

Mitija ground water quality evaluation and their attitude faced with irrigation

Water resources in Algeria, particularly in Mitidja area are limited, vulnerable and unequally distributed on the spatial level. This awkward situation unavoidably requires undertaking new measures to exploit these resources in a rational way.

This project falls within this context, and aims at studying the spatial variability of some chemical properties of Mitidja plain ground water by a classic statistical approach which is the Principal Component Analysis (PCA), and the geostatistical approach (variography and kriging) to be able to assess the quality of this water and their irrigation ability by studying the analyzes of two years, i.e. 2005 and 2008.

By the use of PCA, the study showed that the main facies during the two years is the calcic chloride facies, but the presence of the sulphate facies is also reported. Moreover, the plain water salinity varies from mean to very high with use restrictions as per to two types of classification. It should also be noted that these groundwater run a huge risk of nitrates pollution and might be unfit for agricultural use.

The estimation by standard kriging, for its part, showed that generally the cations (Ca, Mg, and Na), the anions (Cl, SO₄ and NO₃), the Sodium adsorption ratio and the Effective concentration showed a highly variability, and that the geographical distribution of these elements is almost similar except for nitrates the presence of which is related to agricultural practices and lithological layers permeability. It is found that the North-eastern part of Mitidja is the most vulnerable to salinity due to the fact that contents of some elements largely exceed the international standards set by the FAO. According to the study, it seems that water quality is better for high water period of the year 2008, because of the fact that the concentrations of some elements decrease compared to previous situations.

Therefore, this project will be a decision support tool as regards resource exploitation as far as quality and contamination hazard are concerned, whether it is for human health or for agricultural purposes.

Key words: Mitidja plain; PCA; geostatistics; standard kriging; irrigation.