

## ***Interactive comment on “Uncertainty propagation in a cascade modelling approach to flood mapping” by J. P. Rodríguez-Rincón et al.***

### **Anonymous Referee #1**

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This paper deals with the propagation of uncertainty from numerical weather prediction to flood mapping through a distributed hydrological model. The topic fits the goals of the journal. The paper is generally well structured, and overall sufficiently well written, although it does include a number of typos, difficult sentences or imprecise terminology (see e.g. predictions vs forecasts). However, the introduction gives a lot of emphasis on the potential impact of climate change on floods (which is actually much more complex than what the authors state in this manuscript) while the rest of the paper, as well as the conclusions, are not connected with this premise.

Anyhow, I could not find any scientific novelties in this manuscript. It describes a mere numerical exercise with reference to a specific case. The exercise is too simplistic as too many sources of uncertainty in the model cascade are neglected (structure

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and parameters of the rainfall-runoff model, structure and parameters of the hydraulic model, etc...). This is a major issue because different parameterizations/structures, for instance, would likely lead to different propagation of uncertainty. Comprehensive methods in this field have already been developed, and abundantly described in the literature: Pappenberger et al., 2005; 2012; Di Baldassarre et al., 2010; Beven et al., 2011; etc... to only mention the few ones cited in this paper. In my opinion, this manuscript does not add anything, from a scientific viewpoint, to these studies.

Also, this exercise is described without attempting to interpret the outcomes. What would a reader actually learn? In the abstract, one might find intriguing (though not necessarily counter-intuitive, and not entirely correct from a grammatical viewpoint. . .) that “uncertainty do not necessarily increase within a model cascade”. However, this study does not demonstrate that. The specific outcomes only result from the strong assumptions made by the authors, and the absence of a rigorous and comprehensive uncertainty analysis (based on model results as well as observations) exploring the impact of the different sources of epistemic and aleatory uncertainty.

These are the main reasons why I think that this paper lacks the "substantial contribution to scientific progress", which is a prerequisite for publication on HESS.

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