



## Assessment of bandwidths of shallow interflow velocities in alpine catchments

Gerhard Markart (1), Gerhard Bieber (2), Alexander Roemer (2), Anna Ita (2), Birgit Jochum (2), Klaus Klebinder (1), Bernhard Kohl (1), Bernadette Sotier (1), Monika Strassser (1), and Klaus Suntinger (1)

(1) (Gerhard.Markart@uibk.ac.at), Department of Natural Hazards and Alpine Timberline; Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW), Rennweg 1 – Hofburg, A-6020 Innsbruck, Fax: +43-512-573933-5250, (2) (alexander.roemer@geologie.ac.at), Department of Geophysics; Geological Survey of Austria (GBA), Neulinggasse 38, A-1030 Wien

Near surface runoff (shallow interflow) cannot be described by most precipitation / runoff models in a process-oriented manner. For optimization of input data situation in the Austrian Alps in the frame of the project “Assessment of bandwidths of shallow interflow velocities in alpine catchments (Acronym: Shallow interflow)” – funded by the Austrian Academy of Sciences (ÖAW), Commission of Hydrology - near surface interflow velocity of widely spread substrates is investigated. Therefore a certain methodology has been developed:

Test plots are pre-irrigated by use of transportable spray irrigation installations for large plots. Changes of soil moisture content and water movement in the soil are measured by use of buryable TDR-probes and geoelectric-profiles (monitored in time steps of 30 min). In addition underground situation of the slopes concerned is characterized by additional geoelectric-profiles. Tracer insertion (application over trenches and by irrigation of smaller plots within the large ones) allows a better visibility of water movement in the substrate due to more intensive resistivity changes in the underground during the irrigation experiment. Following methodological approach proved best: After extensive pre-spray irrigation of a large plot ( $\geq 600 \text{ m}^2$ ) at low intensity (10 mm h<sup>-1</sup>) a small plot (50 m<sup>2</sup>) was irrigated with a salt tracer solution (LiCl). Transport of water in the substrate was observed by several geoelectric-profiles in the following days under conditions of long duration rain.

At Bromberg (Lower Austria) - on a meadow (cambisol developed from weathering products of mica schist, phyllite and paragneiss) and at Möls Niederleger (Tyrol, pasture over a podzolic cambisol on a phyllitic debris cone) salt tracer (NaCl) has been infiltrated into the soils. At both sites dominant processes in the underground were determined and interaction between precipitation and near surface interflow was persecuted by documentation of spatial distribution of the salt tracer with the geoelectrics-monitoring system. For Bromberg velocity of shallow interflow was about 0,3-0,75 m/h, at Möls Niederleger about 0,4 m/h.