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Hydrology and Earth System Sciences
Discussions

Interactive comment on "A model-based assessment of the potential use of compound specific stable isotope analysis in river monitoring of diffuse pesticide pollution" *by* S. R. Lutz et al.

Anonymous Referee #2

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The authors propose a virtual experiment coupling flow and reactive transport to assess the application of CSIA for the investigation of pesticide degradation in rivers. The overall design of the model experiment includes three major scenarios for steady state flow, an extreme event and transient conditions.

There are some concerns about the consistency of parameters for flow and transport that were compiled from several studies in different environments. While this is permitted for a virtual experiment, it would be helpful to have a bit more detailled background information about the actual environments and conditions these parameters relate to.

Some of the assumptions for pesticide transport are quite special: non-volatility and non-sorptivity are quite unusual for pesticides. While it is a valid assumption to state that this as a hypothetical case, deviations resulting from sorption and volatility should be discussed in more detail, especially as to whether the conclusion that CSIA is working remains valid.

This modeling study focusses on draining hillslope-river cross-sections. In real systems effluent and influent conditions alter. It is therefor recommended to also limit the conclusions drawn from this study to headwater, upstream or sections that fully correspond to model assumptions.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 8789, 2013.