

GEOLOGY AND GEOMORPHOLOGY OF THE CABO FRIO REGION

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An integrated, multidisciplinary study of the geology and geomorphology of the frontier region between the Campos and Santos basins in the southeastern Brazilian margin was carried out. The methodology was based on integration of geological and geophysical data, particularly satellite images and field mapping of regional structures along the onshore portion of the Ribeira fold belt, interpretation of regional seismic reflection profiles along the continental platform and deep water region, and analysis of potential field data (gravity and magnetic) and results from exploratory drilling with 3D visualization. The NE trending structural framework of the Precambrian rocks that occur between the Coastal Plain, the Mar and the Mantiqueira mountain ranges and the Paraíba do Sul river valley was inherited during the Neoproterozoic to Ordovician Brasiliano Orogeny. This resulted from the collision tectonics associated with assembly of the western Gondwana, and resulted in weakness zones that were re-utilized during the Late Jurassic / Early Cretaceous continental breakup that resulted in the formation of the South Atlantic and the Santos and Campos continental margin sedimentary basins. In the Late Cretaceous and Early Tertiary renewed tectonic activity in the Cabo Frio region resulted in the formation of volcanic plugs both onshore and offshore. These igneous intrusions may be identified by analysis of Landsat images onshore, and potential field data (gravity and magnetism). In the offshore region the characterization of a complete suite of volcanic clastic rocks has been possible due to several exploratory boreholes and a regional grid of reflection seismic profiles.