

## **A Cost-Effective Method to Map the Top of Shallow Groundwater Systems**

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### **Abstract**

This paper presents an integrated GPR (Ground Penetrating Radar)-Kriging procedure to detect the depth to a water table below the ground surface. The study evaluates the applicability of this approach to locate the water table using an inexpensive and efficient procedure. The proposed methodology may be utilized to map shallow groundwater surfaces and detect the distribution of groundwater contamination.

A pilot study was conducted in an interdune terrain of Jaforah Desert system of Eastern Saudi Arabia. The material between the water table and ground surface consists of well-sorted medium-grained sand. The data was acquired from 110 traces using a 300 MHz antenna of SIR-2 GPR system. A velocity of 0.15 m/ns was used for time-to-depth conversion. Preliminary analysis indicates that the depth to water table lies in the range of 63 cm to 77 cm.