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Nonlinear Processes in Geophysics
Discussions
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Interactive comment on "Estimation of the total magnetization direction of approximately spherical bodies" *by* V. C. Oliveira Jr. et al.

Anonymous Referee #3

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This paper represents a contribution to magnetic interpretation by providing another tool for the community for the estimation of magnetization direction. The ability to estimate multiple sources in a parametric sense is valuable in specific geologic scenarios, and as such I am in favor of publication after revision.

This work is a natural extension of prior methods by the authors to invert magnetic data. The ability to recover magnetization direction without requiring RTP or regular grids sets this apart from MOST other methodologies. The parametric formulation, where appropriate, can improve the results by precluding the need for regularization. I would not suggest that this method replaces others, but rather represents another tool in the toolbox, which augments the interpreter's ability to determine magnetization as a whole.

In addition, I appreciate what is, to my knowledge, a rather comprehensive literature review.

Some general comments: The requirement of knowing the center of the body is significant. However, as the requirement is explored in the paper, I do not feel that it should preclude publication (or indeed, even usefulness). The use of Euler Deconvolution to compute the center of the sources, however, I believe is a dubious method given the extension of the method to non-spherical sources. Their comments regarding the usefulness of the technique to horizontal location is appreciated, but the example only shows the technique applied to spherical bodies. I'd like an example of an off-center prism.

It's fine to show the L2 results, but I'm not sure when one would not use the L1 in field data. I would like more comparison between the results in the field exampleâĂŤjust some discussion.

If there is room, I'd like to see the total field data in the field example reduced to pole as well, just for comparison.

Interactive comment on Nonlin. Processes Geophys. Discuss., 1, 1465, 2014.