

## Chapter 31

# Google Earth Revisited: Case Studies at the Plain of Larissa (Thessaly, Greece)

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### ABSTRACT

*The interpretation of photos and the processing of Google Earth imagery which allowed the “random” discovery, as a result of a non-systematical research, of a numerous marks of buried constructions in the wide area of the city of Larisa (Thessaly, Greece) is presented in this project. Additional data as aerial photographs over time, satellite images and the digital terrain model of the same area has been used. From the numerous marks, this project mainly focuses on three positions where the positive marks (soilmarks or/and cropmarks), circular or/and linear, reveal on a satisfying level covered construction of great dimensions. The ongoing research activity of the editorial team along with this research highlights the advantages of using Google Earth imagery in an attempt to “random” mark of unknown covered constructions, or, in the frame of a systematic survey of aerial and remote sensing archaeology, as additional and not exclusive source of information.*

### INTRODUCTION

Google Earth (GE) can be characterized as a complementary and thus helping tool in the frame of a systematic survey of aerial and remote sensing archaeology (Kaimaris et al., 2011). More specifically, apart from the main use of GE imagery in archaeology, which is the observation and further study of known archaeological positions, in some occasions the imagery itself has led to a “random” tracing of unknown covered constructions. On the other hand, there have been times when the GE imagery would

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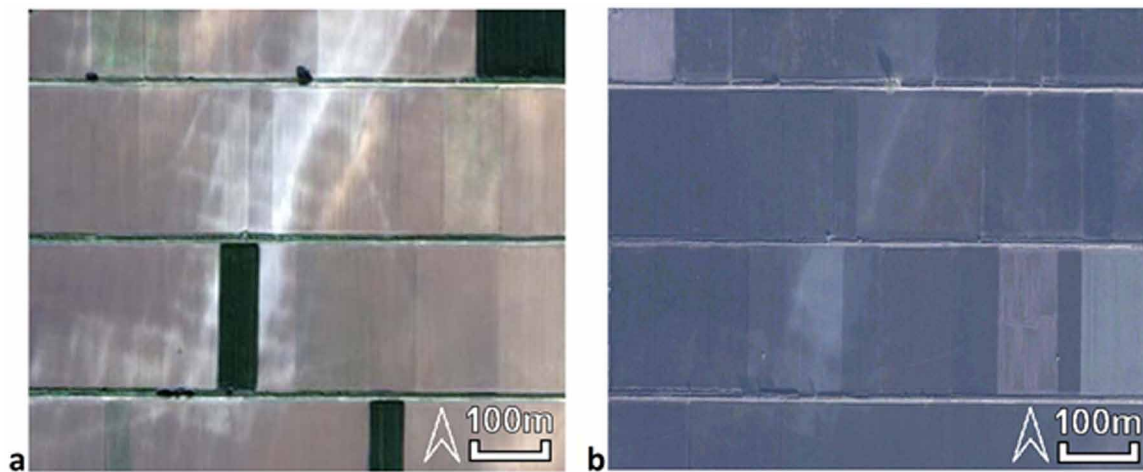
not provide the researcher with enough information in areas where other tools of archaeology prospections (Figure 1), such as for example historic maps and aerial photographs, allowed the detection of interesting locations for further study (Kaimaris et al. 2011, Palmer 2005, Thomas et al. 2008, Myers and Camp 2010, Myers 2010, Cowley and Palmer 2009, Jia and Nie 2009, Micle et al. 2009, Jacobs 2013, Handwerk 2006). This paper focuses on the “random” tracking of possible unknown large covered constructions via the use of GE. Subsequently, aerial photographs over time were gathered and studied confirming our initial suspicions. Afterwards, the supply of a satellite image of specific date (Kaimaris, 2012) followed and terrain of the study area was analyzed.

The collection of aerial photographs and satellite images over time are of major importance, and is one of the key components of the methodology of aerial and remote sensing archaeology, as far as covered structures tracking surveys are concerned. The continuous appearance of a mark over time confirms its presence and increases the likelihood of a covered construction. Otherwise, ie the presence of a mark in a single aerial photograph or satellite image, while it is absent in images over time, can lead to the conclusion that the mark might occur due to a covered construction and appeared due to special weather conditions (Featherstone et al., 1999), but it may also not be caused by a covered structure but by surface factors, such as, e.g. the geometry of the seed or the path of harvesting machines, etc.

## **STUDY AREA**

The city of Larissa (Figure 2) is constructed on the riverside of Pineios River and is located in the center of the eastern part of Thessaly's plain, which is covered almost in full by the regional unit of Larissa. Meanwhile, its altitude from the sea level is 72m.

*Figure 1. Plain of Philippi (Eastern Macedonia, Greece). a. Satellite image QuickBird-2, 02/05/2002 (personal file). Three first channels (blue, green, red) of satellite image. Marks of Hippodamean System. b. Satellite image QuickBird-2, 23/11/2003, source: GE. True color. Accidentally marks. The satellite image date 02/05/2002 was a result of methodological process of Remote Sensing Archaeology*



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