Geophysical Research Abstracts
Vol. 14, EGU2012-7889, 2012
EGU General Assembly 2012

Study on landslide hazard zonation based on factor weighting-rating theory in Slanic Prahova

R.-M. Maftei, G. Vina, and C. Filipciuc
Geological Institute of Romania, Marketing, Bucharest, Romania (mafteir@yahoo.com)

Studying the risks caused by landslides is important in the context of its forecast triggering. This study mainly integrates the background data that are related to historical and environmental factors and also current triggering factors.
The theory on zoning hazard caused by landslides, Landslide Hazard Zonation, (LHZ) appeared in the 1960s. In this period the U.S. and many European countries began to use other triggers factors, besides the slope factor, in achieving hazard zoning. This theory has progressed due to the development of remote sensing and GIS technology, which were used to develop and analys methods and techniques consisting in combining data from different sources.
The study of an area involves analysing the geographical position data, estimating the surface, the type of terrain, altitude, identifing the landslides in the area and some geological summary data.

Data sources.

The data used in this study are:
· Landsat 7 satellite images;
· 30 m spatial resolution, from which is derived the vegetation index;
· topographic maps 1:25 000 from which we can obtain the numerical altitude model (DEM) (used to calculate the slope and relative altitude to land)
· geological maps 1:50 000.

Studied factors.

The main factors used and studied in achieving land slides hazard zoning are:
- the rate of displacement, the angle of slope, lithology
- the index of vegetation or ground coverage of vegetation (NDVI)
- river network, structural factor

1. The calculation of normalized vegetation index is made based on Landsat ETM
satellite images. This vegetation factor can be both a principal and a secondary trigger factor in landslides. In areas devoid of vegetation, landslides are triggered more often compared with those in which coverage is greater.

2. Factors derived from the numerical model are the slope and elevation relative altitude.
This operation was made using the topographic map 1:25 000 from were the level curvs contour was extracted by digitization, and then they were converted into points that have been interpolated. Lithological and structural factors have been extracted from the geological map by vectorization and the hydrological one from the topographic map and satellite imagery.

3. Weights Selection
All these elements were transfomated in raster format with spatial resolution of 25 m. Each element was given a rating of importance from 0-9, depending on its share in causing the phenomenon, and then a quantitative index based on each specific characteristic. Was performed for each subject in hand, a risk index for each area separately.

LHZ will be the established from the risk index histogram important steps.

This work is presented within the framework of the SafeLand project funded by the EC (FP7).