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Interactive comment on “Magnetotelluric investigation in the High Agri Valley (southern Apennine, Italy)” by M. Balasco et al.

M. Balasco et al.

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Dear Prof. A. Gabas, about the first point of your suggestions, we have already replied and, as consequence, modified in the new version of the paper. As we wrote, the sensitivity tests performed following the scheme proposed in Campanyà et al., 2012, did not fully support the properties of the features at deep in our MT model, in particular the geometry of the fault named "F1". In the revised version of our paper, we explicitly stated why, despite the sensitivity test results, we report the presence of F1. In fact, even though the significance of F1 is not fully confirmed by sensitivity tests performed, it is spatially coincident and compatible with the geometry of a thrust shown by other studies carried out in the Agri Valley (Valoroso et al., 2011 after Nicolai and

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Gambini, 2007). As concern the second point, following e.g. de Groot-Hedlin & Constable (2004), different starting models may yield different model solutions and in case of a nonlinear geophysical problem, such as for the MT inversion, there are many local minima in which a linearized algorithm may become trapped. Bearing this in mind, and considering the well-known complexity of the area characterized by a great variability in lateral thickness of each geological units, we preferred the homogeneous half-space as starting model respect to a layered one. This choice is widely adopted in the MT literature.

Finally, we have already provided in the supplementary material a new "Figure S1" in which we show a quantitative comparison between the observed data and the model responses. When we uploaded the supplementary material, we made a mistake and we did not include the figure captions making difficult to understand the content of the figures. To overcome this problem, we upload a new version of the supplementary material with figures and captions. Thank for your suggestion, Best Regards, the Authors.

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