Changes in Deep Ocean Circulation in The Eastern North Atlantic Ocean Associated with Climate Variability 80 Ka - 380 Ka

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There is a documented shift in glacial-interglacial cycles following the mid-Pleistocene transition, from moderate, more frequent cycles to longer, more extensive glaciations and interglacial intervals. Previous studies have used paleoclimate proxies to demonstrate the correlation of millennial climate variability to North Atlantic glacial climate, and they are vital in understanding the unexplained shift in pacing of past climate cycles. However, more work is necessary to characterize the direct relationship between ocean circulation and past climate variability. This study uses deep-sea sediment cores from International Ocean Discovery Program Expedition 397 Site U1587 (37˚34.86'N, 10˚21.54'W, 3479 meters below sea level), on the southwest Iberian Margin, to investigate how these abrupt climate changes influenced ocean circulation. We report a continuous record from 80,000 to 380,000 years BP of benthic $\delta^{18}O$ and $\delta^{13}C$, performed with *Cibicidoides wuellerstorfi*, a species of benthic foraminifera which records the carbon isotope composition of dissolved inorganic carbon in bottom waters, to reconstruct changes in deep ocean circulation. Our results demonstrate that the influence of northern-sourced deep waters was weaker during glacial periods and cool stadials, represented by a strong inverse relationship between $\delta^{18}O$ and $\delta^{13}C$ values. Given the range of $\delta^{13}C$ values, with a minimum of -1.78 to 0.71 (‰), there were notable shifts in water mass geometry and great variability over time. Currently, the Atlantic Meridional Overturning Circulation may be undergoing a slowdown that would, in accordance with this study's findings, decrease temperatures in the North Atlantic, among other effects. Reconstructing past ocean circulation can refine our general understanding of how past climate behaved, and further comparison of findings from Site U1587 to Site U1385 (~900 m shallower) can improve our understanding of vertical contrasts in ocean circulation during rapid and intense climate variability.