Dear Authors,

I've been asked to review manuscript 'Novel insights into deep groundwater exploration by geophysical estimation of hard rock permeability' in view of the interactive public discussion.

The paper is a valid contribution to the field of aquifer permeability estimation using a methodology that involves an applied geophysical technique, controlled-source audio frequency magnetotellurics (CSAMT), to model deep subsurface electrical resistivity, and correlation with aquifer permeability using calibration in boreholes, offering a methodological framework that can be adapted to other sites. This is a common approach in applied geophysics: using geophysical properties as proxy for the estimation of another property of interest. However, it is important to keep working on the establishment of common methodologies for the approach, and common prediction ability estimations. In that regard, this paper is helpful in its uniqueness and capacity of being applied on similar conditions.

However, I think it could be improved in the model prediction ability estimation, and on some details. Therefore, I recommend it for publication with revisions that are the following:

- Change term 'depth penetration' to 'penetration depth';
- On Figure 3, Figure 5, Figure 6, and Figure 7:
    - rotate orientation of labels on x-axis, so the text becomes horizontal;
    - rotate orientation of labels on y-axis, so the text becomes horizontal (also do it on Figure 4);
    - rotate orientation of axis title on y-axis, so the text readable from bottom to top (also do it on Figure 4);
- Figure 3, Figure 6, Figure 7, Figure 8, Figure 9, Figure 10, Figure 11, and Figure 12, rotate orientation of labels on colour scale, so the text becomes horizontal;
- On Section 3.5, agreement is measured using a percentage match equation for each point in space, as part of the validation of the obtained empirical model. Since the empirical model was obtained performing a regression with 116 data points, I think the paper would improve if a leave-one-out cross-validation was conducted, and the RMSE of that prediction was calculated. This will help validate the empirical model and will allow determining its prediction ability, within the range of measured permeability values.

Best regards.