Desalination and Water Treatment
www.deswater.com
doi: 10.1080/19443994.2013.877852

52 (2014) 2139–2143
February

Taylor & Francis
Taylor & Francis Group

Monitoring and modeling of sediment transport in the watershed of Oued El Ardjem, Algeria

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Received 15 January 2013; Accepted 17 December 2013

ABSTRACT

Conservation and management problems of water resources have become increasingly influencing. The growing need for these resources increases the risk of degradation. Millions of tons of soil depart each year into the sea via rivers and a significant amount gets deposited at the bottom of our dams. Our job is to investigate a monographic approach to both analytic and synthetic flow methods, the hydrological regime, and sediment transport in suspension phase to determine the water surface and their spatio-temporal variability. Our study consists of two main parts: first, the diagnostic physical geographical catchment area which will show the main factors involved in the natural water flow, and thus determining basin characteristics. And second, the study of Ouled Ben Abdelkader gauging station for quantification of suspended sediment based on the regression method using different regression models for water and sediment discharge at different scales. The analysis was based on the regression method to find the best relationship for solid flow–liquid flow which leads to accepting of the power regressive model and its use in the quantification of sediment transport. The calculated intake is 18,087.66 tons/year at average where specific erosion is about 0.15 tons/km^2/year. An analysis of Sidi Yacoub dam reservoir siltation by bathymetric surveys method showed a retaining has a loss of 11% of its original capacity for 18 years of operation with 1.79% annual capacity loss.

Keywords: Modeling; Regressive model; Sediment discharge; Water discharge; Sediment suspension

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Presented at the 6th International Conference on Water Resources in Mediterranean Basin (WATMED6), 10–12 October 2012, Sousse, Tunisia