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Interactive comment on "MSDM: a machine learning model for precipitation nowcasting over east China using multi-source data" *by* Dawei Li et al.

Anonymous Referee #2

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Overview: In this paper, Li et al. developed a machine learning model (MSDM) for precipitation nowcasting using multi-source data, and compared the new model with existing methods. The critical success indexes (CSI) calculated from the results of MSDM are comparable with other methods. However, the root mean squared error (RMSE) of MSDM is greater than Optical flow and ConvLSTM, indicating that the error of MSDM is greater than other models. In this case, it can be concluded that the overall performance of this new model (MSDM) is not as good as some existing models. The model presented in this paper is new, but its performance has not been demonstrated to be better than existing models. In this case, I suggest the authors to further modify and train the model, and submit a modified version after its overall performance (judged

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Discussion paper

by RMSE) reaches existing models.

Specific comments: (1) The critical success indexes (CSI) depends on the artificial threshold chosen by the authors, making it difficult to judge whether MSDM performs better than Optical flow and ConvLSTM. The authors might choose several thresholds (i. e., 0.1, 0.3, 1, 3, 10, 40), and calculate the average CSI of these thresholds, then we can compare these models more easily. (2) RMSE is used frequently to judge the performance of machine learning models, but the RMSE of MSDM is too high compared with optical flow, so I suggest the authors to improve and re-train the MSDM model to get a lower RMSE. (3) The MSDM should be described in more details. In Fig. 3, the red arrow on “ours” (MSDM) indicates that the optical flow is used in MSDM, but in Fig. 4 there is no optical flow in the structure of MSDM? (4) In this paper, the authors used MSDM to predict radar echo, and then used random forest to predict precipitation. Why not predict precipitation directly using MSDM? Theoretically, the error would be smaller if one single network is used to predict precipitation.

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