



## **CMIP5 – performance and Climate Change assessment of maximum and minimum temperatures in Europe**

Maria João Carvalho, Alfredo Rocha, and Paulo Melo-Gonçalves

University of Aveiro, Dept. of Physics, Aveiro, Portugal (mariajcarvalho@ua.pt)

The CMIP5 project provides global climate simulations for historical periods, as well as future scenarios using the Representative Concentration Paths (RCP's), for a large set of variables, albeit with low resolution. These simulations can then be used to force models on a regional scale in order to produce results which will in turn allow for the assessment of climate change on a more local level. Consequently, these provide usable tools for some of the areas for which climate change is an important factor, such as agriculture, water management and fisheries. This work focuses on both maximum and minimum temperatures for both the recent-past and future projections under the RCP8.5 for a domain containing Europe. Firstly, the performance of the models in simulating the seasonal cycle, their overall distribution, as well as some ETCCDI indices was assessed using the E-OBS(V9.0) data set against which recent-climate simulations were compared. Also, using the recent-past data, as well as with recourse to already established bibliography, the study domain was divided into regions with similar characteristics. These regions were then used to study climate change, focusing on the ETCCDI extreme indices, for the near (2016-2035), mid (2046-2065) and long-term (2081-2100) future. In order to do so, the statistical characteristics of the indices in each of the region were compared between future climates (near, mid and long-term future) and recent-past climate (1986-2005). Preliminary results point to an overall agreement of the models with observations. When looking at the seasonal cycle as well as the Cumulative Distribution Functions (CDFs'), the modeled minimum and maximum temperatures are in agreement with observations for the majority of the 13 models studied. These results add confidence to findings of climate change signals in the indices.