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The Influence of vegetation on processes of shallow soil erosion in subalpine catchment areas in Western Austria

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Shallow soil erosion processes have been increasing within the last decades in the high montane and subalpine altitudinal zone of Western Austria. Explanations for the progression of eroded areas in the 2nd half of the 20th century have been subject of various research projects. The studies result in different possible explanations and process catenae regarding triggering effects, material dislocation processes and a following development of the erosive spots. Diverse results are based on different scales of the studies and the specific disciplinary driven approach of the researchers.

In order to better understand the process catenae of the dynamics of shallow soil erosion processes this research project is based on an interdisciplinary, pluri-scale approach applied in different areas of the subalpine zone in Western Austria. The focus of this paper is restricted to one catchment area and highlights the influence of different plant parameters on shallow soil erosion processes.

The research area “Thüringerberg” is located in the lithographic flysch unit in the subalpine zone in Vorarlberg, in Western Austria. Its vegetation is strongly characterized by agricultural activities of local people, mainly alpine pasturing. Generally the vegetation can be classified in three different types of vegetation: dry grasslands, pioneers and higher perennial herbs. The grassland, which is dominating in the area, is dominated by the vegetation community Caricetum ferrugineae. Additionally Seslerio-Semperviretum, Polygono-Trisetion, defective vegetation community with Agrostis stolonifera and defective vegetation community with Dactylis glomerata occur. Fieldwork has been conducted during summer 2011, from August, 8th up to the 18th, at highest development level of the plants.

Vegetation data has been recorded around every single soil erosion process (above, sideways, below and inside). Observed vegetation parameters are: height, frequency, distribution, coverage and dominance. Results from vegetational statistical analysis in correlation with geomorphological and hydrological parameters have been used to identify significant soil erosion process characteristics. Furthermore the results can be used to forecast the future development of the current situation.