Open Access Earth System Science Data Discussions

Interactive comment on "Runoff reaction from extreme rainfall events on natural hillslopes: A data set from 132 large scale sprinkling experiments in south-west Germany" *by* Fabian Ries et al.

Anonymous Referee #2

Received and published: 23 September 2019

General comments

The manuscript presents the results of extensive hillslope scale sprinkling experiments on 23 test sites in south-west Germany. It represents a valuable contribution to hillslope hydrology and to hydrology of pluvial floods. The data set provides information on the test sites as well as measurements of sprinkling input and resulting overland flow and subsurface flow and soil moisture response.

The presented experimental data set is clearly of interest for the scientific community.

The measurements were carried out in a intelligent way, the data set is in most parts ready to use and the manuscript is in most parts well-written and the figures show high quality.

The manuscript presents the experiments in a concise way. It would improve from more details on the test sites and from a more detailed description of the results. The manuscript lacks completely any interpretation and comparisons to similar experiments.

Specific comments

The authors should mention that similar sprinkling experiments on the hillslope scale were already carried out by others. Please name some of the most important sprinkling experiment studies. How does your experimental set-up and your results compare to the findings of others?

It would be useful to have more information on the test sites, e.g. what was the soil depth above the soil-bedrock-interface? Was the bulk density and the density of macropores evaluated?

The manuscript would improve from a more detailed description of the results. In particular, a more detailed overview and a comparison of the results on the different test sites would be helpful.

In addition some interpretation of the results would be very interesting. In the introduction section pluvial floods are mentioned as a motivation for the study. What is the interpretation of your results with regard to pluvial floods? The runoff coefficients show large differences at the different sites. How can this be explained? The runoff coefficients show partially extremely high values of 100% (and more?). How can this be explained?

Technical corrections

Equation 1 and axis labels of Figure 4 are not readable.

The data set is partially incomplete with regard to soil moisture data, precipitation input and information on site and experiment number.

C3