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Seismic Stratigraphy Analysis of the South-Eastern Gulf of Mexico (NW Offshore Cuba) - Regional Mesozoic Tectono-Stratigraphy and Platform Evolution

The regional Mesozoic tectono-stratigraphy of the South-Eastern Gulf of Mexico can be revised from the interpretation of 2D regional seismic profiles recently acquired by CGG in the North-Western Offshore of Cuba island. The studied area crosses the Strait of Florida between Yucatan and Bahamian margins.

From the Cambrian basement up to the Paleocene, we identified 14 seismic sequences. Chrono-stratigraphy of these sequences was calibrated from ODP wells (DSDP Leg 77) and deep exploratory wells in western Cuba. The platform-basin facies distribution was also studied in Cuban outcrop Belts.

The main sedimentary phases are the following: a) Syn-rift phase (Lower Jurassic to Oxfordian), with at least two main cycles of block tilting in relation with ocean opening in the Gulf of Mexico and probably with the rotation of the Yucatan block; b) Platform building-up phase I (Oxfordian to Kimmeridgian), with isolated stacked microbial ramps passing laterally to deep lagoon or starved basin with restricted marine conditions; the remnant basement paleo-highs were finally sealed during Berriasian time; c) Platform building-up phase II (Valanginian to Cenomanian), with four stacked bioclastic prograding ramps; d) Breaking up of the Bahamian platform (Turonian to Maastrichtian), with the initiation of intra-shelf basin (Cayo-Coco) and the drowning of main platforms (Strait of Florida) capped by a major unconformity, both due to reduced carbonate production and oceanic current scouring; platforms retreated towards Bahamian and Yucatan margins; e) Collision phase (Maastrichtian-Eocene), with the folding of Cuban Belts and the development of the foreland basin.