

Interactive comment on “Estimation of flood warning runoff thresholds in ungauged basins with asymmetric error functions” by E. Toth

Anonymous Referee #2

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General comment

The manuscript presents a method for the estimation of a 2-years flood from a set of catchment descriptors using a neural network. The author aims at estimating the quantile with a bias towards underestimation by employing an asymmetric error function for training the neural network. It is claimed that the approach enables to reduce the risk of missing a flood event in a forecast. However, the employed method achieves this at the expense of having more false alarms. The approach could potentially be useful for estimation in ungauged catchments for operational use. In my view, however, evaluation of the approach lacks depth and clarity and I find the section on discussion of results rather confusing.

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Detailed comments

It is indicated that the annual maximum flow records for some stations are available for as few as only 5 years. How was the quantile of interest in this work estimated and how meaningful is the estimate done using such a short data set?

Why were only three classes of catchment descriptors used to sample representative catchments from for the three groups of catchments? Are they not too few to enable a fair distribution of different ranges of the catchment characteristics evenly across all the three groups?

How were the output values standardized in the range between -1 and 1 (page 6023, line 12). Here I assume the output variables to be the 2-year flood values.

Related to my previous comment, are the error terms in Equations 3-5 estimated from the normalized 2-years flood values or from the actual values? If they are estimated from the actual values, as it looks is the case by looking at the values of MEA and RMSE in Table 1 and the errors in Figure 2, how was the scale inconsistency at the different stations handled? It is mentioned somewhere that these values range between 10 and 1000m³/s.

I find the whole text on page 6028 messy. Most of the discussion on results is presented on this page, but it is very confusing. The author mentions that negative errors mean overestimation and a couple of lines later a contradictory statement is made (statements on line 6 and 10). Similarly, it is mentioned somewhere that the overestimation error reduces with increasing alpha value and the opposite is mentioned elsewhere. There is even little consistency between what is discussed here and the referred Table 1 and Figure 2. Why did the author choose to define the error term as the observed minus the simulated values? Defining it in a more conventional way would have helped to avoid such inconsistency.

Other comments

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Define the variable M in Equation 3.

I suggest that the catchment descriptors be listed in a table. I am a bit astonished to read that data on soils and land cover are missing when there are open data sources on both that are often used in modeling.

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