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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Hydrological evaluation of open-access precipitation data using SWAT at multiple temporal and spatial scales" *by* Jianzhuang Pang et al.

Anonymous Referee #2

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This paper presents a hydrological evaluation of two open-access precipitation products (CHIRPS and CPC) compared with rain gauge dataset, at multiple temporal and spatial scales. The content of this research is of great interest to readers of watershed hydrology, remote sensing, and satellite meteorology, since it provided valuable suggestions for researchers in these fields, especially for hydrologic modelers. It is demonstrated by the authors that, even with obvious statistical differences, performances of the three selected precipitation datasets in simulating water yield are parallel. Comparably, inconsistency were found when OPPs and rain gauge data were used to simulate hydrological components, e.g. Surface runoff, lateral flow, and base flow. Inner mechanism was highlighted from both spatial and temporal scales. Overall, this manuscript

is quite well written and presented. Minor revision comments below aim to improve the quality of the manuscript.

1. L174-182: The spatial resolutions of CHIRPS (0.05 °) and CPC (0.5 °) were higher than that of the geographic datasets, "some of the grid records are potentially missed, especially for the high - resolution CHIRPS products." Duan Z et al. (2019) proposed an area-weighted method to calculated precipitation for each subbasin, "Calculate the area-weighted average daily CHIRPS data (after disaggregated by 10 times (0.005°)) from all grids within the subbasin to represent the eïňĂective daily precipitation for each subbasin". This might be an alternative way to solve the data problem.

2. L244-248: Moriasi et al. (2007), cited by the author, used three indicators RSR (ratio of the root mean square error to the standard deviation of measured data), NSE, and PBIAS to establish a model to evaluate performance level, while the author used only two. Why not use all three metrics? Besides, since only the NSE index was graded into different evaluation levels, was the evaluation on model performance reliable without the evaluation grades from other two indicators?

3. L309-317 (Fig.8): Explain what "The correlation coefficients' spatial variation" is? The spatial correlation of the three precipitation datasets should be a value rather than a graph. Explain how Fig. 8 was calculated and obtained. Explain why distinguish average precipitation in daily and monthly scales?

Please be aware of following grammar errors and typos: 1. Double-check: L11- "Jiang River". L114- "larges" should be "largest". L299- "varations" should be "variations". 2. Grammar errors. L98- The verb "have" should be "has". L92- The article "an" here should be "a". L310- "relative" should be "relatively". 3. L342 & L360-361 unit of CC should be decimal rather than percentage. 4. L257-As IPCC reported, "Extreme rainfall" was defined as the 95th percentile of daily precipitation data. Therefore, Fig.3, shown as monthly rainfall box chart, failed to capture "extreme rainfall values" 5. L327- Usually we use "validation" instead of "verification". 6. L451- "although they performed

slightly better at the daily scale." the model should perform better at the monthly scale?

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