

# DEEP STRUCTURE OF THE SANTOS BASIN-SÃO PAULO PLATEAU SYSTEM, SE BRAZIL

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## Oral

**RESUMO:** The structure and nature of the crust underlying the Santos Basin-São Paulo Plateau System (SSPS), in the SE Brazilian margin, is discussed based on six wide-angle seismic profiles acquired during the SanBa experiment in 2011, conducted by Ifremer, FCUL, UnB, IUEM and Petrobras. Velocity models allow us to precisely divide the SSPS in seven domains from unthinned continental crust (Domain CC) to normal oceanic crust (Domain OC). Beneath the continental shelf, a ~100 km wide necking zone (Domain N) is imaged where continental crust thins abruptly from ~40 km to less than 15 km. Most of the SSPS (Domain A and C) shows velocity ranges, velocity gradients and a Moho interface characteristic of thinned continental crust. A central domain (Domain B) has, however, a very heterogeneous structure. While its southwestern part still exhibits extremely thinned (7 km) continental crust, its northeastern part depicts a 2-4 km thick upper layer (6.0-6.5 km/s) overlying an anomalous velocity layer (7.0-7.8 km/s) and no evidence of a Moho interface. This structure is interpreted as atypical oceanic crust, exhumed lower crust or upper continental crust intruded by mafic material, overlying either altered mantle in the first two cases or intruded lower continental crust in the last case. Lastly, in a seventh domain (Domain D), forming a triangular shape region in the SE of the SSPS, the crust is only 5 km thick, characterised by high seismic velocities between 6.20 km/s in the upper crust and 7.4 km/s in the lower crust. As seismic velocity gradients seem to rule out a continental origin, and clear Moho reflections argue against serpentinised upper mantle, we propose that the crust underlying this region to be of oceanic origin. Deviations from normal oceanic crustal velocities in the lower crust (6.70-7.00 km/s) could be explained by accretion at slow spreading rates leading to the inclusion of serpentinite into the lower crust at the onset of organised seafloor spreading. Overall, the v-shaped segmentation of the SSPS confirms an initial episode of rifting oblique to the general opening direction of the South Atlantic central segment.

**PALAVRAS-CHAVE:** SANTOS BASIN, SÃO PAULO PLATEAU, DEEP SEISMIC STRUCTURE