Ten years of forecast use

IEA Wind Task 36 Forecasting: Workshop Barcelona directions

Sophie GUIGNARD
9 juin 2016

Maïa Eolis, branch of ENGIE

561 MW of building permits
and **246 MW** currently under operation in France

1st wind farm commissioned in **2005**

80 employees, most of them are engineers

230 millions euros of capital

Maïa Eolis headquarters are in Lille,
We have other office in Lyon and Nantes and
3 maintenance centers based near the farms at Estrées Deniécourt (80), Rumont (55) and Méry sur Seine (10).

Our skills

Single point of contact, we manage every step of a wind farm project

Development

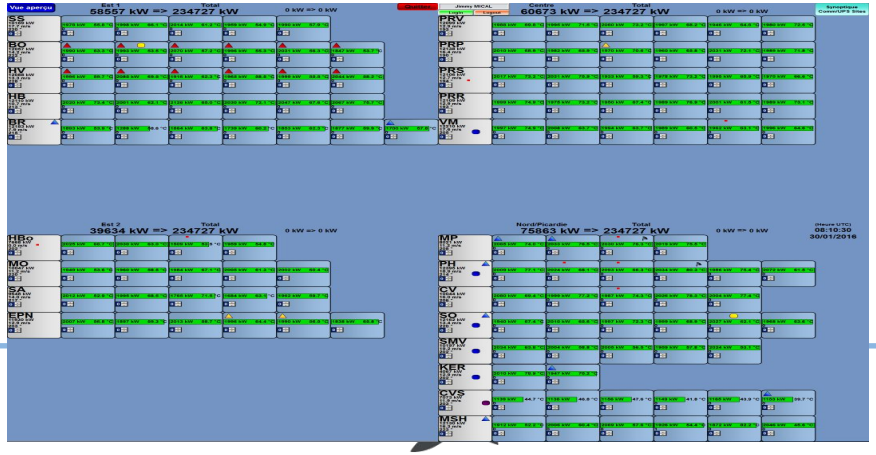
From site research to administrative approval

Construction

Building phase, turbines reception and end of warranty checkings

Operation

Monitoring and remote management of wind farms



Our skills

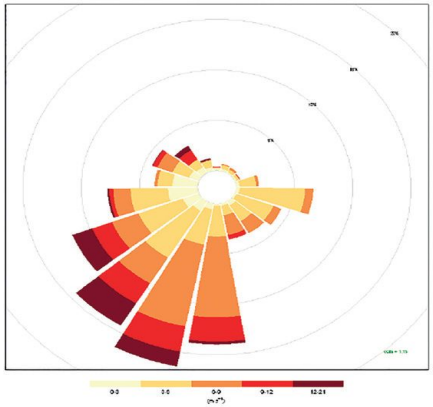
Maintenance

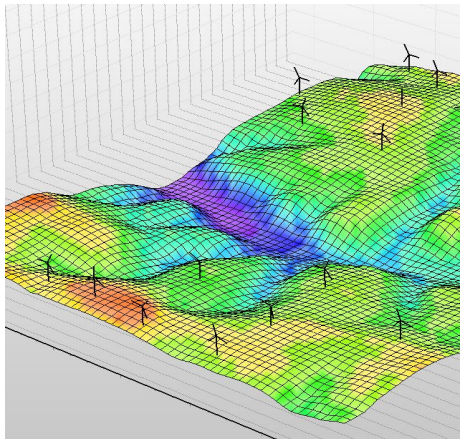
Predictive, preventive and curative maintenance, including blades and 20kV grid

Expertise

Technical support and R&D

Wind / Acoustic / TV / GIS / SCADA-Automation / Computer science / Mechanical and Electrical engineering





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Our forecasting experience

2007

- Benchmark to find a provider

About 20 companies was contacted and 10 were tested

2008

- Establishing a supply forecasts with a first provider

- 10 wind farm.
- 4 times daily as an archive on an htp server containing one csv file for each wind farm
- Forecast each 15 min
- Deadline = 6 days
- NMAE between 6 and 26 % with an average on 12% for the first 48 hours

2012

- Development of internal models

Setting up a run WRF in all our wind farm.

