• Line 36: I suggest removing “aspect ratio” here since it is a measure of shape.
OK, “aspect ratio” has been removed.

• Line 78: Please add a brief explanation of how the interference patterns within the particles relate to the far-field scattering properties.
OK, this has been done.

• Fig. 1: Please use the “hh:mm” format for the x-axis label of panel b.
This has now been done.

• Line 174: Please add a more specific, brief explanation here about why the uncertainty in V-H from cloud heterogeneities would be of similar magnitude to that for unpolarized radiation.
We have clarified in this part of the manuscript that more research is needed in this area in order to quantify the uncertainties in V-H caused by using the 1D approximation:

“Barlakas and Eriksson (2020) investigated the impact of 3D effects on millimetre and sub-mm brightness temperatures measured by satellite radiometers. They found that the difference between approximating the 3D scene by a 1D plane-parallel approximation was dominated by the heterogeneity of the cloud field within the beam (which is small for airborne instruments such as ISMAR), and that horizontal photon transport between different parts of the scene was small (brightness temperature differences <1K typically). Although their study did not consider polarimetric effects, it seems likely that the uncertainties in V-H will be of comparably small magnitude, and we argue that 3D effects can be reasonably neglected in our study, in the context of other uncertainties (in particular the lack of colocation between the in-situ sampling and the radiometer measurements). However, we acknowledge that more research on the influence of 3D radiative transfer effects on

polarised brightness temperatures is required in order to fully quantify this."

• Line 232: Please state explicitly what the acceptable agreement was between the simulated and measured IWC values.
OK, we have specified 1%.

• Line 245: Please describe here what measure of the distribution (e.g., mean, median, mode?) is used to determine its centre.
OK, we have specified that it's the mean.

• Lines 245-246: Please describe how the number of aggregate realisations were chosen.
We have elaborated on this in section 3.1. The Monte Carlo aggregation simulation produces a random (uncontrolled) population of aggregates, from which we subsample particles to span across the range of sizes in our measured PSDs.

• Line 299: Please describe the 148 orientations used for the particle scattering calculations in more detail.
Apologies, 148 was written in error so thanks for this suggestion. The correct details have now been provided in the manuscript, including the number of azimuthal orientations. The orientation averaging was actually done with 36 azimuthal orientations (using a regular azimuth angle grid with 10 degree spacing). Since we are only averaging over random azimuthal orientations (not totally random), we need fewer samples of orientation. Tests showed that for the particles used here, the mean error in the first phase matrix element using 36 orientations is within 0.4% of the results using 360 orientations (1 degree azimuth angle grid).

I have also now included that the grid spacing for the other relevant angles is 5 degrees (incident and scattering polar angles, and scattering azimuth angle), which had not been included previously.

• Lines 508-510: The potential for monomers with aspect ratios closer to one to more closely match the simulations suggests that rimed particles may be better models for this particular case.
Thanks, this has been added to the discussion.