

Interactive comment on “Drivers of nitrogen and phosphorus dynamics in a groundwater-fed urban catchment revealed by high frequency monitoring” by Liang Yu et al.

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General

This manuscript describes a high frequent monitoring study of water quality in a groundwater-fed urban ditch. The monitoring allows to elucidate governing processes of water quality and the authors do a good job in trying to explain the observed water quality parameters. The observations are quite specific for the study area at hand given the specific pumping management, and hence extrapolation to other catchments would be less obvious, which limits the generalisation of the results. That is the major drawback. Sometimes the authors also draw far reaching conclusions which need further

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confirmation. Given the fact that the observations are sound and well described, and discussion needs some further confirmation, I rate this publication to be acceptable for publication with minor revisions. The revisions should help to improve the readability and conclusions that can be drawn from this case study.

Specific comments

Figure 1 contains too many features. I cannot read the map of Amsterdam, and the black item above. It seems redundant. I like the figure with the cross sectional view, but some features are unclear and should be redrawn: (1) where does the water from the drain system go to ? does the drain system capture groundwater or seepage water ? What does the green area in the figure represent ? Is seepage vertically oriented towards the bottom of the ditch ? I would expect the ditch captures water from the surroundings.

Figure 4 is too small. What does 1, 2, 3, 4 represent ?

Figure 6 could rainfall and/or EC be added here ?

P7L245 a discrete water sample confirmed the low NH₄: only one sample. This seems poor to serve as a confirmation. Did you perform regular grab sampling as to check the online values ? How is the data quality of the online measurements validated ?

P7L270 predicted and observed NH₄ concentration generally agree. I would rather say that for both NH₄ and P the concentrations are overestimated by the model. This makes sense since you don't take transformation or sink processes into account in the model.

P9L344 the residence time is mentioned here. It would make sense to have the numbers for the residence time of the water in the manuscript. Did you calculate them for the different time periods ?

P10L400 did you measure NO₃ in this study? do you have clear evidence for NO₃ consuming processes ?

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P13L516-517 you state that the reactivity of the streambed sediments largely controls the water quality. Can you be more concrete on : (1) how then exactly the management should take care of this and (2) what type of measurements need to be done in the sediment to better understand the mechanisms in this system and to prove the hypothesis you make in Figure 7 ? You infer the mechanisms in Figure 7 based on surface water (water column) data only, and conclusions may need further elucidation.

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