



The importance of ice boundary conditions in GCMs

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Attempting to simulate climates substantially different from today offers an opportunity not only to evaluate model skill but also a chance to test our understanding of the fundamental mechanisms governing our climate. The importance of the role played by boundary conditions in GCMs, in particular land ice, are explored in this study. The period of focus is the mid-Holocene, i.e. ~6000 years before present (6kyBP), when the climate was stable and the forcing on the climate well known. To date the General Circulation Models (GCMs) have struggled to simulate the regional climate of Eastern North America correctly. This is attempted to be rectified with this experiment where new and improved local boundary conditions are implemented in an ensemble of paleo-climate models. The remnants of the Laurentide ice sheet is included and the Hudson Bay is somewhat expanded in the model. The ensemble results are compared to geological evidence from the region. The Eastern North American boundary condition experiment concludes that the perturbations brought the climate models to a closer agreement with the geological records regionally.