

# ***Interactive comment on “Evaluation of global fine-resolution precipitation products and their uncertainty quantification in ensemble discharge simulations” by W. Qi et al.***

## **Anonymous Referee #1**

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The study has evaluated the applicability of six fine-resolution precipitation products using statistical and hydrological methods in a small basin of China, and proposed a framework for quantifying uncertainty contributions of precipitation products, hydrological models and their interactions to uncertainties in ensemble discharges. In my opinion, the topic addressed by this study is very important in terms of hydrological modeling. And it is very interesting to compare the performance between a semi-distributed with a fully distributed hydrological model, given different precipitation inputs. In general, the paper is clearly written, and the analyses and comparisons are interesting and convincing to me. Therefore, I recommend its publication after minor revisions.

Major comments: The authors only compared the basin-averaged precipitation, and then the modeled discharges (with TOPMODEL and WEB-DHM) in the basin. Since the spatial patterns of precipitation may also affect the modeled discharges (with semi-distributed/distributed hydrological models), I suggest you also investigate how the spatial distributions of different precipitation data (after downscaling to 300 m grids) have affected the modeled discharges.

Minor comments: Page 9338, line 5: change "usually-neglected area" to small river basin. Page 9339, line 21: please confirm that if your reference of APHRODITE data is appropriate. You may add another reference by Dr. Yatagai. Page 9347, line 14: FAO should be "Food and Agriculture Organization". Page 9362, lines 9-17: I guess that the spatial distributions of different precipitation products may contribute to the uncertainty in discharge simulations. Therefore, it is better to compare the observed precipitation with each precipitation product in their spatial patterns within the basin. Page 9362, lines 18-24: it is dangerous to draw such a conclusion. You may re-write the conclusion after checking the accuracy of different precipitation products in their spatial distributions, through comparing to gauge observations. Figure 1: the unit of "m" should be given for DEM legend. Figure 4: Please explain ANOVA in the figure caption and also in the body text. Figures 6-9: it is better to mention that the values in comparisons are basin-averaged ones. Figure 11: The caption should be "False alarm ratio, probability of detection, and critical success index for the six precipitation products." Figure 17: please indicate (a) and (b) in your figure caption.

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