

EVOLUTION OF THE LLANOS BASIN AND THE DEFORMATION OF THE EASTERN CORDILLERA, COLOMBIA

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ABSTRACT

The Llanos Basin lies east of the Eastern Cordillera in NE Colombia. Basin development commenced with a syn-rift Triassic to Jurassic megasequence related to the separation of North and South America in the Caribbean. Basin development continued in the Cretaceous as a back arc megasequence behind the Andean subduction zone. Marine deposition was abruptly terminated during the early Maastrichtian due to the final accretion of the Western Cordillera.

The accretion of the Western Cordillera created the Pre-Andean Foreland Basin Megasequence (Danian to Serravallian) which covered the Magdalena Valley, Eastern Cordillera and Llanos Basin. In the Llanos Foothills the Megasequence includes the primary reservoir is the Late Eocene Mirador Formation, a fluvial system with marine influence which prograded from the Guayana Shield to the WNW. the Megasequence also includes the Eocene-Miocene Carbonera Formation which was deposited in a low energy fluvio-deltaic system as a series of major, grossly coarsening upward cycles separated by maximum flooding surfaces. These cycles correspond to changes in sea level, sediment supply and foreland basin loading.

The overlying Andean Foreland Basin Megasequence commenced with deformation in the Central Cordillera and Magdalena Valley which created major loading of the lithosphere and resulted in the deposition of the Middle Miocene marine shales in the Llanos. The Megasequence also includes the Guayabo Formation which is a classic "molasse" sequence deposited in a high energy fluvial system with the coarse clastic detritus being shed from the developing mountains of the Eastern Cordillera.

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