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# The Epizefiri Archaeological Site in Locri (Reggio Calabria, Italy): Geophysical surveys for excavation project

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***Abstract –***
**As part of the project called SAET, of which the Institute for Archaeological and Monumental Heritage (CNR) is a partner, geophysical surveys have been carried out with the aim of identifying structures of archaeological interest that may be present within the investigated area. The GPR Sir 3000 from GSSI was used, equipped with 270 and 400 MHz antennas, the Ris Hi mod equipped with 200-600MHz dual band antenna, the syscal kid georesistimeter with 24 active channels and the bartington Grad 601 Gradiometer were used for geophysical surveys.**

## I. INTRODUCTION

Locri Epizefiri was the last of the Greek colonies founded on the territory of present Calabria. The settlers, who arrived at the beginning of the seventh century BC, initially settled near the Zephyrion Acra (Capo Zefirio), today Capo Bruzzano, and only later they settled a few kilometers north of the historical city, preserving the nickname Epizephyrioi, which means "around Zephyrio".
Geophysical measurements including Electrical Resistivity Tomography (ERT) [1] were undertaken in some areas of the archaeological site. ERT is a well known near-surface geophysical technique that allows to investigate and map buried archaeological features. The method consists in electrical resistivity measurements at the surface direct current. The current is induced in the ground using two current electrodes, the electrical potential drop is then read using two other electrodes. There are many different electrode array configurations available, but all configurations are aimed at gathering data that can be used to estimate lateral and vertical variations in ground resistivity values [1].
ERT surveys show interesting structures related to the settlement distribution.

## II. RESULTS AND DISCUSSION

The ERT surveys were carried out with the Syscal Kid georesistivitymeter with 24 electrodes arranged in a non-conventional array (Fig. 1) .
The data were subsequently processed using 3D processing techniques by means of the ErtLab software [2]. On the ERT depth slice (Fig. 2) several resistivity alignements are present. Some of they were interpreted as probably due to a walls.

## III. CONCLUSIONS

The ERT survey allowed the acquisition of new data about the walls structures. They were related a structures part of the settlement of the Greek colony


*Fig. 1. The surveyed areas*

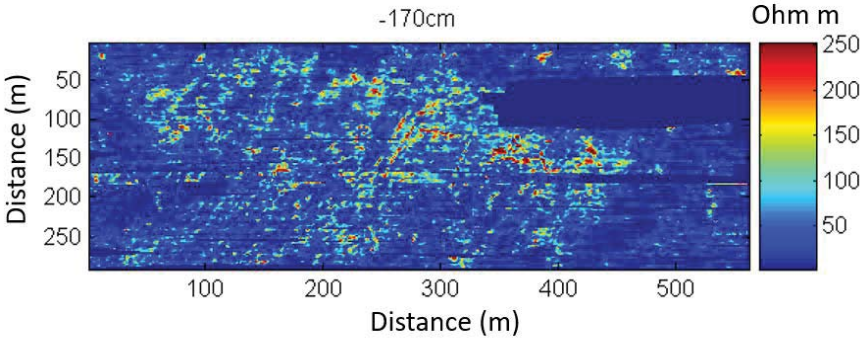


*Fig. 2. ERT slice at 1.7m depth*

REFERENCES

[1] Leucci G., 2019. Nondestructive Testing for Archaeology and Cultural Heritage: A practical guide and new perspective. Springer, pp 217, ISBN 978-3-030-01898-6

[2] ErtLab software (http://www.geostudiastier.it/area_it.asp?tag=ertlab-software-3d-per-tomografia-elettrica&idCanale=56&sezione=1)