

## ***Interactive comment on “Comparison of RO tropopause height based on different tropopause determination methods” by Ziyang Liu et al.***

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Dear reviewer: Thanks for hearing from you again. We have revised our manuscript according to your comments and gave the following responses.

General comment:

“I would like to point the authors to the fact that, to my knowledge, the ROPP Fortran package contains forward modelling routines from model pressure, temperature, and humidity data to both refractivity and bending angle. I don't know whether such model bending angles would be suitable for application of the covariance transform, but I suggest that the authors consider that as a possibility. I'm not requiring that you do that for this present study, but it should be considered in future studies.”

C1

Our response: We think bending angle computed by ROPP should be suitable for applying the covariance transform, because there is a tropopause package in ROPP Applications module that contains bending angle covariance transform method. Actually, we referred to ROPP tropopause package user guide for setting the parameters in our code (We have uploaded the user guide in supplement file, and you can also find it on <https://www.romsaf.org/ropp/>). Normally, the ROPP Applications module should be compatible with ROPP forward module. However, the FY3C bending angle and dry temperature profiles are not retrieved by us, and thus we don't know clearly about ROPP. Maybe there are some issues in the link between forward module and application module, and this point is worth to consider. We will do it in further study.

Minor remarks:

Abstract, line 11: Replace “The Tropopause is a significant ...” with “The tropopause is an important ...” (lower case ‘t’ in ‘tropopause’)

Abstract, lines 16-19: A suggestion: “We compute biases of the RO lapse rate tropopause height (LRTH) and the RO bending angle tropopause height (BATH) relative to the ECMWF LRTH. The dependences of the tropopause height biases on TPH retrieval method, latitude, season and RO mission are investigated.”

Abstract, line 19: Start sentence with “the”: “The results indicate ...”

On page 3, lines 65-66, I suggest to remove the whole sentence “The bending angle profile is level-1 data ...”. The definition of processing levels is not a scientific issue and is not interesting or important for the reader. Related to this change you should also remove “Moreover” from the beginning of the sentence on line 66

On page 7, line 148, I suggest that you remove “(true value)” from the sentence. ECMWF is a reference, and nothing more.

Our response: Thanks for your suggestions. We have corrected our manuscript according to these. The “true value” is also replaced by “reference” in line 236.

C2

In several places in the main text you use the phrase “bias regulation”. That is not a correct use of the word “regulation”. It seems that you just mean “biases”? Our response: In line 149, 206, 264, we replaced the “bias regulation” as “latitudinal biases”, and in line 183, we used biases distribution here for it corresponds to global LRT (figure 5 and 6), and in line 262, we use biases for it is a summarization.

There is an attention “please do NOT submit your revised manuscript here as supplement” and thus we don’t upload the revised manuscript this time (we don’t know the reason why there is a such attention and last time there were large changes in our manuscript and thus we uploaded it). However, if you require the manuscript, we will upload it. We are looking for hearing from you.

Please also note the supplement to this comment:

<https://www.atmos-meas-tech-discuss.net/amt-2019-379/amt-2019-379-AC2-supplement.zip>

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-379, 2019.