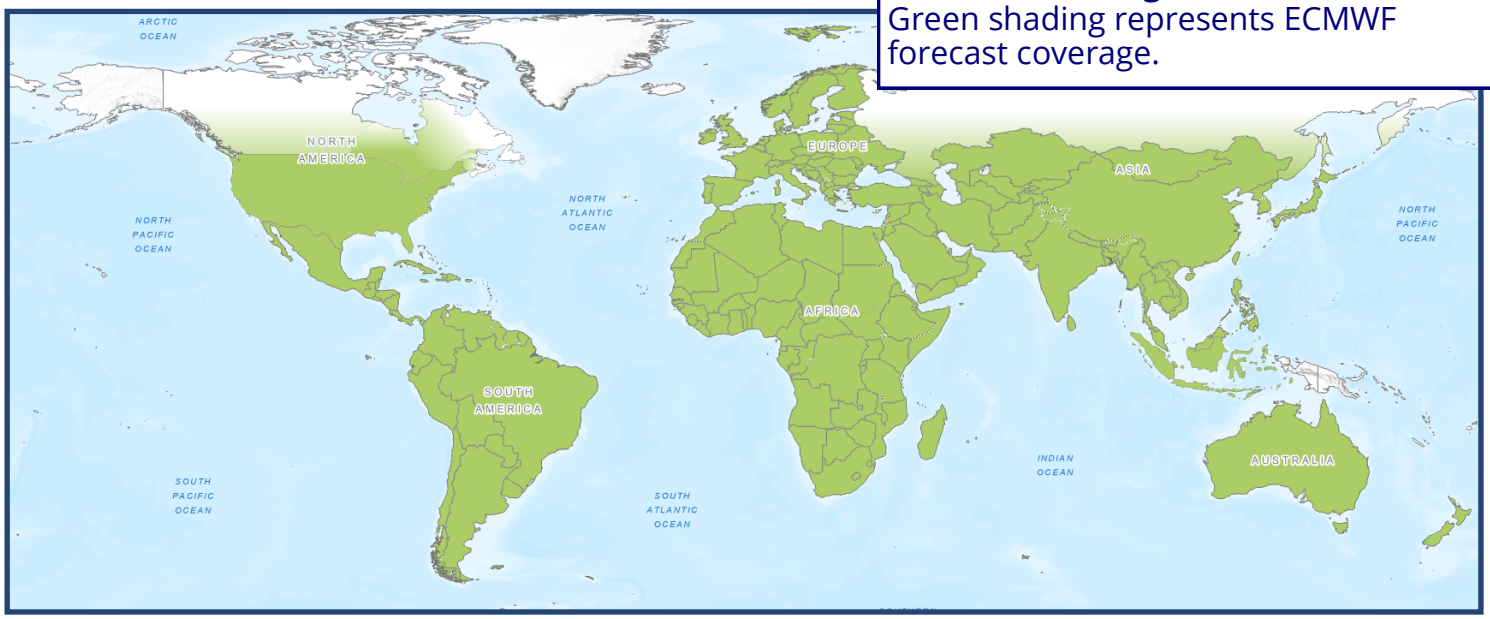
SuperPack® (Forecast)

Speedwell Climate

Speedwell Forecast SuperPack® provides unlimited access to Speedwell's catalogue of probabilistic downscaled (bias-corrected) and raw forecast products. Forecast SuperPack dramatically simplifies the administration of your weather data needs. A single contract covers all users group-wide across multiple office locations.

Forecast Coverage (ECMWF)
Green shading represents ECMWF forecast coverage.



Subscription Highlights

Forecast Models

- ECMWF operational and ensemble (15-day, 46-day, seasonal)
- GFS operational and ensemble (15-day)
- All models available as raw forecasts and Speedwell downscaled (see page 2)

Coverage

- GFS coverage - global
- ECMWF coverage - almost global (see map above)

Forecast Variables / Temporal Resolutions / Forecast Horizon

- Daily maximum and minimum temperature and precipitation
  - ECMWF 10-day operational
  - GFS* 15-day operational
  - ECMWF 15-day ensemble (51 members)
  - GFS* 15-day ensemble (31 members)
  - ECMWF 46-day ensemble (101 members)
  - ECMWF 7-month ensemble (51 members)
- Three-hourly temperature, 10-meter wind, 100-meter wind, and solar radiation
  - ECMWF 10-day operational
  - ECMWF 15-day ensemble (51 members)
- Hourly solar radiation
  - ECMWF 10-day operational (hours 00-90)
  - ECMWF 15-day ensemble (51 members) (hours 00-90)

* additional variables / temporal resolutions available for the GFS model upon request

Indices

- Population-weighted index forecasts for countries and regions world-wide.
- Agriculture index forecasts covering major crop growing regions around the world.
- Renewable Power Production indices (hourly and daily MWh) [**SuperPack Premium**].