- Forecast each 10 min
- Deadline = 8 days
- NMAE between 4 and 45 % with an average on 16% for the first 48 hours

Our forecasting experience

2015

New benchmark provider and Change

- 10 zones → 22 wind farm.
- 1 time daily as an archive on csv file for each zone by mail
- Forecast each hour
- Deadline = 10 days
- NMAE between 6 and 30 % with an average on 12% for the first 48 hours

What kind of use :

R & D project for grid integration
Maintenance
Managing budgets

Our feedback

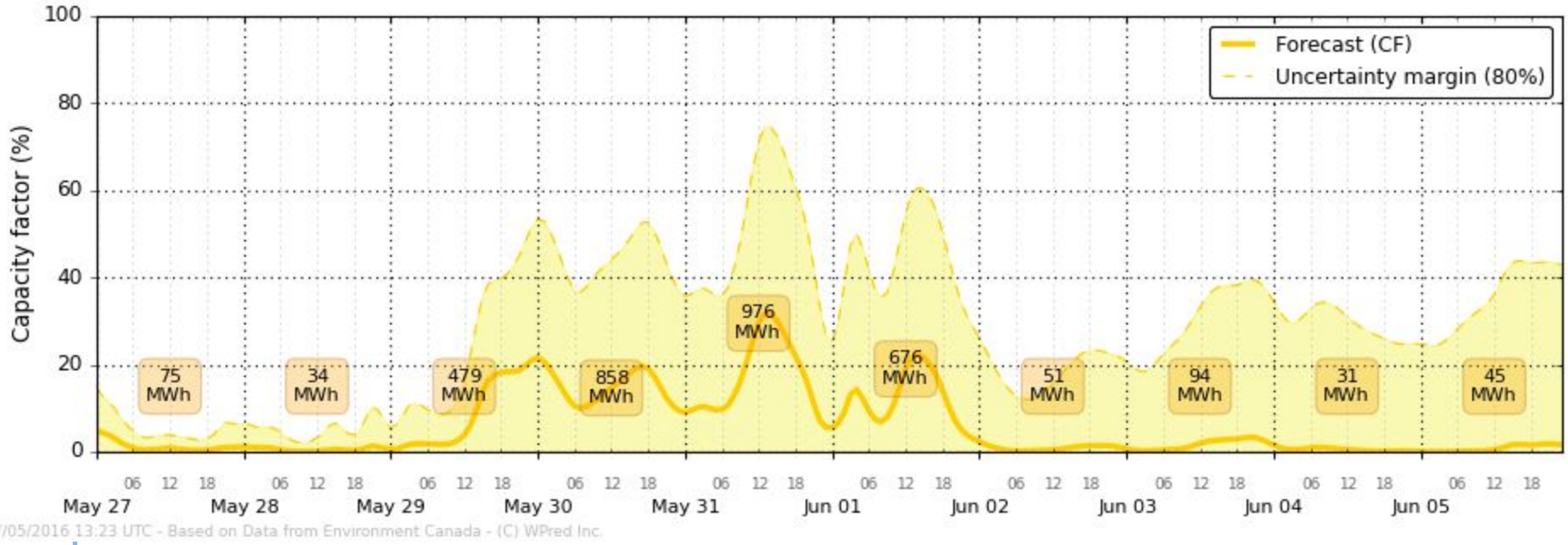
- **Maintain an efficient model can be costly**
- **Some wind farm are hard to predict**

