

## ***Interactive comment on “Improved fuzzy logic method to distinguish between meteorological and non-meteorological echoes using C-band polarimetric radar data” by Shuai Zhang et al.***

### **Anonymous Referee #2**

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This paper presents an improvement of the MetSignal algorithm, an algorithm based on polarimetric C-band weather radar data to identify meteorological and non-meteorological echoes.

A refinement of membership functions and the use of ad-hoc post-processing procedures increase the classification. Nevertheless some misclassification are still present and additional research is needed.

As general comments the paper is easy to read and figures are, normally, clear. The main weakness of the paper is section 4 "Evaluation". While it is acceptable that the authors classify, by them self, events to develop and test the algorithm improve-

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ments (as done in section 3 based on table 3) the same is not so straight forward for the evaluation step. We assume that in the training MET and NMET echoes are well separated, so it is relatively simple to verify that the algorithm outputs meet the expected "expert" classification. For the evaluation phase we hope that the authors use the improved algorithm in a more complex and mixed situation (like as probably happen in most events where MET and NMET are both present). If this is the case expert classification could be not so easy to do on a pixel basis. Further there is no evidence at all how is the "true" in these events compared and what the outputs of both algorithms. The evaluation results are present in table 5 where performances of both algorithms are shown. Here is not clear if the percentages respect the "expert true" or what?

So this section needs to be reformulated and a more deep analysis is needed.

Specific comments.

- 1) Section 3 line 104. Please indicate how events in table 4 are been classified.
- 2) Section 3.2.4 line 187 Please discuss how sensible is your method respect to time-schedule used. Since you use the "previous volume scan" at the "same location" to prevent misclassification of ML what happen if you have a quite fast-moving system?
- 3) section 4 line 215 Please explain how are classified the events in table 4.
- 4) Section "conclusion" line 232 Correct the section number
- 5) references lines 265-266 Please complete the reference
- 6) references lines 282-283 Please add the journal
- 7) figure 5 In Panel (a) what means "aggregation value"? Please explain the color scale?
- 8) figure 8 As for point 7 related to panels (a) and (b)
- 9) figure 11 As above Further, in order to increase the readability of this figure could

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you evaluate to display a zoomed area around the ML at 100 km range from radar in the SE quadrant?

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