



Land use modifications and susceptibility of landslide prone areas. The case of Socorro test site (North of Lisbon, Portugal)

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Modifications in land use associated to an incomplete understanding of how natural systems evolves originate worldwide an increment of negative human-induced effects on natural systems and consequently an increase in the damages associated to hazardous phenomena. For this particular reason, this study has the goal to highlight the importance of the cultural knowledge transmitted through past generations on susceptibility of landslide prone areas. The study area located south of the Socorro hill (North of Lisbon) experienced recent land use changes and other unadjusted human interventions on slopes that have been responsible by the growing exposition of new elements at risk and by the increment of vulnerability. The recognition of the susceptibility associated to a specific type of landslide is fundamental to evaluate the spatial probability of landslide incidence, and can be made under the assumption that the same set of predisposing factors (e.g., slope angle, lithology, superficial deposits or geomorphological units) that originate instability in the past will be the same to instigate instability in the future. Until recent years, landslide occurrence in the test site did not originate relevant damages because of the low exposition of elements to the damaging phenomena. Traditionally, local communities recognize the landslide hazard within the area, and the land use practices adopted (mainly agricultural) minimize losses associated to slope instability. However, some important changes occurred in the territory during the last decade, in relation with the decay of the agriculture activity and the existence of an emergent urbanization process encouraged by local agents. The last few years were marked by the occurrence of some important landslides responsible for relevant damages on infra-structures (namely roads), leading to the temporary abandon of the affected areas. Although some attempts of slope stabilization have been made, the reduction of landslide risk in the test site should be based on land use management,

taking in account the landslide susceptibility and hazard assessments at the regional scale.