

Review of "Evaluation of EarthCARE retrievals of ice microphysics and vertical wind using in-situ aircraft observations", by R. Hogan et al.

This paper is a much needed and thorough evaluation of critical EarthCARE products that will be used worldwide. The analysis is very complete, and I only have one comment to make the reading experience more enjoyable. The authors must be commended for a very careful editorial work, as I believe it is the first time I don't detect a typo or ask for clarification!

My comment relates to the disconnect between the organisation of the text in the Results section and the figures supporting the text. I understand why you have presented the figures in this way, but it really does not work well for the reader, since you are looking at reflectivity from all the cases first, then you move on to Doppler for all cases, etc ... It would make more sense to have all the reflectivity time series in one figure, Then one with all Doppler velocities etc ...

Also, I think that the analysis of these excellent observations could be enhanced by adding one plot for each variable where you would group all the points from all cases in a scatterplot (maybe with the points coloured as a function of time difference with overpass time since you expect more variability, or maybe a scatterplot of the reflectivity difference as a function of time difference from overpass time). I did that before and it's quite informative. What you should find is that the variability of the difference is smaller at $\Delta t=0$ then expands due to the temporal evolution of reflectivity.

The comment in lines 274-275 is another very good reason to produce the plot I suggest (ΔV_d as a function of Δt as a scatterplot in that case). With the points you have you could also calculate the standard deviation of the difference with the points that are close in time to the overpass (within a time difference window of a size to be defined) and compare that to the expected measurement errors on both sides.

I don't know how strict journals are these days with colourblind-friendly palettes these days, but I know that the one used for reflectivity is not, so you may be asked to consider switching to another colour palette.

Good luck with the review,

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Melbourne, 29/09/2026