



Climate change scenarios over Iberian Peninsula from regional climate models: ESCENA project

Marta Domínguez (1), Raquel Romera (1), Lluis Fita-Borrell (2), Jesús Fernández (2), Pedro Jiménez-Guerrero (3), Juan Pedro Montávez (3), William David Cabos (4), Giovanni Liguori (4), Enrique Sánchez (5), and Miguel Ángel Gaertner (5)

(1) Environmental Science Institute, University of Castilla-La Mancha, Toledo, Spain
(marta.dominguez@uclm.es,+34025268800), (2) University of Cantabria, Dpt. Appl. Math. and Comp. Sci., Grupo de Meteorología, Santander, Spain, (3) University of Murcia, Physics of the Earth, Ed. CIOyN, Campus de Espinardo, Murcia, Spain, (4) University of Alcalá de Henares, Madrid, Spain, (5) University of Castilla-La Mancha, Toledo, Spain

The principal aim of ESCENA (2008-2012) Spanish project is to generate, through dynamical downscaling techniques, high resolution climate change scenarios based on an ensemble of Regional Climate Models (RCMs) over Iberian Peninsula and surrounding areas. This region is especially interesting because of its heterogeneous topography and climate in a relative small domain. In addition to Spain, ESCENA will provide useful information regarding climate change projections for countries like Portugal and Morocco. The resulting database will be publicly available after the project is finished. Four groups are involved in this project: the University of Cantabria (UC), the University of Murcia (UM), the University of Castilla-La Mancha (UCLM) and the University of Alcalá de Henares (UAH). ESCENA will produce a dataset comparable with the RCM products generated within the PRUDENCE (2001-2004) and ENSEMBLES (2004-2009) European projects, using the same resolution as in ENSEMBLES (25 km). It complements the ENSEMBLES dataset through the use of improved or additional RCMs (PROMES, WRF, MM5 and REMO), nested in three Global Climate Models (GCMs) (HadCM3, ECHAM5 and ARPEGE) and a larger set of emissions scenarios (A1B, A2 and B1), giving as a result an almost complete matrix of GCM/RCM combinations. Another important difference with respect to ENSEMBLES is the simulation domain, which is centered over the Iberian Peninsula and covers parts of the Atlantic Ocean, including the Canary Islands, which were not included in these European projects.

The project includes an evaluation present climate simulation (1990-2007) forced by the higher resolution ERA-Interim reanalysis, instead of the ERA-40 reanalysis used in ENSEMBLES. This simulation has been compared with the improved Spain02 reference data (0.2°). This database was developed following the ENSEMBLES E-OBS database methodology but using a much larger amount of daily station data. Thus, it is very suitable over this area to be compared with high resolution RCMs data at daily timescale. The main part of the project is devoted to the generation of climate change scenario simulations (1950-2050) applicable to impact models due to its high resolution. Results of mean and extreme fields from the evaluation present climate simulations compared with Spain02 data are analyzed in an associated contribution (Jiménez-Guerrero et al., 2011) also presented in this General Assembly.