

Remapping of Greenland ice sheet surface mass balance anomalies for large ensemble sea-level change projections

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We present a method to apply surface mass balance (SMB) anomaly forcing from climate models to a wide range of Greenland ice sheet models. This method may be used in the context of the Ice Sheet Model Intercomparison Project for CMIP6 (ISMIP6) or other process-based large ensemble sea-level change projections. While climate models typically calculate SMB at the observed surface elevation, the initial state of ice sheet models may differ from the observed. In order to make the forcing applicable for different ice sheet geometries, we translate a given SMB anomaly field as a function of absolute location, to a function of surface elevation for 25 regional drainage basins. The method reproduces the original data closely when remapped to the original geometry. Remapped to different modelled ice sheet geometries it shows similar patterns to the original and smooth and continuous SMB anomalies across basin divides.