



An analysis of precipitation extreme event evolution in the Ebro River Basin (1951-2002)

J. Abaurrea, J. Asín, A.C. Cebrián and A. Centelles

Statistical Methods Dpt., Zaragoza University, Spain (abaurrea@unizar.es)

Precipitation extreme event indices are analysed in the Ebro river basin, an area of 85362 Km² situated at the NE of Spain, in order to characterize the temporal evolution of these events and also their spatial properties.

The IPCC TAR (2001) conclusion concerning the evolution of extreme precipitation events is that "... for those areas with increased mean total precipitation, the percentage increase in heavy precipitation rates should be significantly larger, and viceversa for total precipitation decreases". This type of behaviour, which we will call acceleration, is confirmed by some works but is not found by other authors, Zhang et al. (2001) for example, who conclude that precipitation extreme event signals evolve in parallel to total precipitation, Qw.

Our objective is the analysis of this question in the Ebro river basin by using index series defined from 1941-2002 daily precipitation data which overcame severe quality controls. The dataset contains 5 daily series with more than 40 observed years, 9 additional series with data until 1985 and 8 series from 1968 on.

The analyzed indices are similar to those of the ECA project, Klein Tank and Können (2003), but relatively adjusted with respect to Qw or total frequency. Correlation and trend analysis are performed and, finally, regression models are fitted, in order to determine the parallel or accelerated behaviour.

References

ECA (European Climate Assessment) project: <http://eca.knmi.nl>

Klein Tank, A.M.G., Können, G.P. (2003). Trends in Indices of Daily Temperature and Precipitation Extremes in Europe, 1946-99. *J. Climate*, 16, 3665-3680.

Zhang, X., Hogg, W.D., Mekis, E. (2001). Spatial and temporal characteristics of heavy precipitation events over Canada. *J. Climate*, 14, 1923-1936.