

## Abstract

Research Title : Artificial neural network modeling for prediction of Dissolved Oxygen parameter in surface water: A case study of canals in Dusit district

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## ABSTRACT

This research is concerned with the use of a neural network model for the prediction of dissolved oxygen in canals. The neural network model is developed using experimental data which are obtained from the Department of Drainage and Sewerage, Bangkok Metropolitan Administration, during 2006-2008. The input parameters of the neural network are pH value (pH), biochemical oxygen demand (BOD), chemical oxygen demand (COD), substance solid (SS), total kjeldahl nitrogen (TKN), ammonia nitrogen ( $\text{NH}_3\text{N}$ ), nitrite nitrogen ( $\text{NO}_2\text{N}$ ), nitrate nitrogen ( $\text{NO}_3\text{N}$ ), total phosphorous (T-P) and total coliform. The Levenberg–Marquardt algorithm is used to train the artificial neural network (ANN). The optimal ANN architecture was determined by trial and error method. The ANN architecture having 16 hidden neurons gives the best choice. Results of ANN models have been compared with the measured data on the basis of correlation coefficient (R), mean absolute error (MAE) and mean square error (MSE). Comparing the modeled values by ANN with the experimental data indicates that neural network model provides accurate results.