Tectonic History of the Mandawa Basin: Implication from Field Structural Observations, Dem and Magnetic Data

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Abstract
Our new field structural observations, digital elevation modal (DEM), seismic and magnetic data from the Triassic-Jurassic Mandawa Basin of coastal Tanzania demonstrate tectonic results of Gondwana rifting and dextral strike slip movements associated with the rifting and drifting of Madagascar from East Africa in Jurassic time. The results reveal two major deformation events, in the history of Mandawa Basin formation, named D1 and D2 in this study. The D1 event generated the NNW-SSE trending deep-seated normal faults, and T-fractures. The geometry of these structures suggests that, the ENE-WSW extensional movements, probably associated with the rifting of Gondwanaland during Permo-Triassic time, generated them. The D2 event was the most important deformation episode, which is widely distributed on regional scale as well as on outcrop scale. The NNE-SSW, NNW-SSE and ENE-WSW Riedal shears, dextral strike slip faults, sinistral faults, normal faults and T-fractures characterize D2 event. The D2 event is probably related with the NNW dextral shear zone with NW-SE extensional movements, probably generated during the drifting of Madagascar along the Davie transform fault during the Jurassic time. The geometry of Mandawa Basin suggests pull-apart origin, generated by transtensional event, followed by successful reactivations.