

***Interactive comment on* “Effect of preferential transport and coherent denitrification on leaching of nitrate to drainage” by David Nagy et al.**

Anonymous Referee #2

Received and published: 7 September 2020

Dear Authors,

I have read both manuscripts “Estimating the degree of preferential flow to drainage in an agricultural clay till field for a 10-year period” and “Effect of preferential transport and coherent denitrification on leaching of nitrate to drainage“. I think the studies are interesting. The manuscripts show an impressive attempt to model the water flow and nutrient dynamics in the well-studied clay fields of the PLAP Studies in Denmark, using a very large dataset.

When reading this article some main issues were disturbing me and kept me from really appreciating the study and the main message I guess you want to convey. I am not very comfortable with the large amount of parameters which you apparently use for the calibration. I feel that it would be better to keep the optimisation of the SH param-

eters completely in the article on degree of preferential flow to drainage (including the bromide transport there for the calibration of the preferential flow). Then in this article the focus can be on the nitrate.

I have attached here a document with my comments. I think the paper as it is needs a major revision, including rethinking the way the model was parameterised. That should be followed by a new round with reviews.

I wish the authors good luck with the review of the article. It is an impressive amount of data and an interesting model. I think it is worthwhile putting some effort into this as I expect that it will increase the interest in the paper.

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2019-666/hess-2019-666-RC2-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-666>, 2020.

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Discussion paper

