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Discussions

Interactive comment on "Atmospheric bending effects in GNSS tomography" *by* Gregor Möller and Daniel Landskron

Anonymous Referee #2

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The paper outlines a method for including ray bending in GNSS tomography. My main concern relates to the iterative retrieval technique, and the possible confusion between "a priori" and "first guess". Equation 7 should not be used in iterative form, and therefore a solution from eq. 7 should not be used as "a priori" for the next iteration (lines 7-8, page 7). This is covered in section 5.6.2 ("A popular mistake") in Inverse Methods for Atmospheric Sounding Theory and Practice by Clive Rogers. I suggest that this issue should be clarified before moving to the discussion phase, because it impacts all of the results.

Minor points.

I do not understand why the authors use singular value decomposition in Eq. 7. Normal matrix inversion should suffice. The meaning of the weighting matrices should ex-

plained (they are the inverse of covariance matrices I think) and they should be clearly defined.

The work might benefit from investigating how ray-bending is handled in GPS radio occultation measurements. EG, Burrows, C. P., Healy, S. B., and Culverwell, I. D.: Improving the bias characteristics of the ROPP refractivity and bending angle operators, Atmos. Meas. Tech., 7, 3445-3458, https://doi.org/10.5194/amt-7-3445-2014, 2014.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-202, 2018.