

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on **essd-2021-312**

Alessandro Tibaldi (Referee)

Referee comment on "The Active Faults of Eurasia Database (AFEAD): Ontology and Design behind the Continental-Scale Dataset" by Egor Zelenin et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-312-RC1>, 2021

This work describes the characteristics and infrastructure of the "Active Faults of Eurasia Database". The database comprises 46,775 structures formatted as a shapefile with spatial detail sufficient for a map at a 1:1 M scale. Each fault has a database that comprises fault sense, a rank of confidence, a rank of slip rate, and reference to source publications, supplemented, wherever possible, with a fault name, fault zone name, abbreviated fault parameters and text information from the sources. The database is available at various websites.

This work is of large international relevance and represents a step forward in the representation of the state-of-the-art knowledge of active faults, especially in Asia, where most studies are available in Russian and as hardcopy.

This database helps in the search of active faults in a given area, useful for assessing the framework of regional tectonic activity, or for focusing more in detail on a given structure. It provides the backbone for the study of a particular fault, and guides more-in-depth bibliographic analyses.

The paper is well written and contains all major information on the database, with a couple of short examples. I would only encourage the authors to add some more explanations about the seismicity showed in their web map. The map, in fact, contains also seismicity divided by major, middle and minor earthquakes. It would be wise to know more about the sources of these data, and the criteria of selection of the showed seismic events.

I recognize that it has been a strong effort to gather all this information. I also recognize

that the authors have stated, at the ending of the paper, that they encourage researchers to advise them about missing or recently obtained data. Anyway, I have seen the lacking of some major active faults in the present database; for example, in Iceland very few faults have been presented in the database, respect to the available information. Among these, it should be added in the database at least the famous Husavik-Flatey transform fault that is now missing: this is a 100-km-long active structure that comprises an offshore section and a 25-km-long onland section. This structure has been widely studied with clear evidence of Holocene offset deposits, morphological indicators of right-lateral strike-slip motions, elongated seismicity along the fault trace (with some major earthquakes) and at least one paleoseismological trench opened across the fault (some relevant literature: Metzger et al., 2013, Present kinematics of the Tjornes Fracture Zone, North Iceland, from campaign and continuous GPS measurements. *Geophys. J. Int.*, 192, 441-455. Pasquarè Mariotto et al., 2015, Holocene displacement field at an emerged oceanic transform-ridge junction: The Husavik-Flatey Fault - Gudfinnugja Fault system, North Iceland. *J. Struct. Geol.*, 75, 118-134. Tibaldi et al., 2016, Interaction between transform faults and rift systems: a combined field and experimental approach. *Frontiers in Earth Science*, 4, 33. Tibaldi et al., 2016, Partitioning of Holocene kinematics and interaction between the Theistareykir Fissure Swarm and the Husavik-Flatey Fault, North Iceland. *Journal of Structural Geology*, 83, 134-155).

A few detailed observations on the text follow here:

At Line 30 it would be better to introduce here ILP with the entire name International Lithosphere Program, and after that you can use the acronymous. It is fully introduced only at Line 163.

Line 75 IN the database?

Line 93 Not clear why here you write about a target map scale of 1:1 M, whereas previously, at Line 36, you speak about 1:5 M scale, and then at Line 98 you cite a 1:500 000 scale. Explain better.