AGU FALL MEETING
San Francisco | 12–16 December 2016

T41E-3011: Impact of Iceland Plume on Norway's Rifted Margin

Thursday, 15 December 2016
08:00 - 12:20
Moscone South - Poster Hall

Norway's rifted margin like many of the world's rifted continental margin systems is characterized by large magnitude differential topography sustained over considerable timescales. Spatial and temporal variations in the patterns of associated vertical motions deviate from predictions from classical rifting models. Rifted continental margins are frequently subject to a poly-phase evolution with major thermal perturbations during and after continental break-up, sometimes also overprinted by late-stage compressional reactivation. The role of pre-rift structural inheritance on crustal and lithospheric scale also appears to have long-lasting consequences for the topography and sediment source-sink dynamics at rifted margin systems. In the Northern Atlantic, the Iceland plume has a strong impact on intraplate deformation affecting both onshore and offshore parts of Norway's rifted margin.

3D thermo-mechanical models show the first-order control of lithosphere structure and segmentation in style of plume head separation and deviation. This results in hundreds km propagation of hot material ponding lithosphere-asthenosphere boundary that produces long-wavelengh anomalies onshore topography. Short-wave offshore compressional domes are likely caused by joint occurrence of plume-related thermal perturbations and a compressional regime resulting from ridge-push forcing.

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