Geophysical Research Abstracts, Vol. 8, 06081, 2006
SRef-ID: 1607-7962/gra/EGU06-A-06081

Unravelling the magnetic signal of Heinrich Events, Dansgaard-Oeschger cycles and Bond cycles in sediments from the Barra Fan off the north-west coast of Scotland

C. Peters, W. E. N. Austin and J. Walden

School of Geography and Geosciences, University of St Andrews, St Andrews, U.K. (cp34@st-andrews.ac.uk)

Mineral magnetic measurements have been used as a proxy to (i) identify Dansgaard-Oeschger (D-O) cycles and trends within Bond cycles, (ii) identify different ice rafted debris (IRD) sources and phasing within Heinrich Layers (HLs) and stadials and (iii) suggest evidence of growth/decay of ice-sheets. Measurements were carried out on the 30m long giant piston core MD95-2006 recovered from the Barra Fan off the north-west coast of Scotland, the major deposition centre of the last British Ice Sheet (BIS). The core section studied spans HL2 to the North Atlantic Ash Zone II. Susceptibilities, anhysteretic remanent magnetisations (ARMs) and isothermal remanent magnetisations (IRMs) were carried out at 1cm contiguous intervals. The climatic signal of D-O cycles is shown by the correlation of the ARM and it's ratios to susceptibility and IRM with the record of the polar foraminiferal species N. pachyderma (sinistral). The cooling trend of the interstadials within a Bond cycle is also observed in the magnetic signal. Within the HLs and stadials magnetic parameters such as susceptibility and IRM ratios show variability suggesting pulsing from potentially three different IRD sources with distinct lithologies. Evidence of the growth of the BIS during a Bond cycle is suggested by a trend observed in the masking of the Laurentide Ice Sheet signal within the stadials.