



Massive High-Angle Normal Faulting at distal magma-poor margins: examples from South Atlantic

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Seismic imaging of very distal margins enabled to evidence seaward-verging normal faults with slip displacements up to 6000 meters, in several areas of both African & Brazilian magma-poor margins.

Interpretation of deep seismic profiles, including 3D seismic, time- & depth-migrated, evidence sharp depth variations of the Moho, close to areas where subcontinental mantle exhumed further to successive activation of Low-Angle Normal Faults and large detachment faults.

The sharp Moho depth variations are related to giant High-Angle Normal Faults (HANF) which had offset the Moho itself and may have rooted close to the base of the serpentized mantle. The faults are sealed within the salt, enabling to date it Late Aptian in age.

The close synchronicity between HANF activity and salt deposition reflects some dramatic changes of depositional environments, subsidence and deformation processes at the scale of the margin, especially as salt deposition is also closely related to significant increase of magmatic additions in the ultra-distal parts of the margin.

These changes are very likely related to the lithospheric break-up process and support the post-detachment timing of activation of the HANF interpreted from cross-cutting relationships on the seismics.

The evolutionary model for HANF proposed is supported by field evidence, seismic analogs and thermomechanical models: it invokes thermal, isostatic, rheologic, tectono-magmatic processes, and documents the context of South Atlantic salt deposition.