Web Tools

- Forecasts can be viewed on the Speedwell website using a range of tools that include latest forecast displays, comparison with previous model runs, forecast verification...

About Speedwell Downscaling

Speedwell downscaled forecasts are location-specific forecasts based upon the ECMWF & GFS forecast models that have been post processed to remove forecast bias. Bias correction is accomplished by comparing the forecast against observed data and then statistically correcting the forecast (see below). The result is a superior forecast to the original raw model output.

Step #1 Data Preparation

The Speedwell downscaling methodology starts with the sourcing of high quality input. Observations for forecast verification are sourced from Speedwell's extensive worldwide archive of high-quality cleaned observations. Weather forecasts are sourced from the ECMWF (European Centre for Medium– Range Weather Forecasts) and GFS (Global Forecast System operated by the US National Weather Service) numerical weather prediction models.

Step #2 Choice of grid points

In order to produce a station level forecast we must convert from the raw gridded forecast to the location of the station. This conversion requires the selection of grid points to be interpolated to the location. Grid point selection requires an understanding of the geography and local climatology of the area as well as the use of a statistical correlation analysis. In some instances, more than one grid point will be used to optimise the forecast for the desired location.

Step #3 Collation of time steps

The GFS & ECMWF forecast models are released as temporal forecast slices. To produce a daily forecast one must combine these model slices to cover the forecast period. For purposes of consistency across regions we aggregate the time slices to produce a local calendar day forecast (approximated due to limitations of available model slices).

Step #4 Statistical adjustment

The daily forecast produced in step #2 is continuously compared against cleaned observations. This running analysis is used to detect forecast bias. Forecast bias is calculated continuously for each forecast product, each model run, each element, for each station, and for each day. Once understood, the detected bias is removed from the forecast in order to produce the downscaled forecast.

SuperPack Premium (Forecast)

SuperPack Premium includes all features of standard offering plus access to the Speedwell Renewable Power Production forecasts.

