



Effects of regional climate model spatial resolution on 10m wind field over the Aegean Sea

I. Tegoulas, Ch. Anagnostopoulou, K. Tolika, K. Velikou, and Ch. Vagenas

Aristotle University of Thessaloniki, Dept. of Meteorology and Climatology, Thessaloniki, Greece (tegoulia@auth.gr)

The main scope of the present study is to reveal the potential improvements in the representation of 10m wind field when using higher resolution simulations of the same regional model. The model used is RegCM3 and two long term simulations were performed. The first has 25km resolution while the latter goes down to 10km. The simulations cover the period 1950 to 2000 using the 20C3M scenario. The simulated wind data (speed and direction) were compared against observational data from several stations over the domain of study for a time period of only 20 years, from 1980 to 2000 on a monthly basis due to the lack of available observational data for the first years of the simulations. The raw data from the model were available every three hours from which we computed the mean daily wind speed and the prevailing daily wind direction. It should be mentioned, that the comparison was made for the grid point that was the closest to each station over land. Moreover, a comparison between the extreme speed values produced by the model and those calculated from the observational data was conducted, in order to assess the change in the ability of the model to capture the most intense wind conditions. Both the simulations produced results that seem to capture quite satisfactory the main characteristics of the wind field over the area. As expected the higher resolution simulation achieves better performance in the wind direction calculation in complex terrain and closed gulfs, while overestimating wind speed.

Acknowledgments: This research has been co-financed by the European Union (European Social Fund–ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF) - Research Funding Program: Thales. Investing in knowledge society through the European Social Fund.