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Conjugate mid-Norway and NE Greenland continental margins: Late Mesozoic-Cenozoic tectono-stratigraphic correlations and margin evolution

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Late Mesozoic-Cenozoic tectono-stratigraphic correlations between the conjugate mid-Norway and NE Greenland continental margins are provided based on the recently refined structural and stratigraphic framework off mid-Norway, new early opening plate reconstructions of Eurasia versus Greenland between Jan Mayen and Senja fracture zones, and a sparse regional grid of seismic reflection profiles off NE Greenland. The Norwegian margin exhibits a distinct along-strike margin segmentation governed by across-margin transfer systems. In particular, the Bivrost Fracture Zone and its landward transfer zone prolongation are well-defined features. Corresponding features are here interpreted on the conjugate NE Greenland margin. Together, these conjugate transfer/fracture zones represent a first-order, across-margin tectono-magmatic boundary of prolonged structural inheritance. Regional transects across both margins reveal important vertical and lateral variations in crustal architecture as well as basin configuration and stratigraphy resulting from a complex history of rifting prior to and during the last rift episode in Late Cretaceous-Early Tertiary time, leading to breakup and volcanic passive margin formation. Although the composite Late Jurassic-earliest Cretaceous rifting is the dominant tectonic episode we also observe structural and stratigraphic relations that indicate an Aptian-?Albian rift phase, probably coeval with similar events elsewhere on the NE Atlantic margins. Late Cretaceous rifting, with onset in middle Campanian time, is characterised by low-angle detachment faulting, culminating with regional uplift, intrusive igneous activity and subsequent erosion towards the end of the Paleocene. Thick seaward dipping reflector sequences manifest

massive eruptions of lavas during breakup at the Paleocene-Eocene transition. The post-breakup passive margin development is characterised by the transport and deposition of large amounts of sediments in response to margin subsidence and uplift and erosion of adjacent land areas, particularly during two distinct phases of outbuilding in Oligocene?/Miocene and Plio-Pleistocene times. Of special interest are a number of mid-Cenozoic intra-basin inversion features recognised both off Norway and off Greenland, revealing a regional compressive regime.