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Hydrology and Earth System Sciences Discussions



# *Interactive comment on* "Effect of flow forecasting quality on benefits of reservoir operation – a case study for the Geheyan reservoir (China)" *by* X. Dong et al.

**Anonymous Referee #1**

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I think that the manuscript provides an interesting application of optimization techinques applied to a relevant water resources management problem. However, I am not sure that the manuscript really constitutes an original scientific advancement, as the techniques used are not novel nor is the approach to the problem. Admittedly, I am not an expert of optimization and I think that the acceptability of the manuscript should be conditioned to a clarification of the originality of the contribution with respect to previous literature on water resources management.

I also have some specific comments of a more technical nature, which I think need to

be addressed:

- The Authors claim that no attempt has been made in the previous literature to link forecast quality and horizon to the benefit. However, they base their analyses on just a single year (an quite a particular one as it contains a 25-year flood), which hardly confers to their work a sound statistical basis (how would the relationships found change if more extreme events were included? What if the period considered is one of drought?). I thus suggest the Authors focus on the methodology rather than on the possible generality of their findings in this very particular case.

- Synthetic forecasts are obtained by adding time-correlated noise to observations with a specified constant variance. On the contrary I expect the error in a real forecast to STEEPLY increase with lead time. The method used to generate the forecast is thus not suitable to reproduce actual forecasts errors with important implications in the evaluation of the benefit obtained for a given lead time and for the identification of the lead time achieving the limit benefit. I think this is a major pitfall and that the Authors should address this issue very seriously.

- Page 3782, Line 25. How is the monthly to daily interpolation performed? Is this just a piece-wise linear interpolation?

- P. 3783, L. 20. The water level obtained from the short-term optimization based on the forecasts at the end of each month will be different from the actual values because forecasted inflows are different from actual ones. How are the levels reconciled with the target values obtained from the long-time optimization?

- The average monthly values of inflows used as a basis for the long-term optimization can be VERY different from actual monthly inflows. Wouldn't it be best to perform an optimization at the beginning of each month, using the previous observed monthly values?

- Figures: some of the figures are too small and not very readable (in particular, the



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y-axes are often too small).

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