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Hydrology and Earth System Sciences Discussions

Interactive comment on "A modelling approach to assess the hydrological response of small Mediterranean catchments to the variability of soil characteristics in a context of extreme events" *by* C. Manus et al.

Anonymous Referee #1

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The paper describes the application of a new model in 4 ungauged basins in France, where only rough estimations were available of peak discharge of a storm event in 2002.

The model concepts as such are combinations of already existing approaches, based on a Richards equation approach with hydraulic characteristics based on Brooks & Corey. The estimation of some parameters is done using a few more recently developped methods.

Validation is based on single peak discharge estimates of a single storm for these basins. To justify the procedures used, and to justify publication in a scientific journal, I believe the study would need the testing/validation of the used model and methods in a gauged basin as well with a good data timeseries. Have the authors considered this? Could they still carry this out? If not, why not?

The assumption of a constant flow velocity of 1 m/s in the river network in the model assumes relatively slow-medium flow; What is the basis of this assumption? In my opinion, the value is likely to be larger during these kind of flash flooding. Application of a larger velocity will likely seriously influence the simulation of peak discharge. Since validation is solely based on single peak discharge estimates of a single storm, this could have serious consequences. What do they authors comment on this. Have they evidence for the 1m/s assumption?

If a chapter on a gauged basin is added, the paper will serve as providing a nice method for ungauged basins.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 2687, 2008.

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Interactive Comment