

6a.4 WRF for realistic wind farm siting

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Renewable energy is gaining attention as a sustainable energy resource. New wind farms are usually screened on (among other restrictions) the local wind climatology. Since areas of optimal wind resource are limited, the wind farms are clustered. As a consequence, there is a risk of mutual interaction and reduced power yield.

Various instruments are available to aid in the wind farm siting process varying from semi-empirical, statistical to Computational Fluid Dynamics (CFD) models. However, they share the disadvantage of lacking to produce a good description of the atmosphere, and they often do not take into account the interaction between wind farms.

WRF contains a wind farm parameterization scheme that allows for site assessment studies using real time weather data. To assess the simulated power, a verification analysis for the Farr wind farm in Scotland was carried out where the simulated power production was compared with observations and MeteoGroup's statistical power forecasting product.

This presentation highlights the results of this study, in particular those where the power quality of the WRF 1-km hind-cast was close to that of MeteoGroup's power product. Based on the outcome of this study, the wind farm parameterization scheme has been incorporated in MeteoGroup's operational WRF configuration.