

THE SOUTHERN PART OF THE LESSER ANTILLES ACCRETIONARY PRISM: A MODEL OF ACTIVE DEFORMATION

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ABSTRACT

During the last ten years, several oceanographic cruises have been conducted by the University of Bordeaux (France) on the southern part of the Barbados accretionary prism. This region is among the most spectacular lithospheric convergent areas, coupled with a very complex boundary between an active and a continental passive margin. The data are based on multibeam bathymetric maps, seismic profiles (high resolution, water-gun and 3.5 Khz), many piston and box-cores, deep-towed Side Scan Sonar imagery (SAR) and direct observations realized during 17 deep dives with the French submersible "NAUTILE".

All these observations have allowed us to point out a very important recent or present-day tectonic activity, which controls the development of particular structures, the dual origin of which is:

- the general stresses distribution at the junction of the Venezuelan passive margin with two other convergent margins;
- the existence of a deep level of clays supersaturated with water which induces an argilokinetic activity

These structures are:

- **NE-SW diapiric ridges** with the interaction between compressional movement and transpressional stress (east-west wrench faulting, like the continuation of El Pilar Fault);
- **Mud-Volcanoes** which are at the origin of large supplies of allochthonous materials. Some of them seem organized along approximately north-south axes;
- **Diapiric domes** with their tops covered by important encrustation. The origin of these diagenetic carbonated crusts is related to circulation of deep fluids associated with hydrothermal activity. This activity controls the development of rich benthic communities like Calypptogena, Mytilidae and Vestimentiferous.

Lastly, at the level of the deformation front, the acoustic sonar imageries permit us to observe on the overlapping flank of the first accretionary fold a network of conjugated fractures developed in a transpressional domain.