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# Coupled ice sheet-climate interactions during the Last Interglacial simulated with LOVECLIM

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The Last Interglacial warm period (LIG, $\sim$130 to 115 kyr BP) represents a real-world test case for the stability of the Greenland and Antarctic ice sheets, both thought to have lost considerable amounts of ice compared to their present-day configuration. We use the Earth system model of intermediate complexity LOVECLIM version 1.3 to perform transient simulations over the LIG forced with changes in orbital parameters and greenhouse gases. The model includes thermomechanically coupled models of the Greenland and Antarctic ice sheets, which are interactively coupled with the atmosphere and ocean components. We present modelling results with focus on ice-climate interactions and inter-hemispheric coupling and their role in modifying polar climate evolution in both hemispheres. LOVECLIM simulates annual mean temperature and summer temperature anomalies over central Greenland relative to the present day that peak at 5.5 °C and 10.7 °C, respectively. The retreat of the Greenland ice sheet associated with a sea-level contribution between 1.0 and 2.6 m and a replacement by low albedo tundra is instrumental in generating a warming of similar magnitude to a recent ice core reconstruction. The evolution of the Antarctic ice sheet over the LIG with a peak sea-level contribution of 2.1 m is governed by changes in global sea-level stand that controls the grounding-line position, while changes in surface melting have a negligible effect. Interactive ice-climate coupling is again crucial to produce a temperature evolution over the Antarctic ice sheet better in line with ice core reconstructions.