Methods for landslide susceptibility modelling in Lower Austria

Rainer Bell (1), Helene Petschko (1), Thomas Glade (1), Philip Leopold (2), Gerhard Heiss (2), Herwig Proske (3), Klaus Granica (3), Joachim Schweigl (4), and Gilbert Pomaroli (5)

(1) Department of Geography and Regional Research, University of Vienna, Austria (rainer.bell@univie.ac.at), (2) Environmental Resources & Technologies, Health & Environment Department, Austrian Institute of Technology, (3) Institute of Digital Image Processing, Joanneum Research, Graz, Austria, (4) Geological Survey, Federal state government of Lower Austria, (5) Department of Spatial Planning and Regional Policy, Federal state government of Lower Austria

Landslide susceptibility modelling and implementation of the resulting maps is still a challenge for geoscientists, spatial and infrastructure planners. Particularly on a regional scale landslide processes and their dynamics are poorly understood. Furthermore, the availability of appropriate spatial data in high resolution is often a limiting factor for modelling high quality landslide susceptibility maps for large study areas. However, these maps form an important basis for preventive spatial planning measures. Thus, new methods have to be developed, especially focussing on the implementation of final maps into spatial planning processes.

The main objective of the project "MoNOE" (Method development for landslide susceptibility modelling in Lower Austria) is to design a method for landslide susceptibility modelling for a large study area (about 10.200 km^2) and to produce landslide susceptibility maps which are finally implemented in the spatial planning strategies of the Federal state of Lower Austria.

The project focuses primarily on the landslide types fall and slide. To enable susceptibility modelling, landslide inventories for the respective landslide types must be compiled and relevant data has to be gathered, prepared and homogenized. Based on this data new methods must be developed to tackle the needs of the spatial planning strategies. Considerable efforts will also be spent on the validation of the resulting maps for each landslide type. A great challenge will be the combination of the susceptibility maps for slides and falls in just one single susceptibility map (which is requested by the government) and the definition of the final visualisation. Since numerous landslides have been favoured or even triggered by human impact, the human influence on landslides will also have to be investigated. Furthermore possibilities to integrate respective findings in regional susceptibility modelling will be explored.

According to these objectives the project is structured in four work packages namely data preparation and homogenization (WP1), susceptibility modelling and validation (WP2), integrative susceptibility assessment (WP3) and human impact (WP4).

The expected results are a landslide inventory map covering all endangered parts of the Federal state of Lower Austria, a land cover map of Lower Austria with high spatial resolution, processed spatial input data and an optimized integrative susceptibility map visualized at a scale of 1:25.000.

The structure of the research project, research strategies as well as first results will be presented at the conference. The project is funded by the Federal state government of Lower Austria.