MULTI-METHOD ARCHEOGEOPHYSICAL PROSPECTION IN NOER, GERMANY

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Abstract

Geophysical measurements of magnetics, ground-penetrating radar (GPR), electromagnetic induction (EM), and electrical resistivity were carried out at an archeological site in northern Germany where an early modern manor was suspected underneath a topographic high on a seasonal pasture near the town of Noer in Schleswig-Holstein. Archeological artifacts, data from 12 shallow soil cores, and near-surface geophysics were combined to aid archeological interpretation. Artifacts found at the surface and in the cores include brick rubble and ceramics, suggesting a brick building from the late 16th - 17th century with wealthy inhabitants.

Magnetic anomalies and depth slices of the in-phase component of EMI show the suspected structure in an area of the highest elevation in the north of the surveyed field. It comprises a tripartite structure measuring ca. 22 x 27 m. About 5 m from this building an outer wall encircles a total area of 43 x 47 m. The conductivity component of EMI and the results from the electrical resistivity measurements show lower conductivities around the magnetic anomalies, but no clear outline like in the magnetic results. The lower conductivities confirm the expectation of brick walls in a surrounding of sand and clay soils known from the soil cores. The GPR profiles show sharply outlined structures, presumably walls, from close to the surface to 1-2 m depth. Also visible are a number of strong horizontal reflectors that do not follow the topography and could indicate layers of debris or remains of flooring. Two soil cores show a ca. 5 cm thick layer of brick debris in the respective depths. They also show rock resembling fieldstone foundations. Chaotically located anomalies in all methods within and around the structures suggest debris accumulations. Together with the shallow depth of 0 to 2 m below the surface it can be concluded that the structure in question has been demolished or eroded and only ruins remain in the ground.

The site was then used to compare the in-phase component of the EM instrument to the magnetic results, and the Quadrature component of the EM to the electrical resistivity inversion results to determine if using an EM instrument would eliminate the need for the other methods.