



The Protection of Cultural Heritage Sites from Geo-Hazards

Kyriacos Themistocleous (1), Athos Agapiou (1), Branka Cuca (1), Vasiliki Lysandrou (1), Marios Tzouvaras (1), Silas Michaelides (1), Diofantos Hadjimitsis (1), Claudio Margottini (2), Francesca Cigna (3), Giovanni Crosta (4), and Jose Fernandez (5)

(1) Cyprus University of Technology, Limassol, Cyprus, (2) ISPRA -Istituto Superiore per la Protezione e Ricerca Ambientale, Rome, Italy, (3) Natural Environment Research Council, Swindon, UK, (4) University of Milano, Milan, Italy, (5) Instituto Geológico y Minero de España, Madrid, Spain

Cultural heritage sites are continuously impacted by several environmental and anthropogenic factors, including climate change, precipitation, natural hazards, wars, etc. However, there is limited data available regarding the effects of geo-hazards on cultural heritage sites. This paper presents the methodology of the PROTHEGO project, which uses radar interferometry to monitor surface deformation with mm precision to analyze the impact of geo-hazards in cultural heritage sites in Europe. PROTHEGO will provide a new, low-cost methodological approach for the safe management of cultural heritage monuments and sites located in Europe. The project will apply InSAR techniques to monitor monuments and sites that are potentially unstable due to landslides, sinkholes, settlement, subsidence, active tectonics as well as structural deformation, all of which can be effected of climate change and human interaction. The research methodology will be focused on long-term low-impact monitoring systems as well as indirect analysis of environmental contexts to investigate changes and decay of structure, material and landscape. The methodology will be applied to more than 450 sites on the UNESCO World Heritage List in geographical Europe. One of the case study selected is located in Cyprus at Choirkoitia, which is a UNESCO World Heritage site. The outcomes of PROTHEGO will support correct planning and rebalancing the contrast between endogenous (structural and materials decay, the societal development, the anthropogenic pressure) and surrounding exogenous forces (natural hazards acting on the heritage) which affecting the European cultural heritage.