**Hydrology and
Earth System
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Discussions

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Interactive comment on "A new uncertainty estimation technique for multiple datasets and its application to various precipitation products" *by* Xudong Zhou et al.

Anonymous Referee #1

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General comments The study proposed a new uncertainty estimation that takes into account both spatial, temporal, and model uncertainties. The authors then compared the new uncertainty values with two classic uncertainty metrics and demonstrated the comprehensiveness of the new metric. As the new uncertainty estimation still bears some similarity with the two classical metrics, it could be used as an alternative metric. The reviewer recommends minor revision.

Specific comments Section 2.4 is missing.

L16 on page 7: change "Similarity" to "Similarly".

L1 on page 9: change "can also be expressed as the normalized" to "can also be

normalized"

L13 on page 9: change "more natural" to "more proper".

L1 on page 10: the use of "global atmospheric gauges" is not proper, change to "global precipitation gauges" instead. Change "representatives" to "representativeness".

L2 on page 10: change "grids dataset" to "gridded dataset". Change "provided by" to "stands for".

L28 on page 10: the percent biases are calculated wrongly. Suppose you use CMA annual precipitation as the base, then the percent biases are: (63.1/589.8)x 100% = 10.7%, and (232/589.8)x 100% =39.3%, respectively.

L31-32 on page 10: Do you mean some areas have abrupt precipitation changes rather than following the general gradient? The use of "isolated areas" is confusing to me.

L4 on page 12: the description is confusing.

L1 on page 14: change "non unit" to "no unit".

L18 on page 14: change "which may has" to "which may have".

L8-9 on page 16: Figure 6i and 6j do not agree well for gauge-based and merged products, so it is not proper to generalize like this sentence.

L15 on page 16: change "divided" to "categorized" or something similar.

L25-28 on page 16: The comparison between gauge-based products and CMA was mentioned firstly according to Figure 7, and then the reason for the discrepancy between the merged products and CMA was discussed. The transition was missing in between.

L6-12 on page 18: Are the standard deviations of each precipitation data group related to the number of data products that you chose?

L23-33 on page 18: It may be better to denote the subregion numbers in Figure 8, so

the audience do not need to go back and forth to identify the subregions.

L31-32 on page 20: It seems that higher U_s also correlated to regions with higher model uncertainty in Figure 9 g-i.

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