



Analysis of Sediment Transport for Rivers in South Korea based on Data Mining technique

Eun-kyung Jang (1,2), Un Ji (1), and Woonkwang Yeo (2)

(1) Korea Institute of Civil Engineering and Building Technology, Goyang-si, Republic of Korea, (2) Myongji University, Yongin-si, Republic of Korea

The purpose of this study is to calculate of sediment discharge assessment using data mining in South Korea. The Model Tree was selected for this study which is the most suitable technique to explicitly analyze the relationship between input and output variables in various and diverse databases among the Data Mining.

In order to derive the sediment discharge equation using the Model Tree of Data Mining used the dimensionless variables used in Engelund and Hansen, Ackers and White, Brownlie and van Rijn equations as the analytical condition. In addition, total of 14 analytical conditions were set considering the conditions dimensional variables and the combination conditions of the dimensionless variables and the dimensional variables according to the relationship between the flow and the sediment transport. For each case, the analysis results were analyzed by mean of discrepancy ratio, root mean square error, mean absolute percent error, correlation coefficient. The results showed that the best fit was obtained by using five dimensional variables such as velocity, depth, slope, width and Median Diameter. And closest approximation to the best goodness-of-fit was estimated from the depth, slope, width, main grain size of bed material and dimensionless tractive force and except for the slope in the single variable. In addition, the three types of Model Tree that are most appropriate are compared with the Ackers and White equation which is the best fit among the existing equations, the mean discrepancy ration and the correlation coefficient of the Model Tree are improved compared to the Ackers and White equation.