

Interactive comment on “Assessing the value of seasonal hydrological forecasts for improving water resource management: insights from a pilot application in the UK” by Andres Peñuela et al.

Anonymous Referee #1

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This an interesting and timely study into the value of forecasts for improving the performance of a simple water supply reservoir system with an operational trade off between augmentation of stored water through pumping and associated energy cost. The selected case study is appropriately simple and also informative for this type of analysis. Results are quite difficult to follow and key details are omitted from the method. The set of forecasts selected for use in the simulation are also poorly justified. Finally, I feel that the paper attempts to answer too many questions and would benefit significantly from more focus. For example, the analysis of the dynamical forecast product and its failure to provide skill over ESP is an interesting study in its own right, demanding much more in-depth analysis and interpretation than is offered in the paper. The operational

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section then addresses ESP vs dynamical and the additional question relating to importance of incorporating ensemble uncertainty. The paper would be much stronger if you were to focus on just one of these areas and deliver a more compelling conclusion backed up with in-depth analysis of a specific question. I recommend that the paper would be publishable if significant changes are made to simplify the overall story and provide further method detail as outlined in the comments below.

Specific comments:

- It's not clear what optimization framework is used to deal with the forecast ensemble. The deterministic approach using rolling horizon (e.g., ANGHILERI et al., 2016) is quite common and there are very few successful examples in the literature where the full ensemble is used to inform the decision. Please outline exactly how the ensemble is used in your optimization and then justify the approach. If this is a new approach it perhaps needs to be described in its own, separate publication.
- Given the skill scores achieved for the dynamical forecasts, it's not clear why these were pursued in the operational part of the study. What is the justification for using a forecast product that is demonstrated to be unskillful relative to ESP?
- I found the results quite difficult to follow, partly because it's hard to keep track of the various operational settings. Why not simplify by showing the Pareto front for each forecast set (as opposed to five schemes with different symbols/colors). This would be both more comprehensive and easier to understand. Also, the emojis in the key figures are not appropriate.

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