

Interactive comment on “Using a holographic imager on a tethered balloon system for microphysical observations of boundary layer clouds” by Fabiola Ramelli et al.

Anonymous Referee #1

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1 Main review points

- In this manuscript, the authors present a holographic imaging system and its application to the analysis of low stratus properties in a case study from Switzerland. The paper is well-written, has a clear structure, and overall presents a good overview of the potential of the technique in studying boundary-layer clouds. The case study presented includes some very interesting aspects, the resulting hypotheses are summarized in a useful conceptual sketch. Any generalization would require further samples, but is beyond the scope of this paper focused on the introduction of the technique.

C1

- Language: The paper is legible and understandable, but riddled with small lingual errors that could probably be corrected quickly by someone fully proficient in English.

2 Details

- page 1, line 3 (1-3): which cloud properties exactly?
- 1-4: since holographic imagers are not a common type of instrument in large parts of the cloud community, please add a very short note on the principle in the abstract
- 1-10: scales have been mentioned in line 7 already, but in contradiction to this line
- 1-11: I think an example is not needed in the abstract
- 2-10: What do you mean by "most of the observations", and how did you reach this conclusion?
- 2-13: is there a source for this (problems in lowermost km)?
- 2-21: what is "ice shattering", and how does it impact measurements?
- 3-3: some additional info on the principles of holography would be useful here
- 3-18: i.e. a low stratus cloud with its cloud base above ground? Please specify.
- 3-20: how do you define inhomogeneity here?
- 5-27: What do you use as training data?
- 5-28: How are these parameters calculated?

C2

- 5-28: "such as" – please be specific here and list all parameters.
- 9-5: Why was this particular situation chosen? In what ways is it representative or not?
- Figure 5: Please provide complete citation (author, year)
- Table 2: Why is there no descent for profile number 9?
- 11-18: What do you mean by classification in this context? Which classes?
- 11-18: How is a classification by hand performed?
- Section 4.3: How do you explain the nearly constant with height droplet diameters?
- 17-12: I think this statement is too general, given that only one case is analyzed.

3 Technicalities

- page 1, line 1 (henceforth 1-1 etc.): aircrafts → aircraft
- 1-2: orographically diverse
- 1-2: densely populated
- 1-5: velocity-independent sample
- 1-6: allows for observations
- 1-7: scales
- 1-9: above the ground were performed at temperatures...

C3

- 1-11: scales (No more comments on language from this point forward)