

A Key Variable Selection Based on Fisher's Linear Discriminant for Parsimony Plant Modeling

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In this study, reasonable variable selection method based on Fisher's linear discriminant (FLD) is proposed. The Latin Hypercube Sampling (LHS) which yields many model simulations by reasonable changes of the Activated sludge model no.1 (ASM1) parameters is used to assess the modeling accuracies dependent on the various parameters values. The parameters generated by LHS are classified into two groups: whether COD error is bigger than TN error. The discriminant importance in the projection can be used to rank the importance of input measurement variables to select key variables among ASM1 parameters, since the weight vector of the FLD reflects their importance to the modeling of ASM1. The key variables are checked to verify their effects by removing one variable stepwise. This study provides simple method to select the most valuable variables for wastewater treatment plant (WWTP). Acknowledgement) This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MEST)(No. 2012-0000609) and the Korea Research Foundation Grant funded by the Korean Government (KRF-2012-001400).