

CONTINENTAL BREAKUP AND EARLY EVOLUTION OF THE SOUTH ATLANTIC

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South Atlantic continental breakup is closely related to the impingement of a large plume head at the base of the lithosphere. The Tristão da Cunha plume created one of the world's largest flood basalt provinces in the Paraná-Etendeka basin at 137-127 Ma in Early Cretaceous time. Volcanics probably related to the same plume head and indicating rapid continental breakup are recorded as seaward dipping reflectors along the continental margin of southern Brazil, Argentina and southern Africa. To the north of the Ponta Grossa Arch, however, continental breakup was slow and passed through the creation of a wide rift basin in which the proportion of volcanic rocks rapidly diminished to the north. Increasing extension created a deep depression tapering NE and dotted with lakes; in the south, near the Ponta Grossa Arch, the surface of this depression lay 2000 m below sea level. A rapid succession of catastrophic inundations across the Ponta Grossa Arch in late Aptian time filled the depression with a thick evaporite wedge whose width reached 400 km and thickness 2000 m at the southern end. N of Salvador, in the northernmost segment of the South Atlantic rift, most of the early rift basin was absent along the present continental margin; instead, the clockwise rotation of Africa relative to South America dragged the NE-Brazilian Sergipe microplate with it, creating the inland Recôncavo-Tucano-Jatobá rift in its wake. By early Albian time rifting propagated to the Equatorial margin, connecting the South Atlantic with the central Atlantic and Tethys oceans.