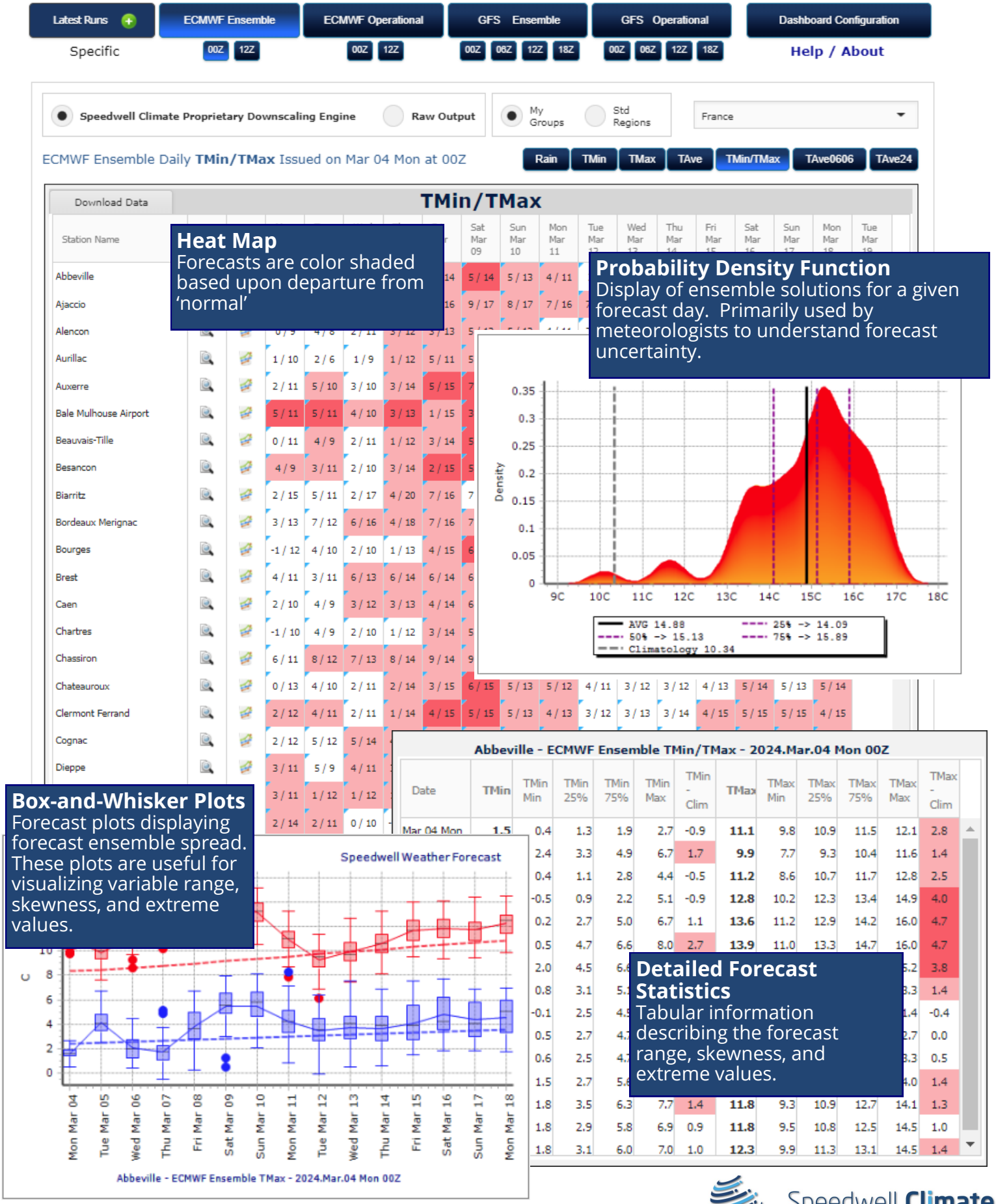
- Forecasts based up on the Speedwell Wind Power Production models (the same models used to produce the Speedwell Wind Power Production Indices).
- Catalogue
  - Hourly Production forecasts (MWh)
    - ECMWF 00z and 12z operational (10-day forecast)
    - ECMWF 00z and 12z ensemble (15-day forecast)
  - Daily Production forecasts (MWh)
    - ECMWF 00z and 12z operational (10-day forecast)
    - ECMWF 00z and 12z ensemble (15-day forecast)
- Note, for each index, the Power Production Model is frozen (fixed) based upon the installed capacity as of a given date. These forecasts do not actively account for changes to the installed capacity, curtailment, or asset outages.

Forecast Dashboard

Web Tools (Forecasts)

Online applications for forecast visualization, in-depth analysis, and rapid updates

Subscribers can view multiple forecasts in the easy to use dashboard. Forecasts are colour shaded to show the difference vs. normal. The grid is fully configurable by the user to show groups of sites in an a user defined order.



