Community Comment

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Often times, what we have is insufficient to meet what we need. There are times, what we have is more than what we need. Therefore, to bridge the gap that has been created between what we have and what we need, the principle of sustainable solutions has been preferred in the scientific field. This principle has been well accepted in the fields of economics and business development through the concepts of demand and supply curves.

In this manuscript, considering the spatial resolution and the obstacles introduced by global Earth System Models (ESM), the authors research whether what has been produced through ESMs is useful to meet every local-scale objective and need that is set by practitioners by means of metrics. The findings of the research reveal that some of the metrics that are set by local-scale objectives and needs are well produced by an ESM called the Community Earth System Model (CESM). Therefore, the authors request that we bridge the gap that has been created between what we have through ECMs and what we need through continued collaboration among all stakeholders.

> The title of the manuscript needs to be evaluated by a specialist. In my opinion, these metrics that are evaluated against the model outcome are from practitioners and water managers. These metrics may not reflect what is expected from a water user. This could be well explained if we consider a river basin (e.g., the Mekong River Basin) that is pronounced for upstream-downstream conflicts. The metrics that would be desired by downstream users may not be favored by upstream users. Therefore, policymakers and practitioners decide metrics based on what is best to satisfy both parties (i.e., upstream and downstream users).

This is a valid point, and we agree that the metrics developed are more useful for water managers of large basins rather than specific water users. We hope that this article will open the conversation for more researchers to explore where there is skill in ESMs that may supplement the information derived from higher resolution models.

> Line 85-88 (Given that ESMs have advanced immeasurably in the recent decade, it is time to re-evaluate whether their direct output can support decision maker)

It would be more appropriate for the authors to enumerate all the advancements in the model to understand these statements.

There is a pretty vast literature on the advancements, some of which we have pointed out in the text.

The table that has been presented in Appendix A is the culmination point of this research work .In my opinion, the authors need to add more information to understand the necessity of those metrics tabled by the practitioners. For example, as per the table, the number of wet days (NWD) is considered an important metric in reservoir operations management. The inclusion of an exact reason in this table would boost the contribution of this manuscript.
Refer to Appendix A

There are no specific references for this, it stems from prior interactions with water managers. Interactions include the stakeholder workshop referenced in the text, as well as other collaborative projects such as described in Done et al. 2021

Done, James M., Rebecca E. Morss, Heather Lazrus, Erin Towler, Mari R. Tye, Ming Ge, Tapash Das, Armin Munévar, Joshua Hewitt, and Jennifer A. Hoeting. “Toward Usable Predictive Climate Information at Decadal Timescales.” *One Earth* 4, no. 9 (September 2021): 1297–1309. https://doi.org/10.1016/j.oneear.2021.08.013.

Mean precipitation on wet days calculated from PRCPTOT/NWD. Is this correct? As per the definition of PRCPTOT, it includes <1mm of precipitation as well.

Yes this is correct - it is the Standardized Daily Intensity Index defined by the ETCCDI (cited in the paper).

Refer to Part II

Acknowledgement and Disclaimer

The author is an alumnus of Texas A&M University, Texas, USA. The views expressed here are solely those of the author in his private capacity and do not in any way represent the views of Texas A&M University, Texas, USA.
Citation: https://doi.org/10.5194/egusphere-2023-2326-CC1