

RIFT LOCATION WITHIN THE CAMPOS AND SANTOS BASINS, SOUTHEAST BRAZIL, USING GEOSAT- DERIVED CRUSTAL BOUGUER GRAVITY ANOMALIES

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Satellite-derived gravity anomalies have been used to map the location and distribution of rift subbasins comprising the Campos and Santos basins of the southeastern Brazilian continental margin. Even though thick post-rift sediment units, evaporites and diapiric structures have tended to obscure clear seismic imaging of the basement syn-rift structures and stratigraphy of these basins, free-air and crustal Bouguer gravity anomalies have helped define: 1) a prominent negative-positive gravity gradient along the southeastern Brazilian margin that correlates spatially with the termination of oceanic fracture zones, the boundary of syn-rift evaporites, and the abrupt change in gravity anomaly trend from east-west to margin-parallel features. The gravity gradient helps define the location of the ocean-continent boundary and as such, requires that the much of the São Paulo Plateau is underlain by thinned continental crust. The positive component of the gradient corresponds to thickened Aptian-Albian oceanic crust. The southern boundary of the plateau represents a transform margin controlled by both the Curitiba and Florianópolis Fracture Zones; 2) a major tectonic hinge zone, the Santos-Campos hinge zone, consisting of a series of short segment, en- echelon high- standing blocks subparallel to the Brazilian margin and that demarcates the western limit of significant continental extension. The Badejo high of the Campos basin is part of this hinge zone trend. A second offshore hinge zone may exist to the east of the Campos and Santos hinge zones, separating moderately-extended crust within the Santos and western Campos Basins from highly-extended continental crust across the São Paulo Plateau and eastern Campos basin, respectively; 3) a series of major rift subbasins seaward of both the Campos and Santos hinge zones. These subbasins have limited along-strike continuity, implying that syn-rift lake communication, water chemistry, and possibly source quality and preservation are spatially restricted to each of the subbasins.