

Geosci. Model Dev. Discuss., author comment AC2  
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## Reply on RC2

Jérémie Giraud et al.

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Author comment on "Structural, petrophysical, and geological constraints in potential field inversion using the Tomofast-x v1.0 open-source code" by Jérémie Giraud et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-14-AC2>, 2021

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Dear Mehrad Bastani,

Thank you for your review and for your comments. We are pleased to read that you enjoyed reading our work!  
Below are our answer to the your comments.

Reviewer:

"I would like to see how meaningful the variation of density contrast at a depth of 10 km or deeper can be when modelling the gravity data and it is the same with the magnetic field data? A presentation of sensitivity analysis can be a good way to test/answer this point."

Answer:

One of the options offered by Tomofast-x is to write the diagonal values of the sensitivity matrix multiplied by its transpose to the hard drive after completion of the inversion as part of the outputs. From there, one can then estimate the sensitivity of the data to variations in any model cell. We agree that the kind of sensitivity study you mention is interesting but we prefer not to propose it in the manuscript to maintain focus as the paper is already a bit long. The sensitivity of magnetic and gravity data being different due to the physics of the phenomena each method relies on, their sensitivity decays differently with the distance to the source.

We have followed most suggestions you made in the edited version of the manuscript. Our point-by-point answers to the comments and suggestions you made are provided the supplementary material.

Thanks and regards,

The authors

Please also note the supplement to this comment:

<https://gmd.copernicus.org/preprints/gmd-2021-14/gmd-2021-14-AC2-supplement.pdf>