



What caused glacial abrupt climate changes?

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The last glacial period was punctuated by abrupt climate changes that are widely considered to result from millennial-scale variability of the Atlantic meridional overturning circulation (AMOC). However, the origin of these AMOC reorganizations remains poorly understood. The climatic connection between both hemispheres suggested by proxies indicates that the Southern Ocean (SO) could regulate this variability through changes in winds and atmospheric CO₂ concentration. Here, we investigate this hypothesis by using a coupled climate model in an experimental setup inspired by proxy data, in which CO₂ and SO wind-stress respond to AMOC variations. The evolution of the simulated climatic patterns matches the amplitude and timing of the largest events that occurred during the last glacial period. Our results indicate that glacial abrupt climate events are part of an internal inter-hemispheric oscillation and provide an explanation for the pervasive Antarctic-like climate signal found in proxy records worldwide.