



## **Identification of Mediterranean rainfall events for hydrological analysis. Criteria and characterization**

A.M. Camarasa (1), M.J. López-García (1)

(1) Departament de Geografia, Universitat de Valencia, Av. Blasco Ibañez 28, 46010 Valencia (Spain)

Since Mediterranean environments are characterized by the irregularity of their climate and hydrological processes where, for instance, twice or even three times the average annual rainfall can be registered in a single torrential rainfall event, hydrological studies are increasing focussing on the analysis of actual rainfall events. Criteria to define what constitutes a rainfall event are not yet clearly established in literature. Although we can find detailed, a posteriori, studies about specific torrential rainfall events related to floods in a given basin, detection of rainfall events with a hydrological meaning from daily rainfall records remains difficult and normally has been done with reference to floods events at catchment level. This paper proposes criteria for selecting rainfall events with hydrological objectives. We consider not only events that can produce major floods but also those events around the runoff generation threshold which can also produce significant contributions to the subsurface flow. These criteria have been applied to the territory of the River Júcar Water Authority (43.000 km<sup>2</sup>), using daily data recorded by the Automatic Hydrological Information System (SAIH), and covering a 15 year period (1989-2003). A total of 347 events were identified and characterised by indicators of total rainfall, duration, intensity and irregularity calculated over 11 regional units. The synoptic atmospheric situation responsible for each episode has also been taken into account in the analysis. As a result, a classification of the episodes has been obtained. The analysis shows a littoral-interior dichotomy. The largest number of events were recorded near the coast (except in one region), mostly in winter, with greatest volumes and high irregularity. In the interior the events were less intense and more frequent in summer. The orographic effect is important, not just in relation to altitude but also in relation to the orientation of the mountain ranges with

respect to the wind direction.