



Vegetation and slope stability in Italy based on IFFI and CORINE LAND COVER datasets

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It is well known that the vegetation cover, in particular the forest, can assume a relevant role in the stability of slopes and the regulation of water erosion. Specifically it controls the hydrologic processes and the shear strength of soils. Aim of the work presented here is the analysis of the correlation between vegetation cover and landslides in the mountainous territory of Italy, based on the knowledge regarding the land cover in Italy summarized in the framework of the Corine 2000 project and the landslide distribution provided by the IFFI project (Italian Landslide Inventory). In Italy the widest part of territory is represented by farmed and rural land (51.9%), followed by forested and semi-natural land (42.1%). Such percentages vary sensibly taking into account only the mountainous portion of the territory. It is noticeable that, comparing the 1990 and 2000 CORINE data, the percentage of wooded land is expanding, confirming a trend started in the 70', due to the rapid abandonment of the mountain areas because more difficult to farm and hence no longer economically advantageous. The landslide set of data has been provided by the national project IFFI, developed by the Soil Protection Department-National Geological Survey of the Italian Environmental Protection Agency (APAT) with the important contribution of the Italian regional authorities, which has led to identifying and mapping more than 400,000 landslides, based on standardized criteria. The study methodology has been based on the analysis of the predisposing factors related to the tendency to slope instability, in particular related to the presence/absence of landslides in homogeneously classified mapping units. To evaluate the protective role of different vegetation types against shallow landslides, statistical tools (multifactorial statistical analysis) and GIS processing techniques have been applied. The input data have been the lithology, the IFFI landslides, the CORINE Land Cover 2000 (3rd e 4th level), the 20 meter resolution

DEM and derivative products (e.g., slope classes, etc.). The data processing has permitted to calculate the landslide index by vegetation type and to evaluate the protective action of the different vegetation classes to contrast slope movements.