



## **Spatial and temporal daily regime in Catalonia (NE Spain) derived from precipitation indices (1950-2000)**

M.D. Martinez (1), X. Lana (2), A. Burgueño (3), C. Serra (2)

(1) Departament de Física Aplicada, Universitat Politècnica de Catalunya, Barcelona, Spain, (2) Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Barcelona, Spain, (3) Departament d'Astronomia i Meteorologia, Facultat de Física, Universitat de Barcelona, Barcelona, Spain (dolores.martinez@upc.edu / Fax: +34 934016090)

Four precipitation indices (annual rainfall amount, P; number of rainy days per year, N; average daily rain intensity, I; and relevance of a rainfall class interval to the annual amount, R) are used to describe the daily rainfall regime of Catalonia (NE Spain). Daily amounts for 75 rain gauges along the 1950-2000 period are considered. Five percentiles of the daily amounts (25, 50, 75, 90 and 95th) are considered for indices N and I, and six class intervals (<25, 25-50, 50-75, 75-90, >90 and >95%) for index R. The indices are described by their mean annual values, standard deviations and consecutive temporal irregularities. The diversity of their spatial patterns reveals the influence of the complex orography, the effects of the Mediterranean regime and the remoteness to the Atlantic Coast of the Iberian Peninsula. North-faced areas of the Pyrenees reveal the influence of the Atlantic regime. These features are described through a Principal Component Analysis and the subsequent clustering process. Moreover, time trends of the annual indices are derived from lineal regression and local statistical significances at the 95% confidence level are established using the Mann-Kendall test. Field significant trends are investigated by means of Monte Carlo simulations. It is worthy of mention that index N shows field significant trends for percentiles up to 75th, all local trends being negative. Index R depicts field significant trends for the first three class intervals, with a predominance of positive local trends for the first two, thus indicating an increasing contribution of light and moderate daily episodes to the annual amounts.