

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Comment on nhess-2021-351

Anonymous Referee #2

Referee comment on "Probabilistic fault displacement hazard analysis for the north Tabriz fault" by Mohamadreza Hosseini and Habib Rahimi, Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-351-RC2>, 2022

The main aim of this paper is to evaluate the probabilistic on-fault displacement hazard analysis for the North Tabriz Fault. The authors consider two different scenarios, based on two different published paleoseismological studies, and apply the Petersen et al. 2011 approach, due to the strike-slip kinematic of the considered fault. The study is interesting because there are very few examples of PFDHA and its application worldwide, but before to consider it as publication, in my opinion a major review is necessary.

These general comments must be addressed:

- 1) The introduction is missing of several worth-to-mention papers and should be improved accordingly.
- 2) The input data must be clearly described both in the main text and in the figure. Fault length and selected site are just two examples.
- 3) The section Methodology of probabilistic fault displacement hazard analysis needs a deep review. I suggest to focus only on the approach used (i.e., Petersen et al.) and I would like to see all equations used (and how).
- 4) The section Results and Discussions is very poor. There is no discussion about the results and, for me, it has been very hard to understand how input parameters are considered and which equations are used. This paper could help the seismic hazard local community but it need a major review in order to make the manuscript clear and readable. Reading the paper I have the feeling that most of things are omitted and not well described.

5) As it is, this work is just an application of an already published work (Petersen et al., 2011). Which is the contribute to the scientific community ? even if the authors are in position that they cannot contribute from a methodological point of view, a good discussion section can help to improve the quality of the manuscript, for example, highlighting the critical aspects of this approach, the difficulties that they have found in its application, area that need further and future works, implication in the hazard of the area, and so on.

6) Several references (more than 15!!) are in the reference list but they are not in the manuscript. This is a little bit embarassing. Reference list is important as well figure and main text as.

7) Please address also comments in the annotated pdf.

Please also note the supplement to this comment:

<https://nhess.copernicus.org/preprints/nhess-2021-351/nhess-2021-351-RC2-supplement.pdf>