Geophysical Research Abstracts
Vol. 18, EGU2016-17782-2, 2016
EGU General Assembly 2016

Ice stream behaviour in the western sector of the North Sea during the end of the last glacial cycle

David Roberts (1), David Evans (1), Chris Clark (2), Mark Bateman (2), Stephen Livingstone (2), Alicia Medialdea (2), Colm O Cofaigh (1), Elena Grimoldi (1), Louise Callard (1), Dayton Dove (3), Heather Stewart (3), Bethan Davies (4), and Richard Chiverell (5)

(1) Durham University, Geography, Durham, UK (d.h.roberts@durham.ac.uk), (2) Department of Geography, Winter St, University of Sheffield, Sheffield, UK, (3) British Geological Survey, Murchison House, West Mains Road, Edinburgh, UK, (4) Department of Geography, Royal Holloway, University of London, UK, (5) School of Environmental Sciences, University of Liverpool, Liverpool, UK

During the last glacial cycle the East coast of the UK was overrun by the British-Irish Ice Sheet (BIIS) flowing eastwards and southwards. In recent years it has become evident that several ice streams including the Tweed, Tyne, and Stainmore Gap ice streams, as well as the late stage North Sea Lobe (NSL), all played a role in shaping the glacial landscape during this period, but understanding the flow phasing of these ice streams during advance and collapse has proved challenging. Here we present new data from the seafloor collected during recent work undertaken by the Britice Chrono and Glanam project teams during cruise JC123 in the North Sea.

Sub-bottom seafloor data together with new swath data clearly show that the final phases of the collapse of the NSL were controlled by ice sourced from the Firth of Forth ice stream which deglaciated in a NNW trajectory. Other ice streams being fed from the west (e.g. Stainmore, Tyne, Tweed) were not influential in final phase ice retreat from the southern North Sea. The Forth ice imprint is characterised by several grounding zone/till wedges marking dynamic, oscillatory retreat of the ice as it retreated along an offshore corridor between North Yorkshire and Northumberland. Repeated packages of tills, ice marginal and glaciomarine sediments, which drape glacially scoured bedrock terrain and drumlins along this corridor, point to marine inundation accompanying ice retreat. New TCN ages suggest decoupling of the Tyne Gap ice stream and NSL between 17.8 and 16.5 ka and this coincides with rapid, regional collapse of the NSL between 17.2 and 16.0 ka along the Yorkshire and Durham coasts (new OSL ages; Britice Chrono). Hence, both the central and northern sectors of the BIIS were being strongly influenced by marine margin instability during the latter phases of the last glacial cycle.