

The Junction of the Chiapas and Guatemala Fold and Thrust Belts (Guatemala): a Neogene Tectonic Syntaxis Affecting the Southern Peten Basin

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The Guatemala fold and thrust belt (GuaFTB), trending E-W and bounded to the South by the Polochic-Motagua sinistral fault system, constitutes the boundary between the North American and Caribbean plates. The Chiapas fold and thrust belt (ChiFTB), trending NW-SE with NE vergence, shows important shortening with minor dextral wrenching evidence. The Peten basin is an oil-producing basin located South of Yucatan platform (Guatemala) and East of the Chiapas carbonate platform (Mexico). It is made up by 5,000 m thick Upper Jurassic to Neogene sequence of shallow platform carbonates, evaporites and few pelagic limestones.

During the Neogene, transpressional motions on the GuaFTB and ChiFTB resulted in a large tectonic syntaxis that controlled the deformation in the southern portion of the Peten basin. At the GuaFTB, the sedimentary sequence of southern Peten shows different scale structures due to strike-slip deformation: double-plunging anticlines with sigmoid shapes in a plan-view, domes and related pop-up structures that are limited in general by steep reverse faults. Thrusting characterizes the front of the ChiFTB; the elongate-shaped fold structures are also favored by detachment in evaporites. Cross-sections controlled by wells, seismic and outcrop studies were made across the two belts and its adjacent northern foreland. This information shows a partitioning in the deformation style in the northern internal quadrant of the tectonic syntaxis: structures show a gradual increase of constriction towards the corner formed at the junction of both belts.