PETROLEUM EXPLORATION IN SUBANDEAN BASINS

"Learning from the past - Looking to the Future"

Transpression and Its Impact on the Tectonic History and on the Exploration Potential of Northwestern Colombia.

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The interaction between the South American Plate, with an overall westward oriented transport, and the Caribbean Plate being displaced at a higher speed, in a general ENE direction, created conditions that resulted in a structural style mainly dominated by dextral wrenching. Wrenching conditions, together with tangential accretion of exotic terranes and obduction of the Caribbean Plate, contributed to structural inversion of the accreted terranes. These phenomena occurred along a series of east verging sutures, which formed the continental margin at the time, under the transpressive conditions affecting the region.

Consequently, northwestern Colombia, west of the Romeral suture, can be divided into a series of accreted terranes, which separates the continental and oceanic crusts. The transpressive conditions affecting the area west of the suture, generated transtensional conditions in the autochthonous block to the east. This later became the LMB. On the other, in those blocks involving oceanic crust, a series of separate sub-parallel small basins are formed, as an answer to the existing transpressive conditions.

The structural history of the region impacts the petroleum potential of the region and the way prospecting for hydrocarbons is to be conducted. The geometry of the accreted basins heavily influences the distribution of source rocks, reservoirs and seals, as well as the type of traps to be prospected. Moreover, the basins structural inversion, within a dominant wrenching environment, generates different types of stratigraphic and structural traps, which remain unexplored to date.