



Climate change induced landslide hazard mapping over Greece- A case study in Pelion Mountain (SE Thessaly, Central Greece)

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Landslides, as a major type of geological hazard, represent one of the natural events that occur most frequently worldwide after hydro-meteorological events. Landslides occur when the stability of a slope changes due to a number of factors, such as the steep terrain and prolonged precipitation.

Identification of landslides and compilation of landslide susceptibility, hazard and risk maps are very important issues for the public authorities providing substantial information regarding, the strategic planning and management of the land-use. Although landslides cannot be predicted accurately, many attempts have been made to compile these maps. Important factors for the the compilation of reliable maps are the quality and the amount of available data and the selection of the best method for the analysis.

Numerous studies and publications providing landslide susceptibility, hazard and risk maps, for different regions of Greece, have completed up to now. Their common characteristic is that they are static, taking into account parameters like geology, mean annual precipitation, slope, aspect, distance from roads, faults and drainage network, soil capability, land use etc., without introducing the dimension of time.

The current study focuses on the Pelion Mountain, which is located at the southeastern part of Thessaly in Central Greece; aiming to compile "dynamic" susceptibility and hazard maps depending on climate changes. For this purpose, past and future precipitation data from regional climate models (RCMs) datasets are introduced as input parameters for the compilation of "dynamic" landslide hazard maps.

Moreover, land motion mapping data produced by Persistent Scatterer Interferometry (PSI) are used for the validation of the landslide occurrence during the period from June 1992 to December 2003 and as a result for the calibration of the mapping procedure. The PSI data can be applied at a regional scale as support for land motion mapping and at local scale for the monitoring of single well-known ground motion event. The PSI data were produced within the framework of the TerraFirma project. TerraFirma is a pan- European ground motion information service focused on seismic risk, flood defense and coastal lowland subsidence, inactive mines and hydrogeological risks.

The produced maps provided substantial information for the land use planning and the civil protection of an area presenting excellent natural beauty and numerous preservable traditional villages.

Keywords: landslide, psi technique, regional climate models, landslide susceptibility maps, Greece