

Solid Earth Discuss., referee comment RC2
<https://doi.org/10.5194/se-2021-7-RC2>, 2021
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Comment on se-2021-7

Anonymous Referee #2

Referee comment on "Holocene surface-rupturing earthquakes on the Dinaric Fault System, western Slovenia" by Christoph Grützner et al., Solid Earth Discuss., <https://doi.org/10.5194/se-2021-7-RC2>, 2021

The authors present a comprehensive paleoseismological study of the Holocene activity of the Dinaric Fault System, which threatens major cities in the region such as Ljubljana or Idrija. They used a large number of methods to obtain their data in a difficult environment with low tectonic activity, in addition to fluvial deposits, forests, intense anthropogenic activity, The opportunity for such a study to be undertaken is noteworthy and the use of the several approaches to the topic adopted is mostly appropriate. The paper has a good organization showing a well-organized research work by the authors, providing all kind of information (figures, complementary images, dating samples, ...), for which the authors should be complimented. The writing style is clear and easy to follow. The resulting paper will provide a worthwhile input to the future SHA of the region. However, the manuscript, in its present state, would benefit from further attention and tightening up technically. For my part, the manuscript requires major/moderate revision.

Although the following comments, along with those included in the revised pdf, may appear to be challenging or negative, they are intended to be constructive, as the nature of the topic and how it is being addressed make it worthy of such attention from my point-of-view.

In general terms, further geological description of the sites must be done, especially at Predjama fault : type of sedimentary units, the environment of deposition. A geological map must be included. An adequate description of the sedimentary units exposed on the trenches walls must be also done.

Predjama Fault: My main concern of the interpretation of the trenches in this fault is about the possible pedogenic development on the exposed materials. I am not sure whether the dating is giving the age of a sedimentary deposit or the progressive and continuous

process of edaphization. Besides this, the interpretation of unit U6 as sagpond seems to me rather unrealistic. See detailed comments on the pdf.

Idrija Fault: the analysis of the stratigraphic relationship with a potential earthquake is too speculative. The uncertainty of the ages (both, epistemic and methodological) obscure any reliable analysis.

Geomagnetic and georadar surveys could be removed from the paper, as they do not show any valuable results.

The analysis of the earthquake magnitude on both faults is completely speculative. The authors cannot make any reliable estimation with their data. Remove these sections.

Please also note the supplement to this comment:

<https://se.copernicus.org/preprints/se-2021-7/se-2021-7-RC2-supplement.pdf>