

## ***Interactive comment on “Processing and validation of refractivity from GRAS radio occultation data” by K. B. Lauritsen et al.***

**Anonymous Referee #1**

Received and published: 17 May 2011

I am referring in my review to the 2 column version I got of the manuscript, not the usually shown version on the website! In particular, the page/line numbers are different.

General Comments:

---

- the manuscript is well written, presents interesting results of the GRAS SAF processing of GRAS data to refractivity. I have a few minor comments for improvement, clarification.

Specific Comments:

C586

- Page 1, Line 31: "Using satellite observations ... applications." Please give a reference for these sentences, maybe the latest Anthes one?

- Page 1, Line 49: "One of the key advantages ... (Dee, 2008)." Suggest to move this up to where NWP is discussed, after the Cardinali reference. Currently the text jumps from NWP to climate and then back to NWP. Although I agree this is a grey area, where NWP "meets" climate.

- Page 2, Line 144: For a reader unfamiliar with GPS signals, the L1, L2, LC comes a bit out of the blue. Suggest to introduce them in a sentence.

- Page 2, Line 149: "For the processing in the upper ..." Suggest to include refractivity here to make the distinction between bending angle and ref.

- Page 3, Line 164: "However the fit is not performed..." I am unclear to what this means. What happens in this case, is the profile disregarded? Or the fit just based on other altitude intervals? Why does it deviate this strongly even after the 2 parameter fit?

- Page 3, Line 179: "Linear interpolation to a fixed..." Why is this linear, the bending angles are exp?

- Page 3, Line 190: Could you actually write down the equation for how the fit is performed, e.g.  $\epsilon_{\text{model}} * \beta + \alpha$ ? I am confused on the  $\ln \alpha$ , multiplication, all in log-space.

- Page 3, Line 203: "Calculation of the relative mean deviation ..." Is there actually a bias left in this, and if yes, how is it handled?

- Page 4, Line 215: How many occultations are removed in this quality control? Would also be nice to give them by the criteria.

- Page 4, Line 289: "... a bias may be introduced ..." Isn't it actually a good sign that a bias persists? If all biases are removed with this approach, any climate monitoring up

C587

there would be useless. Suggest to rephrase this.

- Figure 2, left plot: Why are there actually no observations at 9:30/21:30 over the equator? I know why, but might be good to mention this briefly.

---

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 2189, 2011.