



## **Biotic and abiotic factors affecting stemflow variability in downy oak and Scots pine stands in Mediterranean conditions**

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Although stemflow is only a small portion of rainfall, it may represent an important local input of water and nutrients at the plant stem. Previous studies have shown that stemflow has a significant influence on hydrological and biogeochemical processes. Stemflow volume is affected by many biotic factors as species, age, branch or bark characteristics. Moreover, the seasonality of the rainfall regime in Mediterranean areas, which includes both frontal rainfall events and short convective storms, can add complexity to the rainfall-stemflow relationship.

This work investigates stemflow dynamics and the influence of biotic and abiotic factors on stemflow rates in two Mediterranean stands during the leafed period - from May to October. The monitored stands are a Downy oak forest (*Quercus pubescens*) and a Scots pine forest (*Pinus sylvestris*), both located in the Vallcebre research catchments (NE Spain, 42° 12'N, 1° 49'E). The monitoring design of each plot consists of 7 stemflow rings connected to tipping-buckets, bulk rainfall measured in a nearby clearing and meteorological conditions above the canopies. All data were recorded at 5 min interval. Biometric characteristics of the measured trees were also measured.

The analysis of 39 rainfall events (65% smaller than 10 mm) shows that stemflow accounted for less than 1% of the bulk rainfall in both stands. Results also show that, on average, the rainfall amount required for the start of the stemflow and the time delay between the beginning of the precipitation and the start of stemflow are higher in the Downy oak forest. As suggested by stemflow funneling ratios, these differences might be linked to the canopy structure and bark water storage capacity of the trees, indicating that during low magnitude events, oaks have more difficulty to reach storage capacity. The role of other biotic and abiotic parameters on stemflow variability in both stands is still under investigation.