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GEOPHYSICAL SURVEYS AT THE ARCHAEOLOGICAL SITE OF ANGLONA (MT)

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***Abstract* – As part of the Pandosia Anglona Project, of which the Institute of Cultural Heritage Sciences (CNR) is a partner, geophysical investigations were carried out with the aim to identifying structures of archaeological interest. The investigation area is located on the right of the road that connects Policoro with Tursi, on the top of a hill 262 m a.s.l. The Anglona hill dominates the lower valley of the Agri and Sinni rivers rising in the middle of the hilly system that divides the two rivers, at almost equal distance between these two streams. Geophysical investigation method geoelectrics was used.**

I. INTRODUCTION

The settlement of Anglona (municipality of Tursi, Basilicata) is approx. 11 km as the crow flies from the ancient coastal city of Herakleia (presently Policoro) and is located in its immediate hinterland, on the top of a hill, bordered on the northern and southern sides by the two rivers Agri and Sinni (Fig. 1). Thanks to the various archaeological discoveries made on the hill, it was possible to ascertain the identification of the Anglona site with the Pandosìa of the classical age, a settlement which, in the 4th century. BC, was inserted in the westernmost portion of the agricultural territory controlled by the polis of Herakleia. The School of Specialization in Archaeological Heritage of Matera of the University of Basilicata (SSBA-Unibas), starting from 2016, has embarked on a new archaeological excavation project on the Anglona hill. This research is an integral part of a landscape archeology project that not only involves archaeological excavation on the Anglona hill but also includes a series of archaeological reconnaissance campaigns in the neighboring territories, together with several interdisciplinary investigations, within the framework of the project - sponsored always from the same SSBA -: "CHORA, Archeology Laboratories in Basilicata". In fact, archaeological research has co-opted the participation of several specialized laboratories of the CNR and of

the Italian universities for the realization of different types of analysis of stratified contexts and artefacts, including the geophysical prospections carried out by ISPC-CNR on the central part of the hilly plateau and along the whole lower part of the southern slope of the Anglona hill. The archaeological excavations, the infrasite survey and the geophysical investigations, are returning important data relating to both the protohistoric and high archaic age phase, and to the period of classical attendance, when the plateau was occupied by the agricultural village of Pandosìa pertaining to the chora of Herakleia, both in the medieval phase, when a demic agglomeration was created on the hill itself, protected by a fortified body and the cathedral of Santa Maria d'Anglona.

Fig. 1. The investigated area location

II. ELECTRICAL RESISTIVITY TOMOGRAPHY DATA ANALYSIS

For the electrical resistivity tomography (ERT) survey, 24 electrodes with variable interelectrodic distance were used [1, 2]. The inversion of the data was carried out through an iterative process that minimizes the difference between the apparent resistivity measured and that calculated based on an underground model [3, 4]. The subsoil distributions of the "electrical resistivity" has therefore been studied. A non-standard acquisition geometry was used which provides for the arrangement on the ground of an electrical line that follows the perimeter of the building. Therefore, 2 profiles named ERT1 and ERT2 were acquired respectively (Fig. 2).

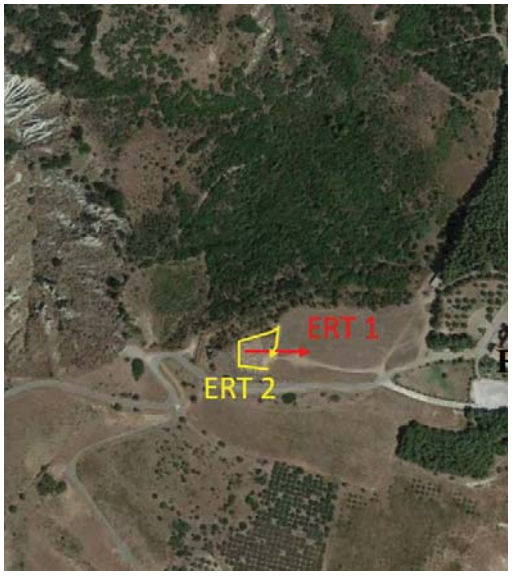

Fig. 2. The ERT profiles location

The 2D distribution model of the physical electrical resistivity parameter relating to the ERT1 profile is shown in Fig. 3.

