

SEISMIC CHARACTERIZATION OF THE CARBONATE SEQUENCES IN THE EARLY STAGE OF SEAFLOOR SPREADING

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Thick carbonate sequences are commonly deposited along passive margins during the early phases of seafloor spreading. In the southeastern Brazilian margin, carbonate successions were deposited in distally steepened ramps formed after the Aptian evaporitic phase. In Santos, Campos and Espirito Santo basins a thick carbonate package, around 1,000m, was deposited during the Albian. These carbonate successions are characterized by many meter-scale shallowing-upward cycles recognized in cores, logs and seismic data. The development of the carbonate sequences was controlled mainly by paleogeographic settings and salt movements responsible for the topography necessary for the development of the high energy trends and by the sea-level fluctuations responsible for the facies stacking along the margin. Seismically, the basal boundary of Albian carbonates which overlie the evaporites of synrift deposits is not very clear. The upper boundary is well defined by erosional truncation overlain by regionally extensive deep marine sediments. Individual sequences can be correlated over hundreds of kilometers indicating that after the major salt movements, sea-level played an important role controlling the facies distribution. Stacking patterns of meter-scale cycles (fourth- and fifth-order?) define the depositional sequences recognized in cores, logs and seismic lines, which delineate long-term relative sea-level fluctuations (third-order sea-level events?). Unconformities and exposure surfaces separate the sequences. Seismic amplitude anomalies have been successfully drilled and tested by numerous petroleum exploration and development wells. They represent porous high-energy facies situated in the upper part of the carbonate successions.