternary Sciences* **15**, 699-713, (and references therein).