

## GEOPHYSICAL PROSPECTING AND RECONSTRUCTION OF ANCIENT SETTLEMENT PROMAHON - TOPOLNITSA

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The prehistorical settlements are very important for both archaeology and history. Their exploration gives data on the development of the earliest human communities. At the same time, due to the primitive building techniques during their existence and the high degree of destruction of their elements, those sites are especially hard and complex to explore using classical archeological methods. Applying geophysical methods also faces many difficulties.

The prehistoric settlement of Promahon - Topolnitsa is situated on both sides of the border between Bulgaria and Greece. On the Bulgarian side, the settlement was partially explored using archeological methods about 15 years ago. The exploration on the Greek side started in 1995 and is still in progress. Geophysical methods were also applied in this exploration.

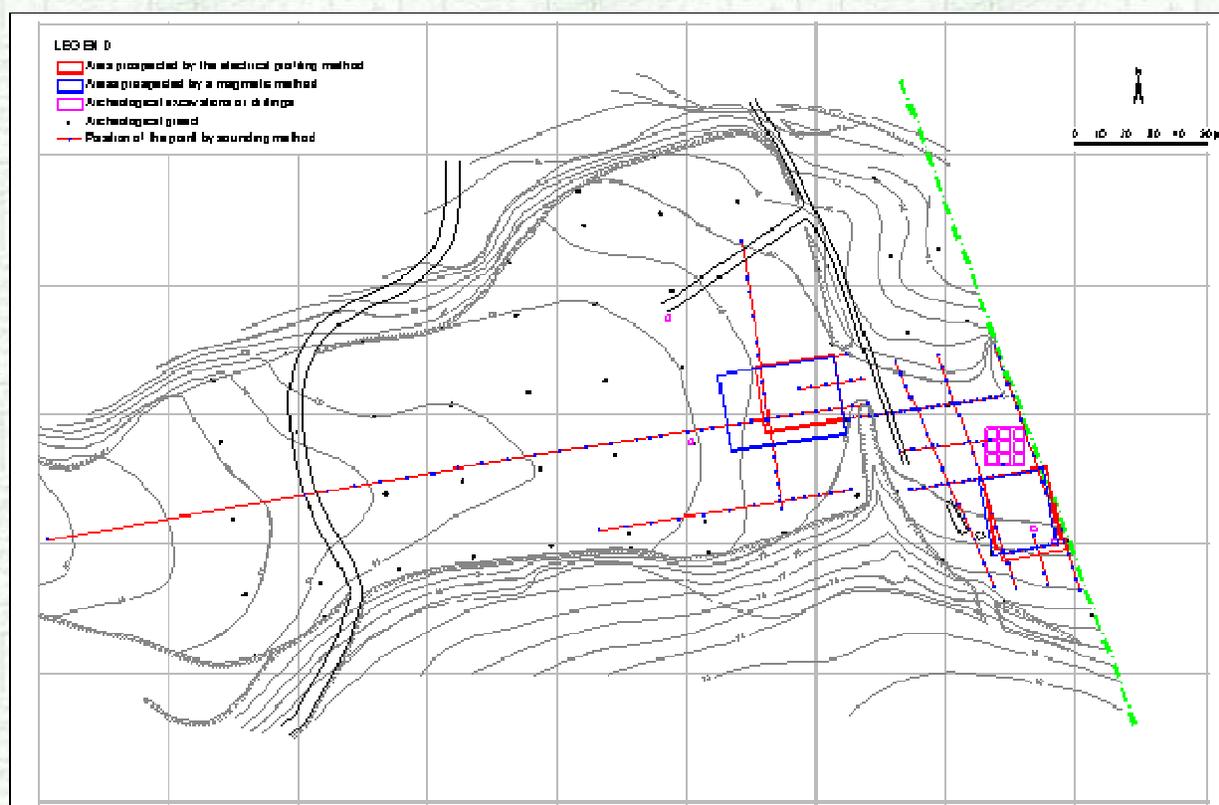


Figure 1. Promahon-Topolnitsa: overview of the situation.

