

Rainfall interception by an isolated evergreen oak tree in a Mediterranean savannah

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Abstract:

Redistribution of ground-level rainfall and interception loss by an isolated *Quercus ilex* tree were measured over 2 years in a Mediterranean oak savannah. Stemflow, meteorological variables and sap flow were also monitored. Rainfall at ground level was measured by a set of rain-gauges located in a radial layout centred on the tree trunk and extending beyond the crown limits. Interception loss was computed as the difference between the volume of rainwater that would reach the ground in the absence of the tree and the volume of water that actually fell on the ground sampling area (stemflow included). This procedure provided correct interception loss estimates, irrespective of rainfall inclination. Results have shown a clear non-random spatial distribution of ground-level rainfall, with rainwater concentrations upwind beneath the crown and rain-shadows downwind. Interception loss amounted to 22% of gross rainfall, per unit of crown-projected area. Stand interception loss, per unit of ground area, was only 8% of gross rainfall and 28% of tree evapotranspiration. These values reflect the low crown cover fraction of the stand (0.39) and the specific features of the Mediterranean rainfall regime (predominantly with few large storms). Nevertheless, it still is an important component of the water balance of these Mediterranean ecosystems. Copyright © 2005 John Wiley & Sons, Ltd.

KEY WORDS rainfall interception; interception loss; rainfall redistribution; *Quercus ilex*; isolated trees

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