

## ***Interactive comment on “Towards an operational Ice Cloud Imager (ICI) retrieval product” by Patrick Eriksson et al.***

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The authors present a very useful overview of the ICI instrument and the day-1 retrieval algorithm. However, I feel that the results in Sec 4.3.3, particularly for the midlatitude case, may rather over-estimate the retrieval accuracy due to the use of a single ice particle habit and size distribution. I would like to see some evaluation of the impact of this assumption on the retrieval since previous work e.g. Fox et al., AMT, 2019 (amt-12-1599-2019) have shown a strong sensitivity of sub-mm brightness temperature to particle habit. Presumably if multiple habits and PSDs are included in the database (as for the tropical case) this will increase the uncertainty in the retrieval?

I also find the description of the radiative transfer simulations in Sec 4.3.1 a little con-

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fusing, particularly how the 2D CloudSat information is used. As far as I am aware the ARTS RT4 solver can only handle 1-dimensional atmospheres. The discussion in Sec 5 suggests that an independent beam approximation is used to handle the 2D antenna pattern, but this is not fully described.

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