

## ***Interactive comment on “Evaluation of micro rain radar-based precipitation classification algorithms to discriminate between stratiform and convective precipitation” by Andreas Foth et al.***

**Anonymous Referee #2**

Received and published: 22 September 2020

Title: “Evaluation of micro rain radar-based precipitation classification algorithms to discriminate between stratiform and convective precipitation” Authors: Andreas Foth and co-authors

General comments:

The study discusses the two algorithms PDF and ANN for classifying convective and stratiform precipitation profiles based on MRR data. The authors utilizes the maximum reflectivity, mean Doppler velocity and maximum deviation in velocity within +/- 15 min. But there have been a numerous studies on this topic using various ANN based algorithms (e.g., Ghada et al., 2019, doi:10.3390/atmos10050251; Jergensen

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et al., 2020, DOI: 10.1175/WAF-D-19-0170.1). The paper is topic of interest. The authors presented only two algorithms. It could have been good to show the results from various ANN based models to discriminate the convective and stratiform profiles and compare them. Further, authors should include the validation metrics such as RMSE, MAPE, etc in tabular form for both the models. Perhaps, use of convolution neural networks (CNNs), Long-short Term Memory (LSTM) and recurrence neural networks (RNNs) will provide better forecast for time series data. However, I concern about following comments. I recommend that this manuscript requires major revision before its acceptance.

Detailed comments are provided below:

P2: Why authors are used two year data for training? Is this data covers the all dynamic ranges observed convection/stratiform? Any ANN based model, the training data should have the all range of values.

P3: Are three indices such soaring index (S), convection index (Ko), total totals (TT) derived using COSMO model data? If so, is COSMO derived indices are validated with indices calculated from radiosonde observations?

P3:L5: Why the authors are used 15 minutes interval, where MRR gives 1 minute data?

P4.L6-7: ..... convective precipitation contains larger rain drops ..... Is it true always? Include reference.

P4.L8-9: ..... +/-15 min is a reasonable time span for classification of rain events. .... But, there are the occasions, where the life time of convection will be less than 15 minutes. Authors should modify the sentence. Include reference.

P5.L9: ....PDF and ANN method are based on training, the data has to be free of extreme or unphysical values. .... Do authors mean that the data cleansing? I understood that the data filter was performed in MRR data. If so, rewrite the sentence. However, what are the extreme values? Because, in general, if the trained data consists of all

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