



Forecast SuperPack

Speedwell Forecast SuperPack[®] provides unlimited access to Speedwell's probabilistic downscaled 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 SuperPack includes forecasts for daily minimum temperature, daily maximum temperature and daily precipitation for the following models:

- ECMWF ensemble (raw output)
- ECMWF operational (raw output)
- ECMWF ensemble (Speedwell downscaled)
- ECMWF operational (Speedwell downscaled)
- GFS ensemble (raw output)
- GFS operational (raw output)
- GFS ensemble (Speedwell downscaled)
- GFS operational (Speedwell downscaled)

Subscription Highlights

Station Data

Daily forecasts:

- Temperature and precipitation
- Speedwell downscaled 15-day ensemble or deterministic forecast location. We produce downscaled forecasts for over 4,000 sites around the world for the ECMWF and GFS models.
- Speedwell downscaled month-ahead forecast based on the ECMWF 32-day coupled model.

3-Hourly forecasts:

- Wind speed / direction at 10m & 100m (Europe only)
- Ensemble forecasts from the ECMWF model

Hourly forecasts:

- Hourly temperature forecasts (Europe only)

Indices

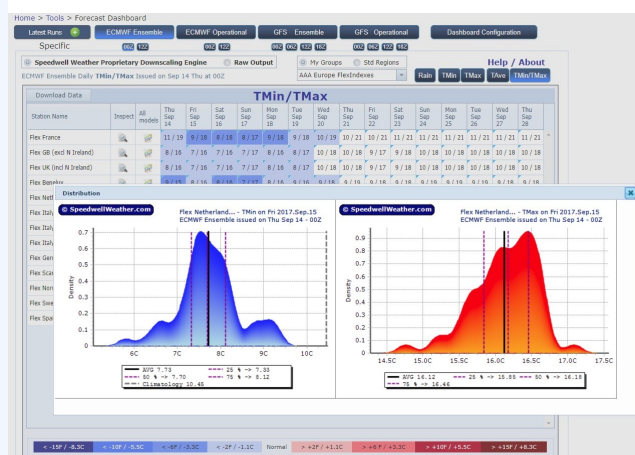
- Access to over 150 population-weighted basket forecasts for countries and regions world-wide.
- Access to over 260 regional agriculture index forecasts covering major crop growing regions around the world.

Web Tools

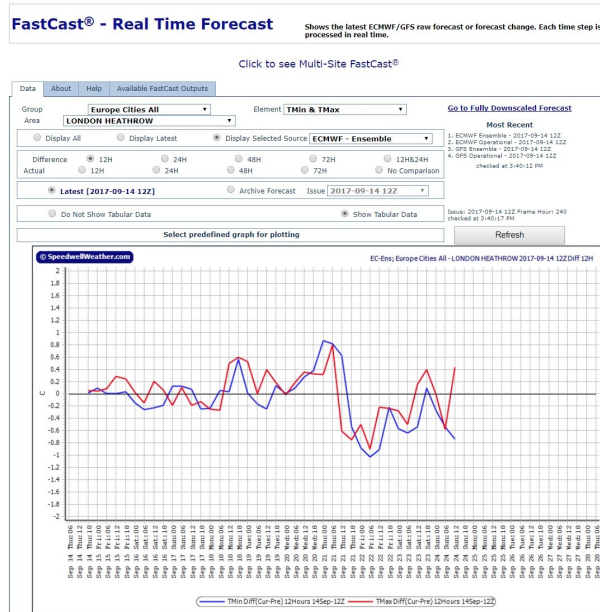
- Forecasts can be viewed on the Speedwell website using a range of tools that include latest forecast displays, comparison with previous model runs, forecast verification...
- Access to Speedwell FastCast[®] for ultra-fast forecast change notification.

Data Delivery

- FTP, web download, Speedwell Weather System, or direct access via the Speedwell API.
- We make available all members of the GFS & ECMWF ensemble forecasts.



Access to the Speedwell forecast dashboard. View raw forecasts or downscaled forecasts. Colour shading to depict above normal or below normal conditions. View probability distributions for ensemble forecasts.



Access to FastCast[®] dashboard. Frame-by-frame ultra fast graphical presentation of the change in the forecast.



