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Structural and Sedimentological Analysis of the Neogene Sediments of the Offshore Portion of the Salina del Istmo Basin, Southeastern Mexico

The Salina del Istmo Basin in southeastern México is characterized by complex structural geology due to salt movement interacting with compressional plate tectonics.

This research is a study of the main geological processes which have influenced the structural and stratigraphic evolution of the Neogene sediments in the offshore portion of the Salina del Istmo Basin known as Marbella area.

Structural analysis in the regional study has recognized four buried fold belts (Agua Dulce, Catemaco, Marbella, and Marbella Norte) trending roughly NE. The Agua Dulce and Marbella Norte Fold belt are separated by an enormous withdrawal salt basin called the Pescadores Basin. The Pescadores Basin is bounded on the north by a stepped counter-regional fault. The counter-regional faults are landward-dipping, listric faults and salt welds associated with basinward-leaning salt. Basinward of the Pescadores Basin, a salt mini-basin is recognized in the upper continental slope. Another important structural element is the Sal Somera canopy, a large salt canopy in the onshore part of the Salina del Istmo Basin, and localized in the south part of the area.

Structural restorations show that, in general, the maximum allochthonous salt mobilization was during the Plio-Pleistocene due to the huge quantity of sediments that the Chiapas massif and the Sierra de Chiapas supplied to the Basin. A geohistory plot indicates rapid deepening at 2.4 to 2.6 Ma, which is attributed to a major influx of sediments.

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