

MODELLING OF QUALITY OF NATURAL WATERS CASE OF THE DAM OF SIDI M'HAMED BEN AOUDA IN THE WATERSHED OF THE WADI MINA (NORTHWEST ALGERIA)

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Abstract

Geochemical modelling is a tool to attempt to understand complex systems and phenomena and make decisions about the management of sites in order to minimize the impact of metal pollution (heavy metals). In the case of solutes and contaminants that are not reactive or who are conservative, the only physical process can be modelled, but most of the contaminants are reactive. In particular, in the case of metallic elements, chemical reactions significantly affect the concentrations in solution (transfer delay, processing into a more toxic species ...).

Dam of Sidi M'Hamed Ben Aouda was put water in 1978 on the main stem of the Wadi Mina with an initial capacity of 253 hm³ but given the erosion phenomenon that hit the region, the dam currently suffers from siltation problem and its capacity is reduced to 153 hm³, several factors come into play such as vegetation, topography, rainfall, water quality...

In this context, the study of dam water below was made by the physic-chemical data acquired by the National Agency of Water Resources. These data are collected over a period of 27 years (1985-2012) with the aim to characterize the physic-chemical state of water systems in relation to these waters. The study was initiated by doing classification dam water using piper diagram and see their subsequent evolution as a function of the study period.

Thus, the calculation of the speciation of the chemical species of water was carried through the SWAT model, which permitted to make a modelling pollutants index most threatening (PO₄, NO₃, NO₂) and at the end find the influence of dry residues and turbidity on siltation dam SMBA.

According to preliminary results, it would be preferable in the future it is hoped that the SWAT model may become a useful tool in the design phase of dam water treatment systems. D'après les premiers résultats trouvés, il serait préférable dans l'avenir d'espérer que le modèle SWAT peut devenir un outil utile dans la phase de conception des systèmes de traitement des eaux du barrage.

Keywords: Modelling, SMBA Dam, Wadi Mina, SWAT model, pollutants