General comment

I have reviewed the revised manuscript and would like to thank the author for their careful consideration of the comments by myself and the other reviewer. The manuscript has most certainly improved, and additional details provided contribute to the understanding. Despite the improvements the author have made, I am still struggling somewhat with the scope of the manuscript, given that it still hinges somewhat on two thoughts; the first being the optimisation of operating policies, robustness assessment and subsequent uncertainty analysis and sensitivity analysis of robust and non-robust policies; while the second is application to the Barragem Pequeños Limbobos (BPL). I think the conclusion section exemplifies this confusion, and that then is my main general comment on this revision. The bulleted conclusions appear to be primarily related to the findings of the application of the method proposed to BPL, and are therefore contingent on the particular structure of the studied water system, as well as already noted on the relative size of demands (e.g. the size of the demand from d/s irrigation when compared to the urban demand). This includes conclusions on the trade- offs between identified demands. The second part of the conclusion, which is in fact more of a discussion despite the name of the section, focuses more on the methods applied, but conclusions on the applicability or the generality of the method itself are lacking. This still brings to question how general the conclusions that are made are. In my opinion, perhaps one of the more interesting conclusions is that where the authors conclude that robust policies are vulnerable only to hydrological perturbations, whilst non-robust policies are also vulnerable to changes to urban and agricultural demand. That is an interesting conclusion if it is indeed generic and therefore a clear contribution to the establishing of reservoir operating polices through the methods proposed. I would think that some discussion on how generic that conclusion is, or if it is indeed dependant on the configuration of the BPL water system. I would still call for the authors to add a short reflection on this. It may also be appropriate to label the section as conclusion and discussion. A separate discussion section prior to the conclusions would make the structure clearer, but I will leave this for the editor to decide on.

AR: We thank the reviewer for this outstanding review. Her/his constructive comments helped us improve the manuscript and strengthen our analysis.

The scope of the manuscript is to propose a decision analytic framework for identifying the main sources of vulnerability to optimal-robust reservoir operating policies in multi-objective water management problems. Even though from a theoretical perspective such framework could be applied to any type of hydroclimatic regime, our study is tailored upon a specifically sub-Saharan river basin: the Barragem Pequeños Limbobos. Therefore, the conclusions thereof (i.e. robust policies are vulnerable only to hydrological perturbations, whilst non-robust policies are also vulnerable to changes to urban and agricultural demand) are to be considered contingent on the structure of the studied water system.

Even though it would be reasonable to assume that robust policies are intrinsically less affected by perturbation in uncertainty sources, the generality of such conclusion can be assessed only by testing test the proposed framework on another case study, with inherently different tradeoffs and water demand and availability trajectories. Notwithstanding the flexibility of the proposed framework towards the applicability on other river basin, such analysis would be beyond the scope of the manuscript.

However, considering the importance of clarifying upon the generality of the conclusions we have modified the final section of the manuscript as follows:

> - Overall, it is possible to conclude that robust policies are usually vulnerable only to hydrological perturbations and are able to sustain the majority of population growth and agricultural expansion scenarios. Moreover, infrastructural interventions become crucial only in extreme drought conditions. On the contrary, non-robust policies are sensitive also to social and agricultural changes, and require structural interventions to ensure stable supply.
>
> From a methodological and computational perspective, the proposed decision analytic framework could be easily applied to any type of water system. However, in this study it is customized for the BPL river basin, and so are the conclusions and discussions thereof. Therefore, a possible future research path could be directed towards testing the proposed methodology across a range of hydro

systems, in order to assess how stakeholder's tradeoffs, policy robustness and vulnerabilities are shaped by inherently different water availability and demand trajectories.

The aforementioned results in terms of UA and SA are specifically tailored upon the parametric input perturbation set employed to generate the SOWs. Even though each perturbation set can be well documented from the literature, unexpected changes in one of the exogenous factor (i.e., higher population growth or lower streamflow availability) could shape the behavior of the system, altering therefore the extent to which a certain policy is vulnerable to each uncertainty source.

Detailed comments

Some detailed comments are provided below. The grammar of the revised version has indeed improved, though there are still some improvements that will need to be done. A good revision prior to submission of the revised manuscript would be recommended.

Line 82: Change reminder to remaining.

Line 86: I would change this to total discharge volume as that would be commensurate to the unit, which is a unit of volume.

Line 113: the closing bracket of the interval should be a square bracket.

Line 123: This constraint would appear (given its formulation) to be related to the capacity of the outlet through which releases are made. However, what confuses me is that the upstream release is direct from the dam itself (elsewhere it is suggested that it is pumped). So, does the constraint apply to the release to the upstream irrigation also? I am fine with it being simplified to consider releases as if these are effectuated through the same outlet, but at least make a comment to this as the optimisation space may be quite different if taking e.g. the max pump capacity upstream as the constraint.

Line 124: It is in turn and not in turns. This should also be corrected in one or two other places in the manuscript.

Line 141: I am not sure irrigation prone solution is a correct formulation. Perhaps this could be formulated as: 'solutions that favour irrigation can be discovered'

Line 174: yielding and not yielding to.

Line 304: The historical averages in the table for irrigation and urban demand are not, I presume, averages as determined over a time series (as was done I presume for the inflows). So, in a sense these are not averages as determined over a time series of demands I presume. Perhaps current or initial values would be a more appropriate label. Figure 2 suggest the demands were calculated based on extent the different crops and their evaporative demand as a function of climate data.

Line 323: This sentence does not make sense to me. Perhaps reformulate as below but do check the context: 'In particular, GLUE allows for determining which SOW result in optimal robust policies that yield unacceptable results.

AR: we would like to thank the reviewer for the detailed review of the manuscript, we appreciate how addressing all the specific comments provided above will undoubtfully improve the overall quality and readability of the paper. Therefore, we implemented all the above suggestions while revising the document.