



“Gheorghe Asachi” Technical University of Iasi, Romania



GEOMORPHOLOGICAL APPLICATIONS FOR SUSCEPTIBILITY MAPPING OF LANDSLIDES IN NATURAL PARKS

Antonio Miguel Martínez-Graña^{1*}, José Luis Goy¹, Caridad Zazo²

*¹University of Salamanca, Geology Department, External Geodynamics Area,
Science Faculty, Plaza Merced s/n. (37008)-Salamanca*

²National Museum of Natural Sciences, Section Geology, 2 C/ José Gutiérrez Abascal, (28006)-Madrid

Abstract

This work establishes a mapping procedure to determine the risk of susceptibility to hillside movements (landslides) that can be applied to any territory by means of algebraic mapping of the passive or determining factors that influence risk. On the one hand, derivative morphometric mappings obtained from a Digital Terrain Model that notably influence the genesis of active processes have been generated; these mappings include gradient mapping, aspect mapping and type of curvature mapping. On the other hand, the basic thematic maps that characterise the materials susceptible to being mobilised have also been generated; these include domain geomorphologic mapping, lithological mapping, hydrogeological mapping and vegetation mapping. The result is a map of landslide susceptibility, for which five degrees of risk susceptibility have been established (very high, high, medium, low and very low). Overlaying the inventory mapping of the hillside movements in two natural spaces of the Central Spanish Mountain System on the landslide susceptibility map validated the procedure when existing slides were found to be in the Very High and High susceptibility sectors of the validation map. This procedure is effective and inexpensive, which makes it very useful during the initial stages of the planning and management of natural spaces.

Key words: digital terrain model, GIS techniques, landslide susceptibility map, natural parks

Received: May, 2012; Revised final: January, 2013; Accepted: February, 2013

* Author to whom all correspondence should be addressed: e-mail: amgranna@usal.es; Phone: +34 923294496; Fax: +34 923294514