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Effects of rainfall partitioning in the seasonal and spatial variability of soil water content in a Mediterranean downy oak forest

P. Garcia-Estringana (1), J. Latron (1), A.J. Molina (2), and P. Llorens (1)

(1) Institute of Environmental Assessment and Water Research (IDAEA-CSIC)., Department of Geosciences, Barcelona, Spain (pablo.garcia@idaea.csic.es), (2) IRTA, Torre Marimon, Caldes de Montbui, Spain.

Rainfall partitioning fluxes (throughfall and stemflow) have a large degree of temporal and spatial variability and may consequently lead to significant changes in the volume and composition of water that reach the understory and the soil. The objective of this work is to study the effect of rainfall partitioning on the seasonal and spatial variability of the soil water content in a Mediterranean downy oak forest (Quercus pubescens), located in the Vallcebre research catchments (42º 12'N, 1º 49'E). The monitoring design, started on July 2011, consists of a set of 20 automatic rain recorders and 40 automatic soil moisture probes located below the canopy. One hundred hemispheric photographs of the canopy were used to place the instruments at representative locations (in terms of canopy cover) within the plot. Bulk rainfall, stemflow and meteorological conditions above the forest cover are also automatically recorded. Canopy cover, in leaf and leafless periods, as well as biometric characteristics of the plot, are also regularly measured. This work presents the first results describing throughfall and soil moisture spatial variability during both the leaf and leafless periods. The main drivers of throughfall variability, as canopy structure and meteorological conditions are also analysed.