



Determination of the influence of soil moisture on infiltration capacity

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The aim of our work is to get a better understanding of the impact of soil moisture on the infiltration capacity. Therefore eight test sites in a small Alpine catchment (Brixenbach valley in the Kitzbüheler Alps, Tyrol, Austria, 9 km², 800 - 2000 m a.s.l.) have been equipped with an advanced version of double ring infiltrometers (three at each site) which allow to perform several runs at different times at exact the same spot without disturbing the soils initial state. Thus it is possible to conduct infiltration experiments at various soil moisture conditions and to determine the temporal variability of the infiltration capacity.

Four pairs of test sites were selected, each of them with a different expected infiltration behaviour (forest, wetland, pasture and areas with a high rate of dwarf shrubs). Three infiltration experiments were carried out at each of the eight test sites at three different soil moisture conditions (dry, semi-wet, wet, 72 runs). Additionally sprinkling experiments with a small rainfall simulator were conducted on a 1 m² plot to compare the results of both methods. Further information on the development of soil moisture content was gained by permanent installed soil moisture meters. Pedological analysis of soil profiles right beside the test sites were carried out in order to support process understanding.

First results show that changes in soil moisture have only little influence on the infiltration characteristics of sites where the infiltration capacity is either very high (e.g. forests, overgrown talus slopes) or very low (e.g. wet areas). But the current soil moisture content is an important parameter on sites with medium infiltration capacity (e.g. slopes on till layers/detritus with dwarf-shrubs and mat grass). Such areas can take up high quantities of rainfall in the best case while producing high runoff volumes in the worst case.

Further results as well as the used method will be presented.