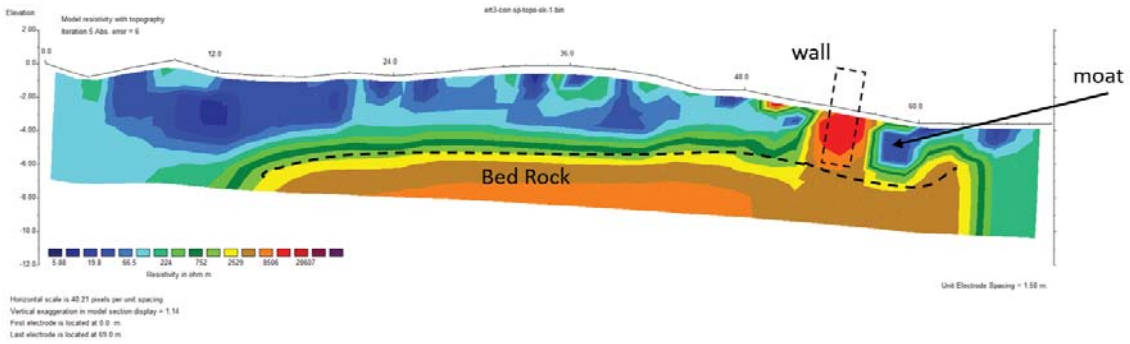

Fig. 3. The 2D distribution of resistivity

From the 2D model of distribution of resistivity (Fig. 3) it is evident the presence of a heterogeneous subsoil with resistivity values between 20 and 8000 ohm m. In particular, it is noted that the rock base has resistivity values between 4000 and 4500 ohm m and is placed at depths between 4.5 and 6m (dotted black line). Always on the 2D model it is possible to find the presence of a high resistive with resistivity values around 6000 ohm m associated with the probable presence of a masonry. Immediately under the masonry it is possible to identify an area with very low resistivity values around 20 ohm m. These values can be attributed to the probable presence of filling materials soaked in water. This suggests a probable moat.

The 3D distribution models of resistivity in the form of depth slices are shown in Fig. 4.

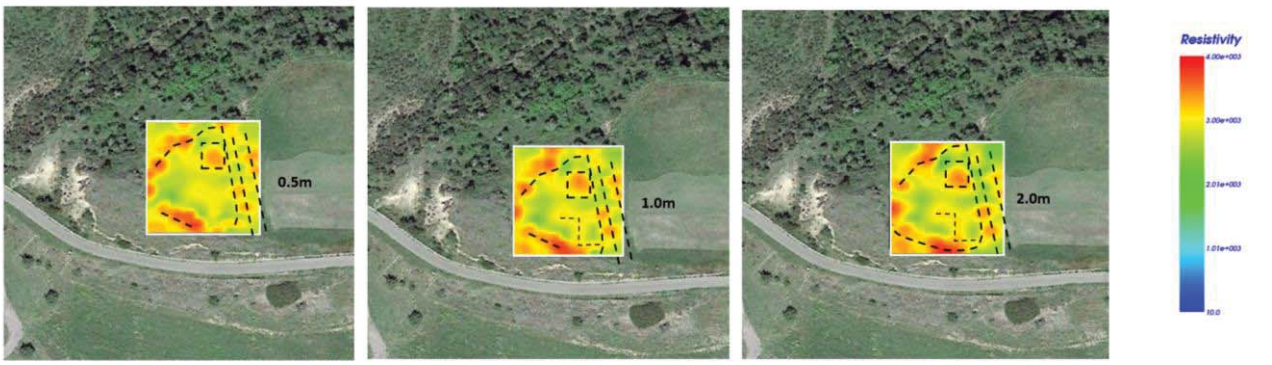

Fig. 4. The 3D distribution of resistivity

The 3D visualization (Fig. 4) shows the presence of a high resistive associated with a probable (defensive) wall. The presence of the tank in the black dotted box is highlighted.

III. CONCLUSIONS

In the investigated area the results made it possible to identify anomalies attributable to ancient structures (walls) buried at several meters deep (up to about 4 m) and covered by inconsistent materials (earth and stones). Some of them rest on the rocky bank at different depths.

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