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Discussions

Interactive comment on "Multicriterion assessment framework of flood events simulated with the vertically mixed runoff model in semiarid catchments in the middle Yellow River" *by* Dayang Li et al.

Anonymous Referee #1

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The paper presents a multicriterion assessment framework for flood events forecasting or warning in semi-arid regions. Four hydrologic models have been used in catchments of the middle Yellow River. The result shows that the VMM model has a better performance of flood modeling than the other three models. The authors believe that flood events in semi-arid and arid regions should have different criteria than that of in humid areas to determine whether a flood forecasting and early warning is acceptable. The topic of this study is very interesting and the idea is more or less novel. The paper is well-structured. I recommend the publication of this paper with a minor revision. Some

specific comments are listed as below. Specific comments: (1) The proposed framework has three parts, C1, C2 and C3. C2 is the key part of this framework, and three flow zone (low flow zone, medium flow zone, high flow zone) are divided. I think this simple framework is more important in terms of flood early warning rather than just a performance assessment. This may be real value of the framework but it is not clearly expressed in the manuscript. More explanation and discussion should be added in the paper. (2) The initial condition is very important for a hydrologic model. In this paper, it is reasonable that the daily based model is used to calculate the initial conditions of the event-based model, but the initial condition of daily based model is not mentioned. Please add some explanations. (3) Conclusion (2): "In the four catchments, by PAWN analysis of VMM, CS, IM, and KE are the most sensitive parameters and are not affected by the choice of objective functions, whereas WM is the most sensitive parameter" make me confusing. Please use clearer and more concise expressions. (4) Reference/citation style needs to be revised. For example, a space is missing between Lu and et on p5, line 26; parenthesis is not right on p7, line 4, (Pianosi and Wagener, 2015). (5) P3, line13:" Streamflow and rainfall data are from 1983 to 2009. Hourly streamflow data came from hydrological stations. Nine. . .", in this sentence, English tenses should be consistent. (6) P3, line 26: the runoff is conceptualized as being composed of surface runoff and groundwater flow (notoriously but erroneously called "below-ground off" in the paper). (7) Figure 1 is requested to be further processed. The symbols of rain gauge station and hydrological station are not very clear. (8) Figure 3: the y-axis label may be "absolute relative error of peak flow (%)" instead of "peak flow (%)". The title "Figure 3: Boxplot of peak flows . . ." should be also checked. (9) Although I am not a native English reviewer, I find some sentences difficult to understand. The authors are encouraged to further polish up the language.

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