



The soil apparent infiltrability observed with ponded infiltration experiment in a permanent grid of infiltration rings

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Since 2003, a study of spatial and temporal variability of the soil infiltration properties has been in progress at the experimental site Liz (Volynka headwater catchment, Sumava Mountains, southern Bohemia). For the soil type of the study area (sandy loam developed upon gneiss bedrock), a large spatial variability of soil hydraulic properties had been observed. Moreover, the infiltration process is strongly dominated by preferential flow, as demonstrated by the results of a dye-tracer experiment conducted in 2005. The present study is focused primarily on the temporal variability of the soil hydraulic conductivity. Additionally, the influence of the initial soil moisture conditions on the soil infiltrability is examined. For this purpose, 18 permanent infiltration rings were installed at a gently sloped grass-covered experimental plot (300 sq m). Using this set-up, the single-ring ponded infiltration experiments have been conducted annually. Since 2005, a procedure of repeating the same ponded infiltration experiments in two successive days has been implemented.

As expected, the observed quasi-steady-state infiltration rates varied much among the infiltration points (the coefficient of variation of values measured in one set of experiments was typically between 0,5 and 1). Regarding the temporal development, independent variations at separate measuring points were overridden by a huge overall increase of the observed infiltration rates (the average detected steady-state infiltration rate changed from 600 cm/day in 2003 to 2300 cm/day in 2009). With regard to the impact of the initial soil moisture conditions, general decrease of the observed infiltration rates for the repeated infiltration was detected.