



## The Influence of Preferential Flow at Catchment Scale

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Preferential flow is rapid flow of water and solutes along certain pathways leaving a large part of the porous media relatively dry. The physical processes underlying preferential flow, the measuring techniques and parameterisation of preferential flow at the process scale have been intensively studied over the past years. The logical next step is to assess the influence of preferential flow on the catchment scale, using a theory-based simulation module validated with field data.

The fieldwork area is the Parapuños catchment (1 km<sup>2</sup>), an experimental watershed of the University of Extremadura, Cáceres, Spain. During a 10 weeks field campaign in the fall of 2004, at 18 locations in the watershed, dye-tracer experiments on a 1.5 by 1.5 m area were carried out. The tracer study resulted in three vertical and three horizontal soil profiles. For these 18 locations also the infiltration and runoff, soil physical characteristics (porosity, bulk density, (un)saturated conductivity), soil texture, vegetation and slope were determined.

The vertical and horizontal dye-stained profiles are used to obtain a full 3-D picture of the preferential flow patterns. This can give us more insight in the degree and distribution of preferential flow paths and the suitability of the measurement scale for parameterisation. The 3-D pictures of preferential flow will then be used to obtain model parameters. A series of variables derived from these pictures can be used to compare with soil characteristics, to find a basis for extrapolation to the catchment scale.