

## **Structural characterization and kinematic significance of the offshore Cenozoic extensional rift zone in the offshore Tanzania.**

### **Research background and scope**

The passive margin in the offshore Tanzania still represents a puzzling area due to its complex Cenozoic structures showing contrasting kinematic history. The area of interest is geographically located in the offshore Tanzania (between the Pemba Island and the Rovuma area) and geologically bounded between the East African rift system (to the west) and the complex structure of the Davie ridge to the east. Recent works focusing on the offshore Tanzania, suggest those Cenozoic structures are represented by a diffused extensional arcuate oblique rift system active since the Neogene age. Those structures are probably routed into (but also reactivating) pre-existing Mesozoic structures related to the Jurassic-Cretaceous rift system. They appear to have a strong control on the recent depositional system by re-routing the deep-water drainage system since the mid Eocene. The relation of this recent structural rift system with the Kerimba graben and the Davie fracture is still poorly understood. The entire fault system is also crosscut by a long lived transcurrent regional fault (named Seagap) which is still active and rooted into the Cretaceous rift structure. The Seagap fault shows a sinistral shear sense and did produce several releasing and restraining basin system of Neogene age. However, despite the recent structural information obtained from newly released 2D and 3D dataset, the main tectonic significance of this re-activated rift system within the regional area is still poorly known and explored. Therefore the main target of this proposal is to elucidate the structural relation between this re-activated rift system and the major regional structure (East African rift, the Seagap fault and Davie ridge in the east) but also explore how it reworks the deep Mesozoic rifting structure which formed the entire passive margin offshore Tanzania.

### **PhD Project:**

The main scope of the project is to explore and unravel the architecture of the extensional rift system and elucidate their kinematic relation with the main regional structural features as the Davie ridge and the Seagap fault. The project will use 2D, 3D seismic data (released by Shell Tanzania) and several well log data. It will consist of a detailed revision of the literature and mapping of 2D and 3D datasets (using well data) located in the southern part of the offshore Tanzania. The datasets available are imaging a crucial sector of the offshore Tanzania and will allow to explore the structural relationship between the Neogene structural rift, the Kerimba basin, Davie fracture zone and the Seagap fault. The project will be run with the collaboration of the Halifax University and benefit of the co-supervision by Vittorio Maselli.