



Initialization of large-scale ice sheet models for future sea-level change projections

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Contributions from Greenland and Antarctic ice sheet changes to the present rate of sea-level rise are relatively small, but are likely to increase in the future. One key issue for future sea-level change projections on centennial time scales with large-scale ice sheet models is the determination of initial conditions that are consistent with present-day observations of both the geometry and the dynamic imbalance of the ice sheets. Common approaches include running the models through a glacial-interglacial cycle, evolving the models with fixed present day geometry and using data assimilation techniques.

We compare a number of different initialization schemes for the present day ice sheet configuration and quantify biases introduced to future ice sheet evolution. The goal of this comparison is to find an optimal initialization scheme for our suite of 3D thermomechanical ice sheet models aiming at providing sea-level change projections over the next 200 years.