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Tectonic segmentation within the Barbados accretionary prism:

The influence of the structure of the subducting Atlantic lithosphere.

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The lateral changes in the tectonic style of the Barbados accretionary prism have been widely influenced by the nature of the Atlantic Oceanic lithosphere involved in the subduction zone. In the North America-South America- Caribbean triple point area, The Barracuda and Tiburon ridges are resulting from of a multidirectional and polyphased tectonic history at the diffuse plate boundary between the North and South America plates. These WNW-ESE trending ridges influence the sediment distribution and they are bounded by sedimentary trenches trending parallel to the Oceanic fracture zones. The subduction of this structural pattern and its partial incorporation within the Barbados tectonic wedge has widely influenced the deformation processes within the accretionary prism and has induced some segmentation of the overriding Caribbean plate. Notably spectacular WNE-ESE transfer zones developed in the northern area of the prism. South of Tiburon the sediment thickness increase drastically within the Atlantic abyssal plain. As a consequence there are much thicker sequences accreted within the prism, and the prism is so much thicker and wider. The Demerara fault zone separate the Cretaceous oceanic crust dating from the opening of Southern Atlantic from the Jurassic crust of Central Atlantic. In the Westward continuation of this fault zone, the fore-arc basin of the lesser Antilles active margin has been uplifted recently north of this major paleogeographic boundary, whereas it is still highly subsiding south, in the Tobago trough. At the southern boundary of the Barbados accretionary prism, a sub-linear fault zone crosscuts the Orinoco Delta obliquely with

respect to the continental slope, from the south of Trinidad and of the Columbus basin to the Atlantic abyssal plain. This fault line results of an active ENE-WSW normal dextral strike-slip movement characterized by a spectacular en-échelon fault system. We interpret this structure as a recent tectonic reactivation of the Continent-Ocean Transition. This could corresponds to a shallow consequence of a deep shearing of the lithosphere at the southern edge of the Atlantic subducting slab below the Caribbean plate.