

Paper Number: 4904

Geological and geophysical integration in the identification of structural features and crustal limits on onshore and offshore portions of the south of Santos Basin, Brazil.

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The Santos Basin, developed during the Mesozoic breakup of South America and Africa, is located in the Brazilian southeast continental margin. It covers an area of approximately 350.000 km² and is limited to the south by the Florianópolis/Rio Grande fracture zone and to the north by the Cabo Frio High [2]. The study area covers the southern portion of the Santos Basin, straddling the state border between Paraná and Santa Catarina states.

The main objective of this work is to understand and characterize the structural features observed onshore of the passive margin and its control on the sedimentary formations of the offshore Santos basin, determining the level of control exercised by the basement structures and their possible reactivation.

The basement of the study area includes the Luis Alves Craton and Dom Feliciano folded belt. The latter encompassing the granites of the Florianópolis batholith, the Neoproterozoic meta-volcanoclastic sequences of the Brusque Group besides the Paleozoic to Mesozoic sediments and volcanics of the Paraná (intracratonic) Basin [1]. In the offshore part of the Santos basin, basalts of Camboriú formation unconformably overly the Precambrian basement, and are in turn overlain by Hauterivian rift sequences, a Barremian post-rift sequence, characterized by a flexural thermal subsidence and a relative tectonic stability, and the post-Albian drift sequence [2].

The integration of geological and geophysical data, airborne magnetics onshore and offshore seismic data, allowed the identification of important structural lineaments, crustal limits and the presence of Mesozoic igneous rocks, including the NW trending Ponta Grossa and NNE trending Florianópolis Cretaceous dyke swarms. The continuation of a number of basement structures such as crustal scale shear zones, and the major tectonic boundaries between the Pre-Cambrian terranes of the Luis Alves craton and the Dom Feliciano belt, have been identified

in the offshore portion of the study area, enhanced by the magnetic, gravimetric and seismic data.

References:

- [1] Basei et al (2010) *Developments in Precambrian Geology*, 16, 273-291
- [2] Moreira et al (2007) *B. Geoci. Petrobras, Rio de Janeiro*, 15, 531-549