The geophysical works had the objective to determine the capabilities and the effectiveness of various electric resistivity methods, of the magnetic gradientometry, and of metal detectors for obtaining accurate data in the given situation. The data obtained gave the opportunity to define the tasks, which geophysics is able to solve using a procedure, optimized according to the methods used and the measurement grid. The dominating role was granted to the electrical sounding with relatively small step

a depth which includes the depth of the anthropogenic layer and the upper part of the underlying materials, and provides for the high resolution of the measurements.

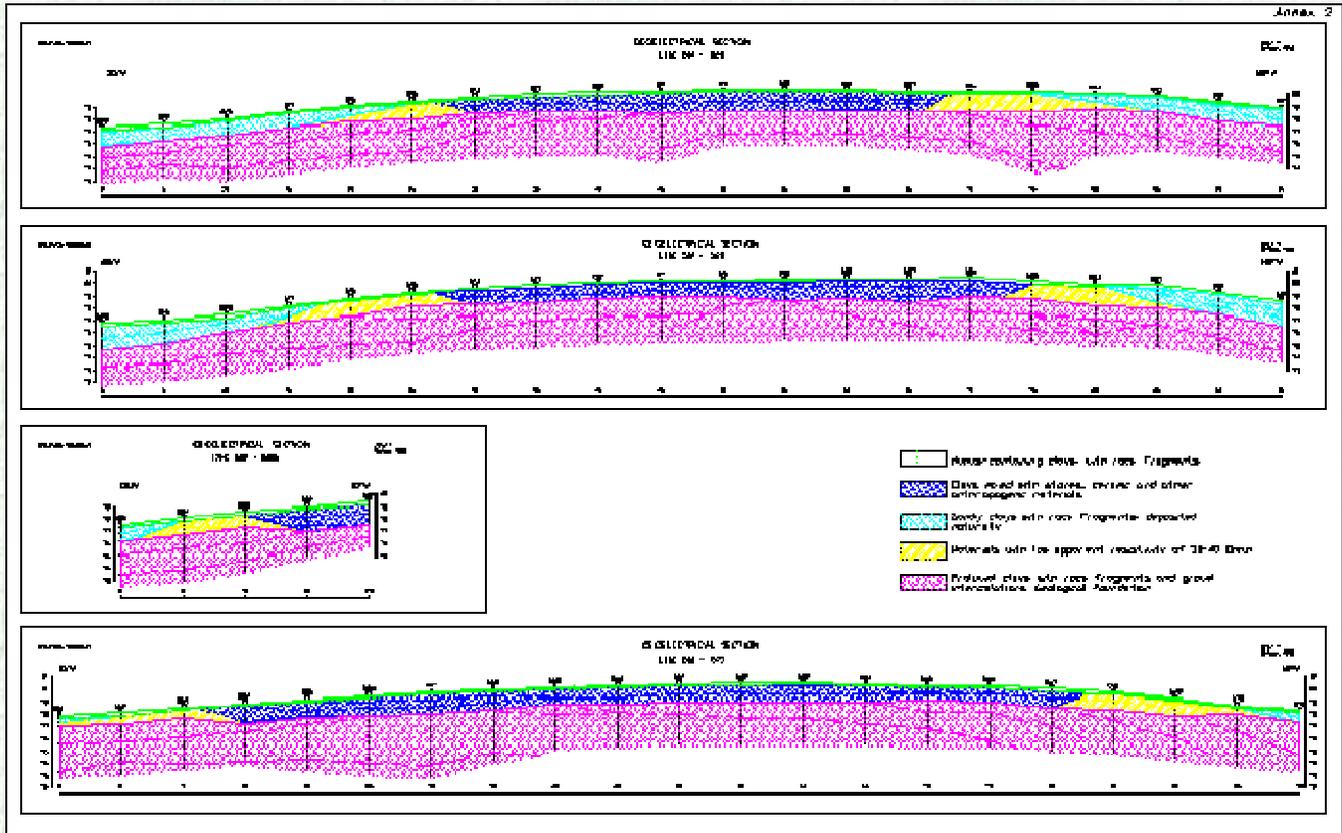
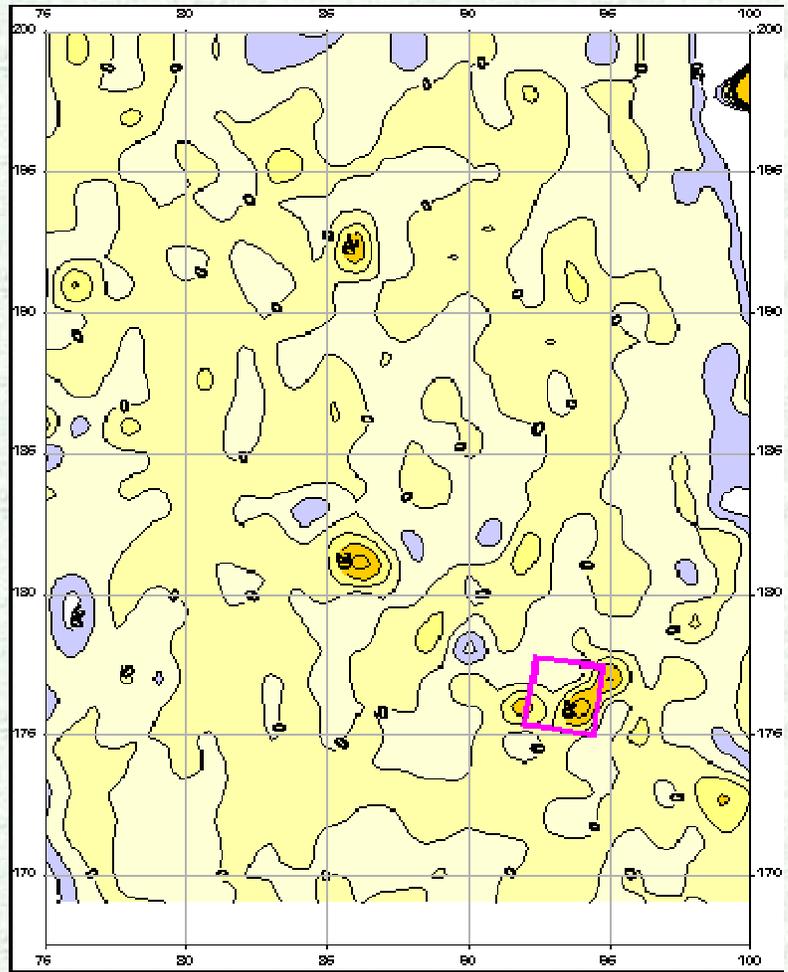
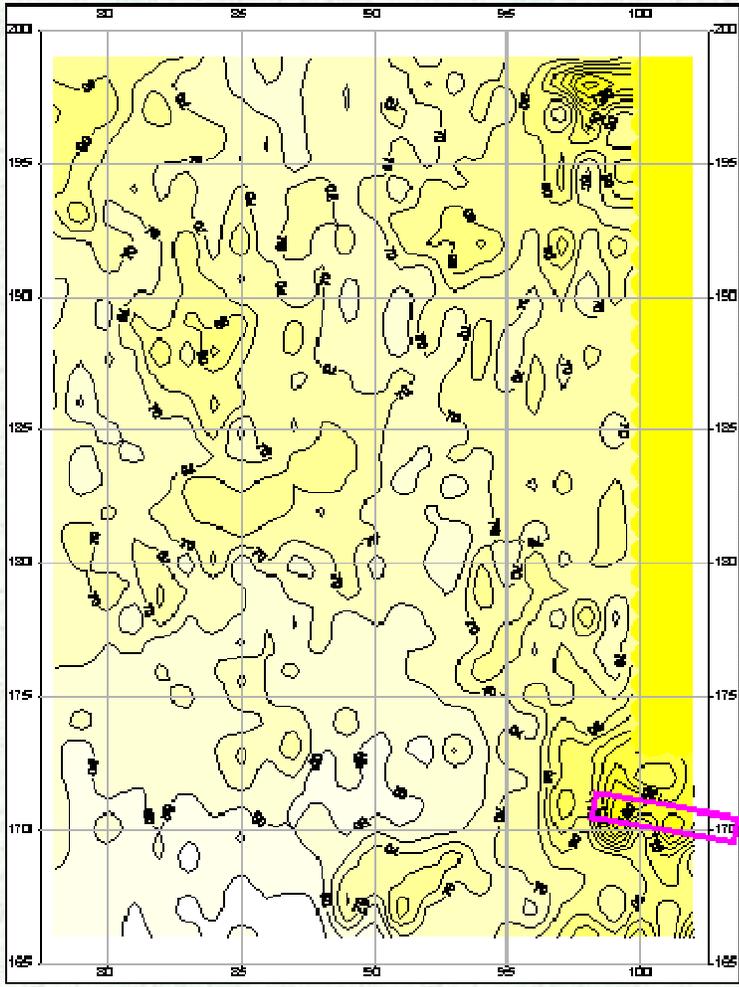


