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المستودع الرقمي للمدرسة العليا للري



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Assessing groundwater quality for irrigation using geostatistical method – Case of wadi Nil Plain (North-East Algeria)

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Abstract : Water quality is one of the fundamental parameters effecting the irrigation. In this work we used Geostatistical process (co-kriging method) to examine the spatial variability of groundwater quality parameters such as (electrical conductivity (EC) and sodium adsorption ratio (SAR)). We collected and analysed 40 groundwater samples, in wadi Nil plain (Jijel, North-East Algeria). Results showed that co-kriging exponential model has low RMSE (more accurate) compared to the other two methods (kriging and Inverse Distance Weighted). The prepared map using the above mentioned method showed that the electrical conductivity (EC) increases from the south to the north. High values are located in northern part of the plain (coastline) likely related to sea water contamination. The spatial distribution of SAR shows an exceptional increase from the central area to the north. Very high values of SAR in this part of the plain could be associated with both the anthropic contamination and the marine invasion. The obtained quality map for irrigation, may be the necessary tool that farmers can use for agricultural irrigation. To recover the polluted area (northern part), it is necessary to identify the main sources and amount of the pollution.

Keywords : Groundwater quality ; Irrigation ; Geostatistical analysis ; Co-Kriging method ; Electrical conductivity SAR

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