Hydrology and Earth System Sciences Discussions

Interactive comment on "On the role of storm duration in the mapping of rainfall to flood return periods" *by* A. Viglione and G. Blöschl

Anonymous Referee #4

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General comments:

The paper studies the relationship between rainfall return period and flood peak return period – a relationship which is of fundamental importance in flood design. Although there are a number of papers that have noted (via theoretical considerations or via empirical analyses) that the assumption of rainfall and flood return periods being equal may be false, there is not much understanding of the relationship between rainfall and flood return period. Hence, the paper addresses a relevant question within the scope of HESS.

The papers approaches the problem by assuming a strongly simplified world. On the

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one hand, these strong simplifications make the analyses possible and allow insight into the relationship between rainfall and flood return period. On the other hand, they are a serious drawback, since it is not clear to which extent the conclusions of the paper are useful for "real-world" hydrology. Although there may be some misgivings, if future, extended analyses can finally reach a state where the assumptions are appropriate for "real-world" problems, the approach is certainly valuable. Hence, I strongly recommend publication of the paper.

Besides this drawback, the paper is of excellent quality. It presents novel concepts, and it is well structured, well written and concise. The assumptions and methods are clearly outlined.

Specific comments:

It would be good if the authors could check the paper for spots where hydrological interpretations of their findings could be strengthened. For example, at page 3435, line 28 they point to the importance of selectiveness of the exponential and rectangular filters. Could this results be "interpreted" in view of hydrological processes?

Technical corrections:

- page 3425, line 20, and page 3426, line 11: choice of parameter values (betaR, deltaR, a1, b1, a2, b2): I would like to see some justification for the choice of these values.
- page 3427, line 2: I suppose that the '.' in the distribution function should be replaced by 'i' → (i|tr)
- page 3430, line 4: comma after '...in the same way...'
- page 3432, line 23: please specify short and long storms
- page 3435, line 8: 'higher probability' instead of 'more probability'

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 3419, 2008.

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