

Atmos. Meas. Tech. Discuss., referee comment RC3 https://doi.org/10.5194/amt-2021-306-RC3, 2021 © Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.

Comment on amt-2021-306

Anonymous Referee #3

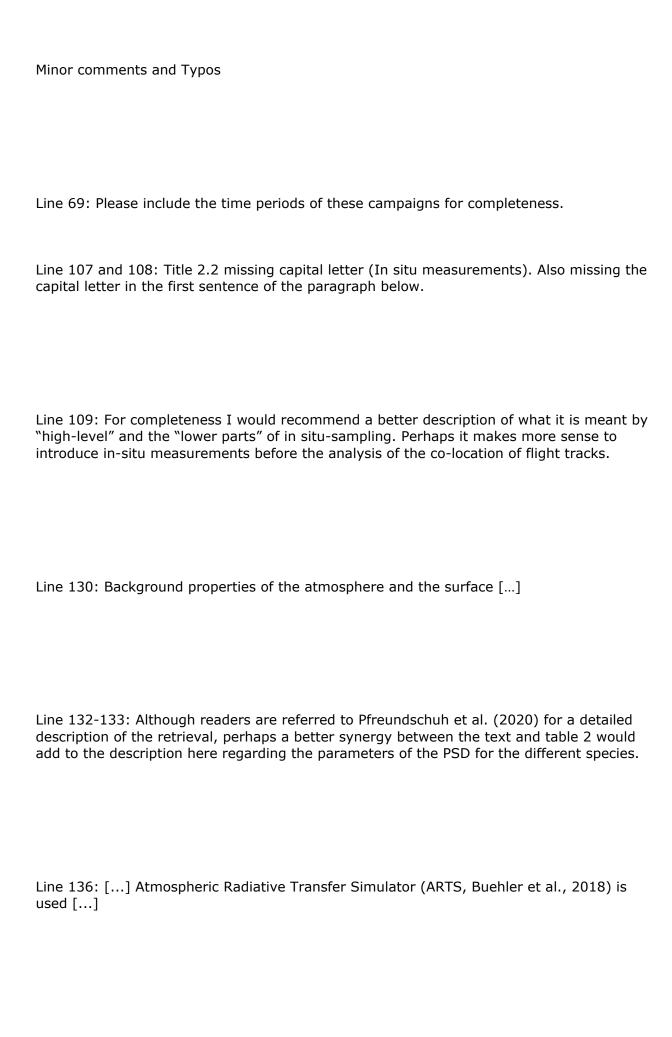
Referee comment on "Synergistic radar and sub-millimeter radiometer retrievals of ice hydrometeors in mid-latitude frontal cloud systems" by Simon Pfreundschuh et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2021-306-RC3, 2021

