



EGUsphere, referee comment RC2
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Comment on egusphere-2022-304

Tuo Wang (Referee)

Referee comment on "The Luangwa Rift Active Fault Database and fault reactivation along the southwestern branch of the East African Rift" by Luke N. J. Wedmore et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-304-RC2>, 2022

This manuscript systematically analyzed 18 identified active faults in the Luangwa Rift, using the SRTM data, and subsequently developed the Luangwa Rift Active Fault Database (LRAFD), which would provide valuable knowledge for future scientific study and implications on evaluating seismic hazard of the region. The authors adopted a previously proposed empirical relationship to estimate the magnitude (M_w) of the potential earthquakes and inferred the rift could host earthquakes up to M_w 8.1. Their resulting height measurements of the prominently exposed fault scarps (Chipola, Molaza, Chitumbi, and Kabungo) suggest that they were formed by multiple smaller events, rather than a single, large-magnitude one. In addition, the authors built a possible connection between the two border faults of the Luangwa Rift (Chipola and Molaza) and surface deformation. In general, I found the manuscript to be properly structured, and the contents of the manuscript are suitable for publication in the SE.

Specific comments:

Using an empirical relationship between the fault length and moment magnitude of earthquakes, the authors conclude that the fault could induce earthquakes up to M_w 8.1, a value that is greater than the historically recorded events in southern Africa. My concern is how confident are you with the resulting estimates, because it seems to me that there's a certain degree of uncertainty here.

Technical corrections:

- Line 57: 'Figure 1 & 2' should be 'Figures 1 & 2', and same for the rest, i.e., lines 216, 224, 225, 228;

- Line 105: The abbreviation was 'EARS' (Line 54), not 'EAR', same for Line 248;
- Lines 112 - 113: The same sentence appears as the first sentence of the last paragraph;
- Lines 120 and 123: The audience would be benefited with the full names of GEM (Global Earthquake Model) and GIS (Geographic Information System);
- Lines 168 - 170: Please check the sentence;
- Lines 186 and 187: Dav or dav?
- Line 213: Do you mean Figure 5?
- Line 261: trees?
- Line 394: The abbreviation of 'LRZ' has not been indicated before.