



Effect of large rainfall events on runoff and soil losses in two small experimental agricultural catchments in Southern Spain

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Abstract. This communication presents the results and a preliminary discussion of the results of a medium term monitoring of runoff and soil losses in two small agricultural catchments, Conchuela and Puente Genil, of 8.0 and 6.1 ha respectively. Puente Genil has been monitored since 2005 and Conchuela since 2006. The gauging station at both catchments is composed of a measure flume provided of an ultrasonic water depth sensor, a raingauge and an ISCO sampler for taking suspended sediment samplers.

The Puente Genil catchment presents average slope of 15%, and is on a soil of loamy sand texture, while La Conchuela presents an average slope of 9% and is on a clay soil. Soil management in both catchments is based on no tillage with mechanical or chemical control of the adventitious vegetation growing in the inter tree space since mid March, to avoid competition for soil water with the olive trees.

The years monitored since 2005/06 to 2008/09 were significantly below the average rainfall in the region with a reduced number of intense events. So, annual soil losses for both basins ranged from 4 to less than 0.2 t ha⁻¹ year⁻¹, and average annual runoff coefficients ranging from 8 to less than 3 %. Hydrological year 2009/2010 has presented unusually high rainfalls. By early January cumulative rainfall from September first is above the average annual rainfall, and a large number of highly erosive events have been monitored in both catchments. Provisional results indicate that these periodical episodes of moist years with high intensity events are key in evaluating the erosive and hydrological behaviour of agricultural areas in Southern Spain. For instance, the sediment delivered from La Conchuela trough the monitoring station during 2009/10 has been estimated in 13.9 t ha⁻¹ by January 2nd.

The practical implications for monitoring schemes under these conditions, and the need of long term experiments that need to be complemented with model analysis will be discussed trough this communication.