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Cruise BGR07 MOBAMASIS - Marine Geophysical Investigations offshore Central Mozambique

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In September/October BGR conducted together with institutes from Germany, France and Portugal marine geophysical investigations offshore central Mozambique (the Zambesi River area). The cruise with RV MARION DUFRESNE served two different goals that were tackled by BGR in cooperation with the French institutions and organisations, respectively, Ifremer, ExtraPlac and IPEV (as responsible operator for RV MARION DUFRESNE):

1. Investigation of the Mozambique Basin in terms of its structure and formation history with special focus on the opening history of Eastern Gondwana and the hydrocarbon potential,

2. Contributions to the opening history of the Southern Ocean and the break-up of the Gondwana mega-continent. Simultaneously, this forma a contribution to the

study focus “Ocean Gateways” within the frame of the International Polar Year (IPY) 2007/2008.

A total of four long transects (450 to 225 km long) and one 400 km long connection line were acquired over the shelf, slope into the deep Mocambique Channel. The data comprises mulichannel seismic reflection (MCS), magnetic, gravimetric and swath bathymetry. On the eastern two transects two on-/offshore seismic refraction studies were carried out. First preliminary results will be presented from the seismic reflection work. These results show a large thick sedimentary succession of over 7 km thickness covering sediments from Jurassic to recent successions. We were able to correlate these successions to two deep reaching wells on the shelf. In the eastern part two different drift phase were distinguishable: A thick contourite structure deposited by the Serpa Pinto (“Paleo-Zambesi”) and a younger sequence originating from the Zambesi River. In the easternmost part also indications of gas hydrates (BSRs) are present. As – from the first interpretation of the magnetic data – no clear magnetic chrons are identifiable it could be that at least a zone of over 300 km either stretched continental crust or Proto-oceanic crust is present in the northen Mocambique Basin.

The westernmost transect show indications for deep reaching active extensional tectonics. This can possibly be related to the southernmost activity of the East-African rift system.