

The authors would like to thank the editor and the two anonymous referees for their comments on our revised manuscript. Following the comment in **Report #1** from **anonymous referee #3**, we make the following replies and corresponding revisions to the manuscript. The original comment from the referee is in *blue italic*, followed by our reply. Moreover, in the marked version of the revised manuscript, the revisions are highlighted with 'REV'.

Report #1:

i am fine with the overall response and revision. i do have a few more questions for clarifications. (1) as indicated by other referees and you agreed that the ASPeCT should not be used for validation, but you used them anyway and as i mentioned that the ASPeCT data actually show better results than the two other datasets. therefore, should you still keep ASPeCT data as the validation? and how good your model actually modeling the real situation? i would say "it is not that good". (2) for my comment on the L204: what i meant was why you did not correct it using the actual incidence angle for each pixel, while using the constant angle of 35 degree for all pixels. (3) for the explanation of L402-406, i am ok with that. if not already done so in the revision, i hope you can add the detail such as "we compute the daily mean location of the buoy and find the cell of the Tb product that contains the buoy's (mean) location, also use the daily mean buoy data"

Reply: we make the following replies and revisions to the 3 points raised by the referee.

Regarding first point on the use of ASPeCT data for the “validation” of the RADIS-L model, we have revised the title of Sec. 4.2.2, which contains related content, from “**Tbs validation in ship-based and airborne observations**” to “**Inter-comparison of Tbs based on airborne and ship-based observations**”. By doing this, we refrain from calling the ASPeCT-based study as validation, due to its potential representation issues.

Regarding the second point of the comment regarding the incidence angle of the SAR image: we confirm that the incidence angle correction is based on the actual incidence angle for each pixel, and all the backscatter values are corrected to the incidence angle of 35-deg. We didn't use (or assume) the constant angle of 35-deg for the original image.

Regarding the third point, we revise the paragraph to contain a more detailed introduction of the methodology, as follows: “**We adopt the following protocol to match buoy's measurements to satellite Tbs. For each buoy, we compute its daily mean locations. The daily Tb map for each daily mean location is used to attain the Tb value in the cell that contains the specific location. Then the buoy's daily measurements are matched to Tbs for further comparison.**”