

Interactive comment on “A flexible two-stage approach for blending multiple satellite precipitation estimates and rain gauge observations: an experiment in the northeastern Tibetan Plateau” by Yingzhao Ma et al.

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Anonymous Referee #1: It is of importance for the scientific community to improve the retrieval accuracy of satellite precipitation estimates over complex terrains. This study proposed a flexible two-step approach to reduce the systematic errors of currently mainstream satellite precipitation products in the northeastern Tibetan Plateau. Evaluation results show that this approach effectively reduce the errors and biases of satellite retrievals. Overall, the paper is rich in content and technically sound. It can offer insightful references for both satellite precipitation produces and data users, es-

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pecially for improving the retrieval algorithm over mountain regions. I consider it is clearly written and informative, and it should be of interest to a significant subset of HESS readers. Thus, I recommend it be accepted for publication, with just a few minor revisions.

Response: We thank this reviewer for the supportive comment.

First, I wonder why the new approach can effectively reduce the biases but not change the CC values. In the text, the authors should explain this point in more details.

Response: As bias correction is performed for each SPE in the first Stage, the blended SPE has a low bias compared with the original SPE. We agree that the CC index does not improve significantly compared to the RMSE and NMAE values for the blended SPE. The CC between two data sets is a measure of how well they are related. In Stage 1, the mean parameter in the Student's t distribution is expressed as a linear regression of the original SPE. A linear assumption in the proposed model might fail to expect significant difference in the correlation. Thus, the other error indices (i.e., RMSE and NMAE) are adopted together to evaluate the performance of the proposed blending approach. We will give more explanations in the revised manuscript as suggested by this reviewer.

Second, the study area is limited within a squared rectangle. In practice, it is difficult to present the application potentials of new approach using such relatively small region as study domain (only like a case study). The gauge numbers are still not enough for validation. At least, the authors should discuss this in the section of conclusion.

Response: We thank this reviewer for the important comments. Perhaps we might not describe them very clearly in the original manuscript. We will rephrase the concerned issues in the revised manuscript as pointed out by this reviewer.

Last but not at least, this manuscript needs to be further polish before publication.

Response: To be polish as suggested!

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