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IEA Wind Task 36 Forecasting – Phase II

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To cite this version:

Gregor Giebel, William Shaw, Helmut Franck, Draxl Caroline, Pierre Pinson, et al.. IEA Wind Task 36 Forecasting – Phase II. Wind Europe Offshore 2019 Conference, Nov 2019, Copenhague, Denmark. , 2019. hal-02440095

HAL Id: hal-02440095

https://hal.science/hal-02440095v1

Submitted on 14 Jan 2020

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IEA Wind Task 36 Forecasting – Phase II

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Summary

This poster gives an overview of the IEA Wind Task for Wind Power Forecasting. The Operating Agent is Gregor Giebel of DTU, Co-Operating Agent is Will Shaw of PNNL. Collaboration in the task is solicited from everyone interested in the forecasting business. The second phase of the Task runs for three years, 2019-2021.

The main deliverables are an IEA Recommended Practice on the forecast solution selection and evaluation process, an up-to-date list of current projects and main project results, including datasets which can be used by researchers around the world to improve their own models, and a position paper regarding the use of probabilistic forecasts. Additionally, dissemination of relevant information in both the forecasters and the end-users community is paramount, e.g. through common workshops and webinars.

Participation is open for all organisations in member states of the IEA Annex on Wind Power, see ieawind.org for the up-to-date list.

Activities News: **Recommended Practice finalised and published**!

NWP Improvements

This WP brings together global leaders in NWP models as applied to the wind industry to exchange information about future research areas. The emphasis is on improvements of the wind-related forecast performance of these models especially in typical rotor heights.

Two lists of up-to-date data are mentioned below (tall met masts and experiments). Additionally, this WP verifies and validates the improvements through a common data set to test model results upon and discuss at IEA Task meetings.

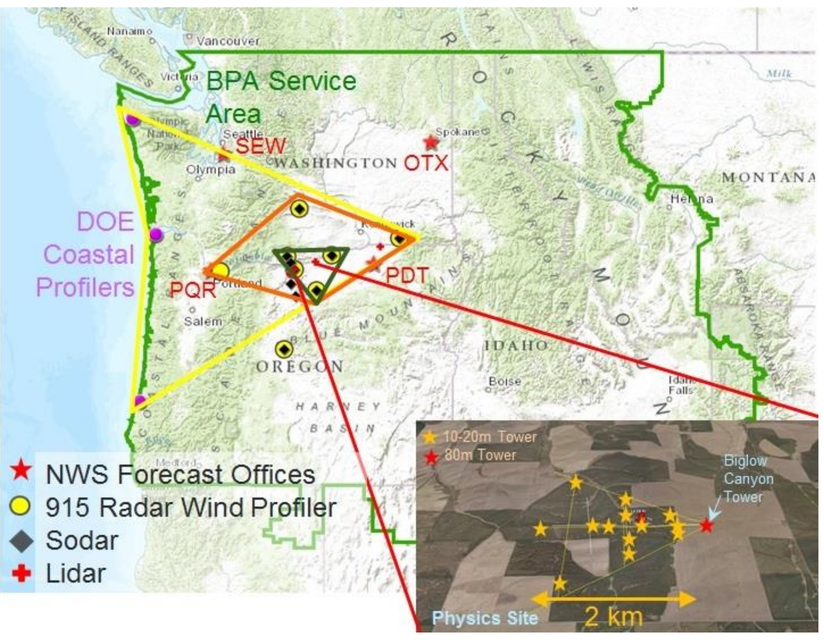


Figure 1: The instrumentation of WFIP2, in the Northwest of the USA. Source: Joel Cline.

RP Forecast Selection Process

In the second WP, a **Recommended Practice** (RP) guiding the selection process of forecasting solutions was developed:

The first part, the "**Forecast Solution Selection Process**" deals with the selection and background information necessary to collect and evaluate when developing or renewing a forecasting solution for the power market.

The second part "**Benchmarks and Trials**", of the series offers recommendation on how to best conduct benchmarks and trials.

The third part "**Forecast Evaluation**", provides information and guidelines regarding effective evaluation of forecasts, forecast solutions and benchmarks and trials.

