Solid Earth Discussions

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Reply on RC2

Mauro De Donatis et al.

Author comment on "A Normal Faults System in the Monte Nerone area and its significance in the recent seismo-tectonic setting of the Northern Umbria-Marche Apennines (Italy)" by Mauro De Donatis et al., Solid Earth Discuss., https://doi.org/10.5194/se-2021-87-AC2, 2021

We thank a lot this anonymous reviewer, because his/her work is very detailed and could give us the opportunity to improve our work. He/she highlighted quite well the weaknesses of our paper. However, we could reply that this attempt of find the traces of an historical earthquake in this setting is based on some evidences not always very clear because erased and hidden by the time.

One of the aims, I would say the main one, of this paper is to start a debate on the ground evidences of the strongest earthquake event of the Northern Marche region. No other authors worked on this topic because, I think, the evidence is not so clear and it do not allow to get quality data as well as the recent events (L'Aquila 2009, Norcia 20016).

This contribution is at the beginning and it wants to stimulate other researchers more experienced to bring their contributions. We are aware that this work is not exhaustive, and some part must be deepened and extended to a larger sector. Nevertheless, we tried to offer some new sight on the mapped structures in an extensional tectonic framework very similar to the one interpreted for the southern Marche region.

We think those are the main reasons why this paper could seem "weak" for the "lack of robust data" and "surficial" disserted.

Specific comments reply

- We will try to follow the indication rewriting the abstract
- We are going to insert a new figure showing the relationships and positioning in the tectonic framework of the structures related to Norcia 2016 events and Cagli 1781 earthquake. We will add also some paragraphs explain this point.
- In the "tectonic setting" section we reported the main interpretation of this part of the chain with a large number of cited papers.
- All the evidences on recent fault extension that could be found on the ground have been referred. The Quaternary deposits involvement could be verified with direct trenches and other geophysical methods, but we could not achieve it. About the interpretative cross-sections (Fig.10) with relationships among ATF, recent normal

faults and earthquakes could be debated. However they remain interpretations, as well explained in the text, like the ones already published by others authors.

- Sections 5 and 6 report all the new data, observations and evidence. We think those are distinguished clearly enough. About our previous work (De Donatis et al., 2020), that was a methodological paper reporting some of the point of the ones we discuss now, just to explain the methods.
- About English language, we have submitted to a professional (paid) language revision. Anyway, we will try to improve in a next version.

Please also note the supplement to this comment:
https://se.copernicus.org/preprints/se-2021-87/se-2021-87-AC2-supplement.pdf