

Interactive comment on “Geological and geophysical characterization of the south-eastern side of the High Agri Valley (southern Apennines, Italy)” by A. Giocoli et al.

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General Comment

The paper provides interesting data on geological, geomorphological and subsurface features of a significant sector of the high Agri valley, mainly through the integration of geophysical data (ERT and HVSR). In particular, these methods provide new evidence on the presence of an eastern strand of the Eastern Agri Fault system, representing one of the main recent tectonic structures of the area. In the following points I summarize some suggestion that can be used for improving the paper and giving more

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emphasis on the new and original results.

1) Three of the four hypothetical faults coincide with nearly rectilinear scarps indicated in the geological map (Fig. 2). By analysing the trace of the scarps, it is clear that these nearly rectilinear features are not scarps but faults (see also detailed comment at P. 6274, L. 6). If the interpretation provided by the geological map is based on good outcrop conditions, the tectonic nature of the rectilinear scarps can be primarily proven by means of surface geology alone. Therefore, geophysical data would be used mainly to confirm the interpretations derived from the analysis of surface geology.

2) A more detailed integration between ERT and HVSR data seems necessary in order to better document the nature of the four F1...F4 faults. This is particularly true for the F4 fault, which is characterized by an opposite displacement, compared to the F1...F3 faults, and does not show any surface evidence (i.e., a nearly rectilinear scarp.)

3) Cumulative throw along the F1, F2 and F3 faults seems quite high (150 m), especially considering that the eastern strand of the EAFS is a relatively young tectonic structure, affecting deposits of Middle-Late Pleistocene to Holocene age. This is also true for the F4 fault, which displays an opposite throw exceeding 50-75 m (based on ERT 1 and ERT 2). Do you have some other (geological) evidence consistent with these results?

Detailed Comments

P. 6272, L. 20: what do you mean for “complex geological and tectonic setting”? Can you explain in a more detailed way what do you mean for complexity and how it can trigger landsliding phenomena?

P. 6272, L. 21: subsidence can be activated also in simple geological and tectonic settings.

P. 6273, L. 22-24: please, translate the name of the project, founded by ENI spa, in English.

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P. 6274, L. 1-2: as far as I know, deaths were caused by mainly by the earthquake itself and not by the landslide.

P. 6274, L. 3: according to the title, in this paper you should report the results of both geological and geophysical surveys. You should briefly indicate the reason for reporting only geophysical surveys in this paper. Otherwise, I suggest changing the

P. 6274, L. 6: what are these “rectilinear NW-SE scarps”? Are those NW-trending scarps connected to fault activity or to some surficial processes (i.e., fluvial terraces)? In Fig. 2 three main “scarps” (identified as F1, F2 and F3) are reported. However, in the geological map, these features are mapped like faults. In particular, it is clear, from the geological map alone, that the “scarps” offset stratigraphic and previous tectonic contacts (see, for example, F1 and F2, which interrupt two NE-trending vertical faults and the stratigraphic contact between Flysch di Gorgoglione and the Vallone dell’Aspro Alloformation).

P. 6275, L. 11-12: can you specify when the active landslide caused damages to the Montemurro village?

P. 6275, L. 27: what do you mean for “surroundings”? Are you referring to the wall rocks that contain the structure that has to be studied?

P. 6267, L. 13: “F3” represents only one of the lateral resistivity variations. This can be deleted. In addition, not all lateral variations fit with the rectilinear scarps.

P. 6267, L. 20: “F4” is not outlined by rectilinear scarps and is not shown in the geological map. Can you explain how the displacement of “F4” can be deduced? You cannot infer this information from the ERT alone. Therefore, also the “tectonic depression” seems quite questionable.

P. 6267, L. 23: It seems to me that the cumulative displacement inferred for the F1 . . . F3 fault strands is overestimated. Which are the geological (or geomorphological) markers that have been used to estimate such displacement value? Probably you are basing

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your interpretation on the nearly vertical contact separating the low resistive (QD) from the high resistive (FG) formations. Please, detail and specify. A displacement of about 150 m affecting quaternary deposits (of Middle-Late Pleistocene – Holocene age according to Zembo, 2010) is really significant and should be documented in detail.

P. 6280, L 13-14: do your data support the interpretation derived from the ERT analysis, and specifically that the rectilinear scarps may be considered fault planes displacing the contact between the high-resistive Gorgoglione Flysch and the low-resistive Quaternary Deposits? This would be a very important result produced by the integration of the two methods.

P. 6280, L 21-24: also here the name of the project should be translated in Italian.

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/2/C2389/2014/nhessd-2-C2389-2014-supplement.pdf>

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 6271, 2014.

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