Figure 2. Geoelectrical sections through the prehistoric settlement of Promahon-Topolnitsa

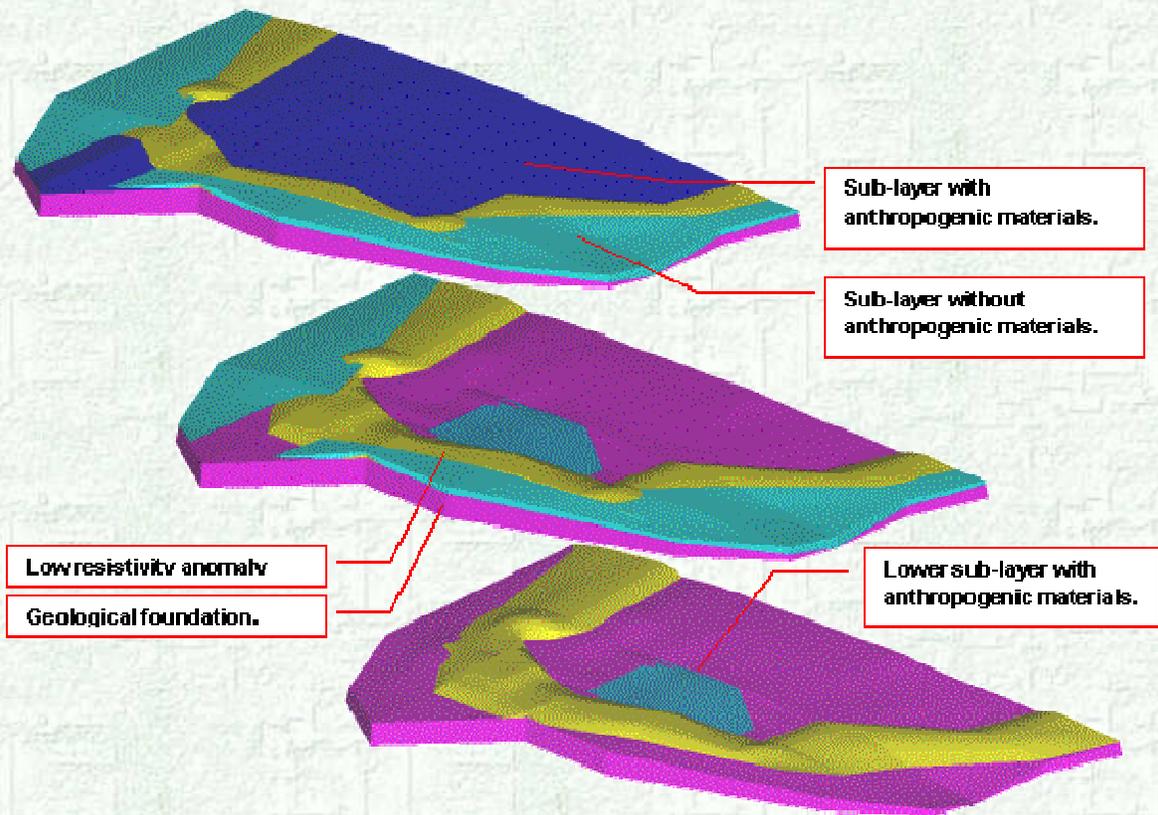
As a result of the performed geophysical measurements, the following data for the site was obtained:

- the distribution and the stratigraphy of the anthropogenic layer. Two construction layers were distinguished in it;
- the locations of groups of dug-outs, separate stoves and fireplaces.
- around the external boundary of the anthropogenic layer, a zone of low resistivity was outlined. It can be assumed that it has been caused by an ancient defense structure.
- a spatial model of the prehistoric settlement was created.





The archeological excavations performed on a part of the area explored, proved the results obtained using geophysics.



Block diagrams of the prehistoric settlement Promahon-Topolnitsa