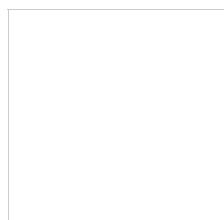


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B21C-0370: Corals deep under the stream: how the Gulf Stream is driving the interglacial occurrence of cold-water corals off Cape Lookout, NC

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Late Quaternary climate variability has been frequently related to oceanographic forcing. In the North Atlantic, recent glacial-interglacial cycles and abrupt millennial-scale climate changes have been linked to reorganisations of the Meridional Overturning Circulation. Among others, aragonite-forming cold-water corals (CWC) have become important archives to unravel the water-mass history. While being accurately datable by means of mass spectrometric Uranium-series dating and given their intermediate depth distribution and specific ecological requirements, the CWC distribution through time can reveal important insights into the oceanographic conditions that favour coral growth (Frank et al., *Geology*, 2011). In the northeast Atlantic, climate driven variations in the strength and flow path of the Mediterranean Outflow Water, surface productivity and mid-depth temperature have been suggested to cause a south-north see-saw pattern in the CWC distribution on glacial-interglacial time scales: abundant coral growth occurred north of 50 °N during interglacial periods (Marine Isotope Stages MIS1, 5 and 7); and south of 37 °N during glacial periods (MIS2, 3, 4 and 6). Stepping forward on the development of basin-scale knowledge on the North Atlantic distribution of framework forming CWC species and its relation to water mass dynamics, we present 19 ages of the CWC *Lophelia pertusa* sampled from mound structures at 320-500m water depth off Cape Lookout (Blake Plateau) on the North Carolina margin (34 °N). Coral (on-mound) and sediment (off-mound) samples were used to accurately reconstruct ages of fossil coral fragments and to determine the sedimentation history via AMS-14C dating of planktonic foraminifera. Our *L. pertusa* samples revealed interglacial ages from early Eemian and from Mid- to Late-Holocene (last and present interglacials, respectively), thus differing from the predominantly glacial temperate East Atlantic CWC developments. The temporal distribution of CWC off North Carolina resembles the pattern found much further north in the Eastern Atlantic. Furthermore, we found no record of off-mound sedimentation since approx. 5 kyr, suggesting that the studied area is, currently, a sediment starved region. Both, sediment grain-size variation and appearance of CWC at the Cape Lookout mound area seem to indicate an on-shore movement of the Gulf Stream after the Younger Dryas and a strengthening of the current around 5 kyr BP. Our results also suggest that the Gulf Stream path during the MIS5e was similar to the present one.