

Interactive comment on “A Quaternary Fault Database for Central Asia” by S. Mohadjer et al.

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Dear Dr. Daniell,

Thank you for your helpful comments. Below, we address each comment. Q stands for question and R stands for reply.

Q: General Comments: ASTER GDEM vs. SRTM 30m, would be interesting to see whether you get better definition as there are quite different results.

R: Thank you for pointing this out. To address this issue, sample tiles (for the Alai valley) from both ASTER GDEM and SRTM 1-arc-second were selected and compared. The SRTM elevation data appear sharper than the ASTER GDEM despite having a similar resolution (~30 meters), but for the purpose of mapping and drawing faults, this difference does not seem to be important.

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Q: Web Portal: A linkable system for extraction of information on multiple faults in a search window would be useful rather than a click system, but the system at the moment showing the name of the fault is also useful. But it is a great portal!

R: This would be a significant undertaking and is not something that can be done easily. The current functionality serves the purpose of allowing users to display and extract information. Future additions such as this will be considered if additional funding is available.

Q: Active Faults: I am used to the definition of this through Holocene period faults, a more accurate definition may be required here as to the use of Quaternary fault sources.

R: We have replaced the term ‘active’ with ‘Quaternary (<2.6 Ma)’ as suggested by Dr. Kathy Haller (also a reviewer for this manuscript). It is possible that some of the faults included in the database are currently inactive (e.g., Herat Fault in Afghanistan) despite having documented Quaternary deformation. Therefore, the term ‘active’ might not be accurate.

Q: P5601: Line 6: Approximately 195796 fatalities? There is great uncertainty in the death tolls for each earthquake. i.e. The Kashmir earthquake etc., probably less exactness is better in this case. Some loss databases have around 695,000 fatalities in total for this time period (depending on Haiti death toll etc.), thus, this would be roughly 28%.

R: We agree. These numbers can come with great uncertainty. We have changed the sentence to say at least 195,796 fatalities in total. More specifically, our calculation of 23% is based on data reported by U.S. Geological Survey for the largest and deadliest earthquakes recorded for 1990–2014. Data are available online at: <http://earthquake.usgs.gov/earthquakes/eqarchives/year/byyear.php>

Q: Consider changing the diagram associated with these as the 2013 Baluchistan

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earthquake is of a different scale (900ish deaths) from the others indicated in terms of death - perhaps log scale for magnitude of event i.e. Sichuan and Kashmir one size.

R: Thank you for pointing this out. The purpose of showing these events in Figure 1 is to highlight the location of the deadliest earthquakes in the India-Eurasia collision zone (that are also discussed in the text). These earthquakes are reported by the US Geological Survey as the deadliest earthquakes in the collision zone (which is also the study area for this manuscript) for the period of 1990-2014. See above link, please.

Q: One star is missing, as there are only 6 on the diagram, yet 7 mentioned in the text - I presume 2010 Yushu in Tibet - ca. 3000 deaths (2968) is the missing one?

R: We agree that there is a missing star in Figure 1. We have changed the caption for Figure 1 to resolve this confusion. The missing star belongs to the 2001 M7.7 Bhuj earthquake in the Kachchh Peninsula. This area is subjected to compressional stress and reverse faulting resulted from India's collision with Asia. Therefore, we have included the damage data associated with this earthquake in the estimations shown in page 2. The earthquake location, however, was not shown because it is located outside the study area (Figure 1).

Q: P5601: Line 12: The Hindu Kush earthquakes had a significant number of injured (in the 10s of thousands, as well as homeless). This sentence should be changed to "caused over 5000 fatalities, left around 10000 injured and tens of thousands of people homeless." Of course the 5000 fatalities is subject to opinion as the Feb and May 1998 quake tolls have some uncertainty.

R: We have changed this.

Q: P5607: Geodetic and geologic slip rates are reported for 20 faults - perhaps a table here, and also consider if slip or displacement is meant. The Figure 2 is fine, but perhaps more could be done with this data for comparison purposes. A graph or comparison of some of these 20 would be good.

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R: We have created a table that shows this information. The analysis of slip rates is done in a separate manuscript that is currently in progress. The purpose of this manuscript is to present the database and how it can be used for data display and extraction. The analysis of its content will be done in a separate paper. We have also changed section 2.3 to distinguish between slip and displacement rates for documented faults.

Q: Figure 1: Do you really have completeness for all $M > 5$ from 1900? Check the completeness of ANSS. A comment should be made to this effect as the diagram probably shows unreasonable densities of events.

R: Good question. The catalog is not uniform in its coverage and magnitude completeness. It is a composite catalog, relying on contributions from member networks. To make this clear to readers, we have changed the text.

Q: Figure 8: the coordinate system would come in handy here - WGS-84, or projected coordinates?

R: Good point. We have added this information to the caption for Figure 8. The coordinate system is Geographic (WGS-1984).

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