

Abstract:

The lack or lack of information on soil erosion and sediment production in many watersheds of the country has made it imperative to use empirical models to estimate the severity and extent of soil erosion and sediment production. The purpose of this study was to evaluate the accuracy of WEPP and MPSIAC models in erosion and sediment estimation with the aim of determining the suitable model for estimating erosion and sediment in the pasouk-watershed of Qasrkand in southern Sistan and Baluchestan province with an area of 16759 hectares. In this study, the study basin was first divided into smaller divisions based on the hydrological characteristics. In order to analyze and estimate the parameters required in each model, the statistical data of the pasouk-hygrometer station with the statistical period from 1360 to 1385, as well as statistical data of the stations The Qalyq-e-Qedrine and Qasr-khand (Kholjukood) and Zhikigur Station as well as synoptic station of Iranshahr in the study area and field survey were used. This information is included in the model files made to determine the rating of effective factors in each unit of work, in order to finally determine the amount of sediment. In other words, using the ArcGis software, the layers needed to be combined and combined to create the final map. After digitizing 100-meter lines, a digital elevation model was prepared, and a slope map and some other calculations were used. Then, using the t-test, SDR and erosion parameters of two models were analyzed. Estimation of sediment yield by WEPP model was estimated to be about 12.5 (t / ha / year) and erosion value of 23.2 (t / ha / year) and sediment estimation results with MPSIAC model is about 6.7 (t / ha / year) and The calculated erosion value is estimated to be 2.3 (t / ha per year). On the other hand, the amount of sediment measured at the hydrometric station is 4.8 tonnes per hectare per year. The results of erosion and sediment estimation by WEPP model are well suited for observational values as well as estimated values by MPSIAC model, and the value of R² in these relationships was higher than 0.8. Therefore, the accuracy of the WEPP model is higher in estimating the erosion and sediment production of the region and has a better correlation with real values..

Key words: Sediment Estimation Models, WEPP, MPSIAC, Erosion, Sediment, Pasouk



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**Accuracy Assessment of WEPP and MPSIAC Models in
Estimation of Erosion and Sediment, in Arid Area (Case Study:
Watershed Pasouk, the city of Qasr-e Qand, Sistan and
Baluchestan Province)**

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