



## **A Transient Initialization Routine of the Community Ice Sheet Model for the Greenland Ice Sheet**

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The Community Ice Sheet Model (CISM) is to be applied in future simulations of the Greenland Ice Sheet under a range of climate change scenarios, determining the sensitivity of the ice sheet to individual climatic forcings. In order to achieve reliable results regarding ice sheet stability and assess the probability of future occurrence of tipping points, a realistic initial ice sheet geometry is essential. The current work describes and evaluates the development of a transient initialization routine, using NGRIP 18O isotope data to create a temperature anomaly field. Based on the latter, surface mass balance components runoff and precipitation are perturbed for the past 125k years. The precipitation and runoff fields originate from a downscaled 1 km resolution version of the regional climate model RACMO<sub>2.3</sub> for the period 1961-1990. The result of the initialization routine is a present-day ice sheet with a transient memory of the last glacial-interglacial cycle, which will serve as the future runs' initial condition.