

Abstract

Correct estimation of suspended sediments volume in rivers is one of important issues in river engineering, water resources and environment projects. Helmand river is main source of water supply to approximately 1070 km of Babayaghma mountains originated in Afghanistan. Sistan river is one of split main branch of Helmand river, wich task of irrigate 70% agriculthrul plain and is responsible for providing part of Hamoon water in Helmand. Given the many problems caused by sediment transport relations according laboratory and field studies. Because of multiplicity parameters involved in sediment transport and complexity process of erosion and transport particles, most of the sediment relationships need to solution complex mathematical equtions, however, it aren't accurarate results. Also regression relations between water discharge and sediment discharge aren't good correlation. The recent years using of smart systems in order to increase accuracy of estimating of river sediments are common. in this study were used the empirical relations of sediment transport and smart systems including Support Vector Regression, Non Parametric Regression in orther to estimation of suspended sediment load in Sistan River. Between empirical relations, Toofaleti wait 66557.8 RMSE and 0.705 correlation coefficient is the best result. All smart way estimate suspended sediment load better than empirical relations. Also, the performance model Support Vector Regression were better than other models with RMSE value and R2 equal to 3523.5 and 0.96, respectively. Therefore suggest estimation of suspended sediment load is suggested using smart methods in Sistan river.

Keywords: Support Vector Regression, Non regression, Suspended sediment load, Sistan river



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