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Interactive comment on "Cloud Photogrammetry with Dense Stereo for Fisheye Cameras" *by* C. Beekmans et al.

Anonymous Referee #2

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The paper describes 3d reconstruction of clouds from two ground-based fisheye cameras in a stereo configurations using photogrammetry and dense image matching. The results are compared in a case study with those obtained by radar and lidar instruments.

Being not an expert in the field of cloud observation, I would be interested to read a bit more about the significance of the work: what does this technique offer, compared to the existing ones? Is it a better resolution/accuracy, a larger area, reduced cost, more completeness? One could also describe it in terms of requirements: we want to see ..., but existing techniques only give ... and therefore we develop a new system expecting to get ... and here we evaluate it.

There are several challenges being addressed, concerning the "difficult" geometry of

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Discussion paper

fisheye lenses, the size of the setup (with a baseline of 300m), the use of automatic (dense) matching with "fuzzy" objects (clouds). All is well explained, but it is not always completely clear how it relates to the state of the art and where is the novelty - I suppose it is in the application of dense matching to clouds, but in that case the results could be analyzed a bit more exactly there.(Furthermore, I liked the used of stars in the exterior orientation).

Only in the evaluation section it becomes apparent what one had in mind concerning the size of the area to be measured: results are shown up to 4 km away from the cameras at two different heights (Fig 11) . The accuracy gets rather poor at larger distances, which may be due to the baseline of only 300m (but a larger one might affect matching performance). Some more discussion about this would be welcome. By the way, what is the area in other Figures , like 15 and 17?

The paper mentions using a third camera, but that would not be covered by the current setup of resampling the images to epipolar geometry (would it?). This implication should be mentioned.