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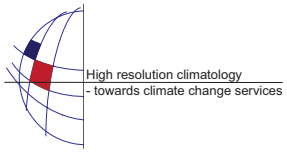

Ad-Hoc Analysis of Synop Observations to enhance shortest-term wind power predictions

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Shortest term wind power predictions with forecast horizons less than 12 hours benefit from observed data. So comparison between Synop observations and numerical weather predictions can serve as assessment of the available forecasts. This ad-hoc analysis depends very much on the observed data whose spatial distribution is very patchy in some areas. A powerful interpolation method helps to create a correct representation of the observed fields. The Kriging method finds a correlation function which describes the variation of the spatial field best. An unknown data point is estimated by weighted observation points, taking distance and clustering effects into account.

We use mean sea level pressure data measured at Synop and ship stations in Europe and the Atlantic to assess the quality of the predicted mean sea level pressure from Numerical Weather Prediction models. Those models serve as base of wind power predictions and influence the prediction error considerably. If this error can be estimated, a rating of different Numerical Weather Prediction Models which are taken into consideration can follow. The choice of the area that represents the area of interest in terms of prediction errors depend on the moving direction of the low pressure systems.

First calculations show that errors of the ad-hoc analysis are in good agreement with the ECMWF analysis. The evaluation of the ad-hoc analysis in an area over Great Britain/North Sea and the comparison with available ECMWF forecasts over Germany reveals phase shifts for some time intervals. This supports the assumption of moving prediction errors along low pressure systems.