



EGUsphere, referee comment RC1
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Comment on egusphere-2022-304

Junjie Ren (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-RC1>, 2022

This study uses SRTM data to analyze surface deformation along the Luangwa rift and develops a database for active faults in the Luangwa rift. The author proposed 18 potentially active faults and estimated the possible magnitudes up to Mw 8.1 for these faults. They also estimate the scarp heights based on the STRM data and use the empirical relationship between magnitude and fault length to assess the maximum earthquake. These data can provide insights into active tectonics and associated seismic hazards in southern Africa.

There are some comments on this manuscript.

- An active fault has been widely defined via offset late Quaternary landforms or sediments. In this study, no field observation on these faults can show any evidence for the latest activities. For large earthquakes, we can often find coseismic surface ruptures. There is a historic earthquake in the 20th Some records in the history may help you.
- You suggest the fault scarps on the alluvial fan. Do you have any evidence for the fan age and the same geomorphic units on the both sides of the fault?
- The magnitudes are estimated via the empirical relationship of magnitude and fault length. The results include many uncertainties. Maybe a large earthquake can rupture several branches. Also, the earthquakes on a fault have a similar depth. Only using the fault length to estimate the depth is not suitable.
- No age, no rates. So your slip rates and associate recurrence intervals are not reliable.

Your database of active faults is very nice. Maybe your analysis is over-interpret

- In L274, The minimum heights using the SRTM data are 2-3 m, but your results show a high resolution like 0.08 m or 0.2 m. It is impossible.
- L169-170: this sentence is not clear. Please check it.
- Line274: was—are
- Line 286: add m.
- Figure 4 show a nearly N-S-striking linear feature between faults 11 and 15 on the west side of the rift.
- Please show the profile locations of figure 9 in the other figure.