



Rift flank uplift and isostatic response to glacial erosion: Creation of a high-elevation continental margin.

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Southern Baffin Island lies to the west of Davis Strait, which is part of a sedimentary basin system, linking Labrador Sea and Baffin Bay. It developed during Cretaceous and Palaeocene rifting that culminated in a brief period of sea-floor spreading in the late Palaeocene and Eocene. To date the cause of the high elevation southeastern margin of Baffin Island has not been a focus of much research, whereas the origin and age of elevated topography on its conjugate west Greenland margin is a matter of lively debate. For west Greenland it has been argued by some authors, from interpretations of on- and offshore data (fission track, seismic and well), that onshore topography was created by tectonically-driven uplift in the Neogene. However, we have previously demonstrated that offshore seismic and well data along the Greenland margin of Davis Strait are consistent with a model of rifting followed by thermal subsidence and fjord excavation by glaciers, where Neogene tectonic uplift is not required. For southeastern Baffin Island, we have analysed offshore seismic reflection profiles, exploration well and gravity data along the western margin of Davis Strait and conclude that rift flank uplift of older remnant topography and subsequent isostatic response to glacial erosion have produced the present-day high elevation onshore. This interpretation of the offshore evolution conforms with an onshore evolution for which elevated topography is related to erosion of pre-existing topography.