Geophysical Research Abstracts, Vol. 8, 06963, 2006
SRef-ID: 1607-7962/gra/EGU06-A-06963

Evolution of the East Greenland continental margin: geomorphological and thermochronological evidence for landscape preservation during ice sheet glaciation

Darrel A. Swift (1), Cristina Persano (1,2), Finlay M. Stuart (2), Kerry Gallagher (3), Kit Johnson (3) and Andy Whitham (4)

(1) Department of Geographical and Earth Sciences, East Quadrangle, University of Glasgow, Glasgow G12 8QQ, UK (dswift@ges.gla.ac.uk); (2) Scottish Universities Environmental Research Centre, East Kilbride, Glasgow G75 OQF, UK; (3) Department of Earth Science and Engineering, Imperial College London, London SW7 2AS, UK; (4) Cambridge Arctic Shelf Programme, Cambridge CB3 ODH, UK.

The contribution made by glacial erosion to the late Cenozoic evolution of North Atlantic landmasses is poorly understood. We present thermochronological and geomorphological evidence from East Greenland for the preservation of a major preglacial passive-margin escarpment. Thermochronology provides evidence for the timing and mechanism of escarpment formation, and, though the landscape is deeply incised by steep-sided fjords behind the escarpment front, escarpment relief indicates limited denudation of the escarpment plateau. These observations support the commonly-held assumption that erosion beneath large ice sheets is often characterised by selective linear erosion controlled by spatial variation in basal thermal regime. Quaternary ice sheet glaciation therefore appears to have played a minor role in denudation and the landscape evolution of the East Greenland continental margin. These findings have implications for ice sheet dynamics and our understanding of the history of ice sheet behaviour in this region.