



## **Integrated electrical geophysical surveys (ERT and SP) for the study of buried structure in a archeological complex**

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### **ABSTRACT**

Geophysical methods, particularly ERT, are very popular in archeological investigations. The success of the ERT method depends on the difference between the resistivity properties of the potential archeological targets (walls, roads, cavities etc..) and the surrounding environment.

In this context often the main issue is to identify cavities or antropic buried structures. In this work we have used ERT and SP combined surveys for the study of buried structures in a farm of artistic importance of the XVII century located near Lecce (Salento peninsula, Italy).

In the courtyard of the farm, characterized by the presence of two access holes to a possible underground cavity, we performed a 3D ERT that consists of 7 parallel profiles with 15 electrodes and a resolution of 0.7m, inverted with robust method. Also we performed a 3D SP surveys with 70 data points and a resolution of 1m using non-polarizing Cu/CuSO<sub>4</sub> electrodes and a high internal impedance voltmeter using the Charge Occurrence Probability (COP) algorithm.

In correspondence of the two access holes both methods demonstrate clearly the presence of a cavity that extends to a depth of about 1.8m from ground level probably used for storage of rainwater. Furthermore the ERT surveys show the presence of a second cavity at greater depths (2.5m) that is not resolved by the SP method.

The 3D inversion results clearly illustrate the capability to resolve in view of quality 3D structures of archeological interest. Particularly, in this work, we underline the role of SP surveys in this context and the good correlation with ERT surveys.