



Heinrich events induced by oceanic circulation changes

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Proxy data reveal the existence of episodes of increased deposition of ice-rafted debris in the North Atlantic Ocean during the last glacial period. These are interpreted as massive iceberg discharges mainly from the Laurentide Ice Sheet. Although these have long been attributed to self-sustained ice sheet oscillations, growing evidence points to an active role of the oceanic circulation.

Here, we present simulations of the last glacial period carried out with a hybrid ice sheet–ice shelf model forced by an oceanic warming index derived from proxy data that accounts for the impact of past ocean circulation changes on ocean temperatures. The model generates a time series of iceberg calving that closely agrees with ice-rafted debris records over the past 80 ka.

Our results indicate that oceanic circulation variations were responsible for the enigmatic ice purges of the last ice age through the control that ice shelves exert on the dynamics of the inland ice sheet