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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Sub-daily runoff simulations with parameters inferred at the daily time scale" *by* J. E. Reynolds et al.

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I found that the paper addressed an interesting issue for flood estimation in developing country, where there is limitation of rainfall data. There are some issues that make me confused. I would like to ask the followings:

1. The measure of fit: modified Nash Sutcliff (X2) is used as performance evaluation which is X2= Reff/(Reffmax) >0.9. What value of Reffmax for this particular case study? in case if Reffmax = 0.4? Reff = 0.36. X2 will be 0.90. According to your assumption, it will be accepted. However, it would not be accepted due to poor matching. Could you please clarify the need of X2?

2. Are MC_EED,Q24 and MC_EED validated and calibrated against daily flow or sub-

daily?

To my understand daily flow was used for MC_EED,Q24 as it was said in description of experiment 2 (paragraph 1,page 7446), and for MC_EED - "When those (MC_EED) used to simulate daily runoff,...." - ph 5 - page 7450.

However, in the conclusion (point 3) states that the parameter set can be used for flood forecasting. To my understanding, the hydrograph of flood flow and daily flow are much different. Therefore, the results tested against daily flow can not be applied for flood flow.

Furthermore, daily flow are average value of subdaily flow and much more stable than flood flow. Therefore, if we simulate the sub-daily flow (at different time step: 1; 3; ...24), and then take the average to calculate the daily flow for validation and calibration. I guest they will be not much different. That's why the parameter sets did change much in these simulations.

3. The main concept of Euler method is to evaluate errors associated with time step. However, both accepted simulations MC_EED,Q24 and MC_EED used only time step of 1 hour. Which step in the modelling process the Euler concept is applied in?

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