	Provider1	Provider2	Provider3
WF1	9,16%	11,33%	11,04%
WF2	6,64%	7,95%	8,85%

- **An interface is important for our use**

Exemple of a bad forecast

Friday the 27th May : forecast for all turbines



It's May → Not a lot of wind so not a lot of production

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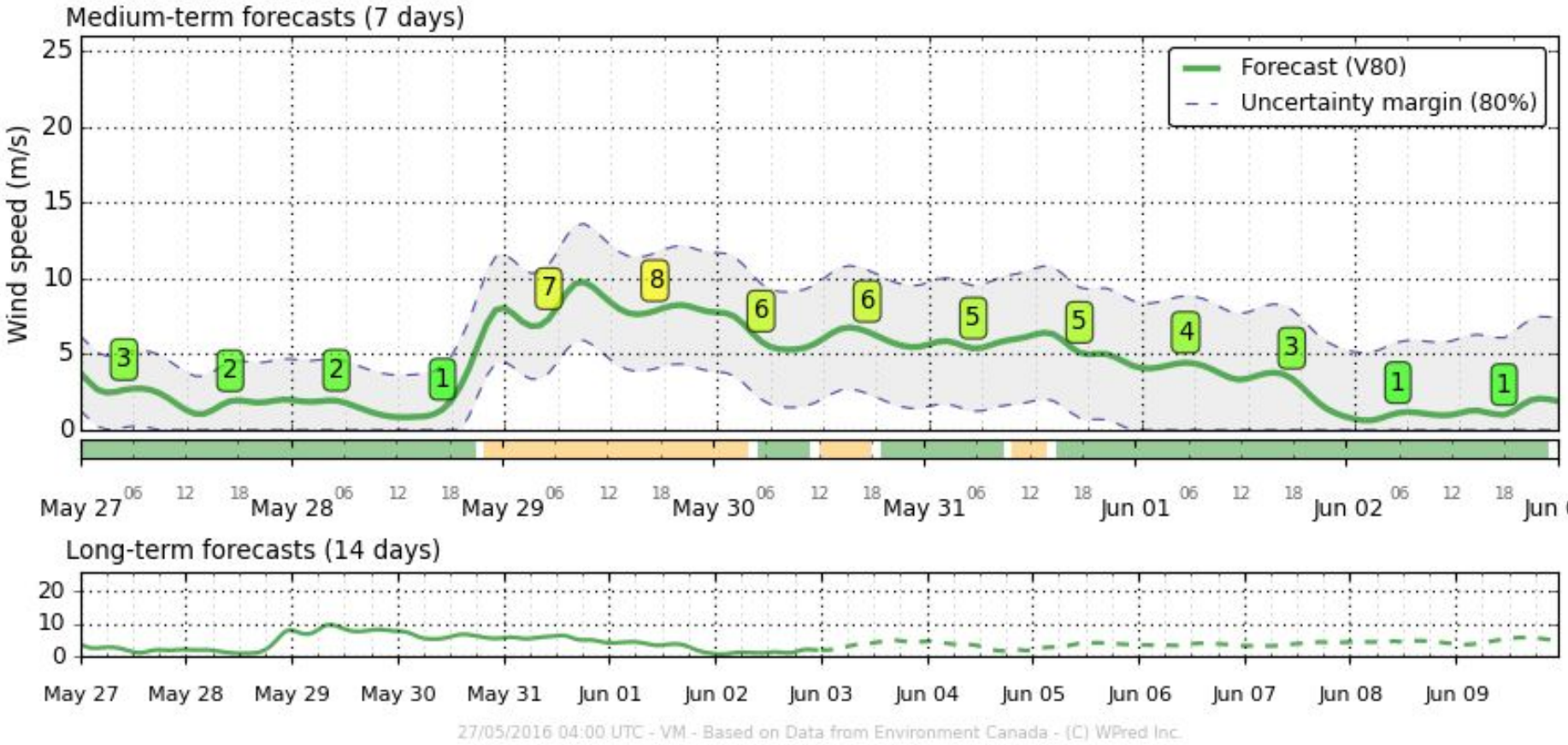
Exemple of a bad forecast

Friday the 27th may : forecast of wind for turbines of the North



For monday 30th May : expected wind at 6m/s → Blades repairs are allowed.

