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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.

Anonymous Referee #1

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The hydrological modelling in the river basins over the Tibetan Plateau is always difficult, due to the limitation of available datasets, and the existence of cryosphere components (e.g., snow, glacier, and frozen soil). For the former, the authors made great efforts to simulate the streamflows over the upper Yellow and Yangtze river basins, with a newly developed daily satellite precipitation product by comparing to available gauge observations. For the two studied river basins, the upper Yangtze River Basin has very sparse precipitation observational stations, comparing to the upper Yellow River Basin. As expected, the performance of HIMS hydrological model forced by the PERSIANN-CDR satellite precipitation performs promising over the upper Yangtze

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River Basin where the ground observations are very poor. In addition, the length (33 years) of PERSIANN-CDR makes it helpful in the calibration of hydrological model. In general, the manuscript is interesting to me and can be accepted after revisions.

Comments: (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 comparision. You may read (but not limited to) the following papers as a referebce. 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. (2011), Evaluation and application of a fineresolution global data set in a semiarid mesoscale river basin with a distributed biosphere hydrological model, J. Geophys. Res., 116, D21108.

(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.

(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.

(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.

(5) Line 233: please add the name of two basins here.

(6) Line 252, "have similar values": please specify the values here.

(7) Line 450: change "are" to "is"; replace "completely" with a more suitable word.

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