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Laser scanning for mapping snow depth

P. Jörg, M. Adams, R. Fromm, R. Sailer, A. Schaffhauser, J. Wallensteiner

Federal Research and Training Centre for Forests, Natural Hazards and Landscape, Innsbruck, Austria (philipp.joerg@uibk.ac.at)

TLS (Terrestrial Laser Scanning) represents an efficient remote sensing tool with the ability to retrieve snow depth changes at high spatial resolution. Knowledge on the spatial and temporal distribution of snow is vitally important to the assessment of avalanche hazard, for snowdrift studies, avalanche modelling and model verification. Traditional point measurements (ultrasonic sensor, geodetic survey) are used to check the quality of the TLS measurements.

Since winter 2005/2006 numerous laser measurements have been carried out in the Wattener Lizum (Tyrol, Austria) within the EU funded GALAHAD (Advanced Remote Monitoring Techniques for Glaciers, Avalanches and Landslides Hazard Mitigation) project. Additionally several automatic weather stations and a webcam help to document the course of the weather throughout the winter. The analysis of successive surveys provides information on the changes of snow depth distribution due to precipitation, wind, settlement and melting. In this study some interesting periods are analysed.