

Interactive comment on “Drought and Flood in the Anthropocene: Modelling Feedback Mechanisms” by Giuliano Di Baldassarre et al.

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We would like to thank the Referee for providing constructive comments about our paper, which we believe will help us improve the description of our work. We provide here a first response to all comments and indicate the way we aim to address them during the review process.

We welcome the Referee’s suggestion to complement figure 5 with a diagram showing reservoir storage (actual one, optimized to cope with drought, and optimized to cope with floods) as a percent of the total.

We agree with the Referee that parameter estimation needs more explanation. Given the virtual nature of this numerical experiment all parameters are assumed. We will clarify this aspect in the revised manuscript and also explain the time scale of variability,

which is annual in the example provided in Figure 5, but can in principle also be monthly or seasonal (though this would include more complex reservoir operation rules).

We will follow the Referee's suggestion to report the assumed parameters as Supplementary Material or in the Tables.

The Referee makes a good point about evaporation. The model does not account for it for the sake of simplicity. Justification and discussion of the potential impact on the results will be included in the revised manuscript.

We also welcome the Referee's suggestion to include a brief discussion on the fact that during droughts, water demand is managed downstream which means that actual release from reservoirs will change. This feedback between water demand and storage is not considered in this model, but it would be an appropriate extension. This will be discussed in the revised manuscript.

We agree with the Referee about the need to add some text to discuss the general limitations of the model including the underlying assumptions, such as the use of a constant S_{max} .

Lastly, as discussed in our Response to Referee#1, we will clarify the focus of the model in the Abstract. Indeed, the current version is too broad. Also, we will change the second part of the title as suggested, i.e. "Feedback Mechanisms in Reservoir Operation".

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Discussion paper

