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Discussions

Interactive comment on "Reliability, sensitivity, and uncertainty of reservoir performance under climate variability in basins with different hydrogeologic settings" *by* C. Mateus and D. Tullos

Anonymous Referee #2

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The manuscript deals with assessing reservoir performance under climate change. It may perhaps be useful as a case study in another journal if more details are included. I am not in a position to recommend its acceptance in HESS, for the following reasons:

(a) The research contribution of the manuscript is negligible. The work merely assembles together available models and (now, rather simplistic) methodologies and applies these to the case study.

(b) Even as a contribution to a case study, the manuscript suffers because of the poor

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discussion on the methodologies used. For example, the authors state that a formal Bayesian approach, DERAM, is used for obtaining the distributions of hydrologic model parameters - but no details are given on how this is done : only a reference to an earlier work is provided. This would have been acceptable if the results provided some insights into the behavior of the hydrologic model. There are no such results in the manuscript. Similarly, discussion on the VIC model calibration is missing in the paper.

(c) A major limitation of the manuscript arises, however, from neglecting (or, at least not discussing satisfactorily) the uncertainties in the climate change projections. A classical and now well-accepted methodology is to employ hydrologic projections arising out of (use of) several GCMs and addressing uncertainties thereof. The uncertainties also cascade into the hydrologic models. While Fig 4 does show the uncertainty bands in the flow projections, the basis for obtaining these bands is not discussed at all.

(d) The performance measures used are rather simplistic. The authors may refer to Raje, and Mujumdar (2010), for a discussion on reservoir performance under climate change : it is necessary to relate the performance to partial failures also, especially in the context of flood protection and hydropower generation.

Reference :

Raje, D., and Mujumdar, P. P. (2010), Reservoir performance under uncertainty in hydrologic impacts of climate change, Advances in Water Resources, 33(3), 312-326. doi:10.1016/j.advwatres.2009.12.008

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