

***Interactive comment on* “Minimum dissipation of potential energy by groundwater outflow results in a simple linear catchment reservoir” by Axel Kleidon and Hubert H J. Savenije**

**S. Hergarten (Referee)**

stefan.hergarten@geologie.uni-freiburg.de

Received and published: 21 December 2017

Dear authors;

Thanks for your prompt reply! I fully agree that all points except for the last one can easily be fixed with some more explanation. However, I am still not convinced about the last point. There was indeed a little misunderstanding, but I am afraid that the clarification does not solve the problem.

When reading the paper I was happy with the consideration of mean values until I arrived at the last sentence of Sect. 2. There the main conclusion of the paper is drawn

[Printer-friendly version](#)

[Discussion paper](#)



from Eq. (19) – the linear behavior of the reservoir as a whole. However, Eq. (19) in its pure form with the mean value definitely does not allow for this conclusion. It only describes the slope at one point of the recession curve which is not much information. Linear behavior would require that Eq. (19) must hold for all times. Otherwise the coupled reservoir would still be described by the superposition of two exponential recession curves as pointed out in my review. As this seemed to be so obvious to me I thought that you implicitly generalized Eq. (19) from the mean value to all times in order to be able to draw this conclusion, and that you just found it not necessary to explain this in detail. So after realizing now that all relations should indeed be restricted to the mean value, the problem has just been shifted. Then the conclusion of linear behavior is not correct in my opinion.

However, I would be very happy if someone else, perhaps one of the other contributors to the discussion, could take a look at this point. I may be wrong, but if not, this would somehow make a major part of the paper collapse.

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-674>, 2017.

Printer-friendly version

Discussion paper

