Interactive comment on "The PERSIANN Family of Global Satellite Precipitation Data: A Review and Evaluation of Products" *by* Phu Nguyen et al.

Phu Nguyen et al.

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Reviewer #2:

We greatly appreciate your comments and suggestions which we believe will result in a much-improved version of the manuscript. The manuscript has been revised according to some of your comments while incorporation of other comments is in progress.

General Comments

I think the authors should improve their description of the justiïïňĄcation for the three families of products. Clearly, this could be confusing for users who would prefer to have one product for all their needs. Lower resolution products, if needed, could always be available by the upscaling of the higher resolution products. Perhaps a simple

schematic with a time line could provide an easy to understand justiïïňĄcation.

Response: Thank you for this suggestion. In the revised version, text has been added in section 2 to illustrate the purpose of each product. The main justification for the existence of three products is that they provide data at different lag times and different time coverage. Therefore, they are tailored for different hydrometeorological applications.

Specific Comments

A concern is the use of the CPC data set for the product evaluation. The authors should comment on the uncertainty of the product. Are there gridded uncertainty maps associated with the CPC product? If not, what are the obstacles to producing them? Any comparison with a ground-based reference is incomplete without characterizing the uncertainty of the reference. Also, just a cautionary note that the correlation coefïňĄcient for skewed random variables (like rainfall) tends to be overestimated. Is the bias additive or multiplicative?

Response: Based on your suggestion, the revised manuscript provides additional information about CPC data such as the number and average density of gauges involved in the interpolated product, the interpolation method . . .etc. Also, references have been cited for additional information. The bias is additive; however, it is relative bias (not absolute). This has been illustrated in the revised manuscript in figures captions.

Overall, it is disappointing to me that space-based products have little skill unless corrected with simple, old rain gauges. Not the authors' fault but something worth commenting on.

Response: The use of IR imagery (cloud top temperature) as a proxy in precipitation estimation requires bias correction with ground observations. However, as estimation of precipitation from satellites continues to evolve by including other information (e.g. water vapor channel) and developing new algorithms, we anticipate that satellite-based precipitation will attain higher accuracy.

The paper says little, if anything, regarding hydrologic applications of the product. The journal is about hydrology, after all.... Is the skill adequate for hydrologic applications? Which applications? Should we be impressed with the skill? I'd like to see authors' perspective on the question. The authors warn against using the product for engineering design, and that's good but in many parts of the world this might still be the best option available.

Response: We thank you for this constructive comment. In the new version, the manuscript includes a discussion about the suitability of each PERSIANN product to different hydrological and water resources management applications taking into consideration their characteristics and the analysis results.

The authors should improve the quality of the ïňĄgures. Figure 1 is practically useless. Other ïňĄgures showing the US are too small and not properly aligned. The continuous color scale obstructs the spatial features. Perhaps 6-8 color categories would show them better.

Response: Based on your suggestion, in the revised manuscript, most figures have been replotted for better quality.

The entire paper should be carefully edited and use active voice throughout the paper.

Response: Thank you for pointing out to this limitation. The language deficiencies will be fixed in the revised version.