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

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In his last comment from 21 Dec 2017, the reviewer raises a point regarding the use of means in our paper. Specifically, he argues that the derivation of the effective mean time scale (Eq. 19) does not allow for the conclusion that the whole catchment acts as a linear reservoir, as it only represents the mean behavior of the catchment.

We agree with the point that we only deal with the mean behavior in the optimization, and that we did not show explicitly that the mean effective time scale implies an exponential recession curve and that the whole catchment acts as a linear reservoir. However, as we explained in our first response to Wouter Berghuijs, for the linear reservoir

the time scales that characterize the exponential recession curve and that characterizes the mean discharge are identical. It would thus seem reasonable to expect that the derivation of the effective mean time scale (Eq. 19) would also be associated with an exponential recession associated with this mean time scale. However, we agree that we do not explicitly show this in the manuscript.

In the revision, we will include an example to illustrate the connection between the mean, optimized behavior and the dynamics of a recession event to address this point and describe this link more explicitly.