

Interactive comment on “An enhanced correlation identification algorithm and its application on spread spectrum induced polarization data” by Siming He et al.

Anonymous Referee #2

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The authors propose an algorithm to attenuate the background noise in Spread Spectrum Induced Polarization data to improve complex resistivity spectra. The simulation results show that the algorithm can effectively attenuate the background noise and improve the signal to noise ratio. Real data obtained in a field test show that the algorithm reduces the standard deviation of the collected data.

The work is definitely valuable to IP practitioners, and it should be published after a major revision.

1 - My general comment is that the results presented in manuscript are not discussed. Additionally, figure captions need to expand and explain the figure in a brief and simple

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way, so the reader doesn't need to switch back to the text to understand the figure.

2 - I have read the first review of the manuscript, and I agree with the reviewer that it's essential to show multi-frequency and phase data.

3 - Page 7: "ECI algorithm still has superior denoising performance and holds smaller volatility of the relative error when the percentage of the outliers is more significant than 50% ." What do you mean by volatility here? This sentence is unclear.

4 - What situations would the algorithm fail? That is, what are the limitations? Please show the limitations in detail (simulation or measured data and discussion).

5 - Phase (or quadrature component) results must be presented and discussed, otherwise we are not looking at the IP effects.

The work has potential for a great paper, but it needs to show the results in more detail (phase or quadrature terms) and discuss them.

Please take my criticism as a way to improve your manuscript, which I am looking forward to seeing published.

Interactive comment on Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2020-8>, 2020.

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