Glacial intensification of the Benguela Current

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The Benguela current feeds cold and nutrient rich waters into the south Atlantic gyre fueling high rates of phytoplankton growth. Its strength is tidily coupled to the southern hemisphere atmospheric circulation and surface ocean recirculation. Framework forming cold-water corals such as *Lophelia pertusa* and *Madrepora oculata* develop north of today's Angola-Benguela Front on the so called Scary Mounds (9°49.331'N; 12°46.565'E; 338m): U-series dating of fossil fragments from these mounds now reveals that corals also developed during the past 33'000 years, hence, including times of global warm and glacial climate conditions. Based on the coral skeletons [Li]/[Mg] ratio and its radiocarbon content, we show first evidence of strong glacial cooling by 6.5±2°C and radiocarbon aging (R = 900±100 years) of tropical thermocline waters. The coral mounds are situated well below the highly dynamic surface layer near today's 10°C isotherm, and are predominantly influenced by the northward advection of thermocline waters through the Benguela current. We interpret the massive cooling and significant aging of thermocline waters as a glacial intensification of the Benguela Current system driven by an enhanced Hadley circulation. In addition, the northward advected glacial mid-depth water from the Antarctic circumpolar current must have been colder and radiocarbon aged as well.