

Interactive comment on “Methodology for flood frequency estimations in small catchments” by V. David and T. Davidova

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This is an interesting paper attempting to solve a practical problem, which is to develop a quick method for flood quantile estimation in ungauged catchments. The paper falls within the scope of the journal, and it will enhance knowledge in flood hydrology internationally. It may be accepted if the authors address the following comments:

1. The literature review is quite outdated, there have been new research studies on regional flood estimation, such as listed below. Please include these latest developments in your literature review.

Micevski, T., Kuczera, G., 2009. Combining site and regional flood information using a Bayesian Monte Carlo approach. *Water Resour. Res.* 45, W04405, doi: C2624

10.1029/2008WR007173.

Nezhad, M.K., Chokmani, K., Ouarda, T.B.M.J., Barbet, M., Bruneau, P., 2010. Regional flood frequency analysis using residual kriging in physiographical space. *Hydrol. Process.* 24, 2045-2055, doi: 10.1002/hyp.7631.

Eng, K., Milly, P.C.D., Tasker, G.D., 2007. Flood Regionalization: A Hybrid Geographic and Predictor-Variable Region-of-Influence Regression Method. *J. Hydrol. Eng.* 12 (6), 585-591.

Haddad, K. and Rahman, A. (2012). Regional flood frequency analysis in eastern Australia: Bayesian GLS regression-based methods within fixed region and ROI framework – Quantile Regression vs. Parameter Regression Technique, *Journal of Hydrology*, 430-431 (2012), 142-161.

Haddad, K., Rahman, A., and Stedinger, J.R. (2012). Regional Flood Frequency Analysis using Bayesian Generalized Least Squares: A Comparison between Quantile and Parameter Regression Techniques, *Hydrological Processes*, 26, 1008-1021.

2. The relationship between basin area and peak discharge seems to be quite low as compared to other studies. Provide more explanation.

3. Show the form of equations to estimate errors (MRE, RMSE etc).

4. Include relative bias in your evaluation.

5. Fig 5, assumed curve and data does not show any match.

6. Did you consider an independent validation such as leave one out or split-sample validation? This is very important in evaluating your developed method. See paper such as: Haddad, K., Rahman, A., Zaman, M., Shrestha, S. (2013). Applicability of Monte Carlo cross validation technique for model development and validation using generalised least squares regression, *Journal of Hydrology*, 482, 119-128.

7. Did you consider the interstation correlation in your analysis? (see Haddad and

Rahman, 2012 paper in J of Hydrology, noted above).

8. Provide how the streamflow data was prepared ie gap filling, outlier detection, rating curve error and trends.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 6327, 2013.