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Southeastern Atlantic Thermocline Cooling Since the Last Glacial

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North of today's Angola-Benguela Front cold-water corals have been found to create large reef like environments. Framework forming cold-water corals of predominately Lophelia pertusa and Madrepora oculata have built up the so called Scary Mounds (9°49.331'N; 12°46.565'E; 338m). Today, mounds are located well below the highly dynamic surface layer near the 10° C isotherm, and are predominantly influenced by the northward advection of thermocline waters through the Benguela current system. U-series dating of fossil fragments revealed coral growth during the past 33'000 years (Wefing et al. 2017). Thus, corals prosperously dwell during times of warm and glacial climate conditions. We report mid-depth temperature reconstructions based on the coralline aragonite [Li]/[Mg] ratio. Our results demonstrate strong glacial cooling by 6.5 $\pm$2°C and secular temperature variations in accordance to global climate change. Based on a sea surface temperature reconstruction from a nearby sediment core, we infer a significant shoaling of the thermocline. In addition radiocarbon ages of northward advected sub-surface waters increase by a factor of two. We interpret the massive cooling and significant aging of thermocline waters as a glacial intensification of northward advection of polar waters possibly driven by an enhanced Hadley circulation. In addition to the reconstruction of sub-surface water ventilation and temperature we will further extend the coral record by Nd-Isotopes for water mass provenance investigations.