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Multiresolution study of a bi-annual rainfall time series

F. Buendía (1,2), B. Ojeda (1,3), A. Tarkis (4), G. Buendía (5), D. Andina (1)

(1) Dep. Señales, Sistemas y Radiocomunicación. E.T.S. Ingenieros. de Telecomunicaciones, U.P.M, SPAIN, (2) GMV S.A. (fsbb@gmv.es) , (3) DIP-CUCEI Universidad de Guadalajara , Jalisco, México. (4) Dept. of Applied Mathematics Agriculture Engineer Technical University of Madrid , (5) National Institute of Meteorology, Spain.

Daily precipitation series are necessary to research the climatology of extreme events, as input in hydrological modeling, in evaluation of numerical weather prediction models, for example. In this work a multiresolution analysis is proposed in order to analyze over real rain distribution events produced during the years 2006 and 2007 at Valladolid (Spain). To initiate this study, daily values of precipitation and pressure waves at 500 mBa have been registered at 0:00 am and 12:00 pm. These parameters and the hours in which have been taken were proposed by experts.

Different Wavelet analyses are then applied to the data, discrete and continuous wavelets transform (DWT and CWT respectively) in order to perform a feature extraction (SFS) and obtain the most representative variables on a rain event using these observations. Preliminary results outline that DWT Daubechies D4 wavelets are suitable to detect and build up a classifier. This is the first stage of a global study where the final aim is to develop a system able to forecast the rain events and quantities.