

Interactive comment on “Runoff simulation by SWAT model using high-resolution gridded precipitation in the upper Heihe River Basin, Northeastern Tibetan Plateau” by Hongwei Ruan et al.

Anonymous Referee #1

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General comments: This manuscript presents a case study of hydrological simulation using SWAT model in the upper Heihe River in northwestern China. For applying the distributed hydrological model in a gauge-sparse catchment, this study used a gridded precipitation data interpolated from the gauged stations and the regional climate model. The main contents of this paper include validation of the gridded precipitation data, application and validation of the SWAT model, and spatial characteristics of water balance in the upper Heihe basin. The topic discussed in this paper and the major results obtained by this study are interesting. However there are several major issues should be addressed, structure and grammar of this manuscript should be improved

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before publication. Specific comments: 1) P2, L12-14: The following reference should be added here. Wang YH, Yang HB, et al. Spatial Interpolation of Daily Precipitation in a High Mountainous Watershed based on Gauge Observations and a Regional Climate Model Simulation. Journal of Hydrometeorology, 2016, DOI: 10.1175/JHM-D-16-0089.1 2) P2: Author should need to explain why select SWAT model in this study. What are the major advantages of SWAT comparing with many other distributed hydrological models? 3) P3: How are the glaciers in the study area? Do you consider the glacier melting runoff in the hydrological simulation? 4) P3: "Gridded precipitation data with daily resolutions of 3 km were used as precipitation forcing data downloaded from the Heihe Plan Science Data Centre (HPSD)." Please specify the original source or reference. 5) P4: the gridded precipitation data: please refer the following paper. Wang YH, Yang HB, et al. Spatial Interpolation of Daily Precipitation in a High Mountainous Watershed based on Gauge Observations and a Regional Climate Model Simulation. Journal of Hydrometeorology, 2016, DOI: 10.1175/JHM-D-16-0089.1 6) P 5, Results: The general introduction about the gridded precipitation data should be moved to the Introduction section. The result section should contain the result mainly. 7) P8, Water balance component: Is this a long-term mean water balance at annual scale? Please specify the simulation period. The units of water balance components in Table should be mm/year for precipitation, evapotranspiration and runoff. Please chek the units carefully. 8) Section 4.5.1 and 4.5.2: You mentioned "The landscape follows a distinct vertical zonation and comprises the desert, steppe, shrub, coniferous forest, meadow, sparse vegetation, snow and glaciers" (P3). So what are the differences of results in the two sections? 9) P10: Uncertainty of the hydrological simulation should be discussed.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-594, 2016.

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