Review of "Influence of measurement errors on the results of the Brutsaert-Nieber analysis of flow recession curves" by Jacek Kurnatowski.

General:

1. This paper investigates possible errors of analysis when applying this classic method. The errors considered were bias due to numerical approximation of the $\frac{dQ}{dt}$ variable and the bias possibly caused by random errors in flow measurements.
2. First the conclusion is given that the numerical bias can be neglected and that the derivative $\frac{dQ}{dt}$ can be approximated by appropriate finite difference equations. It seems that the detailed analysis given by Thomas et al. (2015, cited in the manuscript) tested various approximations of different orders so I am not sure whether the result shown in this paper is new. While the author cited the Thomas et al. (2015) paper, the citation was not with respect to the various finite difference approximations analyzed in that cited paper.
3. The second error was analyzed by producing a recession curve containing random errors, where the errors were drawn from a probability distribution having a certain variance. The standard finite difference analysis using these data errors produced the cloud of points commonly observed in a log($\frac{dQ}{dt}$) vs log (Q) plot. This result leads to uncertainty in the parameters derived from the model, especially so for the nonlinear reservoir model. The author's approach to eliminate the bias is to suggest using a fixed increment in stage (I would suppose the same would be the case for a fixed increment in discharge), and therefore a variable time step for the derivation of the log($\frac{dQ}{dt}$) vs log (Q) plot. The author proves that this approach does then yield correct model parameters after the approach is used to remove the bias. I question the novelty of this result however. The similar type of approach was proposed by Rupp and Selker (2006a, cited in the manuscript). In the Rupp and Selker approach the time step was scales to make the discharge difference be larger than the precision of discharge measurement. The author does mention that Rupp and Selker criticized the use of fixed time steps for calculating the derivative, and said they did not show the effect of the fixed time step approach on the resulting analysis (BN77). I do not find that to be the case at all with the Rupp and Selker analysis. They not only showed the effect of the fixed time step, but also showed how to fix the problem with the scaled time step.
4. The manuscript has a lot of grammar and sentence structure issues.

Specific.

1. I tried several times to derive equation (8), but was unsuccessful. Each time I come out with $\theta = 1 + \frac{(e^{-c}-1)}{c}$
2. Lines 15-18 on page 5 regarding the error (ψ) is not clear after a couple of readings. You probably need to put in more text for the explanation.
3. Explicitly state the error analysis scope in advance. The discussion is limited mainly to the aquifer behavior parameter without regarding the drainage timescale, which is the intercept

of the log plot of the streamflow derivative scattered point cloud. Although the shift of the drainage timescale is mentioned in the nonlinear aquifer simulation in the random error analysis, it's not detailed enough overall.

4. The conclusion that a constant stage increment is necessary for the measurement lacks support for the drainage timescale parameter. Although the slope of the log plot of $\frac{\Delta Q}{\Delta t}$ is consistent after taking this revision and the comparison is straightforward. A shift of the intercept is also observed, the discussion of which has not been given sufficient detail. If the extent of this shift is not acceptable, the measurement suggestion by fixing the stage might be sufficient because the recession analysis does not only focus merely on the aquifer behavior.