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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Active Faults sources of the Morelia-Acambay Fault System, Mexico based on Paleoseismology and the estimation of magnitude M_w from fault dimensions" *by* Avith Mendoza-Ponce et al.

P. Lacan (Referee)

placan@geociencias.unam.mx

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Avith Mendoza-Ponce and co-workers manuscript represent a potentially interesting contribution to the characterisation of active faulting along the Morelia-Acambay Fault System in Mexico.

Hundreds of demonstrated and presumed active faults that form the Morelia-Acambay fault system have been mapped and different parameters were used to propose a characterization of the entire fault system.

The manuscript presents potentially interesting data but suffers from a poor organization and writing that make it very difficult to follow. In my opinion, the data recompiled are potentially of interest for the reader of NHESS but the manuscript must be greatly reorganized and rewritten, clarifying objectives and focusing on the new results (which are not easy to identify in the actual form). Below, I add major comments that could improve the manuscript:

1) General Organization:

The structure of paper is very confused and is not easy to find the elements to follow the reasoning of the authors. -The introduction should introduce the problematic of the manuscript by removing all the generalities away from the objectives of the paper. -The Seismotectonic Setting should be organized to set out the elements necessary for understanding the discussion. In its current form, everything is underneath and the state of art is not clear. -The methods should be explained more carefully: What morphological evidences have been taken into account delimiting fault segments and main faults. Why so much difference with works published previously. In particular Lacan et al., 2018 calculated 48 km length for the Venta de Bravo fault, you should explain how do you calculate the different length (32.982 km?) and why is this difference so important. Same for the Pastores Fault: 33 km for Langridge et al., 2013 and 38 km for you? and other faults... For the "2.4 Fractal analysis", you lose the reader with details explanations but you do not explain what you want to calculate? Why do you think it's fractal? What does these calculations represent? - The Result and Discussion part is confused. I strongly recommend separating the results from one side (explaining the results you get) and after, a discussion section where you discuss these results and their consequences. In the current form, we do not distinguish what is new from what was already known. In particular I do not understand the relationship between the results you present and the generation of major earthquakes. What is already known, including previous mapping of faulting in the area should be carefully presented in the seismotectonic setting. - The conclusion is also confused. You should clearly state

your results and their consequences on the seismic risk of the region.

2) Bibliography: You have probably had a problem with the bibliography editor, everything seems to mix and many references are not attributed to the correct concepts, ideas or interpretation.

3) Figures:

Figure 1: “Geodynamic” and “Seismotectonic setting” imply to indicate the geodynamic elements, the seismicity and the main tectonic features on the figure. Figure 2: It is absolutely necessary to explain in the text how did you realize the fault mapping. Why, for example, some faults located north of the figures are not drawn? What is the difference between your work and the cartography of Suter et al., 2001 or Ferrari et al., 2012? Figure 4: scale is missing

4) English must be revised

Given my comments and considering the importance of such a study for the understanding of the seismic risk in the central region of Mexico, I recommend major revisions before the article can be accepted for publication in NHESS.

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