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Evolution and Exploration Implications of the Colombian Caribbean Accretionary Prism

Development of the Northern Colombian basins has been strongly influenced by the interaction of Caribbean and South American tectonic plates. As a result, three major geotectonic features or provinces are recognized, the Lower Magdalena Basin (LMB), the San Jacinto Fault Belt (SJFB) which represents the first accretionary event (Accretionary Wedge -1, AW-1), and the Sinu Fault Belt (SFB) formed by two additional stages of accretion, i.e. accretionary wedges 2 and 3 (AW-2 and AW-3).

The LMB is a transrotational basin with a rock record from the Late Eocene- Oligocene to the Recent. During Oligocene to early Miocene extensional conditions prevailed, thus creating today's basin configuration, which is marked by the presence of highs and lows. This basinal configuration controlled, to a large extent, depositional environments and their corresponding type of deposits.

The SJFB contains the oldest sedimentary rocks (Cretaceous and Paleocene) in the study area. To the west and underling the SJFB, an oceanic basement has been reported, whereas to the east the basement is continental type.

The SFB comprises two additional stages of accretion. The easternmost one (AW-2), which involves Eocene to Lower Miocene rocks, and the westernmost one (AW-3), affecting the upper part of the Lower to the Middle Miocene sequence.

The tectono-stratigraphic evolution presented permits us to conclude that, in order to properly and successfully explore the Northern Colombia basins, a combined structural-stratigraphic approach is a must. It will provide the bases for conducting a disciplined and thorough evaluation of the hydrocarbon potential of the basins.