Geophysical Research Abstracts
Vol. 12, EGU2010-10979-1, 2010
EGU General Assembly 2010

Syn- and post-rift evolution of the Demerara plateau, French Guiana transform margin.

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Globally oblique to the opening direction of the Equatorial Atlantic, the continental margin of French Guyana is divided in a succession of transform (North of Demerara Plateau and the eastern margin) and divergent segments (East of Demerara Plateau). Reflection seismic and bathymetry data acquired in 2003 by the GUYAPLAC cruise, improve our knowledge of this margin, whose structure and evolution are presented here relatively to the post-rift unconformity, regionally dated Late Albian by drill-holes.

The study area has been divided into 5 parts according to morphological characteristics: the Upper, Intermediate and Lower Plateaus, the Deep Basin east of the divergent segment, and the Deep Abyssal Plain.

The unconformity and underlying highly deformed layers are observed on the Lower and Intermediate Plateaus. The relative chronology of deformation attests that former tilted blocks with fan-shaped filling were inversed by folds and reversed faults. The spacing of available seismic lines does not allow identifying directly strike-slip displacements or transpression. To the north-east, elongated seismic basement highs could be magmatic intrusions and limit the edge of the Lower Plateau from the abyssal plain.

As in other transform margins, but particularly here because of its segmentation, the unconformity is difficult to date and diachronic. Indeed, it marks the transition syn- to post-rift in the divergent segment and the end of strike-slip deformation along the transform segments. The unconformity here clearly seals compressive structures with a progressive erosion of the folds axes. It is later shifted by normal faults affecting mostly the divergent southeastern border.

Post-unconformity sediments were stacked by aggradation on the Plateau. After their deposition, they were tilted oceanwards as the whole margin and affected by massive slides whose scars are located between the Upper and the Intermediate Plateaus. One of these mass wasting layers can be dated as at least post-Miocene perhaps as late as Pliocene. It appears as a shallow layer in the Intermediate and Lower Plateaus but is buried below more than 1s twt thick deposits in the Eastern Basin and the abyssal plain, attesting the late tilting and a late and rapid filling of the deep domain that could be completed mostly by mass redistribution processes.

Fluid escapes are evidenced in seismic lines by a polygonal faulting network, linked at seafloor with pockmark fields and rooted below the post-rift unconformity.

These observations question the complex pre-drift deformation phases and the late structuration of the Demerara Plateau with oceanward tilting, unlike most of the transform margins that were uplifted along the continent-ocean boundary. This peculiar evolution may result from the complex geometrical variability of the French Guyana margin characterised by differently oriented segments when compared to the opening directions, making them neither "classical" divergent nor purely transform segments. Syn- and post-rift movements observed there are hardly compatible with subsidence and tectonic models generally proposed for transform margins, and suggest specific evolution for divergent-transform margins intersections.