AGU 100 FALL MEETING
Washington, D.C. | 10–14 Dec 2018

PP21E-1457: REU: Changes in benthic foraminifera assemblage preservation associated with onset of deep AMOC during the last deglaciation

Tuesday, 11 December 2018
08:00 - 12:20
Walter E Washington Convention Center - Hall A-C (Poster Hall)

Benthic foraminifera are used to generate the majority of paleo-proxy records reconstructing past ocean changes including variations in the strength of AMOC. To assess the reliability of geochemical proxy records generated using benthic foraminifera, a Foraminifera Preservation Index (FPI) was developed to quantify assemblage-wide changes in visual preservation quality. The qualitative criteria for preservation included in the FPI are supported by stable isotope and trace element datasets. Early application of the FPI on *Cibicidoides*assemblages from the deep Pacific Ocean (IODP Sites 846, 1143, 1208) reveal quantifiably better preservation during glacial periods relative to interglacial periods for the last ~1 million years. Here, we present results from two summer REU projects tracking such preservation changes in the deep North and South Atlantic Ocean prior to and throughout the last deglaciation (~0-35 ka). Changes in *Cibicidoides* FPI from IODP Site 1089 in the deep South Atlantic (~4600m water depth: primarily bathed by Antarctic Bottom Water - AABW) mirror those in the Pacific with better preservation during the glacial maximum of Marine Isotope Stage (MIS 2) than the Holocene interglacial (MIS 1). Alternatively, *Cibicidoides* FPI from IODP Site 1059 (~3000m water depth: bathed by North Atlantic Deep Water [NADW] during interglacials; and by AABW during glacials) reveal better preservation during the Holocene relative to MIS 2. Despite these opposing trends, changes in FPI occur at both sites at ~15 ka corresponding to major changes to AMOC documented throughout the deep Atlantic basin. These findings imply that the same processes involved in water mass CO_2-carbonate chemistry on glacial-interglacial timescales affect preservation of benthic foraminifera. Furthermore, our results suggest that the FPI can track major changes in deglacial AMOC, potentially providing an inexpensive method to produce preliminary data prior to or in unison with more expensive geochemical analyses.

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