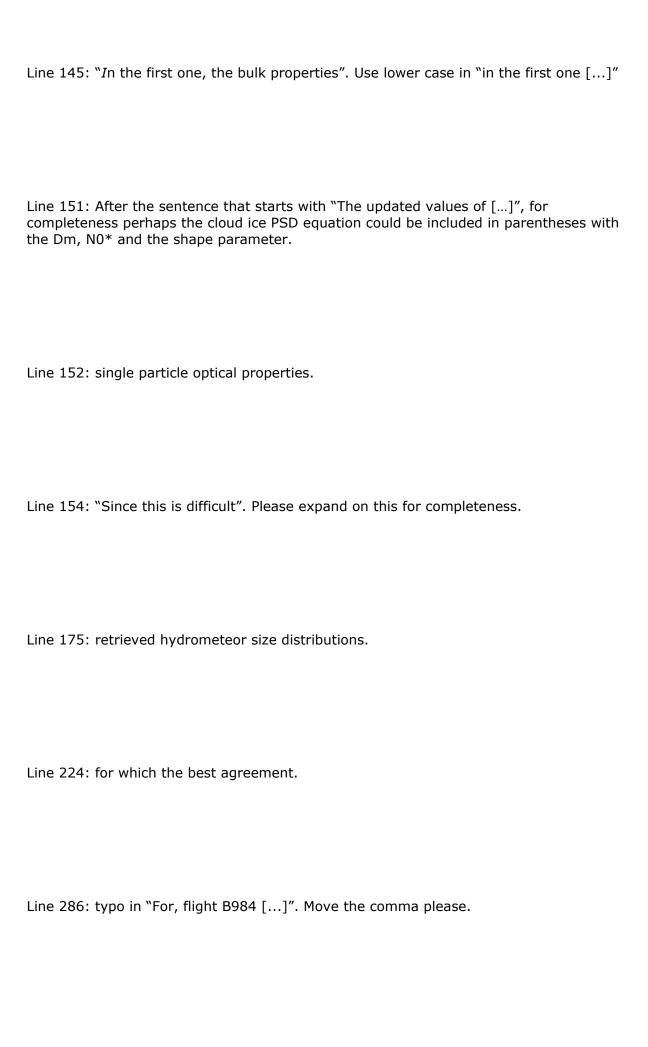
Summary

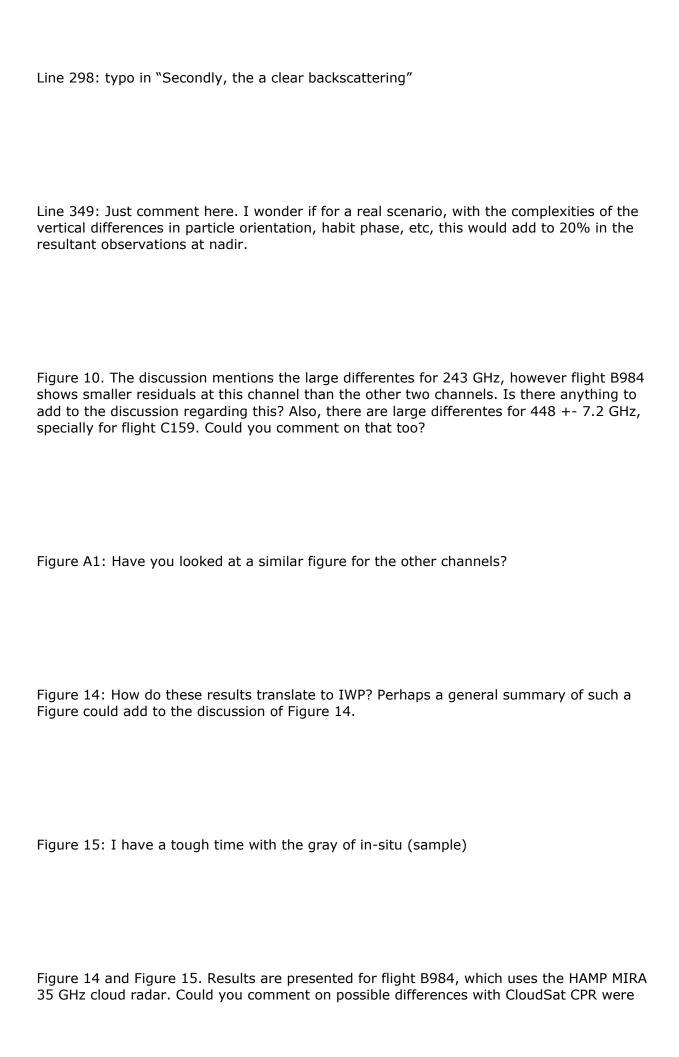
This study presents the results of a synergic retrieval (radar + mw/sub-mm radiometer) of ice cloud hydrometeor vertically-resolver distributions. A previously published paper presented the technical details of the retrieval and tested it with simulation-based results. The present paper validates this retrieval using real co-located radar and microwave radiometer observations. This paper is very well written and organized. Results are divided mainly in two: an analysis of the accuracy of the retrieval by comparing the retrieved results with in-situ measurements of bulk IWC and PSDs, and an analysis of the validity/consistency of the forward model active and passive simulations (i.e., the RT framework).

General comments

The publication is fit for publication as the results are novel and the limitations and complexities involved are analyzed with care and detail. The main results I take is that particle habits are still un-constrained even with sub-mm frequencies and this is an important result on the edge of the ICI era. I recommend publication with only a few minor details/comments to be considered.







to be used.