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Modelling the 8.2Ka event using a fully coupled general circulation model including isotope tracers.

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The representation of stable water isotopes ($^1H_2^{18}O$ and $^1H^2H^{16}O$) has been implemented into the atmospheric, oceanic and land surface components of the Hadley Centre general circulation model, HadCM3. As a result HadCM3 is a more useful tool for the investigation of past climates and model results can be more easily compared with paleodata.

The simulated water isotopes are validated by comparing against observations for the present day climate. The model is then used to investigate the 8.2Ka event; this is the largest rapid climate change event of the Holocene and it has been observed in a number of paleoarchives. The model is forced by adding 5.2Sv of freshwater into the North Atlantic for 1 year (to simulate the final drainage of Lake Agassiz: the expected cause of the event). This leads to a reduction in the strength of the thermohaline circulation, which in turn leads to cooling and reduced $\delta^{18}O$ in precipitation over much of the Northern Hemisphere. These features are in agreement with the paleodata; however the model is not able to reproduce the duration of the event with this forcing.