



Remote sensing based retrieval of snow depth and snow water equivalent

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Snow depth and snow water equivalent are key parameters in the assessment of avalanche hazards, for snow drift and avalanche modelling and model verification. Conventional observational methods like snow pits, probing or profiling lead to point information or transects of snow depth, snow density or snow water equivalent. Unfortunately the conventional methods capture inadequately the spatial and temporal variability of these quantities.

To overcome these restrictions, novel remote monitoring techniques like terrestrial laser scanning as well as ground based and space borne interferometric synthetic aperture radar (SAR) are operated within a 6th FP project (N. 018409) called GALAHAD (Advanced Remote Monitoring Techniques for Glaciers, Avalanches and Landslides Hazard Mitigation). For the experimental activity of the avalanche related topics of GALAHAD, an experimental test site in the Wattener Lizum (Tyrol, Austria), a training centre of the Austrian Army, was equipped by the BFW.

Beside the test site the pros and cons of the remote monitoring techniques as well as the integration of the data into snow and avalanche related applications are illustrated. For that purpose data sets from winter 2005/06 and the ongoing winter are used. During special observation periods contemporaneously observations of the terrestrial laser scanner and the ground based C and S Band SAR will be available. While the laser scanner maps the spatial snow depth distribution, the SAR instrument can be used to retrieve snow depth and snow water equivalent. The remote monitoring data are

compared with information, obtained from continuous traditional field work.