

Interactive comment on “Snowfall retrieval at X, Ka and W band: consistency of backscattering and microphysical properties using BAECC ground-based measurements” by Marta Tecla Falconi et al.

Anonymous Referee #4

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This manuscript presents a very thorough comparison of snowfall measurements conducted at X, Ka and W radar frequency, with the interesting idea of identifying an optimal aspect ratio for each of the frequencies under investigation. The research topic is important, mostly but not only because of the upcoming launch of EarthCare. The manuscript is well written and easy to read. I therefore recommend publication after a few minor corrections.

Major comments

C1

My only major comment is about the classification of snow, as either fluffy or rimed. Further details should be given about how this distinction is made, and propose for example some shape descriptors to discriminate the transition. This appears as the only major subjective choice to be motivated. I suggest a piece of literature on the subject: “Solid hydrometeor classification and riming degree estimation from pictures collected with a Multi-Angle Snowflake Camera”, by Praz et al, AMT 2017. In this study, the authors presented a classification method that tried to be as much as possible in line with the classification of Magono and Lee (1966).

- Page 4: Could you add a sentence summarizing the possible limitations/error sources of PIP? (i.e. beef up the final sentence about the wind)
- Page 4, Line 14: add the percentage of “rejected” particles for this specific campaign, if applicable
- Page 5, Line 24: add an error measure (standard deviation) of such intercomparison
- Page 7, line 5: could you elaborate also in term of sampling volume sizes, other than time?
- Page 8, Line 15: as a curiosity, did you perform any evaluation about the goodness of fit?

Typos Page 2, l.35: typo “from from”

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