

Numerical processing of geophysical data from archaeological sites

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Surface geophysical techniques have been applied to prospect for buried ancient relics of cultural heritage. However, as most of the sought-after features are complex in nature, of limited dimensions, and are commonly located close to the surface, their surface expressions can be slightly detected or, quite often, completely obscured.

Two approaches are adapted for enhancement of signal with respect to noise and better resolution and delineation of anomalies.

Basing on frequency analysis of field data, choice of cut-off frequency for low-pass filtering can be applied. Alternatively, when some approximate knowledge are known about the sought-after bodies, optimum filtering is utilized. However, as the level of contaminating noise can never be known in advance, its impact on the resolution of both techniques was tested by introducing random noise into the anomalies of synthetic models of various sizes buried at different depths.

Three case histories are presented to illustrate the significance of numerical processing of resistivity profiling, magnetic, and gravimetric data from archaeological sites.