

Interactive comment on “Influence of measurement errors on the results of the Brutsaert–Nieber analysis of flow recession curves” by Jacek Kurnatowski

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This paper presents a recession analysis to estimate bucket model parameters under the assumption of error in the rating curve. The paper may provide some interesting results, but it needs serious revisions.

- 1) The methodology is sometimes difficult to follow. For example, I could not see how the “bias for the linear reservoir yields Equation 8”, or what leads to Equation 9, etc. I suggest the steps from one equation to another be made more explicit.
- 2) The analysis is based on the assumption that the error occurs in measuring the stages, and that such errors are IID with zero mean and constant std. This is a strong assumption that needs argumentation and subsequent discussion. It should be dis-

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cussed that errors come from different sources, including e.g. errors in the model inputs, or model structural errors.

- 3) It is unclear how the fit of Figures 5 to 9 is obtained. If this is obtained by standard least squares, it should be noted that this approach assumes that the errors of $\ln(-dQ/dt)$ are iid normally distributed. I am not sure whether this is consistent with the previous assumption of error in the rating curves.

- 4) Note the previous work of Kirchner, J. W. (2009), Catchments as simple dynamical systems: Catchment characterization, rainfall-runoff modeling, and doing hydrology backward, *Water Resour. Res.*, 45, W02429, doi:10.1029/2008WR006912. This is highly related to the current paper and not discussed. E.g. this paragraph “Brutsaert and Nieber [1977] used plots like Figure 6 to define the lower envelope of dQ/dt as a function of Q , under the assumption that these points would be least affected by evapotranspiration, but in practice, much of the spread in dQ/dt at any particular value of Q may be due to stochastic variability and measurement noise [Rupp and Selker, 2006a], particularly over the short intervals between individual hourly measurements.”

- 5) In terms of structure, the introduction must be more focused (e.g. it is unclear how the presentation of linear vs nonlinear debate is related to the paper; objectives must be better specified), there should be a separation between results and discussion, and the conclusion needs to report relevant findings rather than elements of discussion.

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