

Answers to the Editor, Referee #1, and Referee #2

We thank the Editor and the Referees for the positive comments to our revised manuscript. In the following text, the Editor's and Referees' comments are in black and our answers are in red.

Editor's comment:

Dear authors,

based on the referees' reports and my own judgment, I believe the manuscript can be accepted for publication on AMT subject to the minor modifications suggested by one of the referees (Report #2).

I also encourage the authors to link their paper to the AMT/GMD PROBE special issue [1] to possibly increase the visibility in the BL profiling community. If agreed, just ask the editorial staff to be linked.

Congratulations!

[1] https://amt.copernicus.org/articles/special_issue1209.html

We thank the Editor for the comments and suggestions. We have taken Referee's #1 comments in consideration and have included the suggested modifications to our manuscript. Additionally, we'll be happy to link our paper to the AMT/GMD PROBE special issue.

=====

Referee#1 comment:

First of all, I would like to thank the authors for their efforts to take into account most of the suggestions and propose this new improved version of the manuscript. I only suggest minor corrections and I recommend publication to AMT.

Thanks for your comments and suggestions. We have taken your comments into consideration and have included the suggested modifications to our manuscript.

Minor corrections :

→ Appendix :

- line 484 : it's not => it is not

Changed as suggested.

- I think this appendix is really great to demonstrate the benefit of using the sensor synergy of infrared and microwave frequencies for cloud-sky applications.

I think it would be really valuable to include the Appendix directly within the paper.

But I let the authors decide with the editor if they really prefer to keep it in the appendix.

We agree with the Referee that the Appendix brings valuable insights on the benefit of using the sensor synergy of infrared and microwave frequencies for cloud-sky applications. We again thank the Referee for suggesting to investigate cloudy days in the first round of reviews. We would rather prefer to keep it in the Appendix, as a preliminary teaser on future research investigations.

→ Figure 6 : for the degradation of humidity with MWR + RAP instead of MWR : even if we cannot be entirely sure, I think it would be nice to include your explanation within the paper: IRS has more information content in humidity than the MWR alone, so, for configuration #5 (IRS only) the retrievals below 4 km are better constrained by the observation. For configuration #1 (MWR only), differences between the NWP model and the observations above in the atmosphere (NWP model being drier than the MWR observations) might spread (to counterbalance) in the lower part of the atmosphere.

We thank the Referee for the suggestion. Some explanatory text text has been added to the revised version of the manuscript, in Section 4.2.

→ Figure 7 : could you just describe within the paper the fact that the bias is degraded for the configuration IRS + MWR compared to MWR (even if we do not know why but just to mention it in the text.

The suggested comment has been added to the revised version of the manuscript, in Section 4.2.

=====

Referee#2 comment:

I am satisfied with the authors' responses to my concerns and I believe this paper should be accepted.

We thank the Referee for the positive comments to our revised manuscript.