



## **Simulating the response of glacial ice-sheets to past abrupt climate changes**

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Dansgaard-Oeschger (D/O) events were recurrent glacial abrupt climatic transitions between cold and warm conditions over Greenland with an approximate characteristic time of a thousand years. The uncertainties among the available sea level reconstructions hinder our understanding of the interactions between climate and global ice volume. In addition, only limited highly-resolved and continuous sea level records exist. Thus, the millennial time-scale response of glacial ice-sheets to past abrupt climate changes is not well known. Here, we use a hybrid ice sheet-ice shelf model in order to investigate the response of glacial ice-sheets to the influence of millennial-scale climate variability. An ensemble of simulations is performed by forcing the model with a wide range of time-varying climatologies derived from proxy data and from some of the currently available climate model simulations. The assessment of the resulting suite of transient simulations will contribute to constrain the inadequacies of sea level reconstructions in terms of amplitude and timing and will help to understand the implications of glacial abrupt climate changes in past sea level variability. Furthermore, our experiments could be useful to elucidate the mechanisms that involve the interactions between climate and ice sheets on millennial time scales, including future climate change.