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Analysis of the vegetation cover and the increasing soil erosion in the high montane and the subalpine altitudinal zone of Western Austria

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Soil erosion processes, land use and vegetation cover are interacting and will be realized according to their different spatial extensions and temporal developments. There are significant hints for an increase of soil erosion in unwooded areas in the high montane and the subalpine altitudinal zone of the Alps. Reasons for this recent augmentation of eroded areas in the 2nd half of the 20th century are not clear. In general, erosion is a result of manifold types of processes which are relevant and work together. Among other indicators the different vegetation cover shows us the change of land use. This leads to a decline of pasturing and consequently higher potential for development of shallow landslides but on the contrary a loss of soil cover due to intensive mechanical impact (e.g. increase of livestock). Investigations in the Allgäu region (Bavaria) indicate a connection between release of wet ground avalanches and soil erosion. Snow gliding on woodless plots in the montane zone can be seen as an additional source too. In fact a removal or change of the vegetation cover plays a key role generating eroded zones. Therefore it is relevant to investigate the spatial distribution and the structure of the vegetation layer reconsidering the actual situation as well as the situation in the past from historical maps.
In the presentation the basic concept of the investigations planned in the frame of the project EROSTAB – funded by the Austrian Ministry of Agriculture and Forestry, Environment and Water Management (BMLFUW, Forestry Section) – will be presented. EROSTAB focuses on the investigation of the interdependency of factors causing a removal or change of the vegetation layer and soil erosion in high altitude to allow improvement of process-understanding and assessment of future soil-erosion-scenarios under the aspect of changing climate conditions. The relationship between vegetation cover and recent soil erosion from an engineering point of view increasing the bed load capacity in torrent catchment areas will be worked out. The aim of this research project is to develop approaches for diagnosis and prognosis of soil erosion using among other factors plant parameters for early detection of instable hillsides. These approaches are helpful instruments for alpine hazard prevention and can be used as a basis for derivation and adaptation of simple, economical and sustainable stabilization methods for practitioners.