



## **Extremes of European temperature in ENSEMBLES regional climate models**

M. Dolores Frias (1), Roberto Miguez (2), Jose Manuel Gutierrez (3), and Fernando J. Mendez (2)

(1) Santander Meteorology Group. Department of Applied Mathematics and Computer Science, Universidad de Cantabria. Santander (Spain). (friasmd@unican.es), (2) Environmental Hydraulics Institute "IH Cantabria", Universidad de Cantabria. Santander (Spain). , (3) Santander Meteorology Group. Instituto de Fisica de Cantabria, CSIC-Universidad de Cantabria. Santander, (Spain).

In recent years, there has been an increasing interest in studying the impacts of climate extremes in different sectors (agriculture, energy, insurance, etc.). In particular, extreme temperatures and heat waves have had a big impact in European socioeconomic activities during the last years (e.g. the 2003 heat wave in France); moreover, climate change has the potential to alter the prevalence and severity of extremes thus given rise to more severe impacts with unpredictable consequences. Regional climate models offer the opportunity to analyze and project in different future scenarios the variability of extremes at regional time scales. In the present work, we estimate changes of maximum temperatures in Europe using two state-of-the-art regional circulation models from the EU ENSEMBLES project. Regional climate models are used as dynamical downscaling tools to provide simulations on smaller scales than those represented for global climate models. Extremes are expressed in terms of return values derived from a time-dependent generalized extreme value (GEV) model for monthly maxima. The study focuses on the end of the 20th century (1961-2000), used as a calibration/validation period, and analyzes the changes projected for the period 2020-2050 considering the A1B emission scenario.