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Relationships of Subparallel Synthetic Faults and Pre-existing structures in the Central Malawi Rift

It has been suggested that during the rifting process border faults may become locked and strain is then accommodated within the hanging wall. The Malawi Rift provides an opportunity to study how Inherited structures affect evolution of these faults for a young, active and magma-poor continental rift. Two faults in central Malawi (Chirobwe-Ntcheu and Bilila-Mtakataka) may show the transference of strain into the hanging wall and a strong control from inherited structures. Our preliminary results show that the strike of each fault is approximately NW-SE, consistent with the Precambrian fabric. The magnetic fabric has a strike of NW-SE in the south changing to NE-SW in the north suggesting that the faults are controlled in part by an inherited Precambrian fabric. The apparent throw profile of Chirobwe-Ntcheu consists of three segments with a large throws consistent with a mature fault whereas, the inner Bilila-Mtakataka fault is asymmetric and displays five fault segments supporting the interpretation that this is a relatively young fault. The aeromagnetic data utilizing Source Parameter Imaging for approximate depth to basement and 4 cm resolution DEMs created by unmanned aerial system (UAS) will support the apparent throw profiles derived from the SRTM and documenting the regional Precambrian foliation.

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