



Geomatic applications for map production and geophysical techniques applied to archaeology, Karima, North Sudan

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The results of an innovative approach to field data acquisition and interpretation, integrating geomatic techniques and geomorphological mapping based on satellite remote sensing images and Georadar data are presented here, as a suitable tool for supporting archeological missions,.

QuickBird and Aster images have been processed to generate respectively an orthoimage and a Digital Surface Model (DSM) of a specific area near Karima, Nubian Sudan. A GPS survey was carried out to collect the Ground Control Points (GCP) needed for image exterior orientation during the orthoprojection process. The resulting orthoimages has been firstly exploited for archeological purposes: planning studies for a new site and management and mapping of existing sites surveyed in traditional topographic mode. Spectral properties of images have been also used to extract further information about the geomorphological features of the area (fluvial landforms connectet to the present-day and ancient Nile courses) and about evidences of possible hidden archeological features.

In particularly geophysical investigations, with Ground Penetrating Radar campaign field performed in 2006, will be facilitate an underground investigation of hidden archeological targets. GPR technique can be useful to analyze subsurface with an higher resolution than any other geophysical technique, and it is able to show some important discontinuities. In this case, it is important the check of any archeological features present in order to reconstruct the whole environment of excavation.

The results show that image processing aimed at feature extraction and data organi-

zation inside a GIS environment can be useful for managing informations from topographic, geomorphological and archaeological surveys. Also geophysics descriptive data turned out as a necessary complement for global archaeological site comprehension and description.