Sprinkler tests on the Super-Sauze landslide

Koen Wenker and Thom Bogaard

Department of Water Management, Delft University of Technology, Delft, The Netherlands (k.j.r.wenker@student.tudelft.nl)

Precipitation is one of the main causes for the initiation or reactivation of deep seated slow moving landslides. Due to movement cracks can be formed, which alters the hydraulic properties of the landslide material. This results in a complex hydrological behaviour of deep-seated slow moving landslides. Research has shown that for instance the porosity of the soil, the fissure distribution and fissure connectivity are very important to predict the behaviour of the hydrological response of precipitation within a landslide body.

We performed several small scale sprinkling experiments at the Super-Sauze mudslide in southern France in the summer period from 29-6-2012 until 7-10-2012. The objective of these experiments was to assess the spatial distributed hydrological response to rainfall over the Super-Sauze landslide. The University of Strassbourg and Delft University of Technology designed a mobile, 1 m2drop-plate type of rainfall simulator. With piezometers, soil moisture probes and electric conductivity sensors, the hydrological response was monitored. For five hours a rainfall intensity of approximately 35 mm per hour was added to make sure that saturated conditions were obtained. Afterwards the deflation was monitored. Soil samples were taken to determine the porosity and take hand measurements for soil moisture of the plot soils.

A total of 8 experiments have been done on representative plots all over the landslide. We will show the results of these experiments and will discuss the importance as well as the advantages and disadvantages of these sprinkler tests. The experiments will eventually be used to get a better understanding of the spatially distributed hydrological regimes of the landslide. The knowledge gained from these experiments can be a valuable addition in further understanding of the mechanisms of a slow moving deep-seated landslide and to improve the hydrological modelling of these landslides.