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Atmospheric Measurement Techniques Discussions

Interactive comment on "Rain event detection in commercial microwave link attenuation data using convolutional neural networks" *by* Julius Polz et al.

Anonymous Referee #1

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In general, this paper demonstrates the use of a 1D convolution neural network for the task of Wet-Dry classification using commercial microwave links (CMLs). The scientific significance of this paper is in presenting the potential of the suggested method for the specific application: the use of 1D CNN for wet-dry classification with commercial microwave links. But, without any theoretical justification for the use of 1D CNN, it must be compared empirically with other algorithms/methods. The results are shown in this work only compare 1D CNN with a model-driven method [1], however, the suggested method must be compared with another data-driven algorithm, previously suggested (and cited by the author) - the use of LSTM for wet-dry classification [2]. This comparison is important also since the LSTM can capture long sequence, while the 1D

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CNN only see a fix window size of the attenuation time series. Additionally, the authors didn't use the CML's parameters (e.g. link length, frequency, and polarization) as an additional input to the neural network, which may make this method more sensitive to differences in those parameters.

Specific comments required for the paper to be acceptable for publication:

1. Comparing the results of the LSTM and CNN on the same data set is essential.

2. Study the effect of different window size on the performance of the proposed method.

3. Study the effect of different CML's parameters (e.g. link length, frequency, and polarization).

[1] Schleiss, M. and Berne, A.: Identification of Dry and Rainy Periods Using Telecommunication Microwave Links, IEEE Geoscience and Remote Sensing Letters, 7, 611–615, https://doi.org/10.1109/LGRS.2010.2043052, 2010.

[2] Habi, H. V. and Messer, H.: Wet-Dry Classification Using LSTM and Commercial Microwave Links, in 2018 IEEE 10th Sensor Array and Multichannel Signal Processing Workshop (SAM), pp. 149–153, https://doi.org/10.1109/SAM.2018.8448679, 2018

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