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Validation of Mesoscale Wind Forecasts for Ireland

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Since the wind energy resource of Ireland exhibits a high degree of spatial heterogeneity it is vital to be able to accurately forecast wind speeds at high spatial resolution. We are using the non-hydrostatic Lokal Modell (LM) to provide short term forecasts at the mesoscale level.

The model domain is based on a rotated grid system with 101x102 grid points in the horizontal, corresponding to a resolution of 7 km. In the vertical there are 45 levels. The wind fields are output at one hour intervals.

The model has been validated by performing a year-long simulation of the Irish climate (October 2005 - September 2006), driven at the lateral boundaries by ECMWF global re-analysis data, and by comparing the output to observational data. The experiment consists of 365 separate 24hr forecasts. UKCIP data, Irish weather station data, ECMWF data and HOAPS satellite data have been used for the validation.

Results will be presented which confirm that the model simulates the wind patterns over Ireland with a high level of accuracy. To test the impact on wind forecasts of higher horizontal resolution, a further experiment, at 2.8 km resolution was carried out. The boundary conditions for this run have been provided every hour by the 7km model runs through a one-way nesting procedure.