

## ***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.***

**Anonymous Referee #2**

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This manuscript describes a two-step methodology to combine multiple satellite precipitation products to produce a blended daily precipitation estimate. The process involves first bias correcting the individual satellite QPE products relative to surface rain gauges. Then, a Bayesian weighting is applied to blend the various QPE datasets into a single product. The approach is demonstrated on a small area in the northeastern part of the Tibetan Plateau over the 2014 warm season, as well as an individual heavy rain case. Overall the manuscript needs to be checked for correct grammar and usage, and the data and methods sections could be lengthened a bit to make things clearer and

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therefore reproducible (some specific suggestions for this below). Generally, with a few tweaks to the writing I feel this is publishable with minor revisions.

Specific Comments:

The manuscript would be much easier to follow if consistent terminology were used to refer to original SPE, bias corrected SPE, and blended SPE throughout.

Lines 75-80: Additional information about the data used is needed: Please specify the versions of IMERG and CMORPH you are using, and whether the IMERG is the near real time early, near real time late, or research/final runs. It's also interesting that you chose to use TMPA, which is no longer being produced and is generally very similar to IMERG. Additionally, IMERG, CMORPH, and TRMM-3B42 all have daily products available – why did you choose to use the 3-h products and (presumably) accumulate to daily? Finally, what method did you use to resample the IMERG?

Line 85: If you are using CMORPH V1.0, it also corrects using GPCP.

Line 116: This equation would be easier to read if separated onto 3 lines.

Line 162-170: Some discussion of the effects of comparing point data to somewhat low resolution gridded data is needed.

Line 182-183: It seems that the scatter is reduced for the blended product, but it has induced a high bias for low rain days and a low bias on heavy rain days. It's difficult to see if the bias is improved compared to the original SPE products.

Line 213: I disagree with this statement. PERCDR is clearly very different from the others, and to this point in the manuscript has shown very little value to be kept in consideration, and I think it is worth acknowledging this, then using the case study to point out that PERCDR can in fact be informative and on a case by case basis.