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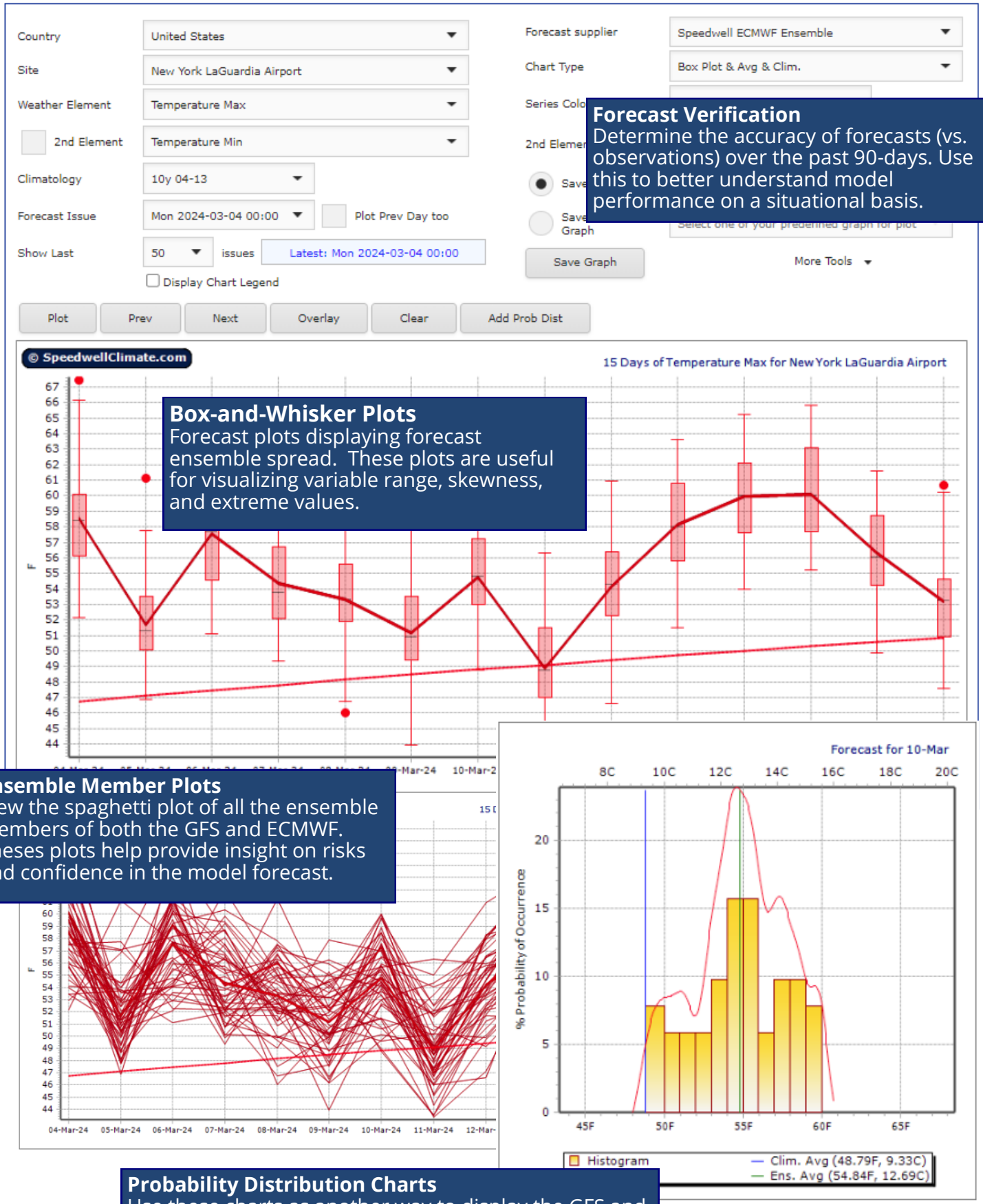
Forecast Viewer

Web Tools (Forecasts)

Online applications for forecast visualization, in-depth analysis, and rapid updates

Users can conduct in-depth forecast analysis using the Forecast Viewer. This tool allows for the generation of box-and-whisker plots, overlay of actual data, overlay of multiple elements and sites without limit. The forecast viewer also allows the user to add the probability distribution.



Forecast Verification
Determine the accuracy of forecasts (vs. observations) over the past 90-days. Use this to better understand model performance on a situational basis.

Box-and-Whisker Plots
Forecast plots displaying forecast ensemble spread. These plots are useful for visualizing variable range, skewness, and extreme values.

Ensemble Member Plots
View the spaghetti plot of all the ensemble members of both the GFS and ECMWF. Theses plots help provide insight on risks and confidence in the model forecast.

Probability Distribution Charts
Use these charts as another way to display the GFS and ECMWF ensemble members in order to better understand risks for maximum or minimum temperatures and precipitation on any given day.

