



EOLMAP: A pseudoreal wind database for small wind turbines for the Iberian Peninsula

Raquel Lorente-Plazas (1), Juan Pedro Montávez (1), David Pozo-Vázquez (2), Juan José Gómez-Navarro (1), Juan Andrés García-Valero (1), Pedro Jiménez-Guerrero (1), Pedro A. Jiménez (3), Sonia Jerez (1), and J. Fidel Gonzalez-Rouco (4)

(1) Universidad de Murcia, Murcia, Spain (lorente.plazas@gmail.com), (2) Universidad de Jaen, Jaen, Spain, (3) CIEMAT, Spain, (4) Universidad Complutense de Madrid, Madrid, Spain

Most of the wind power studies focus on large turbines and usually expensive studies are needed in order to ensure the suitability of a given place for installing wind farms. In the last years Small Wind Turbines (SWT) have experienced a fast growth. In this case it is not profitable to perform this kind of studies. Hence, it is desirable to have some tools giving an estimation about the wind power in a certain place (usually predetermined) as well as which of the available SWTs would be more appropriate.

In this work we present a wind database covering the Iberian Peninsula generated by using a 10 km hind-cast performed by means of MM5-Regional Climate Model (RCM) covering the period 1960-2007. The skill of the RCM has been evaluated by comparing with a hourly observational data set (1997-2007) including more than 500 stations covering the entire Iberian Peninsula. These data have undergone a quality control described in Jimenez et al. (2010).

The analysis performed indicates that the model is able to reproduce quite satisfactorily the main spatial and temporal modes of variation of the wind over the Iberian Peninsula. Albeit the skill of the model in reproducing the observed wind, distribution function, wind rose, annual cycle and interannual variability in a given place depends on the region, being the behavior worse in the Mediterranean basin. On the other hand most of the RCM errors are related to the subgrid orography, i.e. small hills or valleys that the 10km resolution does not capture accurately. A method for reducing these errors is also proposed in this contribution.

Finally, a web tool has been created in order to provide access to potential users. This tool gives information about the potential wind in a selected place (wind histogram, weibull parameters, wind rose, interannual variability, seasonal and daily cycles) and the energy produced by different SWT models. Also some information about the skill of the RCM when reproducing these parameters in the four nearest observational stations is given in order to get some insight about the reliability of the given pseudoreal data.