

A coupled atmospheric-hydrologic modeling system with variable grid sizes for rainfall-runoff simulation in semi-humid and semi-arid watersheds: How does the coupling scale affects the results?

Comments:

Point 1: Page 5, I do not think the authors can ‘eliminate the modeling errors caused by choosing inappropriate WRF parameterizations’, please avoid the unreliable conclusion.

Reply: Thanks for the reviewer’s suggestion. The unreliable conclusion is removed and the sentence is revised as:

“The most suitable physical parameterisations resulting the best rainfall simulations (Tian et al., 2017a) are used for each of the four storm events, as shown in Table 5.”

Point 2: Section 3.2, there are only few references in describing the proposed hydrological model. I would suggest the authors to put more references to support some key concepts.

Reply: According to the reviewer’s suggestion, three references are added in Section 3.2.

Reference:

Zhao, R. The Xinanjiang model applied in China, J. Hydrol., 135(1-4), 371-381, doi: 10.1016/0022-1694(92)90096-E, 1992.

Horton, R. E. The role of infiltration in the hydrologic cycle, Trans. A. G. U., 14(1), 446-460, doi: 10.1029/TR014i001p00446, 1933.

Goutal, N., Sainte-Marie, J. A kinetic interpretation of the section-averaged Saint-Venant system for natural river hydraulics, Int. J. Numer. Meth. Fl., 67(7): 914-938, doi: 10.1002/flid.2401, 2011.

Point 3: Page 14, please explain the abbreviation of QPE and QPF.

Reply: Thanks for the reviewer’s suggestion. The sentence is revised as:

“...such as radar Quantitative Precipitation Estimates (QPE) or Quantitative Precipitation Forecasts (QPF) and radar data assimilation for the NWP model...”