



Structure of the Beautemps-Beaupré pull-apart basin at the southern termination of the Owen Fracture Zone (NW Indian Ocean) from seismic reflection data

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The Arabia, Somalia and India tectonic plates meet at the Aden-Owen-Carlsberg triple junction in the NW Indian Ocean. There, strike-slip motion along the Owen Fracture Zone (the current India-Arabia plate boundary) turns into diffuse extension instead of directly connecting to the Sheba spreading center. The main structure of this area of diffuse extension is the 120-km-long, 50-km-wide Beautemps-Beaupré pull-apart basin at the southern end of the Owen Fracture Zone.

Here we present a new set of multibeam data, echosounder and seismic profiles crossing the Beautemps-Beaupré Basin acquired in March 2012. Ties of the seismic dataset with ODP Sites located at the top of the Owen Ridge document the stratigraphy of the study area. We investigate how the Beautemps-Beaupré Basin formed in the complex framework of the evolution of the Aden-Owen-Carlsberg triple junction. We show that the Beautemps-Beaupré Basin opened 2.4 Myrs ago, coeval with a major structural reorganization of the India-Arabia plate boundary. This 2.4 Myrs-old geological episode is unrelated to any identified kinematic change. This suggests that the opening of the Beautemps-Beaupré Basin reflects a series of transient adjustments of the configuration of the Aden-Owen-Carlsberg triple junction since the last major kinematic change identified in the Indian Ocean between 6 and 8 Ma