Interactive comment on "Multiconfiguration electromagnetic induction survey for paleochannel internal structure imaging: a case study in the alluvial plain of the river Seine, France" *by* Fayçal Rejiba et al.

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GENERAL COMMENTS The paper shows the results of a geophysical investigations of a paleochannel in the alluvial plain of La Bassée (Seine basin, France) by means of integration between Slingram electromagnetic induction method and Electrical resistivity imaging. To-date, there is a strong interest for a better hydrogeophysical characterization of aquifers with effective and non-invasive geophysical surveys, since describing complex aquifers and hydrogeological properties of porous media has great implications in the study of a wide spectra of geological and environmental processes. The

Authors clearly presents their dataset (ERI and EMI and direct probing of near-surface sediments), describes the data calibration performed, presenting adequate references and their interpretation of the results obtained, in terms of both volumetric mapping and calibration procedure between Emi and ERI data.

Although this paper has the potential to be a very interesting contribution to Hydrology and Earth System Sciences, I think that the following major issue of concern exists.

Since the geomorphological context (fluvial paleo-channel) of the survey area and the proximity of the present-day Seine river, it should be expected the presence of the water table hosted in the near-surface porous sediments investigated by the geophysical survey. Actually, this aspect is hardly discussed at all and, since the presence at depth of water hosted in sediments affect the bulk electrical resistivity, it is crucial in for the interpretation of the electrostratigraphic units from ERI in terms of lithology and/or sedimentary facies association and, thus, for the three-layer model adopted all over the site to represent the studied area Considering that the results obtained are very intriguing, I suggest the Author to add a more focused discussion regarding the presence of the water table (or its absence), it its depth below ground surface and the chemistry of groundwater (i.e., the electrical conductivity). Alternatively, I suggest the Authors to explicit if this data were available to them (or not) and, if so, how they were considered in the discussion of results. I think that this discussion will greatly improve the scientific value of the results because can help geologist/geophysicist that have to face a similar problem.

SPECIFIC COMMENTS Minor issues of concern are listed in the following. 1) When describing ERI Measurement setup, considering the use of 48 channel georesistivity meter and 0.5 and 1 m electrode spacing it is not clear how the procedure of roll-along of resistivity data for subsequent transects was accomplished. 2) Apparently, no motivation for defining the topsoil as "resistive" (line 272) is furnished. A motivation for this could be that the soil is plowed (as it can be seen form aerial view in Fig 3)?

TECHNICAL CORRECTIONS 1) Fig. 3: the location of hand auger drilling are not displayed. It can be useful for the reader in order to facilitate the comparison between data. 2) Fig. 5: The SW-NE orientation of the ERI transect is not displayed. It can be useful for the reader in order to facilitate the comparison between data. 3) Fig. 5bis: it could be useful to represent in the ERI model the location at depth where the auger soundings achieved by a refusal.

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