

Atmos. Meas. Tech. Discuss., referee comment RC1
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Comment on amt-2022-61

Anonymous Referee #1

Referee comment on "3D cloud envelope and cloud development velocity from simulated CLOUD (C3IEL) stereo images" by Paolo Dandini et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-61-RC1>, 2022

This work proposes a method to estimate cloud envelope and cloud development velocities based on high resolution satellite train imagery. Because the planned satellite train is not launched yet, the work relies on simulated image data to show the proof of concept. Although the simulated data are perfect in the sense that noise is not accounted for, they are helpful to compare against the ground truth (that will not be available in the case of real data) and therefore show the potential. Before publication, I suggest that the following points are addressed:

Line 12-14: "An independent method based on optimizing the superposition of the cloud top, issued from the atmospheric research model, allows to obtain a ground estimate for the velocity from two consecutive acquisitions." I do not understand this statement, what is meant by superposition in this context? Maybe it is more clear in the text but it just makes the abstract confusing.

Similar for the lines 14-17, please considering restating these lines to make it easier for the reader to understand.

Line 56, Do these error bands differ by magnitude of the velocity and the height? If so, is it better to give a percentage?

Line 75, Please be specific, magnitude acceleration in what? Computation time?

Line 101, Do I understand correctly that the image will not be taking images continuously but will start when triggered and for 200 seconds only. If so, please make this explicit and explain what will trigger the image capture event.

Line 110, How accurately can the satellite positions can be retained? That is what are the bounds of change in baseline? Is this likely to impact the retrieval quality?

Line 140, is 22.5 km the location from a reference point? Please clarify.

Why do Shallow cumulus clouds have better resolution? Shouldn't it be the opposite?

Lines 327-333, is there a specific reason for merging 2xtwo-view instead of using three-view when data from Sats 1-2-3 are used?

Figure 10, Do I understand correctly from the figure that no points are retrieved with Sats 1-3 and Sats 1-2-3 scenarios in A3-5 and A8-9 views? If so, how can you say that none of the configurations outperform? Also, what is thee reason for the skewed-towards-A9/A10-views distribution of error in z in Figure 10.b?

Equation 10, why are the subscripts suddenly 9 and 11?

Line 418, please explain why a dual mode caused by a possible "divergence of the cloud top in the center right part" would not show in the GE distribution?