



Reconstruction of Greenland ice sheet evolution

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The evolution of the Greenland ice sheet during the Holocene is poorly constrained by observations. Geologic data constrain the ice sheet extent and information on ice thickness and climate can be inferred from ice cores, but the information is restricted to a few deep ice cores from interior Greenland. Often observations are used for validation of numerical simulations of ice sheet evolution, but the model parameters describing climate forcing and ice dynamics are not well constrained. Here, paleo-climatic records are used directly to reconstruct the ice sheet evolution. Simple physical models are set up based on the perfectly plastic assumption and other basic principles and directly expressed in terms of the paleo-climatic data. The model is tuned to present day observations of the ice sheet, and paleo-climatic records derived from ice cores are used to produce records of ice sheet volume in the past. The results are compared to previous reconstructions and it is discussed how other paleo-climatic records could be included.