

## ***Interactive comment on “Influences on flood frequency distributions in Irish river catchments” by S. Ahilan et al.***

**S. Ahilan et al.**

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Dear Reviewer,

The authors would like to thank you for your detailed comments regarding manuscript HESS-2011-71 entitled “Influences on flood frequency distributions in Irish river catchments” for publication in the HESS Journal.

All comments have been considered and addressed as follows:

Reviewer 3

It is not clear to me what the innovative component of this research work is: I would

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suggest authors to state clearly what is new in this research that has not been done in previous works and how (if so) this approach can have a general validity.

While the authors agree that investigations assessing hydraulic and hydrogeological influences on flood frequency distributions have been undertaken in the past, these, to the authors knowledge have focussed on a limited number of specific catchments in well defined geographic locations where a particular influence is important. The study presented represents a study at nation scale where a full range of climatic, hydrological and hydrogeological influences are explored. This provides a much extended validation of the findings to a wide range of catchments, the number of which is significantly above that reported in other studies. Furthermore, although the findings of the study are derived from Irish catchments, the authors believe that the findings and the issues they raise, are transferrable to similar catchments in other countries and the conclusions will therefore have relevance to many practitioners engaged in flood estimation.

I find the paper a bit too long: paragraph 1, 2 and 3 could be re-worked and shortened to make them more compact. In particular, paragraph 3-methodology- does not need, in my view, to provide such a detailed description of the GEV distribution. Proper references would serve as well.

The authors agree that the paper is long. Furthermore, while the paper has been shortened by addressing specific comments from Reviewers 1 and 2, the additional analyses that has been undertaken in the revised manuscript adds some additional material to the paper. The length, we feel does not contribute to the readability of the paper and detracts in some respects from its main impacts. The impacts of the paper in terms of conclusions are twofold and relate to (1) hydrogeological and (2) hydraulic influences on flood frequency distributions. The authors wrote to the HESS Editor on 28th September identifying a logical divide between these two elements of the paper and suggested that in light of the additional work undertaken, that dissemination of the research findings may be enhanced by presenting the research findings in two papers, the first dealing with hydrogeological influences and the second dealing with hydraulic

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influences. This, we were informed is something that would be addressed subsequent to our returning our responses to the review comments.

Authors blame climate change impacts (which to me is itself hard to define and identify) to be responsible for "intensifying hydrological cycle" and "are expected to result in greater flood risk". I must say that I find this statement a bit strong: detecting a trend does not mean climate change evidence. Furthermore, there is no comment on the issue of urbanization rate and its effect on the adverse effect of flood events.

The authors accept the reviewer's reservations pertaining to climate change impacts and urbanisation. Similar comments were raised by Reviewers 1 and 2 and have been addressed in our response to their comments.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 3305, 2011.