Hydrol. Earth Syst. Sci. Discuss.,
doi:10.5194/hess-2016-413-SC3, 2016


Hydrology and Earth System Sciences
Discussions

# *Interactive comment on* "Using Satellite-Based Evapotranspiration Estimates to Improve the Structure of a Simple Conceptual Rainfall-Runoff Model" *by* Tirthankar Roy et al.

**W. Si**

lindongsisi@163.com

Received and published: 16 October 2016

General comments: Evapotranspiration is a very important variable in rainfall-runoff models. To a great extent, evapotranspiration determines the calculation of water balance. Oftentimes the conceptual hydrologic models simulate unrealistic values of evapotranspiration. In this paper, the authors consider different ways of using a newly available evapotranspiration dataset to improve the performance of a conceptual model both in terms of streamflow and evapotranspiration simulations. These avenues are studiedcomprehensively, involving a lot of research and analysis work. The performance of evapotranspiration data is different for different temporal scales as pointed out by the authors in the literature review. The literature review in the



revised manuscript also nicely summarizes the performance of different satellite-based evapotranspiration products. The new satellite-based evapotranspiration information is used to improve a hydrologic model and to show how new information can reduce uncertainty and improve our hydrological model structurally enabling the application of hydrological models for ungauged basins with more confidence. The paper is very well written in both structure and English. However, at the first read of this paper, I had two followed questions about this article: (1) The authors show that the soil moisture should be smooth in the research basin. Why should it be smooth for this catchment? (2) I don't understand why you validate your water balance using satellite precipitation which has its own concerns. But after I read all of the review comments, response of all comments and the revised manuscript carefully, I found that the authors have made perfect response to the previous two reviewers' comments, and answered these two above mentioned questions very well. View from my angle, the research results of this paper can increase the amount of information for the rainfall-runoff model when it was applied in poorly gauged basins. So, the paper deserves publication in this journal. It's a good research work which has innovation, and the results are quite promising.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/hess-2016-413/hess-2016-413-SC3-supplement.pdf

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-413, 2016.