



Testing an evapotranspiration subroutine within TOPMODEL developed for an improved simulation of the water balance in a Mediterranean catchment.

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An application of the classical version of TOPMODEL, performed using the GLUE methodology, to the Can Vila small catchment (Vallcebre research area, NE Spain) provided acceptable simulations of streamflow during wet conditions but was not able to simulate small events and to reproduce correctly recessions during dry periods (when evapotranspiration exceeds rainfall). This discrepancy may be attributed to the relatively simple evapotranspiration consideration, not explicitly including rainfall interception and not considering evapotranspiration from the saturated store in this model version. In this context, the purpose of this work is to simulate, within the structure of TOPMODEL, the hydrological response of a catchment with high seasonality. The evapotranspiration subroutine proposed allows the presence of two different types of vegetation cover, distributed in small patches, controlling the local soil water balance but not the overall shape of the water table, as well as the explicit consideration of rainfall interception by vegetation and two-way exchanges between the root-unsaturated store and the phreatic store.