Wind power forecasting for a real onshore wind farm on complex terrain using WRF high resolution simulations.

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Regional meteorological models are becoming a generalized tool for forecasting wind resource, due to their capacity to simulate local flow dynamics impacting wind farm production. This study focuses on the production forecast and validation of a real onshore wind farm using high horizontal and vertical resolution WRF (Weather Research and Forecasting) model simulations.

The wind farm is located in Galicia, in the northwest of Spain, in a complex terrain region with high wind resource. Utilizing the Fitch scheme, specific for wind farms, a period of one year is simulated with a daily operational forecasting set-up. Power and wind predictions are obtained and compared with real data provided by the management company. Results show that WRF is able to yield good wind power operational predictions for this kind of wind farms, due to a good representation of the planetary boundary layer behaviour of the region and the good performance of the Fitch scheme under these conditions.