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Deep water circulation patterns in the Atlantic during MISs 12-11

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Glacial Termination V is one of the most extreme glacial-interglacial transitions of the past 800 ka [1]. However, the changes in orbital forcing from Marine Isotope Stage (MIS) 12 to 11 are comparatively weak. In addition, MIS 11c is exceptionally distinct compared to other interglacials with for example a longer duration [2] and a higher-than-present sea level [3] despite a relative low incoming insolation. Therefore, the term “MIS 11 paradox” was coined [4]. However, only little is known about the Atlantic overturning circulation during this time interval [e.g. 5,6].

Here, we present Atlantic-wide deep water circulation patterns spanning the glacial maximum of MIS 12, Termination V, and MIS 11. Therefore, sediment cores throughout the Atlantic were analyzed regarding their Nd isotopic composition of authigenic coatings to reconstruct the provenance of the prevailing bottom water masses.

During the glacial maximum of MIS 12, the deep Atlantic Ocean was bathed with a higher amount of southern sourced water compared to the following interglacial. Termination V is represented by a sharp transition in the high-accumulating sites from the North Atlantic with a switch to northern sourced water masses. MIS 11 is characterized through an active deep water formation in the North Atlantic with active overflows from the Nordic Seas, only disrupted by a short deterioration. A strong export of northern sourced water masses to the South Atlantic points to an overall strong overturning circulation.

[1] Lang and Wolff 2011, *Climate of the Past* 7: 361-380.

[2] Candy et al. 2014, *Earth-Science Reviews* 128: 18-51.

[3] Dutton et al. 2015, *Science* 349: aaa4019.

[4] Berger and Wefer 2003, *Geophysical Monograph* 137: 41-60.

[5] Dickson et al. 2009, *Nature Geoscience* 2: 428-433.

[6] Vázquez Riveiros et al. 2013, *EPSL* 371-372: 258-268.