Hydrological study of the water quality of the Beja River according to the SWAT model

Dorsaf Ben Othman*, Moncef Gueddari

Geochemistry Laboratory, Sciences Faculty of Tunis, Department of Geology, Tunis El Manar University, 2092 Tunis, Tunisia
Tel. +216 71872 600; Fax: +216 71871 666; email: dorbothm@yahoo.fr

Received 26 December 2012; Accepted 30 November 2013

ABSTRACT

The proposed research is an important step in the study of agricultural and human pollution in the various tributaries of the Sidi Salem Dam Reserve. We are contemplating the use of the Soil and Water Assessment Tool model for one of the main tributaries, the Beja River. As a first step, we would like to fit this model here, in order to understand the hydrological functioning of this basin. Subsequently, we would study the sensitivity of the model according to the major hydrological parameters and nutrients, by performing continuous simulation for over eight years, allowing us a better choice of these parameters, and later the global results with the observed data. In the second step, we would refine the calibration parameters of the model in two wet and dry years. In both cases, the seasonal variability of these parameters would be taken into account, to better describe the pedoclimatic context of the study area. This approach had to have a good agreement between the simulated and observed data, as it was confirmed by four measures of accuracy. Furthermore, it was shown that the nitrate and orthophosphate levels were of concern because of the misuse of agricultural fertilisers. The proposed approach would provide the decision-makers a powerful tool for monitoring water pollution in the dam’s area, as it would evaluate the water pollution of the ungauged basins around the same dam.

Keywords: SWAT; Modelling; Hydrology; Geochemistry; Subhumid region; Beja River

*Corresponding author.

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

1944-3994/1944-3986 © 2013 Balaban Desalination Publications. All rights reserved.