**Atmospheric
Measurement
Techniques
Discussions**

Interactive
Comment

Interactive comment on "On differentiating ground clutter and insect echoes from Doppler weather radars using archived data" *by* S. J. Rennie et al.

Anonymous Referee #2

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The authors do not give an assessment of the proposed technique. Although the authors motivated the proposed algorithm with the need to reexamine archived reflectivity and velocity data from a single polarization radar, this does not preclude the use of current techniques and new data sets to assess the proposed algorithm. The proposed algorithm can be assessed against a dual polarization classification algorithm (see http://publications.nssl.noaa.gov/wsr88d_reports/JPOLE_Obs_and_Classification_of_ Echoes_Report.pdf) or a similar single polarization algorithm such as the Radar Echo Classifier algorithm which uses reflectivity, velocity and spectrum width fields to classify ground clutter, insects and precipitation (see http://www.eol.ucar.edu/rsf/NEXRAD/nexrad_publications_list.html for a list of publications).

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Additionally, the use of the standard deviation of velocity is not a new concept. It is used in both the dual polarization and single polarization classification algorithms cited above.

Several issues need to be addressed.

1. Page 1844, Line 2, 18. Use of colloquialism should not appear in formal writing (i.e. fine weather). Is "fine weather" a weather event? What are the conditions that make it "fine weather?"

2. Page 1845, Lines 23 – 24. "However, the effectiveness of these methods must be reduced for weak signals ..." This statement is unsupported.

3. Page 1845, Lines 25 – 29. The authors indicate that the treatment of "white clutter residue noise" is an important factor to detect insects. How does the proposed technique treat "white clutter residue noise?"

4. Page 1847, Lines 13 – 27. The authors use the term weak signal and low reflectivity almost interchangeably. The term weak signal refers to the signal-to-noise (SNR in dB) level not the reflectivity level (water equivalent reflectivity factor in dBZe).

5. Page 1847, Lines 19 – 20. The authors state that "the radar detection threshold increases with range due to beam spreading." This statement is incorrect. For distributed targets such as weather the received power drops off as the square of the range. This is due to the increase in radar volume with range and the assumption that distributed targets fill the beam.

6. Page 1847, Lines 25 – 27. The authors state that the SQI and noise threshold techniques are mostly coincidental in identifying ground clutter. Explain the use of the noise threshold option in the proposed technique and the validity of the statement that these parameters (SQI and noise threshold) are coincidental?

7. Page 1848, Lines 6 – 10. The authors indicate that obvious ground clutter registered a velocity of 10 m s-1 in their analysis requiring more discriminating methods than just

mean velocity. Yet, a basic assumption for the calculation of the standard deviation on page 1850 is that stationary ground clutter velocity is zero. This seems to contradict their earlier statement. Explain.

8. Page 1851, Line 21. This formula is inconsistent with the radar equation for distributed targets such as weather (see comment 5).

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 1843, 2010.