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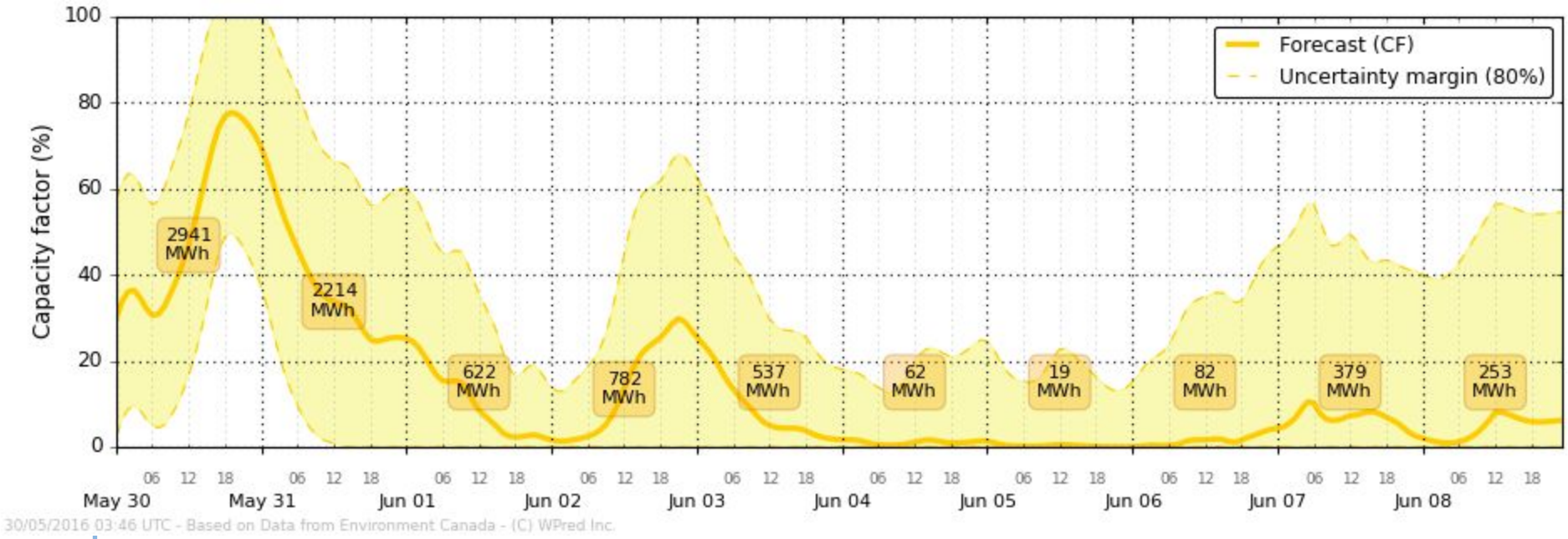
Exemple of a bad forecast

Monday the 30th May : forecast for all turbines



A forecast within 1GWh (858 MWh) become a forecast almost 3GWh (2941 MWh) ? !!!

