acp-2022-136

Responses to 2nd review

Highly supercooled riming and unusual triple-frequency radar signatures over McMurdo station, Antarctica

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August 3rd, 2022

We thank the reviewer 2 for his renewed efforts and time for providing additional technical comments which greatly help polishing the manuscript. All our point-to-point answers are highlighted in red below according to the following sequence: (i) comments from referees/public, (ii) author's response, and (iii) author's changes in manuscript.

General comment:

I am satisfied with the authors responses. The added descriptions, especially about the environments around the sites, are helpful for me. I have a few minor suggestions and questions.

Specific comments:

1. (i) It would be worth mentioning about minimum detectable reflectivity for the corrected data for all radars. This may be a good reference for future studies.
(iii) We added the sensitivity of the radars after calibration in the 3rd paragraph of section 2.2.

2. (i) Figure 1: Data sample size at each temperature also helps.
(iii) We added panels to show the number of samples per temperature level.

3. (i) Section 4.3 “130000 observations”: Does “observations” mean range-gate data points or profiles?
(ii) We meant range gate data. (iii) We replaced “observations” by “data points (with resolution of 2 s by 30 m)” in the manuscript.

4. (i) I might be confused with the definition of diameter D in this paper. Does “D” or diameter refer to water equivalent diameter or maximum dimension of irregular shapes, or others?
(ii) In this study, D refers to the maximum dimension of ice particles. (iii) We added this information just after equation (1) and in the caption of figure 12.

5. (i) I think that I still do not understand why radar misalignment is emphasized at lower levels (smaller sampling volumes).
(ii) Indeed, at lower levels the sampling volumes mismatch is mainly due to the slightly different location of the radars: since the beam widths are small and the radars are nearly 10 meters apart, there is less overlap between the sampling volumes of the different radars. When the cloud is highly heterogenous, this can explain the unusual DWRs below 1 km.