

Interactive comment on “Quantifying Hail Size Distributions from the Sky: Application of Drone Aerial Photogrammetry” by J. S. Soderholm et al.

Anonymous Referee #2

Received and published: 19 September 2019

The authors present a new technique for measuring hail size distribution using aerial photography and a machine learning approach to detecting and measuring individual hailstones. This is a novel method using new technologies and would provide better sampling with more automation.

There are, however, a number of requirements for this technique and I would like to see more discussion on these limitations and in what kind of scenarios this method would be practical.

Further concerns:

Pg 2 Ln 22-25: Can you quantify these requirements better? It looks like, in this case, the hailstones must be larger than 20mm. What kind of spacing must there be between

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them on the ground? How much is the technique affected by the presence of smaller hailstones as well?

Pg 3 Ln 6: Is there a restriction on the 10m wind speed in order to fly the drone at such a low speed? Does accuracy fall off with a large or variable wind?

Pg 4 Ln 8: How were the 12 training tiles chosen? Does the number of tiles necessary for training depend on the concentration of hail, or on the type of background?

Pg 4 Ln 26: Do the tiles have similar distributions or concentrations?

Pg 5 Ln 5: What kind of range does the 'lightness value' have? If the lightness value of a hailstone must be >50 more than that of the edge, how much does this restrict the type of background against which hail can be measured? How sensitive is the lightness value or its variability to the overhead light (sky conditions, sun angle)?

Pg 5 Ln 10: How many hailstones were counted on the pad? How does the total concentration compare? Were there no hailstones <20 mm measured on the hailpad or were they just not considered for this comparison?

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-281, 2019.