The updated scenario in Europe of Landslide Susceptibility Vs UNESCO Cultural Heritage: the PROTHEGO project

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PROTHEGO Project

"PROTection of European Cultural HEritage from GeO-hazards" is a collaborative research project funded in the framework of the Joint Programming Initiative on Cultural Heritage and Global Change (JPICH) of the European Commission’s 7th Framework Programme (FP7). The aim of the project is to develop and validate an innovative multi-scale methodology for the detection and monitoring of European Cultural Heritage (CH) exposed to natural hazards, namely monuments and sites potentially unstable due to landslides, subsidence, ground settlement and monument deformation. By applying this methodology to UNESCO World Heritage List (WHL) Sites in geographical Europe (399 Sites), and by analyzing geo-hazard databases, PROTHEGO Project will identify and rank the most critical European Cultural Heritage Sites. A clear and update picture of the most endangered WHL Sites at European level is carried out as useful tool for any kind of conservation and management plans as well as future conservation policies.

Landslide Hazard

The available European database concerning landslide hazard (European Landslide Susceptibility Map, ELSUS v1) was investigated for a preliminary spatial analysis in order to produce an overview of WHL Sites at risk. So far 26% of UNESCO Sites are at High and Very High landslide susceptibility.

A more detailed analysis has been carried out in Italy by comparing WHL with national Landslide Inventory (IFFI), finding that 45% of Italian Sites are affected by landslides.

Conclusion

In the framework of the PROTHEGO Project (PROTection of European Cultural Heritage from GeO-hazards) European UNESCO World Heritage List Sites have been analyzed with respect to landslide hazard. For the first time a specific database with all the UNESCO WHL boundaries (Core Areas and Buffer Zones) was produced.

Through spatial analysis the Sites were overlaid with the European Landslide Susceptibility Map (ELSUS, v1). The first output is that 26% of European UNESCO Sites are at High and Very High landslide susceptibility. A specific downscaling analysis for Italy point out that 23 of 51 UNESCO Sites are interested by landslides.

The proposed methodology could provide a useful tool to identify priorities and to plan field surveys, detailed studies and monitoring systems, allowing job scheduling of Cultural Heritage maintenance.