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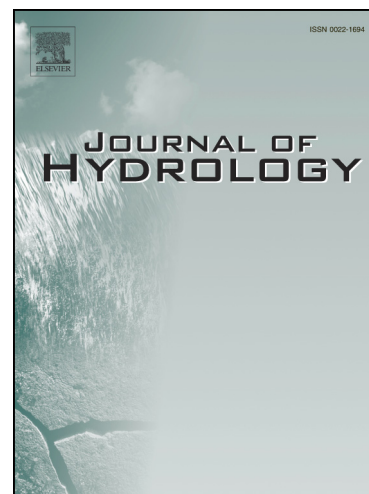
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## Modelling Daily Dissolved Oxygen Concentration Using Least Square Support Vector Machine, Multivariate Adaptive Regression Splines and M5 model Tree

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### ABSTRACT

In the present study, three types of artificial intelligence techniques, least square support vector machine (LSSVM), multivariate adaptive regression splines (MARS) and M5 Model Tree (M5T) are applied for modeling daily dissolved oxygen (DO) concentration using several water quality variables as inputs. The DO concentration and water quality variables data from three stations operated by the United States Geological Survey (USGS) were used for developing the three models. The water quality data selected consisted of daily measured of water temperature (TE, °C), pH (std. unit), specific conductance (SC,  $\mu\text{S}/\text{cm}$ ) and discharge (DI cfs), are used as inputs to the LSSVM, MARS and M5T models. The three models were applied for each station separately and compared to each other. According to the results obtained, it was found that: (i) the DO concentration could be successfully estimated using the three models and (ii) the best model among all others differs from one station to another.

### KEYWORD

River water quality modelling; Dissolved oxygen; least square support vector machine; Multivariate adaptive regression splines; M5 model tree.

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