



Investigation on the dominant factors controlling the spatio-temporal distribution of soil moisture in experimental grasslands

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The spatio-temporal distribution of soil moisture in the unsaturated zone influences the vegetation growth, governs the runoff generation processes as well as the energy balance at the interface between biosphere and the atmosphere, by influencing evapotranspiration.

A better understanding of the spatio-temporal variability and dependence of soil moisture on living versus abiotic environment would lead to an improved representation of the soil-vegetation-atmosphere processes in hydrological and climate models.

The Jena Experiment site (Germany) was established October 2001 in order to analyse the interaction between plant diversity and ecosystem processes. The main experiment covers 92 plots of 20 x 20 m arranged into a grid, on which a mixture of up to 60 grassland species and of one to four plant functional groups have been seeded. Each of these plots is equipped with at least one measurement tube for soil moisture. Measurements have been conducted weekly for four growing seasons (SSF).

Here, we use geostatistical methods, like variograms and multivariate regressions, to investigate in how far abiotic environment and ecosystem explain the spatial and temporal variation of soil moisture at the Jena Experiment site. We test the influence of the soil environment, biodiversity, leaf area index and groundwater table. The poster will present the results of this analysis.