Abstract

A procedure to select the controlling factors connected to the slope instability has been defined. It allowed to assess the landslide susceptibility in the Rio Beiro basin (about 10 km^2) over the north-eastern area of the city of Granada (Spain). Field and remote (Google Earth^{TM}) recognition techniques allowed to generate a landslide inventory consisting in 197 phenomena. To discriminate between stable and unstable conditions, the diagnostic area has been chosen as the one limited between the crown and the toe of the landslide. Univariate tests, using both association coefficients and validation results of single parameter susceptibility models, allowed to select among 15 controlling or determining factors as good predictor variables, which have been combined for unique conditions analysis. Susceptibility maps for the five best models were prepared. In order to verify both the goodness of fit and the prediction skill of the susceptibility models, two different validation procedures were applied and compared. Both procedures based on a random partition splitting of the landslide archive for producing a *test* and a *training* subset. One method is based on the analysis of the shape of the success and prediction rate curves, quantitatively analyzed exploiting two morphometric indexes; the second method is based on the analysis of the degree of fit. The relative error, considered between the intersected target landslides by the different susceptibility classes, was used to estimate the predictive skill of the maps. The degree of fit was computed for each susceptibility class confirming a very good predictive performance of the five susceptibility models and of the actual procedure followed to select the controlling factors