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Atmospheric Measurement Techniques Discussions

Interactive comment on "Quantifying residual ionospheric errors in GNSS radio occultation bending angles based on ensembles of profiles from end-to-end simulations" *by* C. L. Liu et al.

Anonymous Referee #3

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General comments

The manuscript contains an analysis of the residual ionospheric errors affecting bending angles retrieved from GNSS radio occultation measurements. The analysis aims at quantifying the residual ionospheric errors by means of ray tracing through nominal ionospheric regions in an ensemble fashion. The analysis is well described and presented. The discussions contained throughout the manuscript are sound and seem correctly deduced from the simulations. The assumptions at the basis of the analysis are reasonable and reflect the current state-of-the-art understanding. Figures and tables are clear and well structured. The English is at a standard appropriate to an in-

ternational Journal such as AMTD. The manuscript warrants publication in its present form.

Specific comments

Negligible effect of the ionospheric spherical symmetry assumption. A possible alternative explanation of this might be as follows. The analysis is based on an ionospheric model which reproduces nominal ionospheric layers in an average fashion, providing average variations over different seasons, solar activities and latitudes. In the case of radio occultation ray path geometries, the model is utilised to produce a nominal ionosphere at the LT of the tangent point (I assume?). The model might have very little sensitivity to longitudinal variations, hence introducing a sort of inherent spherical symmetry, which would smooth out the difference between spherical symmetry and absence of it. As a consequence, the analysis presented in the manuscript provides a lower bound to the residual ionospheric errors which might happen even larger in the presence of real large-to-small ionospheric structures. This aspect is of no concern to the paper, which warrants publication as it is. This comment is intended to stimulate further analyses in case the authors happened not to check such an aspect already.

Technical corrections

Please, double check figures citations throughout the text. For example, at page 776 line 10 it should be Figure 10 and not Figure 1. Acronyms used to identify different dataset (e.g. orns) would be better identified if in Italic, for example. Please, double check whether any font change is possible to allow for a better identification of the datasets throughout the text.

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 759, 2015.