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Crossing hydrological and geochemical modeling to understand the spatiotemporal variability of water chemistry in a headwater catchment (Strengbach, France)

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The authors addressed previous comments and answered most of my questions. In particular, the authors added an interesting focus on the implications of their work for the Strengbach watershed. I believe the manuscript has improved and can be published after few minor changes.

The modelling approach proposed by the authors is novel and very interesting, and has the great advantage of combining a low-dimension hydrological model with a reactive transport model. The description remains slightly confusing sometimes. Please consider clarifying the following points.

- Kirmat is derived from the Transition State Theory (l. 294) but are all chemical reaction (dissolution of primary minerals, oxido-reduction reactions and clay precipitation l.298) rates calculation based on the kinetic laws derived from the TST? Clays precipitated at the thermodynamic equilibrium (l. 307), therefore I would expect no kinetic laws. Please clarify if TST is only applied for mineral dissolution. Which oxido-reduction reactions are taken into account in this study?
- Clay precipitation rates are said to be realistic (l.768) but I could not find the rates in the paper. Maybe this could be added in the supplementary materials (in a table such as for the dissolution rates).
- Simulated chemical compositions are far from a state of chemical equilibrium with respect to primary minerals (l. 756). What would be the order of magnitude of water transit time (or chemical equilibrium length) to reach equilibrium with respect to primary minerals in the watershed?
- Back tracking was used to constrain the origin of subsurface water exiting the system at certain points, as simulated by the hydrological model (l.243), meaning that water originate from the tipping point of the flow line. However in the geochemical model, the authors consider water percolating all along the flow line. How can the back tracking be used to differentiate between water particle entering the subsurface or just passing at a certain point?