

**Review AMT-2021-9:  
Improving thermodynamic profile retrievals from microwave radiometers by including Radio  
Acoustic Sounding System (RASS) Observations**

First of all I would like to thank and congratulate all the authors of the manuscript for taking into account the major comments of the previous versions and for providing such an improved version. I appreciate all their efforts to improve the equations, figures, scientific evaluation and discussion as well as new results proposed with the MWR bias correction impact.

I only suggest a few minor corrections for typos and I think probably a mistake in the text. I recommend the publication of the manuscript to AMT.

**Minor corrections :**

**Line 337 :** we have demonstrated the augmentation → we have demonstrated the extension

**Line 447 :** It is mentionned that the BC is computed with the TROPOe retrievals. I doubt this would be a good idea as the TROPOe retrieval is obtained to minimize the distance with the observation. So, if the observations is biased, we of course end with an atmospheric profile compensating the bias in the observation. Thus, I assume that the difference between the observation and the simulation from the TROPOe retrievals should tend to zero as the PR want to minimize this distance. I think the authors wanted to mention TOPROe background profiles from the climatology as it is confirmed in line 498 and explained in their reviewer's answers. Please correct the text accordingly.

**Line 635 :** as a function of the height → as a function of height

**Figure 8 :** bottom right : change 0-5 km averaged into 0 – 3 km averaged.