

Interactive comment on “Electrical Resistivity Tomography surveys for the geoelectric characterization of the Montaguto landslide (southern Italy)” by Jessica Bellanova et al.

Anonymous Referee #3

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General comments:

The manuscript presents the results of an ERT survey performed on the Montaguto earth-flow, located in the southern Apennines (Campania Region, southern Italy). 11 profiles ERT with a maximal investigation depth of ~40 meters were performed with the goal to reconstruct the geometry of the landslide body.

The paper is well written, the abstract clear and precise, the figures are well documented and clear. On the other side, the treatment of data can be improved, e.g., a 3D modelling could be included, and the robustness of the inversion should be discussed. How sure are the estimations of the interface between the “old flow” and the “actual flow”? How the location of this interface will change depending on iterations and on the

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inversion method (robust or least-square) ? The discussion of results is too general and rather speculative, the conclusions are too strong.

Specific comments:

1. The survey consists of 11 parallel profiles showing coherent features. In my opinion, it would be very helpful to try a 3D inversion of this data set.
2. Figures 2-3: Please give the borehole information in the same terms as ERT profile units (FFa1, 2 etc)?
3. The major remark concerns lines 162-164. The authors “used data from literature, geological surveys and exploratory boreholes to calibrate the ERT and to directly correlate electrical resistivity values with the lithostratigraphic characteristics. “ It is not enough to give a reference in such a major point, please detail this translation of the ERT features to the lithostratigraphic characteristics which is a most important point in the paper. Are there some laboratory measurements available on the samples or are the resistivity? Or is the calibration done using outcrops or borehole data? How do you find and how sure you are that 6-12 Ohmm structure corresponds to the activated earth flow (e.g., L228-230) ?
4. L231-234: Observed resistivity values and water content. It lacks a reference here (e.g. Waxman & Smith, 1968). The authors suppose that the higher conductivity of the underlying unit is related to a higher water content and refer to the independent piezometric data coming from boreholes but do not show these data. It would be interesting to show the data on water content and to check your assumption using the formalism given in Waxman & Smith, 1968 (or equations 6-7 in Rinaldi et al, 2010).

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