

## **Goelectrical and Hydrochemical Investigations for Characterizing the Salt Water Intrusion in the Khanasser Valley, Northern Syria**

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### **A b s t r a c t**

An integrated approach of goelectrical and hydrochemical investigation surveys was proposed for indicating contact regions between saline and fresh groundwater in the Khanasser valley region, northern Syria. The qualitative and quantitative interpretations of 34 vertical electrical soundings (VES) enable to characterize the salt water intrusion laterally and vertically. The established iso-apparent resistivity maps for different AB/2 spacings obviously indicate the presence of a low-resistivity (less than 4 Ohm·m) zone related to the salt water intrusion in the Quaternary and Paleogene deposits. The different hydrochemical and geophysical parameters, such as electrical resistivity, total dissolved solids (TDS) and major ions concentrations used to characterize the salt water intrusion gave almost similar results in locating and mapping the different boundaries of the groundwater salinity. The proposed approach is useful for mapping the interface between different groundwater qualities, and can be therefore used to successfully characterize the salt water intrusion phenomenon in other semi-arid regions. The application of such an approach is a powerful tool and can be used for water resource management in the water scarce areas.

**Key words:** groundwater, electrical resistivity, salt water intrusion, Khanasser valley, Syria.