

Response to Referee #1

This study compares two post-processing methods of streamflow simulation obtained using different precipitation products based on satellite data. A comprehensive evaluation is performed on 522 sub-catchments located in China to assess the performances in terms of reliability, sharpness, and various hydrological skills. The paper is well-written and complete, the figures are clear and the interpretations of the results are convincing. My recommendation is that the paper can be accepted for publication after minor corrections which are listed below.

Response: Thank you for your positive comments. Each of your suggestions is very valuable to us as they have greatly improved the quality and readability of the manuscript. The following are point-by-point responses to these comments.

1.44-46: I strongly disagree with this statement. There is no evidence that satellite precipitation estimation is the most promising hydrological model input. As an example, ERA5 is mostly driven by satellite data and is not able to reproduce most of the precipitation features at a high spatial resolution (Bandhauer et al., 2022; Reder et al., 2022), does not reproduce the strong relationships between precipitation characteristics and the topography in mountainous areas, underestimate hourly and daily extreme values and overestimate the number of wet days (Bandhauer et al., 2022). At high spatial and temporal resolutions, the assimilation of ground measurements and/or radar data is needed to reproduce extreme events (Reder et al., 2022). However, I agree that satellite precipitation estimation is valuable in regions where ground measurements are scarce.

Bandhauer, Moritz, Francesco Isotta, Mónica Lakatos, Cristian Lussana, Line Båserud, Beatrix Izsák, Olivér Szentes, Ole Einar Tveito, and Christoph Frei. 2022. "Evaluation of Daily Precipitation Analyses in E-OBS (V19.0e) and ERA5 by Comparison to Regional High-Resolution Datasets in European Regions." *International Journal of Climatology* 42 (2): 727–47. <https://doi.org/10.1002/joc.7269>.

Bellier, Joseph, Isabella Zin, and Guillaume Bontron. 2018. "Generating Coherent Ensemble Forecasts After Hydrological Postprocessing: Adaptations of ECC-Based Methods." *Water Resources Research* 54 (8): 5741–62. <https://doi.org/10.1029/2018WR022601>.

Reder, A., M. Raffa, R. Padulano, G. Rianna, and P. Mercogliano. 2022. "Characterizing Extreme Values of Precipitation at Very High Resolution: An Experiment over Twenty European Cities." *Weather and Climate Extremes* 35 (March): 100407. <https://doi.org/10.1016/j.wace.2022.100407>.

Response: We agree with your opinion on satellite precipitation products. We will weaken the statement here and highlight the significance of satellite precipitation estimation for remote areas.

1.75: A more recent application of MOS method is provided by Bellier et al. (2018).

Response: Thank you for sharing this more recent application of MOS method, we will add it to our reference.

1.80: short memory: I guess that 'term' is missing between 'short' and 'memory'.

Response: Thank you for pointing it out. We will fix it.

1.123: serval -> several.

Response: Thank you for correcting this. It was a typo and we will fix it.

1.195: “so the model is reliable”. Is it possible to rephrase the sentence to indicate that this is an assumption and not your personal judgement? As the authors do not provide evidence that the model is able to reproduce the natural runoff process (I understand that it is not possible), it would be fairer.

Response: Thank you for your suggestion. Here, we would like to state that the calibrated hydrological model meets the needs of the subsequent study. With regard to reviewer 2's suggestion, we agree that deleting this could be a wiser choice and we will do so.

1.247: Klotze -> Klotz.

Response: Thank you for correcting this. It was a typo and we will fix it.

1.255-256: The terms “single-model” and “multi-model” are a bit misleading, as I understand that the authors refer to precipitation products here. I suggest replacing them by “single-precipitation” product and “multi-precipitation” or something similar.

Response: Thank you for your suggestion. We will replace them.

1.348: Missing dot after “threshold”.

Response: Thank you for pointing out this minor error. We will fix it.

1.448: “Little precipitation events”: I was not sure if the authors refer to localized precipitation events here, or with moderate intensities. Is it possible to be more specific?

Response: Sorry for the confusing information. We want to refer to precipitation with moderate intensity. We will rephrase this sentence.