

The manuscript presented a case study combining remote sensing and in situ data to investigate the potential enhancement of precipitation associated with seeder-feeder mechanism and further compare observations against the model. It is a study with lots of potential. If well-established, it can be applied to more extensive datasets to provide insightful constraints for models. However, there are major issues to be addressed at this point.

You presented multiple seeding profiles during 3-5 UTC in Fig. 4, 6 and 8, but the precipitation rates are very low for this period in Fig. 11. You stated that no seeding occurs between 3 to 5 UTC in your discussion of Fig. 11. These are conflicting. The observations and conclusions are not reconciled.

It is also puzzling that you have 11 profiles selected and shown in Fig. 4, while you picked completely different profiles while you discuss doppler spectrum and polarization ratio etc. in Fig. 6 and 8. A synergetic view means all the coincident observations and available retrievals (reflectivity profile, DWR, retrieved rimed mass, doppler spectrum, etc.) are analyzed and discussed for the identical profiles.

The structure of the paper would be more reasonable, if you presented figures summarizing the entire case (e.g., Fig. 5) for both remote sensing and in situ measurements and then zoom in on representative strong, weak and no seeding vertical profiles and dive into further details.

In addition, the performance of fall streak tracking appears questionable. Related retrievals following the trajectories should be reevaluated. It could have a significant impact on your results. See more in the detailed comments.

The contrast between with and without seeding is evident, but not for the comparison between your strong and weak seeding cases. I expect to see a more in-depth discussion after careful reanalysis of data.

Detailed comments:

Add basic technical details for radars, such as range resolution, minimum detectable sensitivity. Size ranges that 2DVD and VISSR can detect should be provided.

L59: Please add reference for ICON-D2.

L99: reference for peakTree

L122: categorize (verb) → categorized. The same applies to the rest of the manuscript.

L125-126: what is the purpose to obtain PSD and ICNC from both 2DVD and VISSS? Is the information from the 2 instruments complementary or it is for quality control? Also, there is no need to define PSD and ICNC twice.

L153: how large are the uncertainties?

L171: please provide more description in term of how the data is harmonized.

L216: comma should be removed.

L234-235 and L239-240: redundant.

L247-248: How do you define “liquid droplets”? I consider drizzle and rain are part of them.

L254: cloud, drizzle and rain are all liquid water droplets. Raindrops do not fall slowly.

L270: add a table listing the criteria for each classification and providing the percentage of each group – “ice”, “ice and liquid”, “unclassified”, etc. Evaluate how well the classification technique works for your dataset.

L296-297: why not put M in the far left of Eq.2, if that is what to derive?

L304: what is VISSS resolution?

L305: M for individual particles and population should have different symbols.

Eq. 3: is FR for one particle or a population?

L317: VISSS data is not mentioned in section 3.14.

Fig. 4: a panel should be added under panel b to show the time series of liquid water path with error bars indicating retrieval uncertainties.

In Fig. 4b, the first 3 profiles from the left (between 2 and 5 UTC) appear to be under the impact of shear between 1.75 and 2 km by eyeballing the structure of reflectivity. The trajectories are likely slanted. I doubt the particles are falling straight down as indicated. Despite the uncertainties of fall streak tracking, I am not convinced that it works as expected here. I suggest that authors experiment with different time windows when looking for local maximum reflectivity.

L409: what does white color indicate in fig. 5f? It is not part of your colorbar. The high spectral width between 2 and 3 km in fig. 5a mostly collocate with the white colors in fig. 5f. If white indicates missing value, you cannot conclude the high spectral width is not related to turbulence.

L410: remove e.g. in this line.

L459: you state it is a “strong seeding event” here, but your description in Fig. 6 is a “a case with weak seeding”.

L460: why not present a case where fall streaks are available and add that profile in Fig. 4?

Fig. 8 caption: the panel letters for weak (c, d) and no seeding (e, f) events are not correct.

L574: are total ICNC from 2 instruments comparable if very small particles below 0.5 mm are excluded?

L583: why is there no seeding between 3 to 5 UTC? You have multiple seeding profiles during this period presented in Fig. 4, 6 and 8.