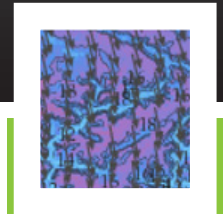
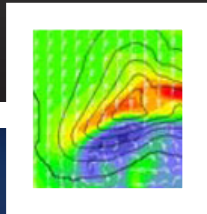




Wind Power Prediction System



WindPredictor™



Our Proven Approach

- Advanced numerical weather prediction models – WDT uses the Weather Research and Forecasting (WRF) physics-based model, which is also used by NOAA for its nationwide forecasts. WDT pioneered the international commercial application of WRF and continues to be on the forefront of its development and implementation.
- Advanced data assimilation – Forecasts incorporate SCADA and met tower data, as well as variety of conventional and custom weather observations, through a combination of Four Dimensional Data Assimilation (FDDA) and other advanced techniques.
- **Forecast ensembles** – Multiple forecasts performed with varying model parameters – called ensembles – are a proven means to provide even greater accuracy. Further, the spread of the forecast ensembles allows us to provide a Forecast Confidence Index, giving operators a measure of assurance that any given forecast will validate.
- **Microscale modeling** – Forecasts are fit to the precise details of complex terrain in a process called downscaling. This ensures that winds associated with ridges, escarpments, and canyons are correctly forecast.
- **Powerful Statistical Processing** – Individual forecasts are correlated in order to provide the best overall forecast. Accuracy is continually improved as the system trains the forecast based on past performance.
- **Ramp Prediction** – Wind ramps – abrupt changes in wind power output – can wreak havoc on system operations. Our customized, component-based forecasts predict the potential for wind ramps based on a variety of location-specific phenomena.
- **High Performance Computing** – WDT utilizes hundreds of processing cores with high-speed interconnects in its Tier 2 data center.

iMap[®]Pro WindPredictor

WDT's unique combination of forecasting technologies generates wind power forecasts of unprecedented accuracy for hour-ahead, day-ahead, and week-ahead predictions.

The Challenge: Accurate Wind Prediction

Accurate wind power forecasts are crucial in order for wind farm operators to manage operations, meet regulatory requirements, reduce penalties and losses, and maximize revenue. Yet wind power production is difficult to forecast accurately. Wind power itself scales with the cube of the wind speed, and the response of a wind turbine is a complex power output curve. Depending on wind speed and the characteristics of the wind turbine, abrupt changes in wind speed ("ramps") can cause large changes in power output. Complex terrain and meteorological phenomena such as low-level jets, land-sea breezes, and thunderstorm winds increase the forecasting challenge.

The Solution: iMapPro WindPredictor

WDT's iMapPro WindPredictor wind power forecasting service provides accurate and timely predictions for the wind industry. This advanced system uses scientifically-proven methodology to provide hour-ahead, day-ahead, and week-ahead forecasts.

When coupled with iMapPro Lightning, it provides time-critical lightning and severe weather alerts.

Utility Operators benefit through reliable operations, minimized wind integration costs, and improved scheduling of maintenance.

Hour-Ahead, Day-Ahead, Week-Ahead

iMapPro WindPredictor provides accurate and timely information at all scales – hourly, daily, and weekly. Forecasts can be updated as frequently as every 10 minutes, based on integrated Supervisory Control and Data Acquisition (SCADA) system and met tower data.

A secure web portal allows convenient interaction with the data beyond "flat files," including customized views and archived data. Past performance data is shown, providing a measure of confidence in the forecasts.



WindPredictor



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Customized Services We Provide

Integrated data – Forecasts incorporate your SCADA and met tower data, providing the most accurate forecasts possible.

- Customized forecasts – Forecasts are tailored for your wind farm, providing the accuracy needed for critical decision making.
- Resource Assessment – Services are available ranging from regional prospecting to detailed site assessment.

Lightning and Severe Weather Alerts

iMapPro Lightning complements **iMapPro WindPredictor™** by providing:

- Real-time lightning data from the North American Precision Lightning Network (NAPLN)
- Lightning alerts up to one hour in advance
- National Weather Service and WDT severe weather alerts
- North American radar data

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