Hydrol. Earth Syst. Sci. Discuss.,
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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Hydrological functioning of West-African inland valleys explored with a critical zone model" *by* Basile Hector et al.

Anonymous Referee #4

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Review hess-2018-219

General Interesting paper, formalizing a complex set of hydrological processes. The work is framed within the Critical Zone approach.

Main comment With the information provided, it is basically impossible to reproduce any results. There are some tables with parameters but it would be so much easier if the complete code and data were made available, preferably as a Docker container. Where are the the topographic data? Where are the measurement values? Which version of ParFlow was used (why not link to the code?)? See, for example, the article "Most computational hydrology is not reproducible, so is it really science?" (https://doi.org/10.1002/2016WR019285). This is a serious issue within hydrology and I would urge the authors to spend some time carefully curating their code and data.

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Discussion paper

This would greatly improve usability and uptake of their approach.

Minor comment It is stated that a complete study would be needed to describe the effects of H2. I agree but perhaps tell the reader a bit more about the geology. Is the geology metamorphic or granitic? The work by Bertrand may be useful here with a nice overview presented in Sitapha Diatta's work on impermeable layers in inland valleys (http://docnum.univ-lorraine.fr/public/SCD_T_1996_0043_DIATTA.pdf). Being familiar with their work, I can still not determine if the Nalohou is similar or completely different. So please add some morphological/geological information.

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