



The first stages of evolution of the Western Somali Basin

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The rifted and transform margins created by the separation of Madagascar and Africa offer an opportunity to jointly investigate the structural and geodynamic evolution of conjugate continental passive margins. It is generally accepted that the continental breakup of Gondwana in the East African region began with the onset of the southward drift of Madagascar (then connected with Antarctica and India) along the Davie Fracture Zone probably during the Middle Jurassic, and subsequently led to the opening of the western Somali Basin. Although published kinematic models are able to explain and date some of the broad scale features of the Somali and Mozambique oceanic basins, the exact timing of rifting, the early stages of seafloor spreading and the timing of seafloor cessation in the western Somali Basin remain debatable. Our new study aims to investigate the relationship between the long history of rifting along the East African margins and the breakup structures by constructing a consistent database that contains structural elements and information about their evolution from updated published literature. Next, a thorough investigation of the potential field data (magnetic and gravity anomalies) is undertaken in order to establish the structure (and possibly timing) of the early seafloor spreading. An analysis of multichannel seismic reflection, gravity, magnetic and bathymetric datasets is aimed to identify deep crustal structure and continent-ocean transition zone in the study area.

We present preliminary results showing the evolution of the East African margin (along Somali and Mozambique basins), the location of the transition zone between the continental and oceanic crust, and a regional kinematic analysis of the Jurassic-mid Cretaceous tectonic events.