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## DESTABILIZATION OF THE GREENLAND ICE SHEET DURING THE LAST INTERGLACIAL

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The Greenland ice sheet is losing mass at an increasing rate, making it the primary contributor to global eustatic sea level rise. Large melting areas and rapid thinning at its margins has raised concerns about its stability. However, it is conceivable that these observations represent the transient adjustment of the fastest reacting parts of the ice sheet, masking slower processes that dominate the long term fate of the ice sheet and its contribution to sea level rise.

Using simulated climate data from a comprehensive coupled climate model (IPSL CM4), we simulate the Greenland ice sheet during the last interglacial with the three-dimensional ice sheet model SICOPOLIS. The last interglacial is a period approximately 130,000 - 110,000 years before present with Arctic temperatures comparable to projections for the end of this century. In our simulation, the southwestern and northeastern parts of the ice sheet are unstable and retreat significantly. This result is found to be robust to perturbations within a wide parameter space of key parameters of the ice sheet model, the choice of initial ice temperature, and has been reproduced with climate forcing from a second coupled climate model, the CCSM3.

To investigate the contribution of the Greenland ice sheet to the last interglacial sea level high stand we use the Greenland ice core records. By combining estimated surface elevation changes of the ice for the last interglacial period, where available from ice cores, with a large ensemble of ice model simulations we are able to constrain the likely range of ice melt from Greenland during the last interglacial. Our best estimate of sea level contribution from Greenland is compared with independent estimates based on marine proxy records as well as other model studies.