

# Sharing advancements in remote sensing archaeology in the Eastern Mediterranean region

Athos Agapiou

Department of Civil Engineering and Geomatics,  
Cyprus University of Technology, Limassol 3603, Cyprus  
athos.agapiou@cut.ac.cy

Significant changes have impacted the up-to-date traditional methodologies applied to archaeological prospection and remote sensing archaeology during the last few years. Satellite imagery archives, including those from the National Aeronautics and Space Administration (NASA) and European Space Agency (ESA), provide a unique opportunity for researchers to work with many open-access and freely distributed datasets. In addition, advanced image processing has revolutionized archaeologists' exploration of vast and often inaccessible areas of archaeolandscapes by exploiting big data cloud platforms and services. Multispectral images from satellite missions can detect buried archaeological structures and map details of past human activity. By analyzing large datasets on cloud-based processing platforms, researchers can employ sophisticated image enhancement and detection techniques to support archaeological site image interpretation. At the same time, remote sensing images can detect natural and anthropogenic threats, like land use changes and urban sprawl.

This paper summarizes the results and outcomes of the last decade carried out by the Cyprus University of Technology, focusing on research in the island of Cyprus and the region (Eastern Mediterranean). Specifically, this study presents research activities dealing with the cropmark phenomenon (a phenomenon widely used in the literature for the detection of buried archaeological remains) and studies for identifying areas of risk due to urban sprawl, looting, and land displacements. In addition, low-altitude systems and machine-learning techniques that can support the semiautomatic extraction of archaeological surface ceramics are also presented. By exploiting these innovative methods, research has provided insights for better adopting remote sensing for archaeological studies, aiming to move beyond data (remote sensing) complexities in the Eastern Mediterranean.