

## **Tectonic and Eustatic Controls on the Origin of Shelf Sands and Associated Facies, Offshore NCMA Area of Trinidad and Tobago**

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Basins along the North Coast Marine Area (NCMA) of Trinidad and Tobago have received large volumes of coarse-grained Tertiary sediments shed from the South American continent. These sediments are deposited within actively deforming basins in shallow marine settings along the northern margin of Trinidad and are subject to significant reworking by the northwestward-moving Atlantic Equatorial Current. Similar current-influenced sand deposits worldwide are host to significant hydrocarbon accumulations and such is the case for basins along the offshore North Coast regions of Trinidad and Tobago which host giant biogenic gas fields in sandstone of Miocene and younger age.

Seismic geomorphic analysis and architecture of shelfal sands found in the offshore northern shelf of Trinidad and Tobago have been examined using 1350 km<sup>2</sup> of high quality 3D seismic and numerous well penetrations, as well as high-resolution 2D lines. We characterize two, ~400 ms (~275 meters) thick Pleistocene-age sequences and assess the varying influences of sea-level, continental climate and syn-depositional tectonics on their formation and morphology. Sequence thicknesses vary across the shelf in response to syn-depositional tectonic accommodation development, and post-depositional uplift and erosion by both subaerial and submarine processes. "Channeled" bodies form a near braided network of complex meandering to straight incisions over the older clinoform packages. Channels range in width from 100 to 550 m. Clinoform geometries dip from south-southwest to north-northeast at angles of 0.14° and are over 25 m in height. Key observations from this data set include the 3D hierarchical nature of key surfaces bounding facies packages in these units, the relationship between the paleo-shelf edge and the lowstand shelf wedges, and the influence of shallow fault deformation on delta top thicknesses.