



## **Integration of archaeological surveys, remote sensing data and geophysical prospecting for the study of rural settlements in the territory of Hierapolis in Phrygia (Turkey)**

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This contribution is focused on the results of ongoing research carried out in north side of the ancient city of Hierapolis in Phrygia (Pamukkale, Denizli Region, south-western Turkey). The investigations are conducted by the Institute for Archaeological and Monumental Heritage and the Institute of Methodologies for Environmental Analysis, both of the Italian National Research Council, in cooperation with the Italian Archaeological Mission of Hierapolis.

The archaeological surveys in the territory of Hierapolis, aimed at the reconstruction of the ancient settlement pattern of the area, allowed the identification of numerous ancient remains, which are very useful to reconstruct the historical development of the territory, from prehistoric times to the ottoman age. In the area immediately surrounding the ancient city, particularly in the plain north of Hierapolis, we discovered many rural settlements of medium size, identifiable as farms, spanning a period between the late Hellenistic - early Imperial ages and the proto-Byzantine period.

Some sites often exhibit subtle remains of emerging walls in travertine blocks. Many of the investigated remains of rural settlements still preserve elements of installations for oil and wine production: presses elements (arbores, arae, weigh stones), monolithic crushing basins and stones.

Sometimes the visible remains of these ancient farms are negligible: in these cases, the integration of multi-temporal high resolution QuickBird 2 satellite images (taken in 2002, 2005, 2007 and 2009) with GPR measurements allowed the identification of buried walls and structures. So, it was possible to identify the perimeter of the ancient buildings, their internal structures and the spatial characterization of the farms.