

## **Title: Quantifying uncertainty in climatological fields from GPS radio occultation: an empirical-analytical error model**

**Authors: B. Scherllin-Pirscher, G. Kirchengast, A. K. Steiner, Y.-H. Kuo, and U. Foelsche**

The paper used an empirical-analytical error model to estimate the errors in RO climatologies. It provides useful error estimations for several parameters. The technical quality is good and the paper should be published. Some minor comments are specified as follows.

### **Minor comments**

1. Several descriptions used the adjective of singular instead of plurality, examples: Page2750, line 2: Single RO profiles; Page2752, line 11: single satellites; Page2754, line15: single measurements, etc. It may confuse readers what the authors want to describe, singular or plurality?
2. Page2754, line16: Could you specify what the “common altitude grid” indicates? What is the vertical resolution? If the vertical resolution is coarse, then it may smooth some information from RO.
3. Page2759, line1-4, and Fig.2: Can all the error representation in the same way (in percentage)? Example for geopotential height and temperature.
4. Fig. 2: Is there any explain to the distribution of the F3C sampling errors at polar regions? It always shows positive at south hemisphere and negative at north hemisphere for all the parameters except the bending angle. For example: one of the F3C shows the error increasing from -0.5% at 30°N to -2% at nearly 90°N in dry pressure sampling error (left bottom panel).
5. Page2762, line 21-23: The description within the bracket can be omitted. More details are already described in section 4.2.1.
6. Page2763, line17: Some sampling error close to zero which always happen in the bins at some altitude levels. On which levels? Is there any reason why it always happened at some specific levels?
7. Page2766, line1-4: The sentence of “This bending angle....” should be added some comma for easy reading.
8. Page2767, line9: The sentence “... assumed to be somewhat large than for other atmospheric .....” may be revised as “... assumed to be somewhat large than that for other atmospheric .....”.
9. Could the characters for axes and labels in each figure become larger? They are too small.