Reply on RC1
Antenor Oliveira Cruz Júnior et al.

Author 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., https://doi.org/10.5194/gi-2022-2-AC1, 2022

Dear Anonymous Arbitrator

Thanks in advance for the opportunity and input from the reviewers, I appreciated the constructive criticism and addressed each of your concerns as outlined in the discussion contributions. I enclose a pdf version of the manuscript GI-2022-2, with the corrections made in colored highlights, to facilitate the conference. The corrections made and arguments are shown below, item by item, as suggested.

Text revisions (by line number)

32-35: Maybe this should be split into two sentences, it's hard to read with so many commas and separate sentences.

Answer = answered. An unfolding of the paragraph was made for better understanding of the text in the introduction. This adjustment is highlighted on a yellow background (line 33).

43-45: "...mineral composition... as well as other factors... such as mineralology..." may be redundant.

Answer = answered. Unfortunately, this point was not clear in our original article. We would like to apologize for the misunderstanding and we are now going to revise the article to explain this better. This setting is marked on a yellow background (lines 43 to 45).

55-56: The term "bring the data" is confusing here.

Answer = answered. Modified as per guidance. This setting is marked on a yellow background (lines 55 to 56).
59-60: "..applying the expression corresponding to a homogeneous medium to the data obtained..."

Answer = answered. We modified a, as directed. This setting is highlighted in yellow background (line 55).

61: "by a heterogeneous medium." This sentence is too long and doesn't benefit from the rest of the exposition after this point.

Answer = answered. We modified according to guidance. This setting is marked on a yellow background (lines 57 to 61).

107-108: "...a 6-channel A/D converter and 10-bit resolution."

Answer = answered. We would like to apologize for the misunderstanding and now we are going to review this information about the analog-to-digital conversion. In the project we used the MCP3550 (ADC) delta-sigma of 22 bits of resolution. This adjustment is highlighted in yellow background (line 105).

110: This is a sentence fragment.

Answer = answered. We believe that the discussion has become clearer, and consequently the conclusion more consistent. This setting is marked on a yellow background (lines 106 to 108).

173-174: Higher stresses meaning higher excitation voltages

Answer = answered. Unfortunately, this point was not clear in our original article. This paragraph deals with an important aspect conceived with the idealization of the project to allow the use of higher voltages that were used in the controlled tests, allowing deeper soundings. After the reformulation made with the evaluator's contributions, we believe that the discussion has become clearer. This setting is highlighted on a yellow background (lines 170 to 171).

Formula 1: Must match Formula 2 formatting (center)

Answer = answered. Formula 1 was centered in the text, as directed. This setting is highlighted in yellow (line 65).

A link to the open source library (github, etc) containing software/hardware descriptions is highly recommended.

Answer = Regarding the disclosure of a link to the open source library containing software/hardware descriptions, we thank the reviewer for this valuable suggestion and it
is in our interest that this equipment be made available to others surveyed, a subject that is already a consensus among the creators of the project. As soon as we have new advances, we will be able to start fully publicizing the project.

Figures/Tables

Fig. 1: Subtitle typo
Answer = answered. We modified according to guidance. Figure 1.

Fig. 2: It's unclear what "Hard Disk" refers to
Answer = answered. We modified according to guidance. Figure 2.

Fig. 5: The callout makes it look like the demod/integrator (d) synch feeds two stages of ADCs. Is this accurate?
Answer = Yes. The demodulator and associated integrator circuit have two channels operating in tandem.

Fig. 7a: It is difficult to say whether there are significant variations in the lower values due to the scale of the graph. It may be helpful to present this on a logarithmic scale, although recognizing that what is being presented is linear correlation. Perhaps just omitting the upper end of the plot is better. The use of engineering notation is encouraged.
Answer = answered. We modified according to guidance. Figure 7a.

Fig. 7b: The y-axis values are crowded by the y-axis label and are unreadable. The use of engineering notation is encouraged.
Answer = answered. We modified according to guidance. Figure 7b.

Fig. 9: This plot is not well motivated in the text or in the caption. I would like to see at least a paragraph explaining the figure as well as the software that generated this figure so it remains in manuscript.
Answer = answered. The prototype has the ability to execute modeling algorithms in Python language that made it possible to produce the treatment of synthetic test data, as shown in Figure 9. This adjustment is highlighted in yellow background (lines 186 to 190).

Please also note the supplement to this comment: https://gi.copernicus.org/preprints/gi-2022-2/gi-2022-2-AC1-supplement.pdf