**Assessing sediment yield in the Kebir catchment, northeast of Algeria**

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This study is an assessment of the suspended sediment yield in the Kebir catchment of ‎northern Algeria. Estimation of the sediment volume carried by rivers are necessary to prevent ‎problems derived ‎from suspended sediment load in rivers, especially in relation to the loss of ‎water storage in ‎reservoirs and water quality.‎ Due to lack of a long-term sediment ‎concentration data, sediment rating curves and flux estimation ‎are the most widely ‎applied. ‎The sediment rating curve method is investigated with the mean discharge classes ‎derived from the ‎recorded daily suspended sediment concentrations and water ‎discharges for the Kebir ‎basin, prior ‎to the Mexa reservoir construction in 1999. ‎ Attempts ‎have been made to show the abilities of other statistical models to improve the accuracy ‎of ‎streamflow–suspended sediment relationships in daily and annual suspended ‎sediment ‎estimation. Therefore, neural networks ‎via the multi-layer model of the Perceptron ‎along with appropriate structure and self-training system are used as one of the methods of ‎estimating the amount of the sediments, also the results are compared with those of the ‎suspended sediment rating curves. Correlation coefficient (R2) and Root Mean Square Error ‎‎(RMSE) are considered the ‎model's ‎assessment criteria. ‎The model results have shown that the ‎ANN models have the highest efficiency to reproduce the daily ‎sediment load and the global ‎annual sediment yields. Our estimation based on the available data ‎indicated that the areas ‎along the Kebir River have experienced high sediment fluxes that could have ‎obvious impacts ‎on the sediment trapping and siltation in the Mexa reservoir.‎ The mean annual sediment yield ‎conducted from 1975 to 1999 is equal to 1400 T km-2 year-1.‎ Up to 2006, the annual siltation ‎rate of the study reservoir has been quantified using a bathymetric survey, which has indicated that‎ 2.23% of the total ‎designed capacity ‎is already lost.