

Interactive comment on “A new approach to global gravity wave momentum flux determination from GPS radio occultation data” by A. Faber et al.

Anonymous Referee #2

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The manuscript is much improved. Unfortunately, the manuscript still gives the mistaken impression that the 3-point method for determining horizontal wavelength with GPS is new to the present work. The fact is that previous work published in Wang and Alexander (2010) exactly described the 3-point method with GPS used here. See page 5 (second column) of that paper, where the case for the 3-point solution is exactly described ($n=3$ in those equations, and explicitly explained in the text). The method was also generalized to more points ($n>3$), but the 3-point method is fully there. So the 3-point method is not “new” as stated in the abstract. The abstract still states that the method is an improvement over the older 2-point method without acknowledging that the 3-point method has been previously described.

Although the manuscript is much improved, two small changes remain necessary to

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correct this impression:

(1) In the new abstract, the authors replaced the original reference to “Ern et al. (2004)” in the abstract to “Wang and Alexander (2010)”, but the reference is used improperly now. Also, the method used in the present manuscript is not a “new method”, but a new application of an existing method. It could be corrected by replacing:

(Line 15-21) “The horizontal wavenumber is derived by the ratio of the phase shift and the spatial distance between adjacent temperature fluctuation profiles at a give altitude, following the method by Wang and Alexander (2010). A new method for the determination of the real horizontal wavelength from three vertical profiles is presented and applied to the COSMIC data (3-point method).”

with

“A method for the determination of the real horizontal wavelength from three vertical profiles is applied here to the COSMIC data.”

The Wang and Alexander (2010) reference could be inserted there, but is probably better left to page 2 where the Ern et al. (2004) reference appears in proper context, and where the differences between the present work and Wang and Alexander (2010) are described.

(2) At line 124, again, this is not a “new method”. This could be corrected by replacing:

(Line 124-127) “In this paper, we introduce a new method to derive λ_{dah} from only three profiles, allowing a high spatial resolution in distribution of the derived GW parameters of $5\text{deg} \times 5\text{deg}$ lat/lon.”

with

“In this paper, we apply the Wang and Alexander (2010) method for deriving λ_{dah} from multiple profiles, but limit the results to only those derived from 3 profiles, and compute resulting GW parameters at a higher spatial resolution of $5\text{deg} \times 5\text{deg}$ lat/lon.”

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