

Interactive comment on “Water level forecasting through fuzzy logic and artificial neural network approaches” by S. Alvisi et al.

Anonymous Referee #1

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This paper provides a much needed comparison between different forecasting techniques but it is restricted to a single catchment and further details are required on a number of points and issues.

The authors list two different possible neural network training techniques but fail to state which one was used. Full details of the neural network training programmes and training parameters should also be provided in the text. The fact that 12 hidden neurons produced the best result for both sets of neural network inputs is of hydrological interest. Model selection was based on trail and error but the question that arises is to what extent were the different models different? Most neural network solutions are rather similar and it is often argued that parsimonious solutions should be selected in favour of models that are selected on the basis of minor or inconsequential differences that were obtained using traditional measurement statistics. It would therefore be helpful if

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this paper reported the number of hidden neurons that had been tested in the trail and error model testing operations and provided some numerical statistics on the range of different output results that had been obtained.

Is there a scientific reason for incorporating two different non-linear transfer functions?

The datasets were 'standardized' not 'normalized'?

Fig 1: division of the catchment into two-sub basins is problematic since the dashed divider appears to possess no hydrological relationship to the drainage network? Is it sub-regions not sub-basins?

I wonder if positive and negative water level variations should be encoded into the same 'input stream' and whether or not traditional neural network standardization protocols are able to cope with such differences in a meaningful manner? Two separate input streams might perhaps be much better?

The models were developed on three independent subsets; training, validation and testing. Each subset must contain a comprehensive representation of the different processes that are to be modelled and to ensure that this condition is fulfilled it is essential that neural network papers provide a detailed statistical description of each subset with respect to the different variables that are involved. The authors must record the number of patterns as well as the number of events in their respective subsets.

How were the events selected? What constituted the start and end points?

The authors have not provided hydrometeorological particulars or morphological descriptions with regard to the nature and pertinent characteristics of this catchment. Their findings cannot in consequence be put into a hydrological context.

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