



Uncertainties of wind power forecasts for Western Transdanubium from mesoscale NCEP/ETA and WRF models

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The wind power capacity has grown significantly in Hungary. The total installed capacity currently exceeds 63 MW from more than 40 great wind power plants. An important problem for further development is caused by the Hungarian power supply network being able to capture only 330 MW until 2010. The short range wind power forecasts have a great importance for owners of wind farms and for the Division for Transmission Network from Hungarian Power Companies Ltd. because Hungarian standard requires 48-hours wind power estimation with a time resolution of quarter hours. The expected accuracy of the forecast is at least 30%. It is a so called “time table for each wind farm”.

The NCEP/Eta and the WRF mesoscale models were applied with a 5-km horizontal grid resolution for local wind field forecasts. Both models run on a daily basis. The wind field is interpolated for the location of a wind farm situated in Western Transdanubium, 10 kms from the Austrian border (Burgenland). The ENERCON E40 (600 KW), E70 (2 MW) and VESTAS V90 (2 MW) wind generators are working with a hub height of 65 m, 115 m and 105 m, respectively. Based on case studies, the uncertainty of wind profile estimations and wind power forecasts are investigated. Differences of wind power among wind generators with respect to wind speed and direction are also analyzed.