Biogeosciences
Discussions

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Interactive comment on "QUAL-NET, a high temporal resolution eutrophication model in large hydrographic networks" *by* Camille Minaudo et al.

Anonymous Referee #2

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General comments:

This paper concentrates on identifying important temporal drivers for drainage networks water quality with a fine temporal resolution at the regional scale. The authors try to explain that the so called QAL-NET model could compute the biogeochemical processes and simulate the eutrophication event in the Middle Loire River Corridor. They conclude that phytoplankton variations in the Loire River were governed by phosphorus availability and transit time. Their modeling study found that continuous phytoplankton blooms occurred in the study area were triggered by the recycled of phytoplankton cells growing in the upper part of the studied corridor through the microbial loop. While this result is not surprising finding, the approach and method used may be valuable to be published. Two general suggestions are highlighted below:

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1. The hypothesis and purpose of the study is somehow unclear. I do not really understand what the objective of this paper. Does the paper focus on the new modeling approach or the eutrophication in the modelling study?

2. I found the manuscript written with unclear messages. The manuscript seems were written without final editing. I think it needs a language editing. Also, please avoid repetition of adverb such as "yet" and "additionally" in the text.

Specific comments:

1. The manuscript states that most of biogeochemical processes are water temperature dependent, however, I found that it does not provide modeling result on temperature variable. How does the daily temperature look like? During the travel time from S1 to S2, does it highly fluctuated? During summer, does the temperature at S2 close to the temperature value at S1?

2. The fluxes and concentration of point sources were considered constant over the time in the model. Further explanation on how much and how fluxes and concentration were estimated is needed.

3. The manuscript does not discuss how the model treats the nutrient source coming from resuspeded sediment and nutrient fluxes between water and sediment interface. I think A paragraph discussing this would be helpful for the reader.

Technical comments:

(Page 1: Line 19) Change "or" to "end"

(2:15-30) "Yet" and "additionally" adverbs were used extensively.

(2:31) Instead of "context", perhaps use "study"?

(3:3, 7, 26) Missing multiply mark "x". Also, in the figure 1.

(3: 18-20) Please reorganize these unclear sentences.

C2

(3: 22) Change "the fusion" to "a couple"

(4: 16) In Figure 2, switch delta x with delta t.

(7: 19) In Figure 3, change the color lines and add a list of abbreviations to improve the figure clarity.

(7: 31) What and how many variables were calibrated?

(page 11, 12, and 13) I do not think lower roman numbering is necessary in the text.

(13, 21) Consider improving "At finer resolution" words in the conclusion. What resolution? Time or space? Finer from what?

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2017-229, 2017.