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Northeastern Atlantic cold-water coral reefs and climate

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U-series age patterns obtained on reef framework-forming cold-water corals collected over a nearly 6,000 km long continental margin sector, extending from off Mauritania to the south-western Barents Sea reveal strong climate influences on the geographical distribution and sustained development of these ecosystems. During glacial times densely populated cold-water coral reefs flourished in the temperate east Atlantic, where at present only scarce live coral occurrences exist. In contrast, climate warming induces a rapid northward colonization of cold-water coral reefs with the biogeographic limit advancing from ~45°N to ~70°N. Thus, we invoke here that north-south oscillations of the polar front during the past glacial-interglacial cycles and the consequent displacement of cold nutrient-rich intermediate waters and productivity drives the decline and expansion of cold-water coral ecosystems and its biogeographic limits in the northeast Atlantic.