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Discussions

Interactive comment on "Climate and hydrological variability: the catchment filtering role" *by* I. Andrés-Doménech et al.

Anonymous Referee #3

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This is an interesting approach to investigating the relative role of climate and catchment characteristic variability on flood frequency. The authors use an analytical model with which they perform a sensitivity analysis to address this issue. I think the paper is within the scope of HESS, interesting and generally well written. I do have a few questions though:

[1] Catchment filtering varies of course very much with the system studied (e.g. Troch et al., 2013, HESS). Can the authors make better statements about the transferability of their results? Is it really applicable for all of the Mediterranean? Much of it will for example be karst-type catchments.

[2] In how far does seasonality play a role in the rainfall model? Presumably different

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types of rainfall dominate in different seasons. Does the model reflect both frontal and convective type events (and their characteristics) equally well?

[3] The simple catchment model must be limited in how much it can reflect the differences of different catchments. Is there any kind of quantification for the model to reflect the flood frequency characteristics in different places? E.g. some performance analysis from other studies?

[4] The sensitivity analysis performed is a bit simple and I am not clear whether it is too simple or not. The assumptions derived in section 3 have rather strong impacts on the resulting study set-up. Why has this part not been analysed in a quantitative way? It would be rather straightforward to perform a formal sensitivity analysis. The way it is currently done, for example, ignores interactions between the different parameters.

[5] The subsequent sections with the quantitative sensitivity analysis also assume that interactions between the parameters/inputs can be ignored. This might be fine, but what is the justification for this assumption?

[6] Given that this is a synthetic study anyway, I am a bit surprised that the authors not simply investigate the synthetic set-up more deeply. You could show in a higher dimensional space how input and storage characteristics interact - e.g. as 2-dimensional surfaces. Have you considered this?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 10411, 2014.