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FastCast

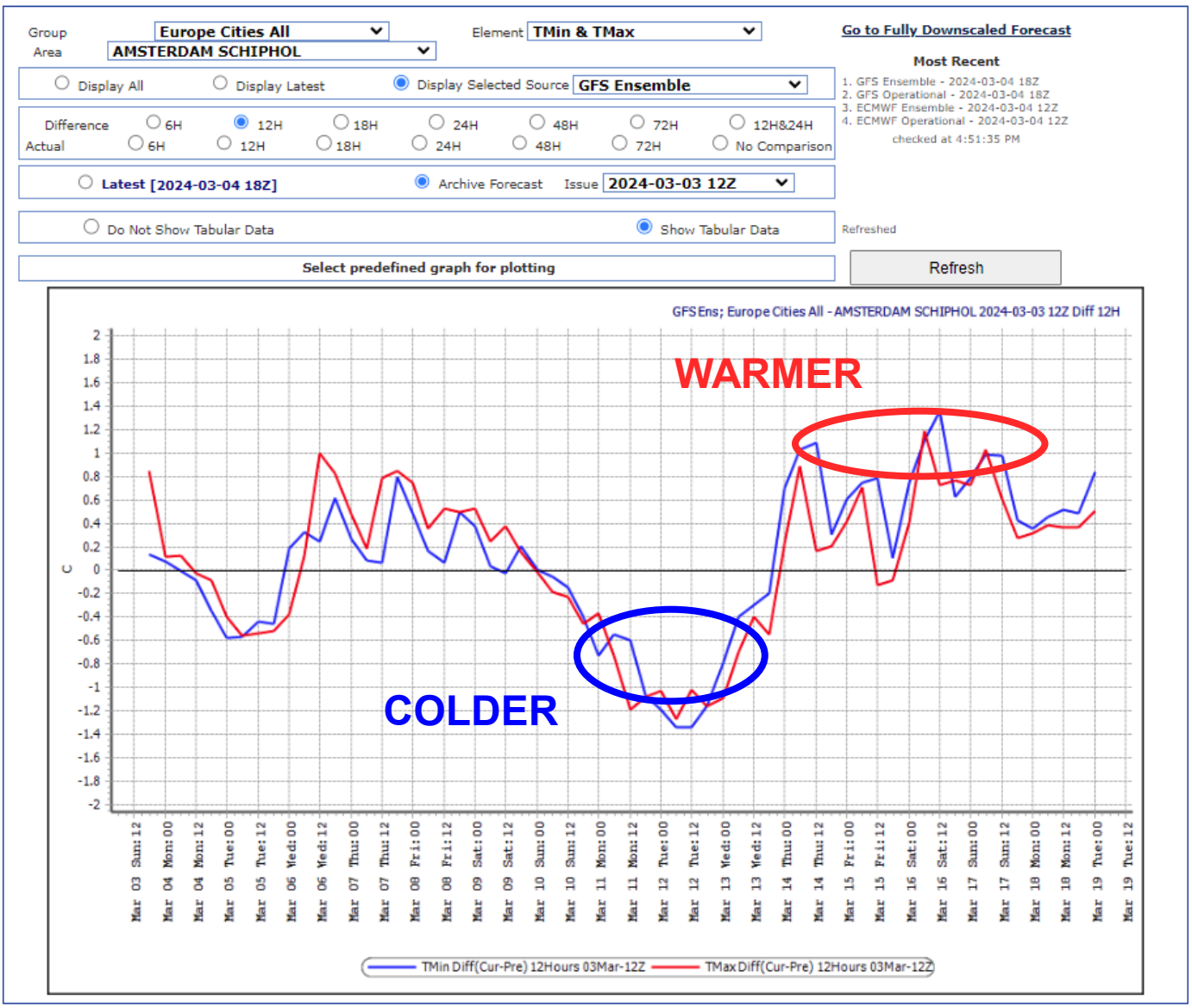
Web Tools (Forecasts)

Online applications for forecast visualization, in-depth analysis, and rapid updates

Speedwell FastCast produces a frame-by-frame ultra fast graphical presentation of the change in forecast from one run to another. Graphics are updated as each time step is released.

The FastCast product has been designed with input from traders. The goal is to present the information rapidly and in a straight-forward manner: “warmer or colder…?”

- View ECMWF and GFS operational and ensemble
- Charts update in real-time as model slices are received
- Multi-station capability, which allows 4 graphics in one window
- Support is provided for all of Speedwell’s agricultural and population weighted indices



Forecast Delivery Options

Speedwell offers a number of solutions for data delivery. Customizable file formats as well as API access to SuperPack stations are all included with the subscription.

- FTP delivery of historical and ongoing data feeds
- Direct download by multiple users from the Speedwell website
- Direct access via Speedwell API

For additional information please contact us at

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