Geophysical Research Abstracts
Vol. 14, EGU2012-7475, 2012
EGU General Assembly 2012

Simulations of Heinrich Events using a fully coupled full complexity icesheet/global climate model (Glimmer/FAMOUS)

W.H.G Roberts (1), A.J. Payne (2), and P.J. Valdes (1)

(1) BRIDGE, School of Geographical Sciences, University of Bristol, United Kingdom (william.roberts@bristol.ac.uk), (2) Bristol Glaciology Centre, School of Geographical Sciences, University of Bristol, United Kingdom

We present results from a coupled ice sheet (Glimmer) / full complexity global climate model (the FAMOUS version of HadCM3) simulating a series of Heinrich Events.
The ice sheet model simulates unforced oscillations of the Laurentide Ice Sheet that give surges of ice from the mouth of Hudson Strait with a size and periodicity within the observed range of Heinrich Events. The surges in the ice sheet model are the result of the classic thermomechanical instability mechanism. We show how the global climate responds to these Heinrich Events. We highlight the individual roles played by the two pathways that the ice sheet can affect the climate: the flux of ice with its resultant freshwater flux freshening the ocean and the rising and falling of the ice sheet surface altering the northern hemisphere atmospheric circulation.