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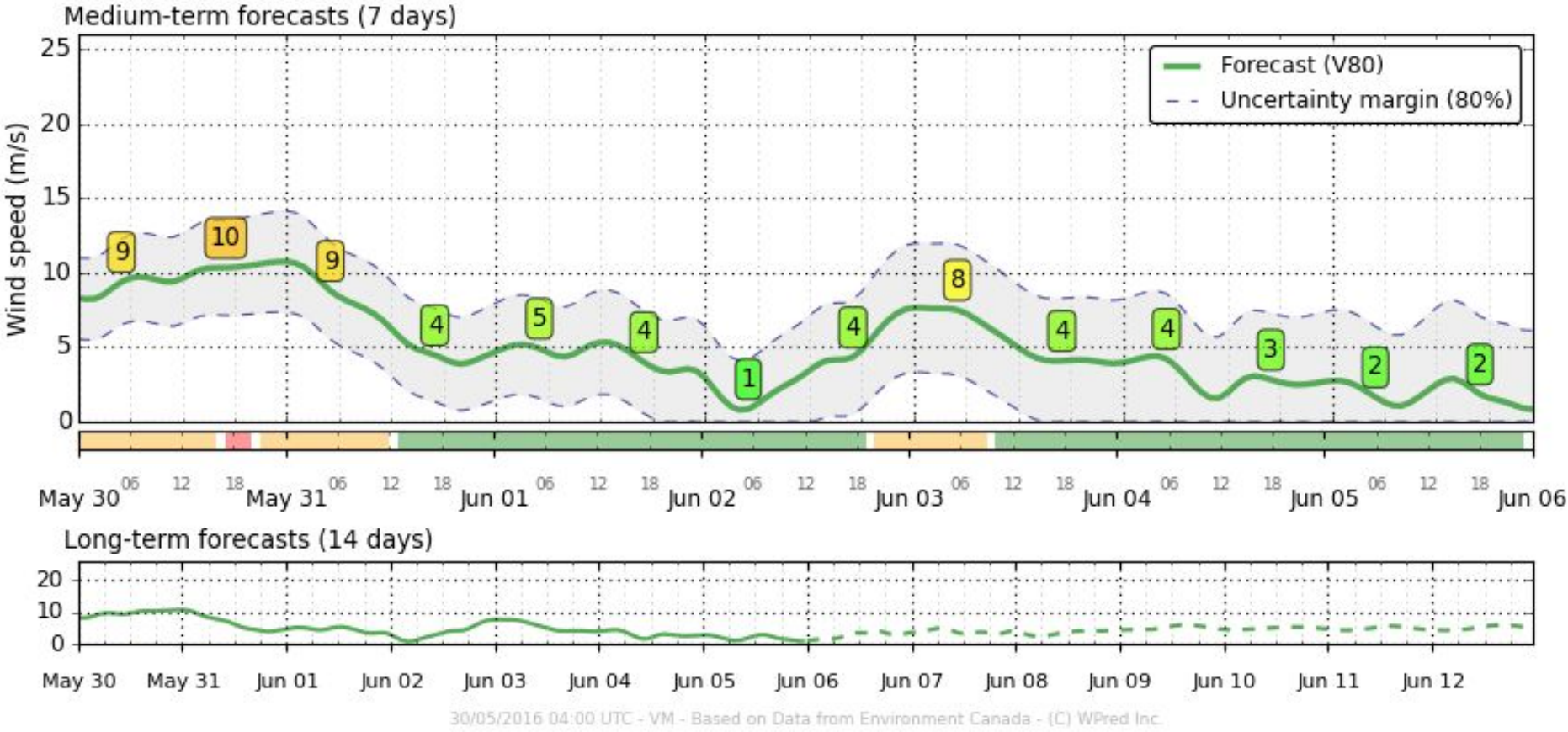
Exemple of a bad forecast

