Abstract:

Erosion occurs naturally in the bed and bank of rivers. Intensifying of bed erosion leading to instability the banks of the river and loss of soil mass in the beach. This process can change geometry and morphology of the river. mention change leading to change in flow structure and cause increasing of bed erosion and sediment. Sedimentation in the open sections of the river lead to increasing of bed level which with the continuation of such a trend in some cases lead to the widening rivers bed is provided. The high cost and limitations of physical models has led to the use of mathematical models and numerical considered. In this study, using two-dimensional mathematical model CCHE2D to simulate sediment transport in the range limited to stations Cheragh veys of upstream and downstream Qbqblv, Saqez river in Kurdistan province, After sensitivity analysis, model parameters Schmidt number, invoice matching, bed roughness coefficient and the empirical formulas and England Hansen Wu and colleagues tested the calibration stage, And by comparing the results of simulations with observed data of Cheragh Veys station, roughness coefficient values equal to 0.45, Schmidt number 0.75 and compliance factor 0.5 and formula Wu et.al also with root mean square error equal 0.002 and mean absolute percentage error 7.14, as regards the most suitable criteria were used to calculate sediment. The study area is divided into four periods and was modeled separately. And found that the total sediment load in the river Saqez to about 1257444 kg per year is the period, As well as with Constructing of Cheragh weys dam reservoir the annual sedimentation in Saqez River reduced by 15 percent during the range studied. Results showed that the highest amount of deposits in April was to the 52.74 percent of total deposits of river and The highest distribution of sediment particles including diameter of 0.11 is in a class 1 whereas the lowest distribution of the particles diameters of 190 mm in class 2. Flow pattern and sedimentation in part of the Meander saqez River and the confluence of the rivers Saqez with subsidiary Khan was simulated with the main river. Flow patterns and sedimentation show in confluence show that suspended sediment distribution in left bank, at the confluence and after that take place. And the most ultimate combination of bed metarial is about coarse sand and fine gravel bed.

key word: cche2d, sediment transport, saqez river, simulation

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Sediment Transport Simulation in Rivers by using CCHE2D (Case Study: Saqez Chay, Kurdistan Province)

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