



## **The Integrated Use of Space Technologies, UAVs and Field Measurements Intended for Cultural Heritage in Cyprus**

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The integration of earth observation techniques, which include satellite images, aerial images from UAVS and field measurements, have been used to monitor and document cultural heritage sites in Cyprus. Historically, field measurements have been the most common way of monitoring cultural heritage sites and monuments in Europe. However, manual field documentation, that includes field surveying, ground-based data collection and periodical observations, can be time consuming and expensive. Satellite remote sensing can successfully resolve these problems by providing the ability to monitor large cultural heritage sites and archaeolandscape in a systematic way. New space technology based on radar interferometry (InSAR) is now capable of monitoring surface deformation with mm accuracy using precise ground measurements. However, since satellite images provide low resolution, high resolution aerial images from Unmanned Aerial Vehicles (UAVs) and field measurements are required to document cultural heritage sites. The use of UAVs provides a low-cost, non-invasive technique to acquire high spatial resolution aerial images of cultural heritage sites and archaeolandscape. In addition, photogrammetry technology provides a simple and cost-effective method of generating 3D models and ortho-images of cultural heritage monuments and sites. Several projects were conducted through the Eratosthenes Research Center, Cyprus University of Technology by integrating earth observation techniques, UAVs and field measurements to efficiently and systematically monitor and document UNESCO cultural heritage sites, archaeological sites and monuments in Cyprus.

The integrated use of cutting-edge remote sensing and space-based techniques for monitoring cultural heritage will be further developed through the 'EXCELSIOR' project (ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the Environment), which receives funding from the European Union's Horizon 2020 Research and Innovation programme under grant agreement No 7633643 Work programme H2020 under "Spreading Excellence and Widening Participation", call: H2020-WIDESPREAD-04-2017: TeamingPhase1 (Coordination and Support Action) ([www.excelsior2020.eu](http://www.excelsior2020.eu)).