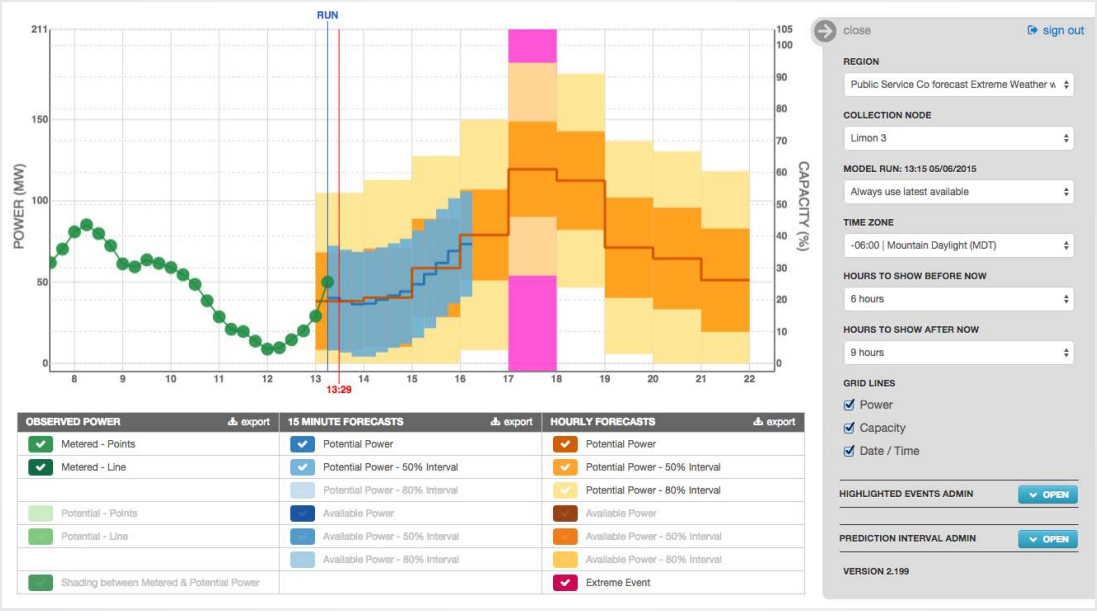
Global Weather CORPORATION

wind WX

Wind Energy Forecasting Data Services

Global Weather Corporation's WindWX™ service provides forecasts of hub height wind speed and estimated power output (when system characteristics are available), for any wind farm at any location in the world. WindWX's accurate estimates of hub height wind speed enable reliable monitoring and prediction of wind energy systems, including power production. Typical users include utilities, energy traders, farm operators, farm maintenance crews, and transmission operators. Forecasts can be displayed in our simple, intuitive, web-based display, shown here. Alternatively, our forecast data feed can be integrated into any customer system.

User Interface for WindWX Services

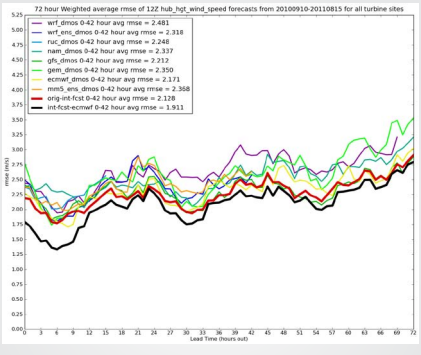


Observed power (green line) is displayed with hourly average forecasted power (orange line). The forecast of 15-minute power is shown by the blue line. The shaded areas show the prediction interval for the forecasts. Extreme weather is noted with the magenta highlight.

WindWX combines two critical modeling steps.

1. The first is GWC's best-in-the-world atmospheric forecast,[1] used in this case to generate hub height wind speed information.
2. The second is our power conversion model that converts wind speed to output power. Some customers need only hub height wind speed; others need the conversion to power as well. When observational data are available, the system can provide an improved forecast based on statistical analysis of the observations.

Forecast Error Stats



WindWX underlying technology produces lower errors than other commonly used national weather service models.

