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Simulating Termination 1 in the coupled climate—ice sheet model LOVECLIM/PSUIM

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Climate—ice sheet coupling processes, such as meltwater discharge and sea-level rise, can substantially modulate the global ocean circulation and climate. Here, we explore the role of such coupling mechanisms and their impact on the Atlantic meridional overturning circulation (AMOC) in transient simulations of Termination 1. The simulations are performed with the 3-dimensional climate model of intermediate complexity LOVECLIM coupled to the Pennsylvania State University ice model (PSUIM) in the Northern Hemisphere and Antarctica. LOVECLIM includes a parameterisation of the transport through the Bering Strait, which opened during Termination 1 due to sea level rise. Our simulations illustrate that the Bering Strait transport can stabilise the AMOC in periods of fast ice retreat and strong freshwater discharge.