

Interactive comment on “Evaluating the streamflow simulation capability of PERSIANN-CDR daily rainfall products in two river basins on the Tibetan Plateau” by Xiaomang Liu et al.

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(1) We can get limited knowledge if only one precipitation product is investigated. Considering the special length of precipitation datasets, suggest adding a similar one, the Global Land Data Assimilation System (GLDAS) precipitation for comparison. You may read (but not limited to) the following papers as a reference. Gottschalck et al. (2005), J. Gottschalck, J. Meng, M. Rodell, P. Houser, Analysis of multiple precipitation products and preliminary assessment of their impact on global land data assimilation system land surface states, J. Hydrometeorol., 6 (2005), pp. 573–598 Wang et al.

C1

(2011), Evaluation and application of a fine resolution global data set in a semiarid mesoscale river basin with a distributed biosphere hydrological model, J. Geophys. Res., 116, D21108.

Answer: Thank you for your suggestion. We totally agree with the comment. GLDAS precipitation also has a long length of data record. We will add the GLDAS precipitation as input to run the hydrologic model and make some comparison in the revised manuscript.

(2) Having better spatial distributions is a big merit of satellite-based precipitation product, comparing to the sparse ground-based observational sites over the Tibetan Plateau. Suggest adding the Figures of precipitation in their spatial distributions if possible.

Answer: Thank you for your suggestion. We agree with the comment. Adding some figures about the spatial distribution of PERSIANN-CDR precipitation is a good way to show the big merit of PERSIANN-CDR precipitation product. We will add the spatial distribution figures of PERSIANN-CDR precipitation in the revised manuscript.

(3) It is hard to compare the hydrological model's performance with only the basin integrated streamflows. Suggest adding the comparisons of simulated evapotranspirations (ET) as well, to confirm the improvements of internal processes besides the final discharge outputs. For the ET estimation over the two river basins, suggest reading (but not limited to) the following papers: Zhang, Y. et al. (2007), Trends in pan evaporation and reference and actual evapotranspiration across the Tibetan Plateau, J. Geophys. Res., 112, D12110. Xue et al. (2013), Evaluation of evapotranspiration estimates for two river basins in Tibetan Plateau by a water balance method, Journal of Hydrology, 492, 290–297. Li et al. (2014), Seasonal evapotranspiration changes (1983–2006) of four large basins on the Tibetan Plateau, J. Geophys. Res. Atmos., 119, 13079–13095.

Answer: Thank you for your suggestion. We agree with the comment. Adding ET comparisons can be a good supplement to verify hydrological model's performance.

C2

For hydrologic modeling, the improvements of internal processes besides the final discharge outputs are also important. We will add the ET comparison results in the revised manuscript.

(4) Lack of frozen soil parametrization in HIMS may largely affect the simulated seasonal variation of water balance components (e.g., streamflow and evapotranspiration). It may bring certain uncertainties in the discharge comparisons by different precipitation inputs. To address the modelling issue may be out of the scope of this paper, but you can discuss the limitations/uncertainties in the "Summary" section.

Answer: Thank you for your suggestion. Lack of frozen soil parametrization in HIMS definitely will affect the simulated seasonal variation of water balance components. Actually, we find that both PERSIANN-CDR and gauge-based precipitation generate smaller streamflow in dry season, which probably is due to the lack of proper algorithm in the HIMS model to handle frozen soil. We will add some discussion about the limitations of frozen soil simulation in the "Summary" section in the revised manuscript.

(5) Line 233: please add the name of two basins here. Answer: Thank you for your suggestion. We will add the basin name in the revised manuscript.

(6) Line 252, "have similar values": please specify the values here. Answer: Thank you for your suggestion. We will add the values in the revised manuscript.

(7) Line 450: change "are" to "is"; replace "completely" with a more suitable word. Answer: Thank you for your suggestion. We will improve the grammar in the revised manuscript.

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