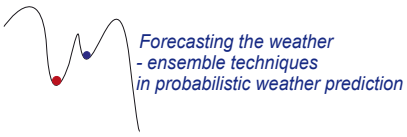
EMS Annual Meeting Abstracts
Vol. 8, EMS2011-884, 2011
11th EMS / 10th ECAM



A statistical model to downscale GCM output to wind speeds at turbine rotor height

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During the last thirty years surface wind speed observations of the northern hemisphere show a declining trend of 10%. A reduction of this magnitude over 50 years would affect wind-power generation (McVicar et al, 2010). It is however unclear whether such a trend would continue in future. Global circulation models are useful tools to assess this trend, but their horizontal and vertical resolution is coarse and output parameters are of varying quality. Therefore we use a statistical model to downscale GCM output to the height of the wind turbine rotor. The statistical downscaling technique is based on a lineair relationship between distribution parameters of on the one hand rotor-height windspeed observations and on the other hand GCM modeled atmospheric variables, which have first been evaluated using ERA-interim reanalysis data. Only the parameters that are adequately represented by the GCM are taken into account. In further research the statistical downscale model will be applied to future scenario's of a GCM ensemble.

McVicar, T., Roderick, M., 2010, Winds of change, Nature Geoscience, Vol 3, 747-748