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Land cover as an important factor for landslide risk assessment

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Landcover change is a crucial component of hazard and vulnerability in terms of quantification of possible future landslide risk, and the importance for spatial planners but also individuals is obvious. Damage of property, losses of agricultural land, loss of production but also damaged infrastructures and fatalities may be the result of landslide hazards. To avoid these economic damages as well as possible fatalities in the future, a method of assessing spatial but also temporal patterns of landslides is necessary. This study represents results of landcover modeling as a first step to the proposition of scenario of landslide risk for the future.
The method used for future land cover analysis is the CLUE modeling framework combining past and actual observed landcover conditions. The model is based on a statistical relationship between the actual land cover and driving forces. The allocation of landcover pixel is modified by possible autonomous developments and competition between land use types. (Verburg et al. 1999)
The study area is located in a district in the alpine foreland of Lower Austria: Waidhofen/Ybbs, of about 130km2. The topography is characterized by narrow valleys, flat plateau and steep slopes. The landcover is characterized by region of densely populated areas in the valley bottom along the Ybbs River, and a series of separated farm houses on the top of the plateau. Population density is about 90 persons / km2 which represent the observed population density of Austria. The initial landcover includes forest, grassland, culture, built-up areas and individual farms. Most of the observed developments are controlled by the topography (along the valleys) and the actual road network.
The results of the landcover model show different scenarios of changes in the landslide prone landcover types. These maps will be implemented into hazard analysis but also into vulnerability assessment regarding elements at risk.

Verburg, P.H., de Koning, G.H.J., Kok, K., Veldkamp, A. & Bouma, J. 1999. A spatial explicit allocation procedure for modelling the pattern of land use change based upon actual land use. Ecological Modelling 116 (1): 45-61.