DEVELOPMENT AND CALIBRATION OF A MODEL FOR REGIONAL SEDIMENT YIELD ESTIMATION

Thesis by

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A B S T R A C T

In this study two types of models are developed through multiple regression analysis for predicting sediment yield as a function of 9 parameters relating to climate, physiography and environment. One model includes minimum number of easily obtainable independent variables. The best model involves greater number of parameters. The prediction with best model is more precise. Annual soil loss data of 12 watersheds of northern monsoon region of Pakistan was used for development of the models. A good correlation of computed with observed sediment yield was obtained. The data of 42 climatic stations of northern monsoon region were used to develop regression equation for determining average annual precipitation. The average watershed elevation of 18 climatic stations were used to develop a relationship for determining average annual temperature. Results of the model indicates that sediment yield increases with increase of precipitation, precipitation temperature ratio and longitude of watershed centroids. While it decreases with increase of area, temperature, elevation, rock hardness, vegetation cover and latitude of watershed centroids. Contribution of each variable to soil loss were also studied. It was found that mean annual precipitation had major contribution in sediment production.