

Glacial millennial scale changes in North Atlantic oxygen concentrations

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Model simulations predict that global ocean oxygen concentrations may decline by 30% by the year 2800 [1-3]. This decline is attributed to anthropogenic driven surface water freshening (increased precipitation and melting of sea-ice) in the polar regions causing a reduction in the meridional overturning circulation [1-3].

Here we study the effects of a reduced / shoaled AMOC on deep and intermediate water oxygen concentrations in the North Atlantic Ocean involving large-scale ice rafting as well as some millennial scale cooling events of the last glacial. We use the $\delta^{13}\text{C}$ gradient between bottom water and pore water at the anoxic boundary as a quantitative proxy to reconstruct bottom water [O₂] [4]. We compare and discuss reconstructed bottom water [O₂] at two sites from a deep northeast (MD95-2042, 3.1 km) and an intermediate northwest (ODP 1055, 1.8 km) location.

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