Dear Dr. Anthes,

We deeply appreciate your careful review again for improving our manuscript. We also thank you for pointing out the confusing description about the retrieval product we used in this study. The product we used is wetPf2. As you pointed out, the reference should be Wee et al. (2022). Please see our point-to-point responses to your comments as follows.

1. The response to my comment 8 (shown below) was not clear. There are two versions of the 1D-Var retrievals of temperature and water vapor from RO data. The original one, developed more than 20 years ago, is designated wetPrf. The newer, and improved version (Wee et al. 2022) is designated wetPf2. I think the authors used the original version, wetPrf, but it is not clear from their response because they use the term wetPrf2, which does not exist (I know, it can be confusing!). In the revised paper (lines 140-141) they say they use wetPf2, but they reference Wee (2018). If they use wetPf2, they should reference Wee et al. (2022). Please say clearly in the revised version whether they used the original version or the new version.

   In our paper, we used the new version of 1D-Var retrievals of temperature and water vapor (wetPf2). The data was obtained from Taiwan Analysis Center for COSMIC (TACC) (https://tacc.cwa.gov.tw/data-service/fs7rt_tdpc/level2/). We modified the product name and the reference (Wee et al. 2022). Please see the modifications at line 144 and 184.

2. The Rocken et al. (1997) paper was inadvertently omitted in the text of the revised paper. The negative N bias was first noted by Rocken et al. (1997), although the reasons for it were not discovered until a few years later. The reference should be mentioned in the text. Perhaps in line 60: "It is known since 1997 that negative biases in refractivity exist in the lower troposphere, especially in the tropics (Rocken et al. 1997)"

   Thank you very much for pointing out this important reference. We apoloze for our inadvertent mistake. This sentence is now included accordingly.

3. The recent paper on detection of superrefraction by Sokolovskiy et al. (2024) should be added to the references in line 53.

   Thank you for your suggestion. Sokolovskiy et al. (2024) is now cited at line 54 and included in the reference.

4. Line 26—delete "tend to"

   This sentence is modified accordingly.

5. Line 156-replace "are" with "is" and delete "and regression coefficients"

This sentence is modified accordingly.

6. Line 168-replace "choose" with "choosing" s

   The grammar error is corrected. Thank you.

7. Lines 297-298-"drier conditions"

   Thank you. It is corrected.

8. Line 362-"investigates"

   Thank you. The grammar error is corrected.

9. I don't understand the sentence in lines 461-462. Factors such as temporal variations, topography and meteorological effects are implicitly considered in this study, which is based on statistics of data that include these factors. Possible biases in the ERA5 analysis is one limitation. Fewer data in high latitudes is another. A third is that the statisical results are not perfect, as indicated in the RMSE and other parts of the paper (e.g. Fig. 10). So the results may be useful in a statistical sense and using the polynomials to determine the negative N bias for individual profiles may have errors.

   Thank you for your suggestion. We removed this sentence but emphasized that predictors used in the statistical models may not be perfect to capture all attributions of REFB (line 468).

10.   Line 471-I think there was only one anonymous reviewer.

   Thank you for pointing this out. It is corrected.