Solid Earth Discussions

Solid Earth Discuss., referee comment RC2
https://doi.org/10.5194/se-2021-75-RC2, 2021

Comment on se-2021-75

Anonymous Referee #2

Referee comment on "Ground-penetrating radar signature of Quaternary faulting: a study from the Mt. Pollino region, southern Apennines, Italy" by Maurizio Ercoli et al., Solid Earth Discuss., https://doi.org/10.5194/se-2021-75-RC2, 2021

In this manuscript the Authors describe and interpret the Ground Penetrating Radar profiles acquired in different campaigns along a splay of the Fosso della Valle-Campotenese fault (VCT) in the Pollino Range (Northern Calabria, Italy), well known as a seismic gap region. Among the major objectives are the finding of evidence in the subsurface for Quaternary faulting along this buried fault and also the characterization of peculiar GPR signature of faulting in order to build a powerful methodology for areas of similar characteristics.

Lots of data are produced on GPR acquisition and I found very interesting results and interpretation for the subsurface imaging of a sector of the Fosso della Valle-Campotenese fault (VCT) at the local scale. Manuscript provides a very high quality data, and the inferences derived from the 3D are very well constrained.

However, in my opinion several issues affect the manuscript and need to be fixed. In general, i) the Authors use large parts of text, even redundantly and not always clearly, to refer to some general concepts not linked to the acquired data and to the aim of the manuscript. In different sections, there is confusion between what was found in the previous geological studies of the fault and what is new. This criticism has to be addressed to make the work sound in terms of objectives to be reached with the GPR acquisitions, the work core. ii) Similar problem occurs for the section GPR data description and interpretation that is very long and I would clean it by sentences on generic technical references (possibly to be insert into the methodology chapter) and shed light to the interpretation of the data. Moreover, iii) at least the fault portion surveyed by GPR is claimed to be a buried fault, but then there is no a clear presentation on the mapping of the fault pattern at the surface and on which evidence it is based. This is critical also iv) to fully discuss the seismic hazard implication of the VCT fault based on the GPR results, as offset estimation, fault zone width, etc…rather than citing already well established statements. Here, I expect you to explore the potentiality of the data relative to hazard assessment on the fault, including the definition of limits of the GPR approach on the recognition and dating of discrete events of faulting. This is why GPR signals remain very important for the preparatory phase of further investigations. v) Figure and figure captions need revision in order to become self-readable images.

For the above criticisms in my opinion the manuscript is suitable for publication in Solid

Earth with major revision. You may find several detailed comments, questions and proposed changes in the annotated attached file.

Please also note the supplement to this comment:
https://se.copernicus.org/preprints/se-2021-75/se-2021-75-RC2-supplement.pdf