

**CONTRIBUTION OF IN SITU OBSERVATIONS TO SEDIMENTARY ANALYSIS, STRUCTURAL EVALUATION AND KINEMATICS OF PRESENT DAY TECTONIC DEFORMATION ON THE SOUTHERN PART OF THE ACCRETIONARY PRISM OF THE LESSER ANTILLES**

Griboulard, R.C.<sup>1</sup>, Faugeres, J.C.<sup>1</sup>, **Huyghe, P.**<sup>1</sup>, Bobier, C.,<sup>1</sup> Gonthier, E.<sup>1</sup>, Deniau, Y.<sup>1</sup> and Welsh, R.<sup>2</sup>

<sup>1</sup>Department of Geology and Oceanography, U.R.A. 197, Talence, Cedex, France

<sup>2</sup>Ministry of Energy Industries, Port of Spain, Trinidad

**ABSTRACT**

Seventeen deep dives with the French submersible "NAUTILE" have been realized on three different areas of the southern part of the Barbados accretionary prism. The authors show, in particular, the role of present-day tectonic deformations illustrated as well by the deep towed sonar acoustic imagery (SAR) and with direct observations during dives.

Indeed the structural complexity of this region (very well supplied by terrigenous inputs of the Orinoco River) is due to its original situation in a delta prograding on the connecting area between three different types of plate margins. It appears that NE-SW diapiric ridges due to subduction are cut very recently by N 100° dextral strike slip faults which appear clearly on side scan sonar imagery and correspond to vertical escarpments observed during dives. Some of these faults drive hydrothermal fluids which induce strong diagenetic processes (very large carbonated crusts and chimneys, oasis of benthic communities). These structural lines cut some rims of black cover blocks oriented N 30°.

Clay diapirism s.s. produces kilometric circular or elliptic mud volcanoes with accumulation of mud flows and also mud domes affected by tectonic markers. The authors have observed important accumulations of blocks cut in diagenetic crusts along fault scarps up to ten meters high. In other places we can observe either directly or on acoustic imagery important gravity glidings oriented by tectonic structures, important erosional surfaces and markers of deep currents sometimes influenced by tectonic structures.