Accuracy of the fundamental wind speed prediction has been verified by comparison to observations. The line graph shows forecast error statistics for a 72 hour period, illustrating GWC's reduction in forecast error (black line) as compared to U.S., Canada, and Europe weather service models.

1. ForecastWatch is an independent provider of forecast accuracy and skill information. Read the report at http://forecastwatch.com/static/Three_Region_High_Temperature_Study_2014.pdf

Weather for the Connected World

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Specifications

WindWX includes two datasets, both of which are updated every 15 minutes:

- hourly intervals out to 7 days, and
- 15 minute intervals out to 3 hours.

Observations of wind speed and power, when available, are input to the system. These data are used to optimize the forecast generation and power conversion steps in the processing chain. Output is available through GWC's web-based time-series graphical user interface and as a data feed for integration into automated processes.The table below summarizes the standard output variables when power output data are provided in addition to hub height wind speed.

Data for WindWX Services

VARIABLES AVAILABLE

- Output Power at Node
- Average Wind Speed at Site
- Rolling 7-day Power %MAE
- Rolling 30-day Power %MAE
- Rolling 365 day Power %MAE
- Minimum Node Power
- Maximum Node Power
- Power as % of Capacity
- Available Power at Node
- Min Available Power at Node
- Max Available Power at Node
- Available Power 7-day %MAE
- Available Power 30-day %MAE

DELIVERY METHOD

- Standard web services as bulk CSV files

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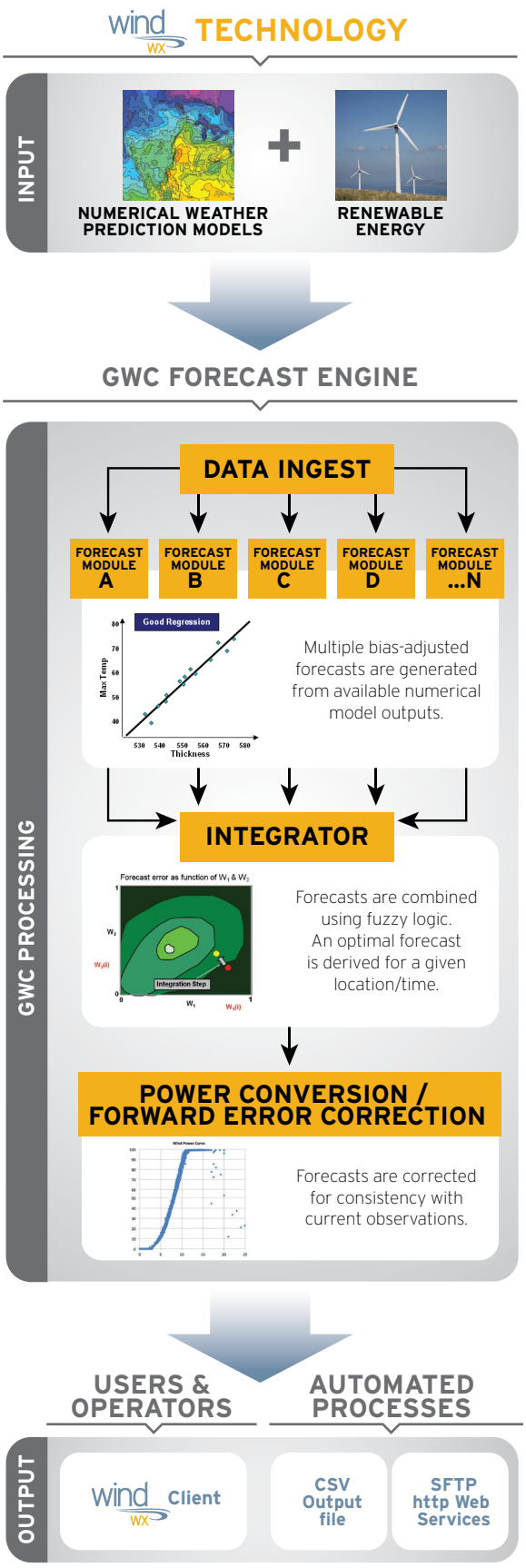

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