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Comparison of Wind energy production forecasts, in terms of errors and economic losses

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We compare 6 forecasts productions models on two windfarms located in France. The evaluation is made in terms of root mean square errors. The power production forecasts are the products of both physical and statistical models and cover a period of 6 months.

We show that the economic performances of those models can be improved using econometric approaches, where we to minimize the cost induced by the forecast error instead of minimizing the forecast error itself. This technique relies on state of the art non-parametric estimators of conditional probability distribution functions (cpdf) of energy production at a wind farm, given the wind speed forecasts of a deterministic meteorological model. In this case, no assumption is made about the shape of the underlying laws.

The economical benefits of ensemble versus deterministic wind speed forecasts are also assessed.