

Interactive comment on “Artificial Intelligence Techniques for river flow forecasting in the Seyhan River Catchment, Turkey” by M. Firat

M. Firat

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Firstly the author would like to thank the reviewers for their contributions and comments. I submitted the revised version of paper Artificial Intelligence Techniques for river flow forecasting in the Seyhan River Catchment, Turkey, (revised title of paper is Comparison of Artificial Intelligence Techniques for river flow forecasting in the Seyhan River Catchment, Turkey).

The technical corrections can be given as;

Referee #2

The aim of study published by Firat and Güngör (2007) in Mathematics and Computers in Simulation journal was to investigate the applicability and capability of ANFIS

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method for daily river forecasting. For this aim, the data set was divided into four sub-sets using cross validation method. The models were trained and tested by ANFIS and the best fit model structure was determined. At end of study, only the best fit model having two input variables was trained and tested by Feed forward neural network and multiple linear regression methods. On the other hand, the aim of this paper published in HSDS is to compare and evaluate the performances of ANFIS, GRNN, FFNN and AR models for river flow forecasting. For this aim, the data set was divided into two sets, training, testing and verification. All models were trained and tested by ANFIS, GRNN and FFNN methods and the best fit models were determined based on their training and testing performances. Moreover, AR traditional time series method was used in order to compare and evaluate the results of ANFIS, GRNN and FFNN models. In addition, ANFIS, GRNN, FFNN and AR models were verified using verification data set. Moreover, some sentences in the section of ANFIS are similar within paper published Firat and Gungor (2007) in Mathematics and Computers in Simulation journal because the ANFIS method was used in both study. Therefore, similar sentences in the methodology section can be used for the detail description of ANFIS method. However, the paper was cited on this study. In addition, in order to define clearly the aim of this study the sentences, (The results of ANFIS, GRNN and FFNN models are compared and evaluated based on their performance of training, testing and verification. The best fit forecasting model structure and method is determined according to criteria of performance evaluation), was added to the line 20 in page 1370 in the abstract.

The title of paper was rearranged as Comparison of Artificial Intelligence Techniques for river flow forecasting in the Seyhan River Catchment, Turkey.

Other input variables such as rainfall, evaporation, moisture content, and other catchment characteristics might have an influence on daily River flows. However, in the current study, river flow records at the different time lags have been used without other input variables to forecast the daily river flow and the applicability and forecasting capability of ANFIS and ANN methods has been investigated by using only river flow

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records. The parameters in the input vector are the number of runoff values at different time lags that can best represent the time series by ANFIS and ANN models.

Moreover, on the manuscript, the section of study area was revised according to comments.

RC: Abstract, p.1370, lines 8-12: It is not clear how many river flow data are used for the training, testing and verification. See also Sec. 5.1, p.1378, lines 19-21.

In lines 8-12 in page 1370 in abstract section, the sentence was revised. Moreover, Sec. 5.1, p.1378, lines 19-21, the sentences were revised. Moreover, in line 10 in page 1370, the sentence was revised.

RC: Sec. 5.2, p.1379, line 20. A Bracket is missing in eq. 15.

Equations 14, 15 and 16 in page 1379 were revised according to comments.

RC: Sec. 5.2.1, p.1380, line 19: Reference to figure 5 is wrong.

Sec. 5.2.1, p.1380, line 19, the reference to Figure 5 was corrected as Figure 7.

RC: Sec. 5.2.1, p.1380, lines 19-20: This statement should be corrected. Probably RMSE at line 20 should be E.

In line 20 in page 1380, the term of RMSE was corrected as E.

RC: Sec. 5.2.2, p.1381, line 18: Probably a of RMSE is missing: the value (of RMSE) of R-I M2 GRNN model is also lower than...

Sec. 5.2.2, p.1381, line 18, the sentence, (In addition the value of R-I M2 GRNN model is also lower than that of other models) was corrected as (In addition the value of RMSE of R-I M2 GRNN model is also lower than that of other models).

RC: Sec. 5.2.4, p.1383, lines 19-22: This sentence has no meaning in this section.

In line 19-22 in page 1383, the sentence was removed.

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RC: Table 4 and Table 6: The titles are wrong. Moreover Table 4, 5 and 6 are quite repetitive.

The title of Table 4 was corrected as (The performance of R-I M2 ANFIS model). The title of Table 6 was corrected as (Comparison of the performances of ANFIS, ANN and AR models)

RC: Just one table with the values of the statistics for training, testing and verification for the four models could be presented (for example adding the values of the statistics for the training data set to Table 6 and eliminating Table 4 and 5).

Table 4 demonstrates the performance of ANFIS model. In table 5, the comparative of performances of two different ANN methods is given in order to compare the results of GRNN and FFNN model for river flow forecasting. Table 6 shows the performances of all models.

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