

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 #1

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Comments on Manuscript ‘Reliability, sensitivity, and uncertainty of reservoir performance under climate variability in basins with different hydrogeologic settings’

This study has investigated the reservoir performance for two river basins with different hydrogeologic settings and under future climate change. Two hydrological models, namely GSFLOW and VIC, have been used to project future water supply, coupled with eight GCMs and two emission scenarios. Future river flows are then used as inputs to HEC-ResSim model to investigate the reservoir performance for two basins. Some

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interesting results have been derived, such as the conclusion that water resources may be less predictable in basin with substantial groundwater interactions; little evidence of a response in reservoir operation performance to a warming climate etc. These results will provide useful support to water managers in face with climate change. However, the quality of this manuscript is under doubt due to lack of clear descriptions of the methodology and results.

General comments: 1) It seems strange for the reviewer that there is no literature review in the manuscript. This makes it difficult for the readers to understand the work the authors are doing, what the different things are between this work and others' work, and what the value of this work is. The reviewer strongly proposes the authors add this part in the revised manuscript. The introduction was not well written according to the reviewer and is proposed to be rewritten. 2) The reviewer believes that a manuscript must be self-independent. In this manuscript, the authors missed many descriptions of future climate change information, hydrological modeling, calibration and validation, and modeling results. It is proposed to add more details to make the manuscript self-independent. 3) What is Delta-Hybrid method? No details or references? Please add more details. 4) How is DREAM used to get posterior distribution? 5) What are the eight GCMs used in this study? 6) Why only A1B and B1? 7) Why not the newest scenarios and GCMs (CMIP5) used in this study? 8) How is the uncertainty derived in the whole manuscript? What are reliability, sensitivity and uncertainty defined in this manuscript, since these words are all key words in the title? Please make this clear. 9) The conclusion drawn is very much limited to the approaches used in this study. Although eight GCMs and two emission scenarios were claimed to be used, actually only the ensemble mean was used in the analysis. This makes the analysis incomplete. The uncertainty from future climate change projections is highly underestimated. 10) Figure 4: why was simulated historical data used instead of actual observations in this figure? Is this related to the performance of hydrological models? 11) The literature Surfleet and Tullos (2013) is not properly cited.

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