



Application of video-cameras for quality control and sampling optimisation of hydrological and erosion measurements in a catchment

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Long term soil erosion studies imply substantial efforts, particularly when there is the need to maintain continuous measurements. There are high costs associated to maintenance of field equipment keeping and quality control of data collection. Energy supply and/or electronic failures, vandalism and burglary are common causes of gaps in datasets, reducing their reach in many cases.

In this work, a system of three video-cameras, a recorder and a transmission modem (3G technology) has been set up in a gauging station where rainfall, runoff flow and sediment concentration are monitored. The gauging station is located in the outlet of an olive orchard catchment of 6.4 ha. Rainfall is measured with one automatic raingauge that records intensity at one minute intervals. The discharge is measured by a flume of critical flow depth, where the water is recorded by an ultrasonic sensor. When the water level rises to a predetermined level, the automatic sampler turns on and fills a bottle at different intervals according to a program depending on the antecedent precipitation. A data logger controls the instruments' functions and records the data. The purpose of the video-camera system is to improve the quality of the dataset by i) the visual analysis of the measurement conditions of flow into the flume; ii) the optimisation of the sampling programs.

The cameras are positioned to record the flow at the approximation and the gorge of the flume. In order to contrast the values of ultrasonic sensor, there is a third camera recording the flow level close to a measure tape. This system is activated when the ultrasonic sensor detects a height threshold, equivalent to an electric intensity level. Thus, only when there is enough flow, video-cameras record the event. This simplifies post-processing and reduces the cost of download of recordings. The preliminary contrast analysis will be presented as well as the main improvements in the sample program.