Geophysical Research Abstracts
Vol. 18, EGU2016-13743-2, 2016
EGU General Assembly 2016


# Wind Energy Potential: Current representation and projections for the European domain

Richard Davy (1), Natalia Gnatiuk (2), Leonid Bobylev (1,2), and Lasse Pettersson (1)

(1) Nansen Environmental and Remote Sensing Centre, and Bjerknes Centre, Bergen, Norway, (2) Nansen International Environmental and Remote Sensing Centre, St. Pitersburg, Russian Federation

We have used the publically available CORDEX datasets to quantify the ability of a current regional climate model (SMHI-RCA4) to simulate the wind energy potential in the Black sea region using 5 different global climate models for the boundary conditions. The regional climate model results are compared to the ERA-Interim reanalyses over a common period, 1979-2005, and we use Taylor plots to demonstrate the effect of different global climate models on the regional climate simulations. Wind energy potential is calculated from the daily hub-height (120 m) wind speeds by extrapolating the available 10 m wind speeds using a power-law wind profile approximation. In general we find that the regional climate model produces stronger surface winds over the Black Sea region as compared to the ERA-Interim reanalysis, which we relate to the difference in model resolution.
We also assess the projected changes to the wind energy potential in the CORDEX EUR-11 region from the current period to the near future (2021-2050), and to the late 21st century (2061-2090). We use a single model ensemble approach to assess the robustness of the projected changes, depending upon the choice of global climate model used for the boundary conditions. To understand the context of the changes in wind energy potential in the region, we include the changing climatology of the upper level (850 hPa) winds over these periods.
This work was supported by the EU FP7 Project, Grant agreement No.: 287844. “Towards COast to COast NETworks of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential (CoCoNet)”.