

## Freshwater Forcing of Atlantic Meridional Overturning Circulation Revisited

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Freshwater (FW) forcing is widely identified as the dominant mechanism causing reductions of the Atlantic Meridional Overturning Circulation (AMOC), a climate tipping point that led to past abrupt millennial-scale climate changes. However, the AMOC response to FW forcing has not been rigorously assessed due to the lack of long-term AMOC observations and uncertainties of sea-level rise and ice-sheet melt needed to infer past FW forcing. Here we show a muted AMOC response to FW forcing – ~50-m sea-level rise from the final deglaciation of Northern Hemisphere ice sheets – in the early-to-middle Holocene ~11,700-6,000 years ago. Including this muted AMOC response in a transient simulation of the Holocene with an ocean-atmosphere climate model improves agreement between simulated and proxy temperatures of the past 21,000 years. This demonstrates that the AMOC may not be as sensitive to FW fluxes and Arctic freshening as is currently projected for the end of the 21st century.