

# IMAGING FIRST STEPS OF SEAFLOOR SPREADING OFF MARANHÃO-BARREIRINHAS-CEARÁ MARGIN, NW BRAZIL

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## Oral

**RESUMO:** The structure of the North-East equatorial Brazilian margin was investigated during the MAGIC (Margins of Brazil, Ghana and Ivory Coast) seismic experiment, a collaborative project conducted in August-September 2012 by Ifremer (Institut Français de Recherche pour l'Exploration de la Mer), UnB (University of Brasilia), FCUL (Faculdade de Ciências da Universidade de Lisboa) and Petrobras. During this project, 5 deep seismic profiles have been acquired using 143 Sea-Bottom Seismometers (OBS), a 4.5 km seismic streamer and a 7587 cu inch airgun array. Here we focus on two combined wide-angle and reflection seismic profiles: The MC-1 and MC-2 profiles. The MC-2 profile, a 320 km-long transect, east-west oriented spans from the continental crust to the presumed oceanic crust. Whereas the MC-1 profile is a 360km-long transect, NW-SE direction oriented acquired in the presumed oceanic domain, that crosses the MC2 profiles.

Forward modeling of these two wide-angle seismic profiles reveals a lateral evolution of the oceanic crust. After the transitional domain, a 60 km-wide domain, bounded to the SW by a NW-SE volcanic line, consists in a 5 km thick crust presenting 2 layers, characterized by high acoustic velocity and overlain by 5.5 km of sedimentary deposits. To east, the oceanic crust, 5 km thick, evolves to a 2 layers crust characterized by "normal velocities" and also overlain by 5.5 km of sedimentary deposits, spanning between the two main fracture zones that fringe the Maranhão-Barreirinhas-Ceará segment.

We discuss the presence and interpretation of deep strong reflectors in relationship with the P-wave velocity results and propose that this evolution between the two domains may represent an eastwards evolution from a proto-oceanic crust to a more « typical » but thin oceanic crust. We suggest that this evolution can be explained by the involvement of the lower crust in the first proto-oceanic crust.

**PALAVRAS-CHAVE:** MARANHÃO-BARREIRINHAS-CEARÁ BASIN, DEEP SEISMIC STRUCTURE, OCEANIC AND PROTO-OCEANIC CRUST.