

Interactive comment on “Probability distributions for explaining hydrological losses in South Australian catchments” by S. H. P. W. Gamage et al.

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The paper by Gamage et al is an interesting and significant one in the time when Australian Rainfall Runoff (ARR) is being updated. The findings of this paper will be very useful to the knowledge base needed to upgrade design losses in ARR. In particular, there has been little/no information/studies on design losses in South Australia, which has a different climate and hydrology than eastern Australia. I support the publication of this paper in Hydrology and Earth System Science subject to following comments are satisfactorily addressed.

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1. In Abstract, some minor rewordings are needed. Line 1, replace "multiple variables" by "various factors". 2. Line 4, Replace first word "Using: by "Use of". 3. Line 15, Add a sentence break after "also discussed". 4. In Introduction, line 1, replace "crucial" by "an important". 5. In page 4599, line 8, what is RR? 6. Section 2, be more explicit about small to medium sized catchments, see paper by Haddad, K., Rahman, A., Weinmann, P.E., Kuczera, G. and Ball, J.E. (2010). Streamflow data preparation for regional flood frequency analysis: Lessons from south-east Australia. Australian Journal of Water Resources, 14, 1, 17-32. 7. Last line of Section 2, replace "yr" by "years". 8. Section 3.1, explain how did you select start of of a runodd? Did you select a threshold runoff? 9. Page 4604, Can you give some justification about the selection of candidate distributions? 10. Some text book type materials are provided in Section 3 about statistical methods, which should be reduced. 11. For non-parametric distribution, how median/mean value of an ungauged catchment can be estimated? 12. State, how the results of this study can contribute to the on-going research on losses in Australia. 13. Please refer few recent papers e.g. Hill, P., Graszkiwicz, Z., Sih, K., Nathan, R., Loveridge, M., Rahman, A. (2012). Outcomes from a pilot study on modelling losses for design flood estimation, Hydrology and Water Resources Symposium, Engineers Australia, 19-22 Nov 2012, Sydney, Australia.

Loveridge, M, Rahman, A. (2012). Probabilistic Losses for Design Flood Estimation: A Case Study in New South Wales, Hydrology and Water Resources Symposium, Engineers Australia, 19-22 Nov 2012, Sydney, Australia.

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