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Geoscientific Model Development Discussions
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EGU

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 #1

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Precipitation nowcasting is important as it provides valuable insights into drought and flood risk management. This has been achieved by the authors using multi-source data model. The authors seem to make a novel contribution with the study, however the paper warrants further improvement. Recommendation is to do a thorough copy editing of the paper, and include a discussion section to examine the relevance of your results and how it relates to other studies. See below for specific comments.

Abstract

L9 – Change to 'predict precisely'

L13 – insert 'is' between that and suitable

Printer-friendly version

Discussion paper

L13 – change collect to collected

L22 – Define SSIM

L23 – explain the traditional Z-R relationship

Introduction

L33 – Remove extra citation

L34 – What is NOAA's HRRR? There is a need to go through the entire paper and define all the acronyms in its first use, even for something as common as AI.

L35 – Remove repeated citation

L35 – What is MetNet ? Do not assume the reader knows

L37 – Remove repeated citation and do this for every other instance where this is the case

L37 – How were Shi.et al able to achieve this ? Explain their method of prediction of spatio-temporal predictions

L41 – Avoid the use of contractions eg. Haven't

L43 – Avoid using etc. if you can not name more items

L44 – L45 – incorrect use of tense, past (used) and present (will mislead). Check for grammatical errors throughout the paper

L45 – How is optical flow method related to Trans method ? Or is it not related ? Why is it mentioned.

L51 – Remove et.al

Materials and Methods

L59 – Rephrase "to train the deep learning model to learn"

L66 – Provide links for datasets/sources

L74 – change “we compared” to a comparison was made

L75 – What exactly is being predicted first? Needs more clarity

L84 – change to “makes it better to predict”. The entire paper needs to be thoroughly edited for English writing and grammar.

L84 – Are you trying to say that the satellite data is more coarse ? Or has low spatial resolution ? Or are you referring to the time resolution ?

L87-88 – Explain more what you mean by “ increases level through recursive application” and justify your use of satellite data .

Results

L120-124 – There is no mention of how the model was trained and the results were validated. Ideally this information should be in the methods

L120 – It almost appears that the aim of the paper has not been clearly stated. You are using multiple sources of data and at the same time creating a multi-source data model (MSDM). This is very difficult to follow throughout the paper. Make this distinction clear

L125 – Use other metrices to evaluate model performance

L148 – Who made that claim? Citation ?

Conclusions and Discussions

L195-210 - Include a thorough discussion to examine the relevance of your results and how it relates to other studies, previous methods used etc..

L195 – Can it be conclusively stated that looking at the problem through image-image prediction is better than focusing on the problem as spatio-temporal sequence problem. If that is the aim of your paper, then what is the conclusion ? Deliberate further.

Quick Report

1. Does the paper address relevant scientific modelling questions within the scope of GMD? Does the paper present a model, advances in modelling science, or a modelling protocol that is suitable for addressing relevant scientific questions within the scope of EGU? - Yes

2. Does the paper present novel concepts, ideas, tools, or data? - Yes

3. Does the paper represent a sufficiently substantial advance in modelling science? Yes

4. Are the methods and assumptions valid and clearly outlined? The method is valid but needs to be clearly outlined and requires more justifications why certain approaches were taken.

5. Are the results sufficient to support the interpretations and conclusions? - Yes

6. Is the description sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? In the case of model description papers, it should in theory be possible for an independent scientist to construct a model that, while not necessarily numerically identical, will produce scientifically equivalent results. Model development papers should be similarly reproducible. For MIP and benchmarking papers, it should be possible for the protocol to be precisely reproduced for an independent model. Descriptions of numerical advances should be precisely reproducible. – The method needs to be explained more clearly.

7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? – Yes, however the authors need to discuss their work in relation to previous work to illustrate how this study contributes to the bigger picture

8. Does the title clearly reflect the contents of the paper? The model name and number should be included in papers that deal with only one model.- Yes

9. Does the abstract provide a concise and complete summary?- Yes

10. Is the overall presentation well structured and clear? - Yes

11. Is the language fluent and precise? The writing is clunky in some places and needs editing, corrections.

12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? - Yes

13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated?- No

14. Are the number and quality of references appropriate? – Could benefit from more references

15. Is the amount and quality of supplementary material appropriate? For model description papers, authors are strongly encouraged to submit supplementary material containing the model code and a user manual. For development, technical, and benchmarking papers, the submission of code to perform calculations described in the text is strongly encouraged.- Yes

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