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# EXTENSION TECTONICS IN THE CREST OF THE BARBADOS ACCRETIONARY PRISM

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**Abstract**

The Barbados ridge is an archetype of mature thick accretionary prism related to the convergence of the Atlantic oceanic lithosphere (South America plate) with the Caribbean plate (>2 cm/year). Most of the prism shows exclusively compressionnal structures. Notably, the well-known frontal part of the prism is characterized by imbricated thrusts, and, in a large province of the south-eastern part of the prism, the accretionary wedge is complicated by numerous active shale domes and mud volcanoes. Nevertheless, the recent processing of several seismic lines evidences that a poorly known structural feature of the Barbados prism is the clear occurrence of a well-developed extension tectonics in its western part. Normal faulting has already been described close to the Tobago island but it appears that it is widespread in all the area between Tobago and Barbados (Barbados crest) and in the Barbados basin. Indeed, all this area is involved in a synsedimentary extension (growth Normal faults), whereas coeval backthrusting occurred at the western edge of the prism (boundary with the Tobago basin). Below the superficial sequences of the Barbados crest which outline extension tectonics and below an erosional unconformity, a sedimentary basement is found which is strongly deformed by thrust tectonics. The extension tectonics is presently active, but the age of the beginning of the extension is poorly constrained due to the lack of drilling data in the Barbados crest. An attempt of datation of the extensional sequences can be proposed using seismic stratigraphy by correlation with well results on the Trinidad platform. This suggests that normal faults began to be active probably since Late Miocene times. Several interpretations to explain this extension tectonics in the core of the accretionary prism can be proposed. Notably an active gravity collapse of the thickest parts of the prism could be invoked.

## Manuscript Not Submitted