

Simulation of rainfall effects on sediment transport on steep slopes in an Alpine catchment

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Abstract The Alps represent a young, high mountain range which displays strong geomorphological activity. As the major source area in Central Europe, they deliver large quantities of sediment to the lowlands. However, our knowledge on process differentiation is still not sufficient to distinguish between the summer and winter periods of denudation. To increase our understanding of soil detachment, artificial rainfall experiments were carried out to generate data for the physically-based soil erosion model EROSION 2D/3D. Additionally, state-of-the-art, close-range remote sensing methods were applied to validate the results. The first rainfall simulations showed promising results for predicting denudation during the summer period, thus indicating the applicability of this experimental approach. However, further research is required for seasonal dynamics during other times of the year.

Key words erosion; rainfall simulation; steep slopes; soil erosion modelling; structure from motion; close-range photogrammetry; EROSION 3D