

TECTONICS, SEDIMENTATION AND FLUID DYNAMICS IN THE BARBADOS ACCRETIONARY PRISM

1DEVILLE, E., 1COLLETTA, B., 2DECALF, C., 2FOURNIER, F., 2MASCLE, A., 1Institut Français du Pétrole, 1-4, av. de Bois-Préau, 92 506 Rueil-Malmaison, France 2IFP School, 228-232, av. Napoléon Bonaparte, 92 852 Rueil-Malmaison, France

The Barbados ridge is a thick accretionary prism related to the convergence between American and Caribbean plates (~ 2 cm/year). In the southern part of the prism, the high terrigenous flux from the Orinoco influences the morphology, the structure and the fluids dynamics within the tectonic wedge. This induces spectacular changes between two main provinces separated by the Barbados basin: (1) the eastern part of the prism is characterized by imbricated thrusts partly covered by syntectonic turbiditic basins and by active mud domes and volcanoes, and (2) the western part (Barbados crest), where the mud volcanism is presently fossil, shows essentially synsedimentary active normal faults and coeval backthrusts at the western edge of the prism bounding the Tobago basin. The nature of syntectonic sediments is variable. The sedimentary sources are due either, to turbiditic or hemipelagic sedimentation (exotic sources), or to the recycling of sediments within the prism by ductile flows (mud intrusions or effusions around mud volcanoes) and gravity mass-flows deposited in transported basins (in-situ sources). The age of the syntectonic sediments is poorly constrained due to the lack of drilling data in the southern Barbados ridge. An attempt of datation of the frontal thrusts can be proposed by correlation with well data from the Orinoco platform. This suggests that the tectonic front has absorbed only a few of the tectonic shortening (2 to 5 mm/year) during Pliocene-Quaternary times, and so a large amount of shortening was distributed in the whole prism during recent times.