**Atmospheric
Measurement
Techniques**
Discussions

# Interactive comment on "Implementation of a quality control for Radio Occultation observations in the presence of large gradients of atmospheric refractivity" *by* L. Cucurull

**Anonymous Referee #1**

Received and published: 12 November 2014

The useful assimilation of GNSS-RO data in the low troposphere is an interesting and open topic. It is to be welcomed a contribution with proposals for selective filtering.

P 10489, L 8-12: The text uses confusing expressions such as "internal" or "external" rays, presumably around the concept of "trapped" propagation, or "total reflection" near a large gradient. Please reconsider the expression, for instance (but not necessarily) "rays are trapped in the duct, and cannot be a propagation channel between the emitter and the receiver".

P 10495, L 25-27: This text is confusing. Since this paragraph and the former describe

the at the core of the manuscript, I recommend revision of this text. Is the "observation with the largest bending angle" a different observation than the bending angle that was greater than 0.03 rad? Do you mean that if the condition stated (obs_BA>0.03 & mod_gradient<0.5*critical) * happens anywhere, you assimilate only above the maximum obs_BA of the profile?

*I use < since "critical" is negative: |mod_gradient|>0.5*|critical|

Tables 1 and 2: The differences shown between CTL and EXP imply a positive but small improvement. It would be desirable to indicate the significance level, or an estimate of the sigma of the quantities shown.

It would also be desirable to indicate the world distribution of the impact (for instance, a map of RMS reduction or AnomCorr increase). Not only would it provide a check that the regions affected are those where ducting occurs; it would indicate that other regions are not negatively impacted, whereas these show a more significant positive impact.

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 10487, 2014.