

## ***Interactive comment on “Characterization of precipitation product errors across the US using multiplicative Triple Collocation” by S. H. Alemohammad et al.***

### **Anonymous Referee #1**

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General Comments The authors provide a creative and original study of the errors of several “standard” precipitation data sets using the Triple Collocation approach. Critically, this allows them to use the radar analyses without having to assume that they are exact. It also raises the interesting question of what the result would be if the gauges used in Section 5 were entered as yet another dataset in the Triple Collocation study (obviously, only for the subset of boxes that have gauge data). How close would they turn out to be to the unknown true precipitation? The fundamental assumption is that the errors are multiplicative. The background literature tends to advocate this approach for short-interval data – daily or subdaily. By the time you get to monthly averages the

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precipitation itself (not the logarithm) tends to be settling toward Gaussian, indicating additive error, although this depends on how frequent the precipitation is. The biweekly interval is in between; is there any way to assess how correct a multiplicative model is? Finally, the English is extremely clean; if there were an annual award for such excellence, you would deserve it. Overall, a very strong manuscript that just needs some tune-up on the way to acceptance.

### Specific Comments

1. Abstract: It would strengthen the Abstract to be more specific about the details of the comparison:  $2^\circ \times 2^\circ$  grid boxes for a specific part of CONUS (not just “across the U.S.”), using biweekly accumulations for the period January 2002 through April 2014.

2. Dataset citation: The various datasets used are not cited and acknowledged in a consistent fashion, but should be. However, I would suggest that one of the newly emerging best practices in publication is to provide a reference-list citation for the data sets used, just as is done for journal articles. See the AMS policy

<http://www2.ametsoc.org/ams/index.cfm/publications/authors/journal-and-bams-authors/journal-and-bams-authors-guide/data-archiving-and-citation/>

for a discussion and examples. I would urge the authors to adopt this approach to give proper credit and guide the interested reader to the appropriate archives.

3. Dataset names: Shortening “TRMM 3B42” to “TRMM” is ambiguous, since there are many TRMM products, while “3B42” is specific. The same comment applies to the GPCP 1DD, for which “GPCP” is ambiguous, while “1DD” is not.

4. P.14,L.2-3: It would seem that the insightful statement is that the cloud systems are driven by frontal systems. GPI reacts to clouds, and fronts generate clouds that are not necessarily well-correlated to precipitation.

### Technical Corrections

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5. P.8,L.22: The IR in 3B42 is calibrated by microwave before use in the product.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 2527, 2015.

**HESSD**

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