Atmos. Meas. Tech. Discuss., 7, C599–C603, 2014
www.atmos-meas-tech-discuss.net/7/C599/2014/

Atmospheric Measurement Techniques Discussions

Interactive comment on "An introduction to FY3 GNOS instrument and its performace tested on ground" *by* W. Bai et al.

W. Bai et al.

bjbwh@163.com

Received and published: 21 April 2014

Dear Referee #3 and editor,

Thank you for your comments concerning our manuscript entitled "An Introduction to FY3 GNOS Instrument and Its Performance Tested on Ground" (Manuscript Number: amt-2013-331). Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our researches. We have studied comments carefully and have made correction which we hope meet with approval. The responds to the comments are as flowing:

General comments

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

1. I would encourage the authors to locate other relevant references where RO data obtained from mountains were investigated.

Response: Ok, we have located the relevant references: Healy, S. B., Haase, J., Lesne, O.: Abel transform inversion of radio occultation measurements made with a receiver inside the Earth's atmosphere. Annales Geophysicae, 20, 1253-1256, 2002. Hu, X., Zhang, X. -X., Wu, X. -C, Xiao, C. -Y, Zeng, Zeng, Gong, X. -Y.: Mountain-Based GPS occultation observations and its inversion theory, Chinese J. Geophys. -Ch, 49, 15-21, 2006.

2. I would like to see a more detailed discussion of how GNOS performs compared to other RO instruments, e.g. IGOR on COSMIC and GRAS on Metop.

Response: It's a good comment, we would like to do it, but we think it's difficult to complete. Because it's impossible to get the IGOR and GRAS testing data in lab or mountain-base experiment, and we haven't found any paper to introduce that. For the future, we plan to make the compare on-orbit when we carry out the GNOS on-orbit testing, because it's easy to get the COSMIC and Metop on-orbit data.

Specific comments:

1. When Metop is mentioned on pp.705-706, I suggest that there should be a reference to this paper: A. von Engeln, S. Healy, C. Marquardt, Y. Andres, and F. Sancho,Validation of operational GRAS radio occultation data, Geophys. Res. Lett., Vol. 36, L17809, doi:10.1029/2009GL039968, 2009

Response: Ok, it's good advice. It has been cited in the new update version paper.

2. On page 709, lines 22-24: what are the latitude and longitude of these two occultations and how close were they?

Response: I guess the page should be P712. For the mountain-based occultation (antenna deployed height was $\sim$2km), the furthest distance between antenna and event tangent point was about 160km. In terms of the two occultation event azimuth angle

AMTD
7, C599–C603, 2014

(∼186 degrees for B12 and ∼150 degrees for G14), the furthest distance between the two occultation event tangent points should be less than 100 km in the same height level.

3. On page 712: How are these percentages for the differences calculated, at a fixed height or over some interval?

Response: These percentages were calculated at some fixed height range, which were based on Radiosonde's intervals.

4. I suggest that these numbers, and the data in Fig. 8, should also be presented as the relative differences. In Fig. 8, please show the full height interval (up to 20-25 km or where the radiosonde data ends). The same comment applies to Fig. 9, please also show the relative difference and this relative difference for heights from 0 to 40 km.

Response: Yes, it a good suggestion, however, because there were just four points for radiosonde under 2038m, if it presented as the relative differences (GNOS compared with Radiosonde), there should just be four points, it's too few. For the Fig.9, in order to correspond with Fig.8, we would like to keep the original figure.

With regard to the height in figure lower than 2038m, the reason is mountain-based occultation just can retrieval the atmosphere parameters under the height of antenna in terms of the principle of mountain-based occultation retrieval. It's impossible to show the full height.

5. On page 713, line 3, suggest changing the text to "...observations will provide important contributions to the global...".

Response: Yes, it has been changed in the new update version paper.

Technical comments (and suggestions): 1. Correct "performance" in the title Response: It has been corrected in the new update version paper.

2. Insert "the" (before FY3) in the title

AMTD
7, C599–C603, 2014

Response: We think it should not be insert, please reconsider it.

3. Abstract, line 6: is it at 03:03? (on p. 706, line 16, it says at 03:07)

Response: No, the time is 03:07 UTC.

4. p. 705: line 6: change "to sound" to "for the sounding of"

Response: Yes, it has been corrected in the new update version paper.

5. line 19: 2500 COSMIC occultations is perhaps the maximum, so consider to write "up to 2500"

Response: Ok, it has been corrected in the new update version paper.

6. line: 25: change "is the one of" to "is one of"

Response: Ok, it has been corrected in the new update version paper.

7. line 27: write "years"

Response: Ok, it has been corrected in the new update version paper.

8. p.706: line 2: change to "Gorbunov et al., 2006"

Response: Ok, it has been corrected in the new update version paper.

9. line 11: change "add the GNSS" to "carries the GNSS"

Response: Ok, it has been modified to “carry the GNSS” in the new update version paper.

10. p. 708: line 4: change to "...allows using the zero-differencing method..."

Response: Ok, it has been corrected in the new update version paper.

11. line 22: Correct the spelling of "Sokolovskiy"; and insert the year after the second reference

AMTD

7, C599–C603, 2014

Response: Ok, They has been inserted in the new update version paper. I'm sorry for the mistakes.

We have tried our best to revise and improve the manuscript and made great changes in the manuscript according to your invaluable comments. We appreciate for your warm work earnestly, and hope that the corrections will meet with approval.

The new update version paper is enclosed in supplement.

Thank you very much.

Yours sincerely,

Bai Weihua

Please also note the supplement to this comment:
http://www.atmos-meas-tech-discuss.net/7/C599/2014/amtd-7-C599-2014-supplement.pdf

---

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 703, 2014.