



1850-2200 coupled Greenland ice sheet surface mass balance and climate evolution as simulated by the Community Earth System Model

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We present results on the surface mass balance of the Greenland ice sheet (the difference between gains from accumulation and losses from runoff and sublimation) with an advanced Earth System Model that includes explicit simulation of ice sheet surface albedo, melt and refreezing. We compare results from two scenarios (RCP8.5 and RCP2.6) and the most recent and previous versions of the atmosphere model (CAM4 and CAM5). The simulated present day surface mass balance is lower in CAM5, due to modifications in the simulation of clouds. We find a negative surface mass budget by the end of the 21st century under RCP8.5 forcing in both models versions. The role of the albedo feedback, precipitation change and refreezing processes on future ice sheet evolution are examined.