Geoscientific

Model Development

Discussions

[GMDD]

Interactive

comment

Interactive comment on "ML-SWAN-v1: a hybrid machine learning framework for the prediction of daily surface water nutrient concentrations" *by* Benya Wang et al.

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5. Are the results sufficient to support the interpretations and conclusions? Overall, the results and discussion satisfied the major aim of this paper, though several results were not carefully presented. For instance, the RMSE of results in Figure 4 and the meaning of Figure 5 in contribution to the comparison of models that the authors could pay more attention to. Response: Thanks for your comments. We will add more content about Figure 4 and 5 results in the revised manuscript.

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. In the reviewer's point of

view, the title could be improved to be more strength using the result of the discovery of pathways contribution of nutrient, not only prediction of concentration as its current state. The model name and version were provided.

9. Does the abstract provide a concise and complete summary? The content of the abstract is totally good, however, it may better if the authors reduce the introduction of models and add more results of their works. Response to comment 8 and 9: The title and the abstract would be updated to include more result information.

13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? The manuscript more focuses on modelling techniques, only a few ecological discussion was provided. The manuscript provided some discussion on the source of TN in Ellen Brook and Murray River, however, the discussion should be presented better to avoid subjective idea only reflect author assumption. Discussion should better follow results and references The main idea of the Ecological Modelling is not only a prediction tool but also an explanation of ecological significance and pattern of environmental variables. The paper will be greatly improved if the authors spent more discussion on temporal and spatial patterns of predicted variables. Main question can be - How different b/w patterns of DON, TN, NH-N. How results can be used to explain the source of nutrient, - Transformation of nitrogen (in different forms of NH4-N, TN, DON, etc.) from source to river water bodies. - Solution to improve eutrophication situation in river. Response: Thanks for the comments. It is a really good idea to add these discussion points. We will add another section to discuss how different patterns of nutrients indicate nutrient sources and nitrogen transformation in the revised manuscript.

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2020-4, 2020.