Response to Editor:

Thank you for submitting an improved version of your manuscript. I asked two of the previous reviewers to consider your revision and replies to the comments. The reviewers and I think you have adequately addressed all concerns and implemented the suggestions. However, before the acceptance of the manuscript, few minor changes (related to the uncertainty) are requested.

Response:

Many thanks to the editor and reviewers for their efforts on improving out manuscript. We have further revised the manuscript based on the comments from the reviewers. Specifically, we have added the uncertainty range when describing the results of CR, CP and runoff component, and discussed the uncertainty issues in the limitation section.

Response to Reviewer #1:

The revisions made in this updated manuscript effectively address the comments I provided on the earlier version. My main concerns were around uncertainty in the model output and a rigorous calibration and validation exercise. Both have been adequately addressed in the revised manuscript. I have a small suggestion that might further improve the communication of the results.

L421-425: Given that standard deviation values have already been computed, I suggest including them while discussing CR/CP values within the text. This will make readers more aware of the natural variability in the underlying simulations. I suggest revising text like "CP mean advanced by 2.2 ± 7 days".

I propose similar changes in L434-438, where variability of different water source components should be mentioned in the text

Apart from this, I feel the article is a significant contribution to the hydrological community and suitable for publication in HESS.

Response:

Many thanks for your appreciation on our work. We have further revised the manuscript according to your suggestion. In specify, we have added the uncertainties of CR, CP and runoff component in the main text (L419~428, L437~441)

Response to Reviewer #2:

I still have one concern regarding two closely related definitions: calibration and uncertainty. As I mentioned in my previous review, the utilization of the PSO as a calibration algorithm implies that the primary objective of calibration is achieving the best fit between observations and model outcomes. Using PSO, strictly speaking, does not allow for a comprehensive hydrological uncertainty analysis. In simpler terms, the uncertainty is confined to the climate forcing. However, it's crucial to note that the representation of uncertainty related to climate forcing is considerably simplified—there is no climate forcing ensemble. I would recommend emphasizing this point more explicitly in the "Limitations" section.

Response:

Thank you very much for your comment. We agree with you that the simplified representation of uncertainty is indeed an important limitation of our study. We have emphasized it in the limitation section of revised manuscript (L663~665, L688~690).