



## **Infiltration measurements with MDI infiltrometer**

Mojca Sraj, Judita Jordan, and Mitja Brilly

University of Ljubljana, Faculty of Civil and Geodetic Engineering, Ljubljana, Slovenia (msraj@fgg.uni-lj.si, +386 1 1251-9897)

Various types of infiltrometers are currently used to measure saturated or near-saturated hydraulic conductivity of soils, with varying degrees of complexity and time-consuming. In general, there are two groups of infiltrometers, those that apply water to the soil at positive pressure (e.g. double-ring infiltrometer) and those that apply water with negative pressure (tension infiltrometers). Nowadays disk infiltrometers have become rather popular for the in situ estimates of soil hydraulic properties. They are designed to offer a simple and fast in situ estimation of soil hydraulic properties.

Field experiments were made in summer 2010 at the Glinscica experimental watershed in central part of Slovenia. Measurements were made with mini-disc infiltrometer on three different soil types and two most typical vegetation covers on each soil type, all with the suction rate of -2 cm. Twenty replications were performed on each soil type and vegetation cover, ten at the surface and ten at the depth of 10 cm, respectively. Hydraulic conductivity was calculated from measured cumulative infiltration over time using the method by Zhang (1997). Control measurements by double ring infiltrometer were conducted simultaneously with MDI measurements at the soil surface on the same three soil types with grass vegetation cover. Three replications were done on each soil type. All together, 200 measurements of infiltration were made.

The results from in situ infiltration measurements showed that saturated hydraulic conductivity depends on soil type, vegetation cover and the depth of measurements. Most of the statistical analyses of the measurements in the research showed significant dependence. We can also conclude that mini disk infiltrometer provides reliable measurements for rapid in situ hydraulic conductivity estimates and hydrological modeling purposes.