Suspended Sediment Load Prediction Using Support Vector Machines in the Goodwin Creek Experimental Watershed

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Strong correlation exists between river discharge and suspended sediment load. The relationship of discharge and suspended sediment load was used to estimate suspended sediment load by using regression model, artificial neural network and support vector machine in this study. Records of river discharges and suspended sediment loads in the Goodwin Creek Experimental Watershed in United States were investigated as a case study. Seventy percent of the records were used as training data set to develop prediction models. The other thirty percent records were used as verification data set. The performances of those models were evaluated by mean absolute percentage error (MAPE). The MAPEs show that support vector machine outperforms the artificial neural network and regression model. The results show that the MAPE of the proposed SVM can achieve less than 14% for 120 minutes prediction (four time steps). As a result, we believe that the proposed SVM model has high potential for predicting suspended sediment load.