



Forecast of wind ramps in Gaspé region of Quebec

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The forecast of wind ramps is of critical importance for wind power integration and wind plant management. The wind power plants in the Gaspé region of Quebec (Canada) often experience rapid changes in wind speed mainly due to mountain waves and down-slope winds. A Canadian mesoscale model, GEM-LAM, was set-up in Gaspé region at a horizontal resolution of 2.5 km for wind power prediction. Comparison with observations at wind plants revealed that most of the ramps due to mountain waves are correctly predicted in terms of amplitude and timing of the events by the mesoscale model. Forecasts from the Canadian Meteorological Center's operational weather prediction model at lower horizontal resolution (15 km) largely under-predicted the amplitude of wind ramps. A forecast index based on the Froude Number was developed to diagnose the onset of mountain waves. It was found that the forecast index is very useful for detecting the wind ramps due to mountain waves, particularly for those who can not afford to run high resolution Numerical Weather Prediction models.