



Assessment of wind energy potential in Poland

Katarzyna Starosta, Joanna Linkowska, and Andrzej Mazur

Institute of Meteorology and Water Management, Numerical Weather Forecasts, Warsaw, Poland
(katarzyna.starosta@imgw.pl)

The aim of the presentation is to show the suitability of using numerical model wind speed forecasts for the wind power industry applications in Poland. In accordance with the guidelines of the European Union, the consumption of wind energy in Poland is rapidly increasing. According to the report of Energy Regulatory Office from 30 March 2013, the installed capacity of wind power in Poland was 2807MW from 765 wind power stations. Wind energy is strongly dependent on the meteorological conditions. Based on the climatological wind speed data, potential energy zones within the area of Poland have been developed (H. Lorenc). They are the first criterion for assessing the location of the wind farm. However, for exact monitoring of a given wind farm location the prognostic data from numerical model forecasts are necessary.

For the practical interpretation and further post-processing, the verification of the model data is very important. Polish Institute Meteorology and Water Management – National Research Institute (IMWM-NRI) runs an operational model COSMO (Consortium for Small-scale Modelling, version 4.8) using two nested domains at horizontal resolutions of 7 km and 2.8 km. The model produces 36 hour and 78 hour forecasts from 00 UTC, for 2.8 km and 7 km domain resolutions respectively. Numerical forecasts were compared with the observation of 60 SYNOP and 3 TEMP stations in Poland, using VERSUS2 (Unified System Verification Survey 2) and R package. For every zone the set of statistical indices (ME, MAE, RMSE) was calculated. Forecast errors for aerological profiles are shown for Polish TEMP stations at Wrocław, Legionowo and Łeba. The current studies are connected with a topic of the COST ES1002 WIRE-Weather Intelligence for Renewable Energies.