

A GIS-based spatial analysis approach to study the landscape of Phocis (Central Greece) during the Early and Middle Byzantine period (4th-12th c. A.D.)

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Introduction

The prefecture of Phocis (Central Greece), that includes a multifaceted geomorphological landscape consisting of extensive mountain ridges and a few fertile plains together with a 100km coastal zone along the Corinthian Gulf, contains a number of sites that played a critical role in the Early and Middle Byzantine period (4th-12th c. A.D.) history of Greece, especially because of their location on the main corridors of communication between eastern and western Central Greece, but also between northern and southern Greece. Due to the inclusion and the significance of the oracle of Delphi, the area triggered the systematic research of its topography during the Classical, Hellenistic and Roman periods. On the other hand, the study of its medieval remains and the attempt to reconstruct the medieval topography of Phocis remained on the margins of the research. It is this particular research topic that has been addressed, emphasizing the cultural landscape character of the region during the Early and Middle Byzantine period. A number of spatial analysis tools have been applied to process the outcomes of an extensive research that was carried out in the region during the past three years. Through the application of statistical analysis of the geomorphometric attributes of the landscape, visibility analysis, density maps and other spatial tools it was possible to address questions related to the demographic redistribution, abandonment of cities and occupation/diffusion of Slavic/Proto-Bulgarian populations.

Historical Background

The Early Byzantine period (330-641 AD) is a time of fermentation mainly due to the domination of Christianity and the changes that this brought in the life of the Byzantine state. During the passage from the late Roman occupation to the early Christian centuries, most of the ancient cities of Phocis continue to develop and prosper, as shown by the existence of royal, luxurious private

houses with mosaic floors and large public works (Petridis, 2005, pp. 193-204), while at the same time secondary settlements are developed, as well as small rural residential units in the countryside (Bintliff, 2000, pp. 37-55) (Fig. 1).

