

Brazilian Deep Water Fold Belts: Tectonic Drivers and Structural Styles of Potential Traps

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Deep-water fold belts in the emerging and frontier basins in Brazil are structurally quite different than the more explored Santos, Campos and Espirito Santo Basins (the Southern Salt Basin). One key difference is the nature of the mobile substrate. In the deep water fold belts of the Equatorial Margin and extreme Northeast Brazil, little salt exists in the deep water continental margin, although shallow water salt is penetrated in the Sergipe-Alagoas basin. As a result, mobile shales, sometimes overpressured, provide the base of the decollement(s). Continental margin structural imprints from breakup of the North Atlantic and South Atlantic provided strong contrasts in structural fabric of the continental margin as well, separating these underexplored fold belts into 2 generic sectors: 1) Southern Sector from Cumuruxitiba to Parnaiba-Pernambuco basins where roughly East-West rifting occurred and 2) Northern Sector along the Equatorial Margin from the Ceara to the Foz do Amazonas basin, where North Atlantic oblique rifting initiated Berriasian rifts and later drifting. Some limited parts of the Equatorial Margin also have Triassic rifts, akin to eastern North America. Fold belts and their contiguous listric-faulted nearshore structural zones will be dissected from the south to the north, from the Cumuruxitiba to the Foz do Amazonas basins. The major tectonic drivers and structural controls for formation of these fold belts are discussed relative to the general stratigraphic section known in shallow and deep water. In addition to Middle Campanian uplift in the Equatorial Margin, Middle Eocene and Late Middle Miocene Andean orogenies have triggered fold belt formation. The lack of significant exploration in these deep water fold belts points to upside potential in high-risk and potentially high-reward structural segments.
