Authors' response

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The authors would like to express their appreciation to Dr Sivakumar for his interest in and comments on our paper. The issues raised are grouped and addressed as follows:

Data preprocessing and comparative study

The study (Sivapragasam *et al*. 2001) is presented to demonstrate the application of a data pre-processing technique in an effort to increase the prediction accuracy of a model. Prediction improvement with combined SSA and SVM (SSA-SVM), instead of SVM only, is demonstrated. Comparison is also made with the standard approach of NLP (e.g. Farmer and Sidorowich (1987)) as it is a commonly used technique in rainfall and runoff chaotic time series analysis. The study does not, however, rule out the possibility that coupling of a suitable data pre-processing technique with NLP may improve the prediction accuracy of the standard NLP.

Forecasting approach adopted in the NLP method

It should be noted that the NLP approach applied in the study (Sivapragasam *et al*. 2001) followed that proposed by Farmer and Sidorowich (1987). Dr Sivakumar has indeed summarized the procedure correctly. We agree that clarification is required as to how prediction results (Tables 1 and 2) for 'training' sets were obtained when NLP is applied. It should be noted that the 700 data used as the training set for SVM is a subset of, for example, the 3000 data (in Table 1). Instead of leaving the cells (which are filled with 0.57 and 14.57 in Table 1) blank, we applied the same embedding dimension, time delay and the number of nearest neighbors derived from the 3000 data set to predict the 700 data set with 2,300 (= 3,000–700) data used as the data base. This explains how the prediction accuracy of NLP for the 700 data in the 'training' set is derived. The same explanation applies to the prediction accuracy of NLP (0.428 and 0.891) for the 'training set' comprising of 700 data as shown in Table 2.

In closing, the statement that SSA-SVM performs better than SVM, NLP, and ANN should be understood, as always, limited to the limited number of case studies undertaken in the study. We firmly believe that a blanket statement as such for SSA-SVM, or for any method for that matter, will require many more case studies to make the statement credible. In addition, only relevant works are selected to convey the main purpose of this study.

REFERENCES

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