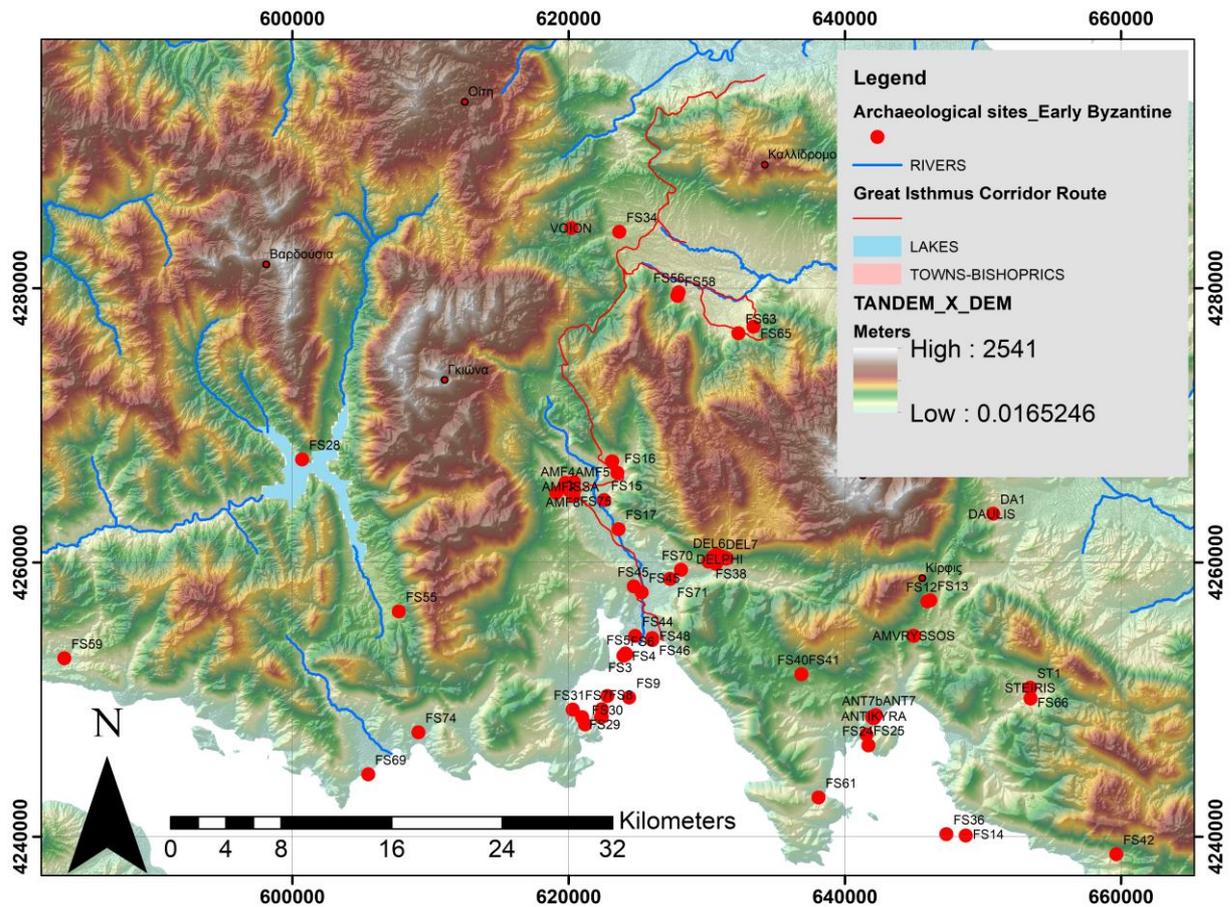


Fig.1: Distribution of Early Byzantine archaeological sites in the prefecture of Phocis

In the last decades, however, of the 6th century A.D. we notice the great descent of Slavic tribes from the north in the direction of the Peloponnese, passing mainly through the area of Phocis. The descent of the Slavs, in connection with the plague epidemic of the 6th century, as well as the devastating earthquakes of 552 AD in the Corinthian Gulf, are considered the main factors that most of the cities and settlements of the early Byzantine era in the area of Phocis, either disappeared or survived with their demographic and economic indicators in great decline. The local population probably sought refuge in safer places, including the small islets of the Corinthian Gulf, which are known by historical sources to have been transformed to "refuge-settlements" in times of raids (Rosser, 1996, pp. 139-146), but until the present research little had been investigated in

terms of material evidence. If the numerous Slavic toponyms are taken into account, the Slavic penetration into the area would have a greater impact. These populations were probably initially imposed by force, but then rather amalgamated with the local population and left behind remnants of their presence (mainly handmade pottery and jewelleryes) (Mailis, 2011, pp. 303-321). In any case, the descent of the Slavs marked the beginning of an era of about two centuries (7th-9th c. A.D.) with few historical testimonies, known for decades in the literature as the "Dark Ages". This gap is gradually beginning to be filled based on new finds of the archaeological record and the study of the material remains of the time (Haldon,1997).

During the 9th and 10th c. A.D., the Bulgarians made many successive raids towards southern Greece. Phocis found itself once again in the passage of these raids. Many settlements were destroyed, while the local population found refuge either in the mountains or on the islets of the Corinthian Gulf. After the final victory of the Byzantines over the Bulgarians, in 997 AD, the Byzantine Empire entered a phase of recovery and prosperity, consolidated its domination and flourished in the field of letters and arts. In the region of Phocis, this era is characterized by the establishment of large monastic centers, mainly during the 11th and 12th centuries, which is probably related to the great flourishing of monasticism in Greece, often with state support in the context of the reconstruction of the area. These monastic centers usually occupy large areas of land and establish secondary ecclesiastical centers within their territory (*metochia*). There are still many churches, whose distribution in the landscape is an indication of the distribution of the - otherwise unknown- settlements of the period.

Methods and Tools

It is exactly the above transformation of the landscape of Phocis during the Early and Middle Byzantine period (4th-12th c. A.D.) that has become the focus of the particular research program. An extensive surface survey has been carried out in the area to define the location of the cultural remains. Thematic maps created using a Geographic Information System depict the evolution of the archaeological sites and settlements of Phocis across the landscape and their distribution for every historical era described above (Fig. 1), while at the same time, other spatial analyses such as density maps (Fig. 2) visualizing the clustering of settlements or other architectural monuments, voronoi polygons correlating the settlements with their possible territory of control and exploitation and visibility analysis (Fig. 3) demonstrating the possibility of controlling road axes, ports or other areas/sites from specific locations, such as castles, towers, fortifications, etc. were carried out to help us comprehend better the Early and Middle Byzantine cultural landscape of Phocis. Density maps were created using the Kernel density technique with a search radius of 5km. Visibility analysis has been performed at specific sites (castles, towers and fortified settlements) that were

expected to be used for the control of movement and landscape. The corresponding analysis was carried out with a 5km distance around specific observers' locations, taking into account a 1.7m observer height in addition to the average height of the fortification walls.

