

Application of geoinformation systems to assess natural and anthropogenic hazards in cultural heritage sites

Archaeological and cultural heritage sites are threatened by a variety of natural and anthropogenic factors. The use of innovative efficient tools can provide an economical approach to monitor and protect the archaeological sites. To this end, an interdisciplinary approach, based on Remote Sensing and Geographic Information Systems (GIS) techniques, can assess the natural and anthropogenic hazards to which cultural heritage sites and monuments are exposed to. The integration of spatial data at various scales in a GIS environment, such as satellite images, geological maps, geomorphological, environmental and climatic data and the application of geoinformation systems can contribute to the most effective assessment and understanding of the harmful conditions encountered in archaeological sites. The informed choice of methods and tools adapted to a specific problem requires a prior understanding of the concepts to which their use is linked. Training young researchers in data processing is therefore fundamental, so that they can develop workflows adapted to their problem and pursue high-level archaeological research.

The aim of the workshop is to provide an introduction to geoinformation systems as well as a presentation of user-friendly approaches and tools to use diverse data in order to address the dangers that the archaeological and cultural heritage sites are exposed to. Analyses and modeling of assessment of both natural and anthropogenic risks will be made, offering new information and knowledge regarding the implementation of optimum measures for the preservation and protection of these areas. Open source data and software will be mainly used to complete the analysis and assess the impact of various hazards in cultural sites.

The one-day workshop is organized in the premises of the Institute for Mediterranean Studies on **Friday November 15th, 2024**. Participation is provided with no registration cost as it falls under the framework of the project Clepsydra (<https://clepsydra.ims.forth.gr/>) funded by the Hellenic Foundation of Research and Innovation. No workstations will be provided for the workshop, so you are kindly asked to join with your own laptop or be prepared to share with another participant. No specific previous knowledge or skills are required. At the end of the workshop, a certificate of attendance will be provided by the hosting Institute for Mediterranean Studies – GeoSat ReSeArch Lab.

For logistic reasons, places will be limited to 10-15 attendees and the selection will be done on the base of the application form and with the policy of “first-come, first-served” (**deadline for submission Tuesday November 12th, 2024**).

WORKSHOP PROGRAMM

9:00-9:45 Welcome and participant's laptops preparation (WiFi connection, software installation etc.);

9:45-10:15

Workshop Introduction and Overview

- Introduction to the objectives and structure of the workshop
- Overview of threats to archaeological and cultural heritage sites
- Importance of using geoinformation systems (GIS and remote sensing) for hazard assessment

10:15-11:30

Session 1: GPS Data Collection and Field Surveying Techniques

- Introduction to GPS technology and its role in hazard monitoring
- Practical exercise: Setting up GPS devices and mobile apps for data collection
- Outdoor session (if applicable): Collecting field data related to natural and anthropogenic hazards at cultural sites

11:30-11:45 Morning Break

11:45-13:00

Session 2: Introduction to GIS and Data Integration for Hazard Assessment

- Overview of GIS for cultural heritage protection
- Types of spatial data used (satellite images, geological maps, environmental and climatic data)
- Hands-on practice: Importing and visualizing spatial data in GIS software (focus on open-source tools)

13:00-14:00 Lunch break

14:00-15:30

Session 3: Hazard Analysis and Modeling in GIS

- Analyzing the risks (natural and anthropogenic) that affect cultural heritage sites using GIS
- Integration of GPS and remote sensing data for comprehensive hazard mapping

15:30-15:45 Afternoon Break

15:45-17:00

Session 3 (cont): Hazard Analysis and Modeling in GIS

- Hands-on activity: Modeling risk assessment and generating hazard maps using open-source GIS software
- Closing Remarks and Discussion