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### **Tectonic Inversion of a Passive Continental Margin (Southeast Brazil) and its Effects on Sedimentation and Petroleum Systems**

The continental margin of SE Brazil is a prolific hydrocarbon province. It formed in the Early Cretaceous, by continental rifting and opening of the South Atlantic. Far from any plate boundary, it is in many respects typical of a passive margin. Yet it has some puzzling aspects.

Onshore, asymmetric mountain ranges, up to 2700 m high, provide evidence for neotectonic faulting and extensive river capture. Focal mechanisms of earthquakes indicate transpression. Late Cretaceous to Palaeogene alkaline intrusions, attributable to the Trindade hotspot, rose along reactivated Neocomian transfer zones. Small lacustrine basins formed during Palaeogene transtension and became inverted during Neogene transpression. From seismic refraction experiments, the Moho is up to 42 km deep. Such a thick crust compensates observed gravity anomalies. From fission-track data, the mountains eroded in Cretaceous and Eocene times.

Offshore, the entire margin is seismically active. Regional tilting has contributed to thin-skinned deformation above Aptian salt. Neocomian transfer zones reactivated during ongoing sedimentation, resulting in deep-seated folds. In Paleogene times, the locus of clastic fan deposition shifted, because of onshore block faulting and drainage reorganization. At an accentuated nearshore hinge-line, Cretaceous sediments became folded, tilted, eroded and unconformably overlapped. In the Campos Basin, uplift of a coastal salient led to re-deposition of Eocene turbidites, which now form excellent reservoirs in the Marlim and Albacora giant oil fields. In the Espirito Santo Basin, seismic profiles across the platform edge reveal landward-dipping reverse faults, which formed by reactivation of Neocomian extensional faults.