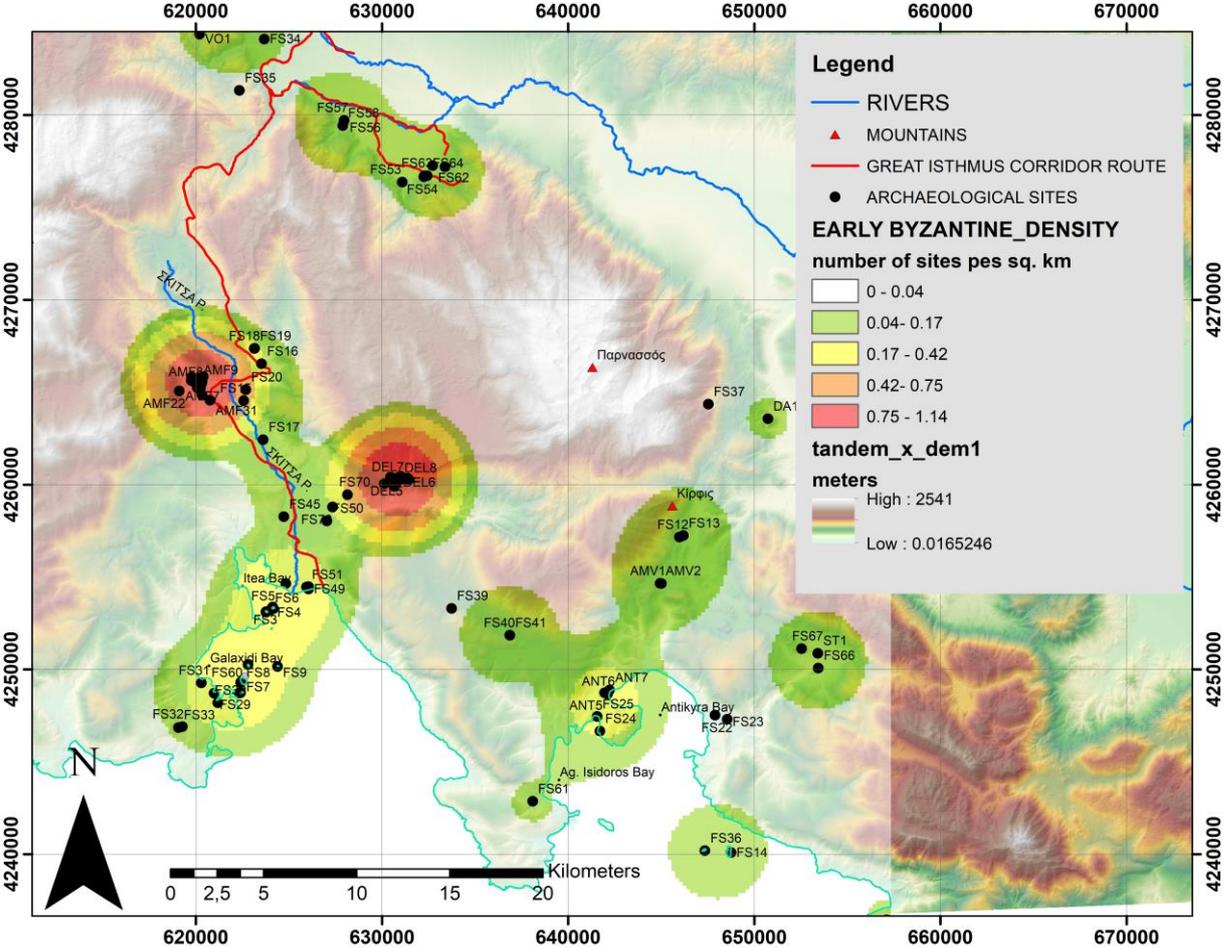


Fig.2: Density map for the Early Byzantine sites in the prefecture of Phocis

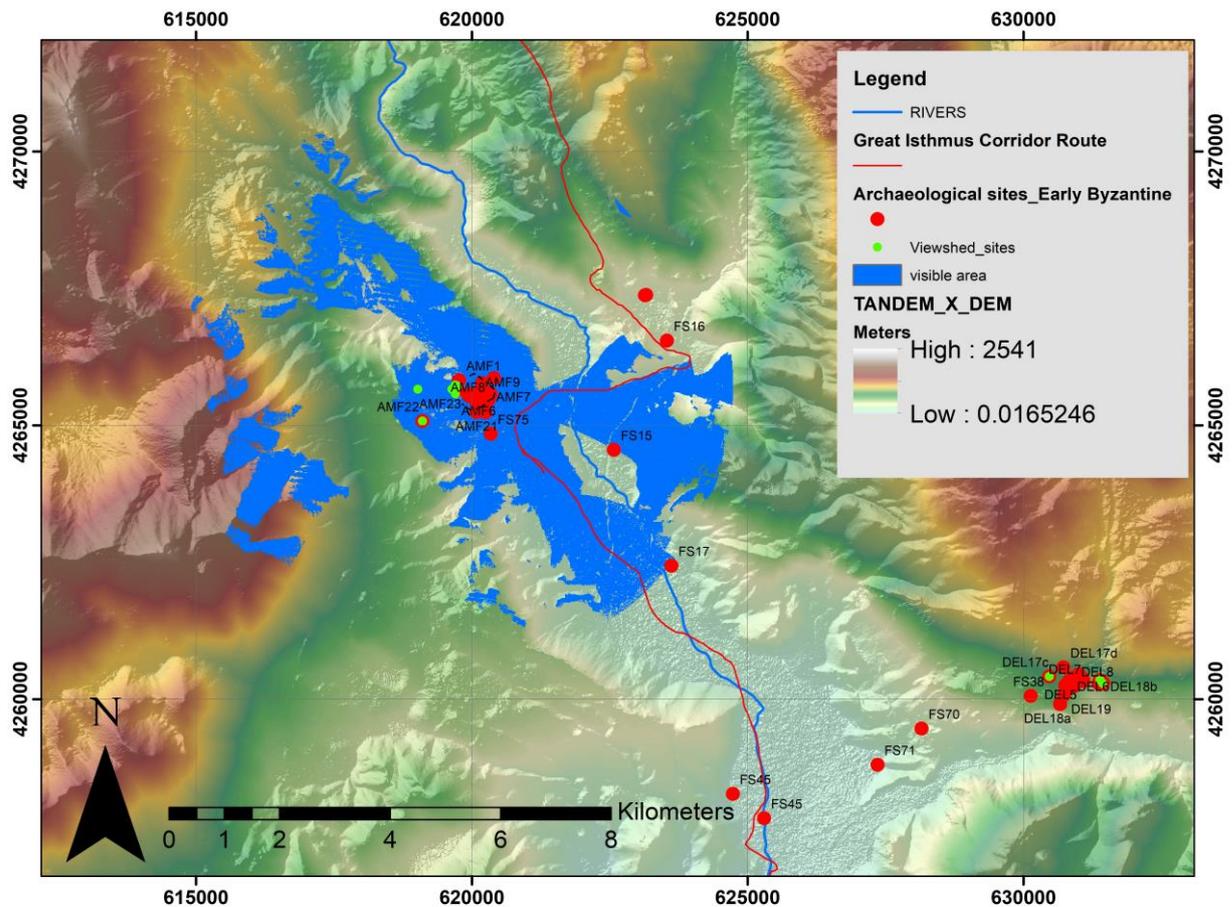


Fig.3: Visibility analysis map from the Castle of Amfissa in the prefecture of Phocis

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Conflict of Interests Disclosure

There are no any financial or personal relationships with other individuals or organisations that could make the results of this research to appear biased or influenced.

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