Hydrodynamic modeling of a water table. Application to the alluvial water table of Oued Boukiou

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In western Algeria, the alluvial aquifer of Oued Boukiou extends. This aquifer has undergone a worrying overexploitation, hence the interest of this study considered as a step towards a rational management of the water resources of the region.

This study is considered as a main step for a better management of the Oued Boukiou alluvial water table, which is based on a piezometric follow-up of the aquifer which shows a direction of overall flow from west to east. The piezometric evolution shows a decline in the water table over time, due to the long period of drought experienced by the region and the increase in water requirements.

Using the ASMWIN calculation code, a better understanding of the aquifer system of the plain was achieved by commissioning a mathematical model simulating the reality of the aquifer (constructed from structural, morphological and piezometric data). This approach also facilitated the visualization of the underground hydrodynamics of the aquifer. The calibration of the steady-state model revealed a new distribution of permeability. The redistribution of the storage coefficient was carried out by calibration of the model in transient mode.

The various simulations showed that the eastern part of the groundwater is more affected by the climatic and anthropogenic vicissitudes.