Monday the 30th May : forecast of wind for turbines of the North



Peaks at 10m/s (against 6m/s) ?!!! Blades repairs are impossible

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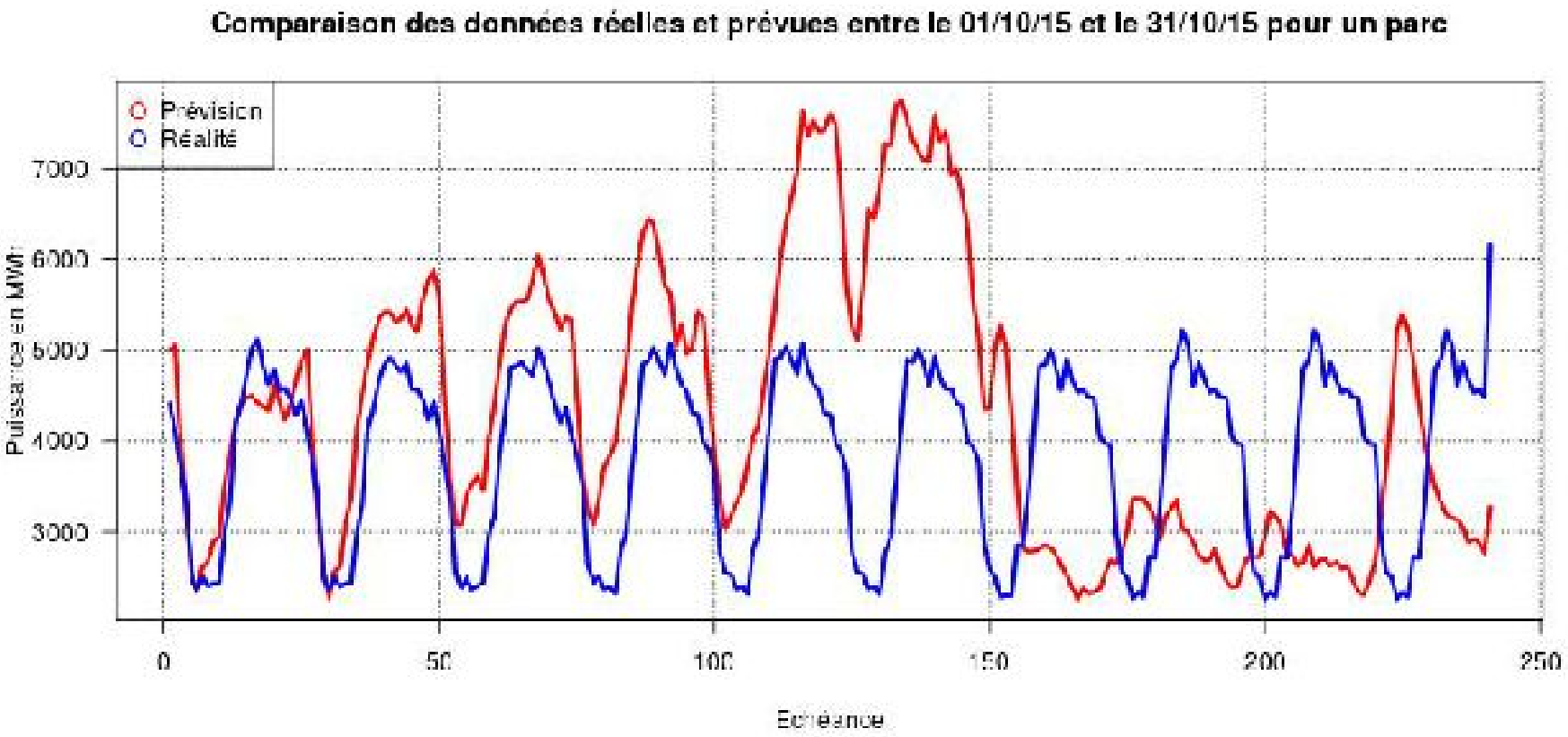
What's happen ?

Unclear at know

Some assumptions :

- Gusty winds ?
- Unexpected phenomenon ?

Other types of error



time shift

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Our wishes

A good interface for our special use

Ever more precice forecast

At least : better indicators of uncertainty

Future perspectives

Development of advances forecasting models

- Power production forecasts currenthly in use for scheduling maintenance works in particular
- Future use : Production/consumption forecasting for optimazed integration in network : overload forecasting

Maia Eolis is involved in research project « FOREWER »

- In association with RTE, EDF, Reasearch Labs and universities
- Development of advanced short term & seasonal forecasting models for wind resource/power output
- Focus on risks
- Synergy between statistical and probabilistic forecasting methods

PROJET FINANCÉ PAR L'ANR - PROJECT FUNDED BY THE ANR

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Thank you !

Questions ?

sguignard@maiaeolis.fr