



Sensitivity of simulated wind to land surface options and model-data comparison with mast and surface observations

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The New European Wind Atlas project (www.neweuropeanwindatlas.eu) targets to provide updated information of wind resources over the broad European domain by offering last generation observational and model simulation products. Within this frame a set of regional simulation have been done with the WRF model over the northeastern Iberian domain in order to evaluate the sensitivity of the model to different configuration and physics options that can have an impact on the simulated wind variability.

The predictability of the wind field is subject to a number of factors (horizontal resolution, the database of initial and boundary conditions, parameterizations of the model's physics, etc.) that go beyond the potential existence of biases or errors in the model. The different combinations of these factors may lead to different model results. The purpose of this work is to explore the sensitivity of the model to changes in the configuration and physics options and also to assess its degree of realism in comparison to observations. Such model evaluation will help selecting the most appropriate model configuration to provide reliable estimates of the wind field in the area of interest. We use various observational databases (gridded and no gridded and re-reanalysis) to evaluate the realism of the simulations.

The land surface interacts strongly with the atmosphere at all scales, which affects the results obtained by the climate models. Therefore a correct selection of the land surface parameterization has become increasingly important. In this case, a sensitivity and validation study of the wind field for four different land surface parameterizations will be presented.

Results suggest that simulations reproduce realistically the wind climatology and variability over the region. However, positive biases tend to appear in all configurations. Reduced wind is associated with dryness and lowlands and is orography-related.