Atmospheric
Measurement
Techniques
Discussions

Interactive comment on "A comparison of ice water content measurement techniques on the FAAM BAe-146 aircraft" by S. J. Abel et al.

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This manuscript is very well written, detailed but clear in the information that is presented and an excellent study that underscores the strengths and weaknesses of the various methods for deriving cloud liquid and ice water content. It is an excellent reference for anyone wishing to either process cloud measurements or to understand them.

There are only a few minor questions and comments that I have that should be addressed before this paper is published.

1) The water content in all the figures is expressed as g kg-1 but the sensitivity of the Nevzorov is expressed in g m-3. For the sake of consistency, I wonder if the units

throughout should always be in g kg-1? On the other hand, the cloud physics community usually uses g m-3 for water content units. Maybe a very brief explanation about the units being used is in order at the beginning of the manuscript.

2) The anti-shattering tips are mentioned when discussing the cloud spectrometers but nothing is discussed about the impact of shattering on the Total water probe or the CVI. Both have significant area of the inlet lip on which ice crystals can impact and shatter. The CVI is likely less impacted due to the 5 um cut point, but what about the total water probe. Can you give an estimate of the possible effect?

3) In the discussion of water derived from PSDs you fail to mention that not only density but shape has to be assumed to derive water content. For the CDP I am assuming that you are assuming that these particles are quasi-spherical, but what do you use for D from the imaging probes?

4) In Fig. 2b, add to the caption what the gray band denotes. This os described in the text and also in Fig 3 onward.

Appendix C

The enhancement factor is mentioned but not discussed. What value was used and isn't it bot air density and particle size dependent?

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