

CAYMAN TROUGH: STRUCTURES AND EVOLUTION

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ABSTRACT

The Cayman Trough is a 1200 km long depression formed by a very short spreading center connecting two long transform faults. The two conjugate margins are asymmetrical, the Belize margin is steep whereas the Jamaica margin is broad. A multichannel seismic survey of this extensional zone and adjacent oceanic crust was carried out during the Casis cruise. These data, in addition to multibeam and magnetic data and previous refraction experiments, allow us to define the continental crust with a large tilted block still exposed to the sea-floor, an Ocean-Continent transition (OCT) formed of a rounded block or large syn-rift depression, and the oceanic domain where oceanic tilted blocks are facing the spreading center. The good quality of the seismic profiles allowed Moho reflections to be imaged in several places.

In the eastern part of the trough, where the crust is thick, the easternmost tilted block is coalescent to the Jamaican margin and some normal Eocene faults have been described in this part (Blue Mountains) of Jamaica. The western tilted block, where the crust is thinner, is separated from the steep Jamaican slope by a deep trough. This trough and the slope formed a transform margin between the Jamaican thick crust and the thinned continental crust. Westward of the OCT, the thick crust of Jamaica is directly in contact with the oceanic crust. In the oceanic domain several transform faults are parallel to the transform margin trending E-W. Since the late Miocene the dead trace of the Jamaican transform margin was reactivated. Jamaica is affected by a transpressional motion as oceanic crust.