

## **Structural Domains in the Eastern Offshore Area of Trinidad/Venezuela and Their Influence on Paleo-Orinoco Shelf-Edge Delta Architectures**

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The study area is situated in eastern offshore Trinidad along the obliquely converging boundary of the Caribbean and South American plates and proximal to the Orinoco Delta system. Major structural elements in the shelf break and deep-water slope regions include normal and counter-normal faults to the south and large transpressional fault zones to the north. Regional two-dimensional seismic lines illustrate significant structural variations from north to south in the eastern Trinidad continental margin.

Two different structural domains have been defined in the study area: (1) the northern domain is dominated by a transpressive system associated with the oblique collision between the Caribbean plate to the north and the South America plate to the south. On the northern domain large faults associated with this transpressive system formed a structure called the Darien Ridge. This ridge is a narrow zone of uplift (20 km [12 mi] wide) comprising multiple complexly folded and thrust structures. Extensional forces associated with this boundary formed grabens along the shelf edge where paleocanyons funneled sediments from the outer shelf to the upper part of the slope. (2) The southern domain is dominated by northwest-southeast shelf-edge normal faults that appear to be relatively recent structures and that have seafloor expression (several meters of vertical relief). These normal faults are often times coupled with counter-normal faults that form localized areas of accommodation for sediments in the upper slope. Some of these sediments are temporally ponded in these areas and later spill out downslope. The structural variations along the eastern Trinidad continental margin played an important role controlling the architecture of paleo- Orinoco shelf edge deltas during the Tertiary.