Geophysical Research Abstracts
Vol. 21, EGU2019-11827, 2019
EGU General Assembly 2019

The Application of Statistical Technic for the Scour Depth Calculation of the Bridge Pier

Hyungjoon Chang (1), Haemin Noh (2), Hyosang Lee (3), Jaewon Joo (4), and Hojin lee (5)

(1) Chungbuk National University, Cheongju, Chungbuk, Korea, Republic Of (param79@chungbuk.ac.kr), (2) Chungbuk National University, Cheongju, Chungbuk, Korea, Republic Of (nohseasky@chungbuk.ac.kr), (3) Chungbuk National University, Cheongju, Chungbuk, Korea, Republic Of (hyosanglee@chungbuk.ac.kr), (4) School of Environmental Science and Engineering, Southern University of Science and Technology, Shenzhen, China (jjw3741@gmail.com), (5) Chungbuk National University, Cheongju, Chungbuk, Korea, Republic Of (hojinlee@chungbuk.ac.kr)

The traffic infrastructures have been actively constructed at the South Korea since the industrialization of 1960s, and the construction of river and sea crossing bridges also have been increased. The purpose of this study is to investigate the scour phenomenon at the bridge installed on the river or sea bed. The scour phenomenon in the bridge piers causes not only to the river-bed erosion but also to the collapse of bridges. Therefore, it is necessary to study to prevent damage of bridge by the scour phenomenon. For the scour depth has a bad influence on the stability of the bridge, this study used the empirical equation for the calculation of the scour depth at piers, was proposed as a basic study to prevent damage of bridge by the scour phenomenon. The proposed empirical equation was developed through multiple linear regression analysis using 'SPSS' based on the results of model experiments, conducted through previous studies. The R^2 value of the proposed empirical equation is over 0.9. As a result of applying the proposed equation to the model data, the error rate was less than 20% in 16 cases. Therefore, the empirical equation, which proposed in this study, can be applied to the calculation of the scour depth at piers. In further research, it will be possible to develop an accurate empirical equation for the calculation of the scour depth at piers and it will give good information to reduce the damage of bridges by the scour phenomenon.

Acknowledgment: This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education(NRF-2017R1D1A3B03035477)