



Analysing, quantifying and modelling soil erosion on steep hillslopes in different climatic areas using LiDAR and SFM DEMs

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Soil erosion is a worldwide well known problem and has therefore been subject to various scientific studies, especially on agricultural areas. However soil erosion on steep hillslopes in mountainous drainage basins can be a threat to human infrastructure as it supplies material, e.g. for debris flows to torrents.

The study presented here aims to analyse, quantify and model soil erosion on (very) steep hillslopes free of vegetation in different climatic areas ranging from South Germany to Central Italy. Multitemporal digital elevation models were acquired with terrestrial laserscanning and from terrestrial and aerial structure from motion-based imagery. Analysis of erosion is mainly based on slope wash and rill erosion during summer months as well as erosion through freezing and melting processes during winter months in catchments of the Bavarian Alps. Erosional processes in the Mediterranean are mainly controlled by different precipitation regimes throughout the year.

Annual erosion and accumulation rates are quantified and used for modelling purposes. First results of the presented project show, that the amount of material eroded is mainly controlled by the size of the sediment contributing area. However there are also other controlling factors, such as slope angle, slope length and vegetation cover which are investigated within this project.