

Interactive comment on “Assessing the operation rules of a reservoir system based on a detailed modelling-chain” by M. Bruwier et al.

Anonymous Referee #2

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GENERAL COMMENTS

I find the paper interesting, as it deals with the role of dams in the mitigation of the impacts of the climate change. It is well written and well structured, but it is the opinion of this referee that some issues should be addressed.

SPECIFIC COMMENTS

SECTION 3.1.- HYDROLOGICAL MODEL What infiltration model is used? Do its parameters value in the long term simulations? The effects of climate change scenarios in the long term will affect land infiltration capacity and this adds uncertainty in the models. This should be mentioned and discussed.

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SECTION 3.3.- FLOOD FREQUENCY ANALYSIS Flood hydrographs should be included in the paper.

SECTION 3.4.- INUNDATION MODELLING Friction coefficients were calibrated using the 1998 flood. It would be interesting to compare the 1998 flood with the floods considered in the paper, to assess the validity of the calibration. It is mentioned that seven peak flood discharges are used but only 5 cases are described in the paper. The two missing should be included.

SECTION 3.6.- RISK The authors use the mean annual damage expected. Are they using an f-N chart or an F-N chart? Why? The risk curve used (at least one of them) should be included in the paper. What is the maximum return period considered in the analysis and why? To capture the effect on risk of low probability-high damage events, return periods up to at least 1000-5000 years should be included in the analysis, otherwise risk cannot be adequately assessed.

SECTION 6.- PERSPECTIVE OF IMPROVED RESERVOIR OPERATION The exercise performed in Section 4 (evaluating how variations in operating rules parameters change performance indicators in the reference situation) would be very helpful here, applied to the different climate change scenarios. This is the way to derive less vague and general conclusions. In its actual form, this sections is rather general and inconclusive. In addition, the enhanced operational rules are not discussed in the terms of the consequences that the proposed tradeoffs will have on the water resources system analysed. What is the value of 1 unit of drinking water compared with 1 unit of by-pass discharge water or 1 unit of hydropower production? What benefits, costs and risks are derived from changes on operational rules under climate change scenarios and how are they evaluated from a river basin perspective?.

TECHNICAL CORRECTIONS

page 5803 line 17: Review units page 5804 line 23: First sentence needs review page 5806 line 25: Review the last two sentences Figure 4.D: Value of $dss = -2.23(?)$ for test

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10 seems out of range according to scale

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 5797, 2014.

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