



The influence of rainfall intensity and temporal structure on rainfall partitioning in plant communities: what occurs in the soil organic litter layer?

David Dunkerley

Monash University, Building 11, Clayton Campus, School of Geography and Environmental Science, Melbourne, Australia
(david.dunkerley@monash.edu)

Though routinely measured in the open by meteorological agencies, rainfall more often than not interacts with plant matter prior to reaching the mineral soil. As a result, only a part (and quite often a minor part) of the rainfall may reach the soil – the net or effective rainfall. Moreover, the arrival of that component of the open-field rainfall takes place at locations, and at rates, that are also influenced by the plants. Interception on plant canopies, on bark, and the delivery of water via released throughfall and by stemflow have all been investigated to some extent. Less is known about the fate of rain and throughfall that arrives at the soil surface litter layer, which has its own spatial structure (often more abundant under canopies, less abundant in inter-spaces) and variability with plant community type and floristics. Nothing appears to be known about the ways in which the intensity of the arriving drops or the rainfall event temporal profile affect partitioning in the litter layer.

This paper will present new data on the fate of rainfall or throughfall on various kinds of plant litter, derived from laboratory rainfall simulation experiments. Experiments were conducted using a range of fixed rainfall intensities and also a series of rainfall events incorporating intensity fluctuations designed to mimic those of natural rainfall. This work forms part of a linked series of studies, from which the results for stemflow on leafed and leafless plant structures in relation to rainfall intensity and event profile have previously been published.