Nonlinear Processes
in Geophysics

Discussions

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Interactive comment on "BP Neural Network and improved Particle Swarm Optimization for Transient Electromagnetic Inversion" *by* Huaiqing Zhang et al.

Anonymous Referee #2

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Dear Editor,

I reviewed the paper whose title is "BP Neural Network and improved Particle Swarm Optimization for Transient Electromagnetic Inversion" written by Zhang et. al. It is interesting paper. The present form of the paper is not suitable to publish in the journal. However, I have some comments to the authors:

1. The main problem is the TEM forward calculation in this manuscript. It is not clear for me. Is it frequency or time domain? The authors said that this is a transient EM. However, they started derivation with the frequency domain expression using Kaufman's (1983) book, then they obtained Hz(t) response using Gravier –Stehfest method. If you

start a frequency domain, after getting a layered response function you need to get the Fourier transform to get back to in the time domain. Either frequency or time domain we need to use some kind of filter function, since there is no analytic solution for a layered earth. Thus, we use some approximations. In addition, I don't see an apparent resistivity formula in the manuscript. Do they use a late time or early time approximation for the apparent resistivity calculation (or all time approximation)? I would like to see a clear explanation about the apparent resistivity formula and TEM forward response explanation in the manuscript. Please be clear about the TEM forward calculation.

2. There is no field data for the inversion as an example, which is very important. All calculation is synthetic. The manuscript can be published in this journal after my suggestion completed.

Best regards,

(Note: Upon request I can provide a field data set to the Authors. I am running a project; the project includes TEM field measurement.)

Interactive comment on Nonlin. Processes Geophys. Discuss., https://doi.org/10.5194/npg-2019-36, 2019.