



Seasonal and spatial variability of rainfall redistribution under Scots pine and Downy oak forests in Mediterranean conditions

Pablo Garcia-Estringana (1), Jérôme Latron (1), Antonio J. Molina (2), and Pilar Llorens (1)

(1) Institute of Environmental Assessment and Water Research (IDÆA)-CSIC, Barcelona, Spain (pilar.llorens@idaea.csic.es),

(2) IRTA, Torre Marimon, Caldes de Montbui, Spain.

The large degree of temporal and spatial variability of throughfall input patterns may lead to significant changes in the volume of water that reach the soil in each location, and beyond in the hydrological response of forested hillslopes.

To explore the role of vegetation in the temporal and spatial redistribution of rainfall in Mediterranean climatic conditions two contrasted stands were monitored. One is a Downy oak forest (*Quercus pubescens*) and the other is a Scots pine forest (*Pinus sylvestris*), both are located in the Vallcebre research catchments (NE Spain, 42° 12'N, 1° 49'E). These plots are representative of Mediterranean mountain areas with spontaneous afforestation by Scots pine as a consequence of the abandonment of agricultural terraces, formerly covered by Downy oaks.

The monitoring design of each plot consists of a set of 20 automatic rain recorders and 40 automatic soil moisture probes located below the canopy. 100 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 as well as biometric characteristics of the plots are also regularly measured.

This work presents the first results describing the variability of throughfall beneath each forest stand and compares the persistence of temporal patterns among stands, and for the oaks stand among the leafed and the leafless period. Furthermore, canopy structure, rainfall characteristics and meteorological conditions of rainfall events are evaluated as main drivers of throughfall redistribution.