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VES and TEM surveys to assess groundwater impingement at Luxor, Egypt

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Abstract

Luxor is one of the most important archaeological sites in the world. It contains one six of the world Archaeology and there is a lot of unexcavated archaeological remains still buried under moisture silty clay soil. The rise of highly saline groundwater table in Luxor area affects both buried and exposed archaeological features. To overcome this problem, it is necessary to understand the groundwater conditions of the Luxor area. Integrated geophysical studies including resistivity, electromagnetic and chemical analysis of some water samples were conducted at the western bank of Luxor area.

Based on the interpretation of the acquired geophysical data and the analysis of water samples. The shallow subsurface was divided into five geoelectrical units based on the joint interpretation of VES and TEM data, groundwater flow directions were determined to be from the central cultivated areas to the west causing a rise in the groundwater levels at the area of the temples, and the increase in groundwater salinity was determined to be towards the area of temples.

Key words: Luxor, Hydrogeology, Joint inversion of VES and TEM, Egypt.