



The elevated peneplain in the Kangerlussuaq-Scoresbysund area - Evidence of post-rift uplift in East Greenland

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The passive continental margin between Kangerlussuaq and Scoresbysund, East Greenland (c. 68-70°N) is characterised by an elevated, mainly ice covered regional peneplain above 2 km above sea level (a.s.l.). The peneplain is in certain areas deeply dissected by fjords or it has been obliterated by glacial erosion, giving the landscape a characteristic alpine relief with sharp mountain ridges and narrow peaks. The area experienced substantial volcanism around 55 Ma, responsible for extrusion of flood basalts, with subsequent formation of tectonic blocks that became tilted and faulted. In areas where the peneplain can be identified it cuts across the basalts including the tilted fault blocks. The peneplain also cuts across Precambrian basement in the northern part of the study area (Scoresbysund). These observations show that the peneplain represents a regional erosional unconformity formed subsequent to the deposition of the basalt. Such regional unconformity must have been graded to a common base level, and in this case it was most likely the sea. If the peneplain has not been buried and exhumed prior to uplift, then the present elevation of the peneplain around 2 km a.s.l. reflects the total amount of rock uplift since formation of the peneplain. The deep erosion of the basalt pile, resulting in the formation of the peneplain, indicates that its uplift occurred long after the basalt extrusions. Preliminary apatite fission-track analysis (AFTA) results from the Kangerlussuaq area in the south indicate a late Neogene phase of cooling (uplift). This uplift resulted in formation of the present relief by deep incision of valleys into the raised peneplain. We conclude that the regional peneplain with its incised valleys represents the effects of late Cenozoic uplift (a period where there is no geological record preserved onshore), and thus that the present-day topography formed long after rifting.