



Extremes of temperature and precipitation in Spain in simulations of the climate of the future

M.J. OrtizBeviá (1), E. SánchezGómez (2), F.J. Alvarez-García (1), I PérezGonzález (1)

(1) Grupo 'Física del Clima', Dpto Física, U. Alcalá, Madrid (2) Climate Modelling and Global Change Team, CERFACS, Toulouse

We use a dynamical approach to determine possible future changes in extremes of temperature and precipitation in Spain, based on analysis of an ensemble of simulations of the climate of the future. These were performed with a global atmospheric model, Arpege, with its stretched grid focused on France and Spain. The ensemble consists of three control (period 1960-1999) and three scenario A2 (2070-2099) simulations.

The dynamical approach identifies large scale atmospheric patterns from the control and scenario simulations and connect them with extremals of temperature and precipitation, yielding a frequency distribution of extremals on these patterns at different grid points. The distribution of extremals identified from station data on the weather type determined from the 500HPa geopotential height anomalies from the ERA-40 reanalysis allow for the validation of the control simulations.

The analysis is carried out for an extended winter and summer seasons. Grid points (stations) with similar frequencied distribution are grouped together with a cluster procedure. In the case of Spain, an atlantic and a mediterranean region (two for precipitation) stand out with different behaviours, marked for the relative influence of the different weather types on the extremes at these regions.