

Wind Forecasts from Frontier Weather

Frontier Weather can produce forecasts of wind speed and direction for any point in the conterminous U.S. as well as adjacent coastal waters, and our forecasts can be extended to include total power generation at a given facility. Highly customizable forecasts can be tailored to suit facilities of any size and can be delivered conveniently in graphical or text form.

Employing an ensemble-based approach, our forecasts offer the best of both worlds: high resolution models providing excellent short term guidance are balanced with tested and proven larger scale models to provide superior forecast performance in the longer term.

Free 30-Day Trials

If you believe wind forecasts from Frontier Weather can help you in preparing for the fluctuations inherent in wind power generation, we invite you to contact us to arrange a 30-day trial period at no charge. We will set up one forecast point for any U.S. facility (excluding Alaska and Hawaii) and produce forecasts in your desired format.



Frontier Weather

6140 S. 104th East Ave.
Suite 300
Tulsa, OK 74133

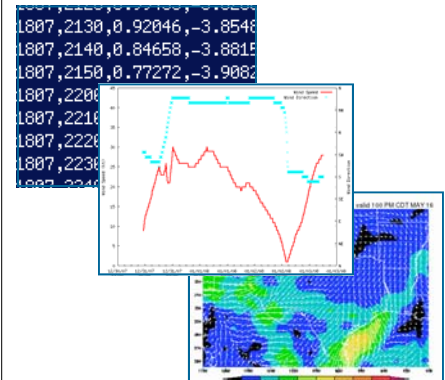
Phone: (918) 252-7791
Fax: (866) 892-8521

E-mail: jsouthard@frontierweather.com

www.frontierweather.com

Frontier Weather

WIND FORECASTING Products and Services



Phone: (918) 252-7791

CUSTOMIZED FORECASTS

Given a facility's location (latitude, longitude, and elevation), we can produce a detailed forecast of wind speed, wind direction, and power generation:

- Speeds in knots, directions in degrees.
- Generation in kilowatts.
- Forecasts go out 72 hours into the future.
- Forecasts for multiple elevations can be made for the same point.
- Forecast timestep is 10 minutes.
- Forecasts can be updated every hour.
- Larger facilities can be accommodated by multiple forecast points.

All of the above factors may be tailored to match each facility's particular requirements, and will ultimately determine the pricing. Contact us for more information or for a quote.

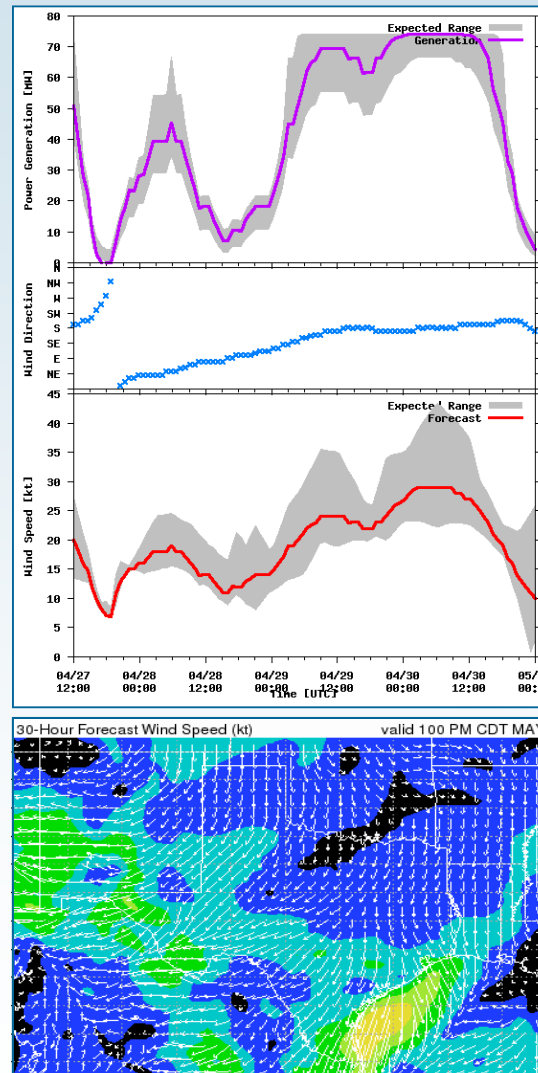
BEST OF BOTH WORLDS

Frontier Weather utilizes an ensemble of many computer models to produce what we believe to be the best possible wind forecasts. Each component model is weighted to favor its strengths—capitalizing on the near-term skill of the higher resolution models while also adding the expertise in the 24-72 hr time period of the larger scale models.

Near Term Highest Resolution	Short Term High Resolution
NAM (WRF)	GFS
RUC	SREF

FORECAST FORMATS

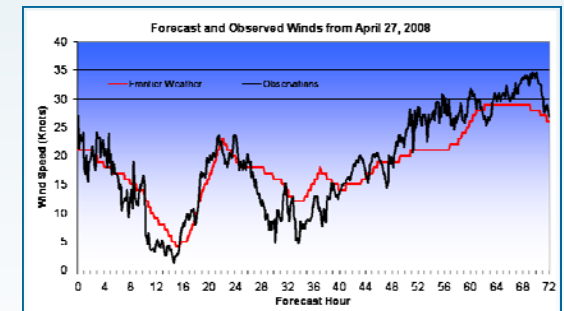
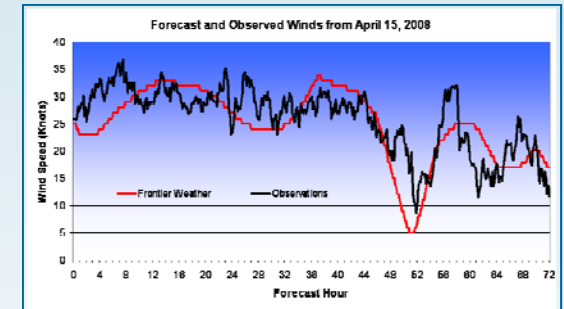
Forecasts can be delivered in a number of ways, either as text (.csv) files, as graphs showing the forecast wind speed and direction as functions of time, or as a set of maps showing the forecast winds at each forecast timestep over a region.



(Top) Graph of forecast power generation (purple), wind direction (cyan) and wind speed (red) with time at a single forecast point; (Bottom) Map of forecast winds in Texas region at 30 hrs.

ONGOING ENHANCEMENTS

When measurements of wind speed and/or direction are available from an on-site meteorological tower, we can verify our forecasts against them. *In situ* observations are very valuable for assessing the performance of our forecasts: we can identify trends and biases that arise from topography and other local effects, and then develop corrections to improve overall forecast skill in all time periods.



Graphs showing forecast (red) and observed (black) wind speeds as a function of future forecast hour at a ridgetop forecast point. Wind speeds are in knots. (Top) Plot from April 15, 2008; (Bottom) Plot from April 27, 2008.