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Runoff generation after abandonment of terrace cultivation in northwestern Spain

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Terrace construction for cultivation results in a complete transformation of the hillslopes to a series of flat sectors and almost vertical steps. This strategy, which involves a redistribution of soils and a re-organization of the drainage network, provides fertile soil over steep slopes, improves infiltration and controls overland flow under conditions of intense rainstorms. In Camero Viejo (north-western Iberian ranges) most of the hillslopes are occupied by terraced fields. During the XXth century, rural population declined and agricultural practices were abandoned. The lack of wall maintenance explains that after abandonment many terraces are affected by small landslides and wall collapse. In this area, a small catchment (1.9 km2) was monitored for studying the hydrogeomorphic evolution of abandoned bench terraces. Terraces occupy 40% of the catchment and covered by sparse grass and shrubs. The equipment installed in the catchment resgisters continuously meteorological data, discharge and water table fluctuations. Data on suspended sediment transport is obtained by means of a rising-stage sampler. In this study we present our first results. The hydrological response of the catchment was moderate (annual runoff coefficient ≈ 0.2); this is in part explained by the high evapotranspiration rates. Lows flows were recorded in summer and autumn, when the water reserves of the catchment are dry, and high flows occurred from January, when the catchment becomes wetter. Soil saturation areas have not been observed throughout the study period (since March 2012 to present), suggesting that soil infiltration processes and subsurface flow are important, and that the drainage system of the terraces is probably well maintained. No suspended sediment has been collected so far, confirming the hypothesis that subsurface flow might be a dominant runoff generation process.