Optimization of avalanche simulation model parameters

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Avalanche simulation models are important tools in present day hazard mapping as well as in risk and crisis management. Therefore two and three dimensional avalanche simulation models require an extensive model verification process, which is accompanied by a reliable determination of accurate model input parameters. Remote sensing techniques provide from a safe distance these input parameters with a feasible resolution in time and space.

The EU-funded GALAHAD (Advanced Remote Monitoring Techniques for Glaciers, Avalanches and Landslides Hazard Mitigation) project is aimed at a further development and the subsequent application of remote monitoring techniques, namely TLS (terrestrial laser scanning) and GB SAR (ground based interferometric synthetic aperture radar), which are used to map snow depth and SWE (snow water equivalent) distributions in avalanche prone areas. Furthermore, in case of an avalanche event the remote monitoring devices record information on snow depth changes and SWE in the release area (release mass), along the avalanche track and in the avalanche run-out zone.

In this study remote sensing data are used i) to optimize the parameter set of the avalanche simulation model SamosAT (Snow avalanche modeling and simulation) and ii) to make statements on avalanche mass balance criteria.