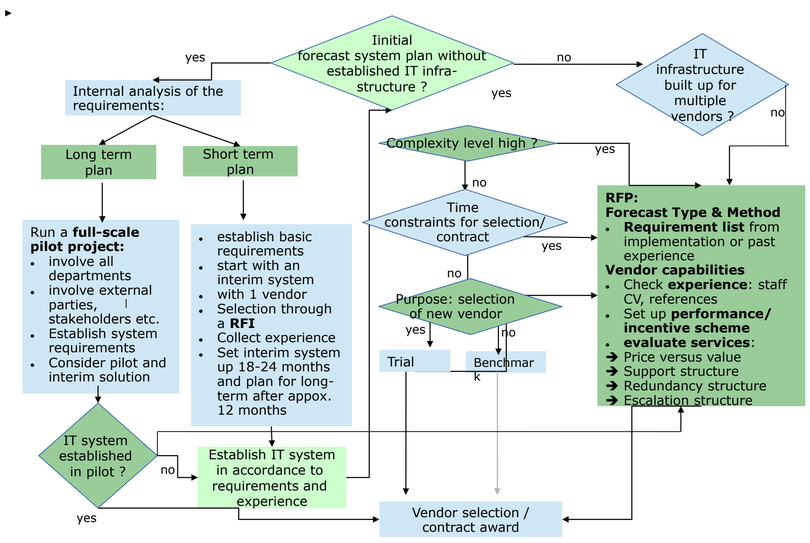
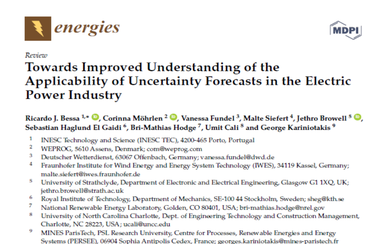


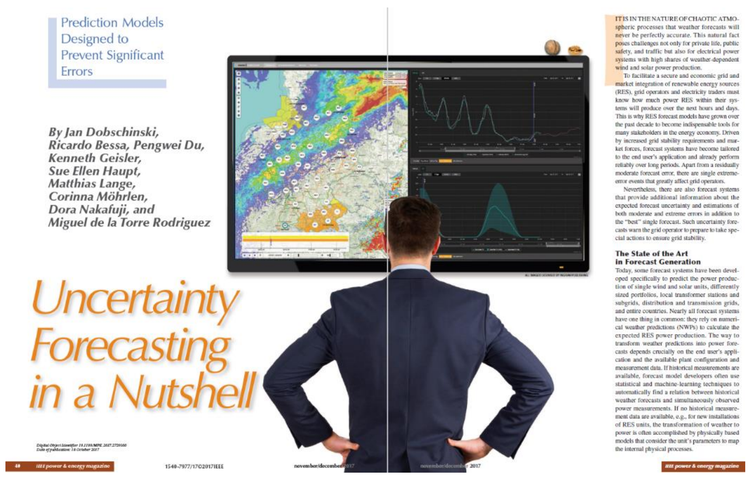
Figure 2:
Overview of a simple decision support scheme illustrating common difficulties when deciding for or against trials or common procurements. Cost, validity and output of trials are often over estimated In their usefulness, because fair evaluation requires a lot of resources, and complex problem solving can often not be verified by simple tests. A guideline for decision making is therefore under preparation by the task.

Use of Uncertainty Forecasting (WP3)

The third WP surveyed the current state of use of forecast uncertainties by the power systems sector and documents and publishes results in a report and publications. This WP also provides outreach to users of forecasts via webinars or other means to enhance their knowledge and ability to use all available information for operations.



Source: http://www.mdpi.com/1996-1073/10/9/1402/



Source: DOI: 10.1109/MPE.2017.2729100

Results

Information Portal

A list with masts useful for validation of the forecasts is published, measuring at least 100m. The list currently contains more than a dozen masts on- and offshore.

A list of meteorological experiments going on currently or recently, either to participate or to verify a flow model against. For example the Perdigao experiment of the New European Wind Atlas or the Wind Forecast Improvement Program 2.

A list of current or finished research projects in the field of wind power forecasting.

Also, check out our recorded **webinars** on YouTube!

See IEAwindforecasting.dk.

Minute Scale Forecasts

In June 2018, IEA Wind Task 32 Lidars and 36 Forecasting held a combined workshop on Very Short Term Forecasting of Wind Power. The main tools employed were lidars, radars and SCADA data. Main results were:

- Forecasts on the minute time scale are getting more important in high-wind-penetration power systems.
- A combination of weather models and instrumentation provide important information when persistence fails, namely at fast changing weather conditions, ramping and high speed wind events.
- Data quality is a major issue, including sensor availability (e.g. for Lidars).

Journal paper is published in Energies 2019: "Minute-Scale Forecasting of Wind Power – Results from the collaborative workshop of IEA Wind Task 32 and 36"

Phase II

The second phase of the Task adds new targets:

- Discussion of possible parts of the forecasting processes to be standardised in the future.
- Online verification and benchmarking of current NWP models with met mast data.
- Detailed review of uncertainty propagation through the modeling chain.
- Assessment of the value of probabilistic forecasts, both on a theoretical basis as well as through description of actual use cases and examples.
- Development of an IEA Recommended Practice for the requirements of data and instrumentation for real-time forecasting.

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