Geophysical Research Abstracts
Vol. 16, EGU2014-14214, 2014
EGU General Assembly 2014

Controls on (anomalous) topography in rifted margin settings

Ritske S. Huismans
Bergen University, Earth Sciences, Bergen, Norway (Ritske.Huismans@geo.uib.no)

Contrasting end members of volcanic and non-volcanic passive margin formation show a large variability in basin shape and structure, subsidence history, and associated topographic evolution of the onshore rifted margins. The large range of structural style and associated topography of these systems imply a strong variability in the underlying thermo-mechanical conditions at the time of rifting. Rift – passive margin styles ranging from narrow to ultra wide are explained using forward numerical models with varying rheological structure, with strong crust lithosphere leading to narrow rift formation associated with highly elevated rift shoulders and conversely weak crust lithosphere resulting in highly stretched wide rifted conjugate margins and little flank morphology. In some cases rifted margins appear to indicate the formation of anomalous post rift topography. A number of mechanisms including small-scale convective removal of the lower lithosphere, lithosphere counter-flow, and dynamic topography, have been invoked to explain the anomalous topography. Forward numerical models are used to predict the magnitude and characteristic topography associated with each of these mechanisms and to evaluate their potential for explaining these apparent anomalous characteristics of rifts and rifted margins.