



How was Iapetan rifting resolved on the East Greenland margin of Laurentia?

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Palinspastic reconstructions for the margin of Laurentia indicate that the Neoproterozoic successions now preserved in the Caledonides of East Greenland, and in the Scottish/Irish sector, were separated by as little as 500 km in the early Palaeozoic. There are indeed strong similarities in the late Neoproterozoic lithostratigraphy of both regions and a number of more or less tentative correlations can be made, up to end-Cryogenian when tillite deposition recorded the Marinoan glaciation (c. 635 Ma). A number of key features in the present day architecture of the Scottish Caledonides may be explained by inheritance from a magma-poor Iapetan ocean-continent transition (exhumed mantle lithosphere, latest Neoproterozoic regional scale overstep unconformity – see Krabbendam and Leslie, Leslie and Krabbendam, this session). Such features appear to be absent in East Greenland.

In central East Greenland, the Neoproterozoic succession consists of \sim 12 km apparent thickness of siliciclastic sedimentary rocks, 2-3 km of carbonate platform rocks, and finally 0.8 – 1.3 km of dolomitic and siliciclastic rocks (including two tillite deposits). The age of the base of the succession is only poorly constrained but is likely to be greater than 800 Ma; the youngest (glacigenic) part of the succession is equated with the Marinoan glaciation. The top of the Neoproterozoic succession is marked by an erosional unconformity overlain by transgressive, tidally influenced mid-Cambrian (c. 520 Ma) arenites. Shallow marine conditions prevail throughout accumulation of this vast, somewhat enigmatic, sequence. No major breaks are apparent within the Neoproterozoic part of the depositional record. There is no magmatic input at any level. How is then, that subsidence was slow and apparently steady (retarded?) over such a protracted period, only to be followed by no apparent accumulation in the next 100 Ma of the sedimentary record? Are we dealing with a coherent separate upper crustal block that lay continentward of the locus of any mantle exhumation and the axis of ultimate rupture? Are there parallels with the Newfoundland Block H?