

Comments on “Correcting negatively biased...” by X. Yu, F. Xie and C. Ao.

*The document has been improved since its previous revision. External information can indeed provide relevant data that GNSSRO may not provide if superrefraction is present. This is particularly important for the Planetary Boundary Layer, where this phenomenon is most common. It is interesting to provide examples of such use of external information. The manuscript is correctly developed and presented. I would only object to the presentation of the following context and implications:*

- *This call to external information, underscores the fact that GNSSRO is not providing it. The bias properties of the retrieved refractivity profile are no longer those of GNSSRO, but are swapped to those of the external source of data applied to provide the closure (also to some extent those of the algorithm itself) in this case, a PW retrieval.*
- *I consider particularly important to underscore that some of the properties generally attributed to GNSSRO do not apply to the PBL, not only before the correction presented here, as is well known, but also after, and notably the good traceability. The external source may have its own bias, and the correction of the bias in the low troposphere presented here can only be partial. Although it may help reducing the refractivity bias of the retrieved GNSSRO profile, the retrieved refractivity will inherit the bias of the PW source, which may perhaps be smaller, but not zero, and not necessarily small. Good traceability is achieved with GNSSRO in the upper troposphere, and the low and mid stratosphere. The correction presented here may reduce low tropospheric bias, and this is of interest for certain applications, but cannot make low tropospheric data as traceable as the upper sections of the profiles.*

*I would thus recommend mentioning this context in the introduction and/or conclusion.*

**<Response>**

Thank you very much for your suggestion. To clarify we added the following sentences at the end of conclusion:

**It should be recognized that the absolute accuracy of the reconstructed GNSS-RO refractivity will be influenced by the uncertainty of the external constraints. The lower SI traceability of reconstructed refractivity within the PBL compared to the upper troposphere and lower stratosphere (UTLS) region can limit its applicability in long term climate monitoring.**

Also, we would like to kindly remind the reviewer that this paper is submitted by “K.-N. Wang, M. de la Torre Juarez, C. O. Ao, and F. Xie”.