

## Tectonic Evolution of the Western Gulf of Mexico Basin

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The Western Gulf of Mexico Basin is characterized by gravity driven thin-skinned tectonics. Listric extensional growth faults occur in the near shore shallow marine platform, whereas in the offshore deepwater spectacular growth folds and associated thrusts developed. Data analysis and structural restoration suggested five main stages of evolution for the study area: (1) Middle Jurassic? to Late Jurassic extensional basins with associated syn-rift clastics in complex half graben systems; (2) Late Jurassic to Early Cretaceous post-rift thermal subsidence with sedimentation dominated by widespread carbonate deposition and well-developed platforms along the basin margins; (3) Late Cretaceous inversion of some of the Jurassic half-grabens due to the most external pulses of Laramide orogeny; (4) Paleogene significant deposition of fine-grained clastics in the offshore basin. A large volume of terrigenous clastics sediments entered the basin using specific pathways controlled by inherited Cretaceous topography. The palaeo-shorelines and shelf margins migrated progressively basinward; (5) Neogene thick sequences of clastics deposited in extensional half-grabens formed by listric growth faults near the platform edge and upper slope. The up-dip extension is linked with the down-dip compression via the remobilisation of the lower Cenozoic overpressured shales. Growth faults are progressively younger, and involve progressively younger sediments, in a basinward direction. Syn-sedimentary tectonic activity continues to the Present Day as shown by the surface fault breaks seen in the seismic lines.

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