Geophysical Explorations of the Classical Coastal Settlement of Lechaion, Peloponnese (Greece)

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Abstract

The geophysical survey at Lechaion was carried out under the framework of the Lechaion Harbor and Settlement Project (LHSP) that aims to study the settlement and its harbor during its habitation. Lechaion was the western and most important seaport of Corinth due to its proximity to the city. Long fortification walls connected the city with the port and the naval dockyard. The basilica of Saint Leonidi which is considered the largest paleochristian church in Greece is sited at the ancient harbor,.
The geophysical results were mainly correlated to a system of parallel N-S roads crossing the site verifying a number of features that were originally suggested from various historical aerial and satellite images. Around the lagoon features follow the direction of the modern shoreline, suggesting that its shape has not changed significantly since the ancient times. Magnetic values were more pronounced closer to the lagoon, showing a denser occupation in this section, probably related to more costal type of activities. The most striking target of the GPR survey was a three aisled basilica oriented in a E-W direction. Its orientation follows more strictly an E-W direction compared to the NE-SW orientation of the Leonidis basilica to the NW, which is built between the inner basin of the lagoon and the sea.

To the north of the central lagoon, an area of more than 100x100m has been clearly differentiated from its surroundings suggesting a region of high deposition intact from other geological processes. The 2D sections of the ERT indicated a three-layer stratigraphy composed of a 2m deep superficial conductive clay horizon saturated with saline water, followed by a 5-9m thick resistive layer (silty clay) sitting on a bedding which slopes towards the NE. The correlation of the ERT data with the lack of GPR reflection signals may suggest that this region could have comprised an outer harbour that has been silted by the continuous sea currents. This was also supported from the GPR data that indicated a series of extensive linear concave features extending parallel to the NE coastline that could be explained as traces of depositions from past incoming sea waves that may have modified the coastline in different historical periods. Furthermore, the geophysical data did not provide any substantial evidence of communication between the outer port and the western lagoon.

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The joint employment and interpretation from diverse satellite and ground based techniques proved their efficiency in reconstructing the cultural dynamics of coastal archaeological sites in Eastern Mediterranean.

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