



Impact of Greenland and Antarctic ice sheet interactions on model climate sensitivity

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We use the Earth System Model of Intermediate Complexity LOVECLIM to show the effect of coupling fully interactive ice sheets on the simulated climate response to a 2xCO₂ stabilization scenario. For this purpose a number of different parameter sets have been defined for LOVECLIM, covering a wide range of the model's sensitivity to greenhouse warming. We analyze the effect and physical mechanism of ice-climate interactions introduced by the dynamic ice sheets for the ensemble of different parameter sets.

We find a lower climate sensitivity of the model when fully coupled ice sheets are included, an effect, which scales with increasing freshwater fluxes from the melting Greenland and Antarctic ice sheets. In both cases, changes in oceanic heat uptake and sea-ice-albedo feedbacks play a major role in attenuating the warming.