

Geosci. Instrum. Method. Data Syst. Discuss., referee comment RC1  
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## Comment on gi-2022-2

Anonymous Referee #1

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Referee comment on "Design and construction of an automated and programmable resistivity meter for shallow subsurface investigation" by Antenor Oliveira Cruz Júnior et al., Geosci. Instrum. Method. Data Syst. Discuss.,  
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### --General Impression--

This manuscript provides an insightful look into the development of a novel, low-cost georesistivity sensor platform. The system description is thorough and well thought out, showing great aptitude in the development of the instrument. Comparisons of the instrument performance are made to standard methods to show its viability. The manuscript alludes to the use of open-source software and hardware to achieve both cost and performance goals. Overall, this is a relevant and exciting piece of work with the potential for great impact in instrument development of this type.

### --Minor Revisions--

There are a number of places in the manuscript where run-on sentences make it difficult to follow the narrative. Several of the figures are placed in awkward positions relative to the text, which may be resolved following minor text revisions. Some of the figures also require minor adjustments and/or clarification.

### Text Revisions (by line number)

- 32-35: Perhaps this should be split into two sentences, it is difficult to read with so many commas and separate clauses.
- 43-45: "... mineral composition... as well as other factors... such as mineralogy..." may be redundant.
- 55-56: The term "bring the data" is confusing here.
- 59-60: "...by applying *the expression corresponding to a homogenous medium* to the data obtained..."
- 61: "by a heterogeneous medium." This sentence is very long and doesn't benefit from the rest of the exposition after this point.
- 107-108: "... a 6 channel, *10-bit resolution* A/D converter."
- 110: This is a sentence fragment.

- 173-174: Higher stresses meaning higher excitation voltages
- Formula 1: should match formatting for Formula 2 (center)
- A link to the open source library (github, etc) containing software/hardware descriptions is highly encouraged.

## Figures/Tables

- Fig. 1: Legend typo
- Fig. 2: Unclear what "Disco Hard" refers to
- Fig. 5: The callout makes it look like the synch demod/integrator (d) feeds into two stages of ADCs. Is this accurate?
- Fig. 7a: It is hard to tell if there are any significant variations at the lower values because of the scaling of the graph. It may be useful to present this on a log scale, though I recognize that what is being presented is the linear correlation. Perhaps just omitting the higher end of the plot is best. Use of engineering notation is encouraged.
- Fig. 7b: The y-axis values are crowded by the y-axis label and are unreadable. Use of engineering notation is encouraged.
- Fig. 9: This plot is not well motivated in the text nor in the caption. I'd like to see at least a paragraph or so explaining the figure as well as the software that generated this figure if it is to remain in manuscript.

After these minor revision are addressed, this manuscript will be fit for publication.