

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
<https://doi.org/10.5194/hess-2022-150-RC2>, 2022
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Comment on hess-2022-150

Anonymous Referee #2

Referee comment on "Technical note: Extending the SWAT model to transport chemicals through tile and groundwater flow" by Hendrik Rathjens et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-150-RC2>, 2022

This manuscript is well written and suitable for publication in HESS. Tile drains and potential groundwater flow to streams are two important pathways in many agricultural watersheds. Adding these processes to the well-established SWAT model will undoubtedly expand the model utility for watershed managers, researchers, and ag-engineers and practitioners in the farming community to develop and assess best management practices and stewardship programs that support sustainable and more environmentally friendly agriculture. Two specific comments are below.

- Section 2.4 Lines 110-115. Was the general term "soil profile" defined as the same as "root zone" or the layer between the bottom of the root zone and shallow ground water? A clear description of the "soil profile" is needed to understand Eq 5.
- Section 3 Lines 165-170. The author(s) should provide the specific values of the pesticide use rate and basic environmental fate parameters such as soil half life and Koc for both parent and metabolite. It is disingenuous by only providing qualitative descriptions of "readily degradable" or "moderate", etc., unless the model can take such qualitative inputs for a simulation.
- Section 3 Line 171. Did the "multi-metric calibration" include pesticide use and fate parameters of the parent and metabolite? if yes, what are the final calibrated values?