



Soil water content evolution in the headwaters of a semiarid catchment and its control by topographic attributes

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Soil and water represent resources of unquestionable importance and detailed soil water content measurements are therefore required for a number of applications in multitude of disciplines. Especially, in arid and semiarid regions soil water is a key variable due to its larger temporal and spatial variability and it is paradoxical the greater lack of information in areas under this type of climate. The high heterogeneity in soil water is related to the soil spatial variability and to complex internal interactions within the soil, as well as irregular rainfall. To better understand these processes and to assess the temporal and spatial distribution of soil water content in the top soil, a small semiarid catchment (10^3 m^2) on mica schists in South-eastern Spain has been monitored. Detailed measurements in space and time include soil water and soil temperature along different transects together with in situ meteorological data and catchment outflow. A one-meter resolution DEM has been used to relate soil water patterns with topographic attributes and specifically, the wetness index was evaluated for different water content levels (dry and wet conditions). Besides topography, other related variables (soil thickness, type and cover) were also tested to predict soil water content under dry and wet conditions.