Processing and Modeling of High-Resolution Geophysical Data for Archaeological Prospection, Nuri Area, Northern Sudan

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Abstract : In this study, the use of magnetic gradient survey, and the geoelectrical ground methods used together to explore archaeological features in Nuri's pyramids area. Research methods used and the procedures and methodologies have taken full right during the study. The magnetic survey method was used to search for archaeological features using (Geoscan Fluxgate Gradiometer (FM36)). The study area was divided into a number of squares (networks) exactly equal (20 * 20 meters). These squares were collected at the end of the study to give a major network for each region. Networks also divided to take the sample using nets typically equal to (0.25 * 0.50 meter), in order to give a more specific archaeological features with some small bipolar anomalies that caused by buildings built from fired bricks. This definition is important to monitor many of the archaeological features such as rooms and others. This main network gives us an integrated map displayed for easy presentation, and it also allows for all the operations required using (Geoscan Geoplot software). The parallel traverse is the main way to take readings of the magnetic survey, to get out the high-quality data. The study area is very rich in old buildings that vary from small to very large. According to the proportion of the sand dunes and the loose soil, most of these buildings are not visible from the surface. Because of the proportion of the sandy dry soil, there is no connection between the ground surface and the electrodes. We tried to get electrical readings by adding salty water to the soil, but, unfortunately, we failed to confirm the magnetic readings with electrical readings as previously planned.

Keywords : archaeological features, independent grids, magnetic gradient, Nuri pyramid

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