



Production of the Finnish Wind atlas

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The Finnish Wind Atlas was prepared applying the mesoscale model AROME with 2.5 km horizontal resolution and the diagnostic downscaling method WAsP with 250 m resolution. The latter was applied for areas most favourable for wind power production: a 30 km wide coastal/offshore zone, large lakes, and highlands. The methodology included several novel aspects: (1) a climatologically representative period of 48 months were simulated with the mesoscale model, (2) in addition, the windiest and calmest months during the period of 1989 – 2007 were simulated, (3) the results were calculated separately for each month and for sectors 30 degrees wide, (4) instead of point measurements the WAsP calculations were based on the mesoscale model outputs, and (5) in addition to point measurements, also radar wind data were applied for the validation of the mesoscale model results. The AROME results were calculated for the heights of 50, 75, 100, 125, 150, 200, and 400 m, and the WAsP results for the heights of 10, 25, 50, 100, and 200 m. In addition to the wind speed, the results included the values of the Weibull distribution parameters, the gust factor, turbulence intensity, wind power content, and the potential power production, which was calculated for three turbine sizes. The Wind Atlas data are available for each grid point and can be downloaded free of charge from dynamic maps at www.windatlas.fi.