About Speedwell Downscaling

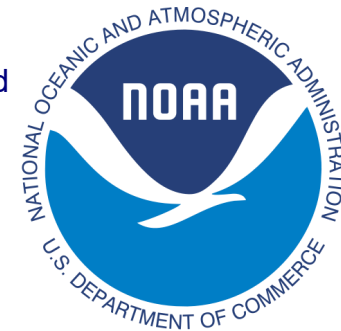
Speedwell downscaled forecasts are location-specific forecasts based upon the ECMWF & GFS forecast models that have been post processed to remove forecast bias. Bias correction is accomplished by comparing the forecast against observed data and then statistically correcting the forecast (see below).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

Downscaling Process:



Step #1 Data Preparation

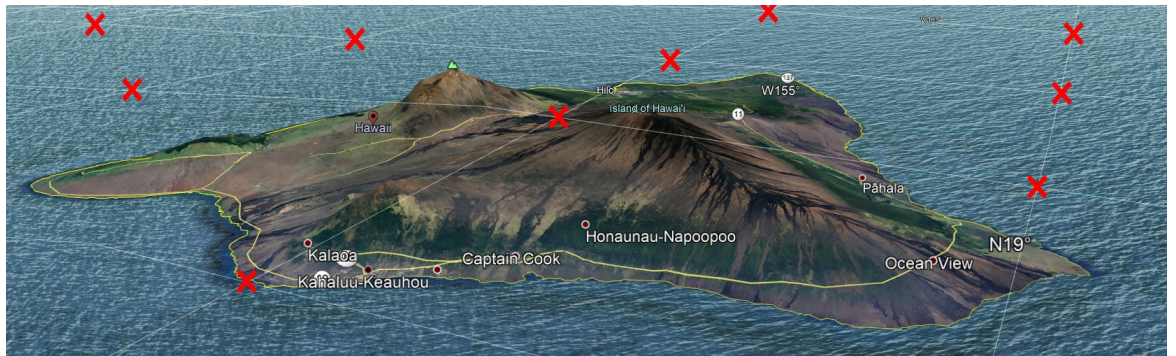
The Speedwell downscaling methodology starts with the sourcing of high quality input. Observations for forecast verification are sourced from Speedwell's extensive worldwide archive of high-quality cleaned observations. Underlying weather forecasts are sourced from the ECMWF (European Centre for Medium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



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.



Forecast Web Tools

Speedwell Dashboard

Subscribers can view multiple forecasts in the easy to use Speedwell Dashboard. Forecasts for multiple locations can be viewed alongside with each forecast colour coded to show difference vs. normal. The grid is fully configurable by the user to show groups of sites in any order. Icons give quick link to more detailed viewing and analytical tools.

The dashboard screenshot shows a table of TMin/TMax forecasts for various airports. The table has columns for Station Name, Inspect, All models, and forecast dates from Fri Sep 15 to Fri Sep 29. Below the table is a color-coded legend for temperature anomalies: <math>< -15F / -6.3C</math>, <math>< -10F / -5.5C</math>, <math>< -6F / -3.3C</math>, <math>< -2F / -1.1C</math>, Normal, $> +2F / +1.1C$, $> +6F / +3.3C$, $> +10F / +5.5C$, $> +15F / +8.3C$.

Below the table is a detailed forecast plot for Bakersfield Airport. The plot shows TMin and TMax forecasts for the period from Fri Sep 15 to Fri Sep 29. The plot includes a legend for the forecast range, skewness, and extreme values. The plot also shows a Probability Density Function (PDF) for the TMax forecast on Tue 2014.Oct.14, with a legend for the PDF: AVG 77.40, 25 % -> 75.39, 50 % -> 77.63, 75 % -> 79.12, and Climatology 65.32.

Forecast Display / Heat Map

Forecast values displayed on a per station or per index basis. Color coding based upon departure from normal.

Box-and-Whisker Plots

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

Detailed Forecast Statistics

Tabular information describing the forecast range, skewness, and extreme values.

Forecast Maps

Geographical display of the raw ECMWF and raw GFS forecasts for North America and Europe.

Probability Density Function

Display of ensemble solutions for a given forecast day. Primarily used by meteorologists to understand forecast confidence and risk.

Speedwell FastCast[®]

Speedwell FastCast produces a frame-by-frame ultra fast graphical presentation of the change in forecast. Updated as each time step of the model is released.

The FastCast product has been designed with input from traders. The goal is to present the information rapidly and in a straightforward manner: "warmer or colder...?"

- View ECMWF Operational / Ensemble or GFS Operational / Ensemble for all runs, graphically updated in real time
- Multi-station capability, which allows 4 graphics in one window
- Support is provided for all of Speedwell's agricultural and energy indices
- FastCast outputs available for all major regions across the globe and thousands of individual sites

The screenshot shows the FastCast - Real Time Forecast interface. It displays a line graph of TMin and TMax forecasts for Denver International Airport. The graph shows the difference between the current forecast and the previous forecast. The graph is annotated with "WARMER" and "COLDER" labels. The graph also shows a legend for the forecast range, skewness, and extreme values. The graph also shows a Probability Density Function (PDF) for the TMax forecast on Tue 2014.Oct.14, with a legend for the PDF: AVG 77.40, 25 % -> 75.39, 50 % -> 77.63, 75 % -> 79.12, and Climatology 65.32.



Forecast Web Tools

Graphical Forecast Viewer

Subscribers can see forecasts in detail in the Forecast Viewer. This allows 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.

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

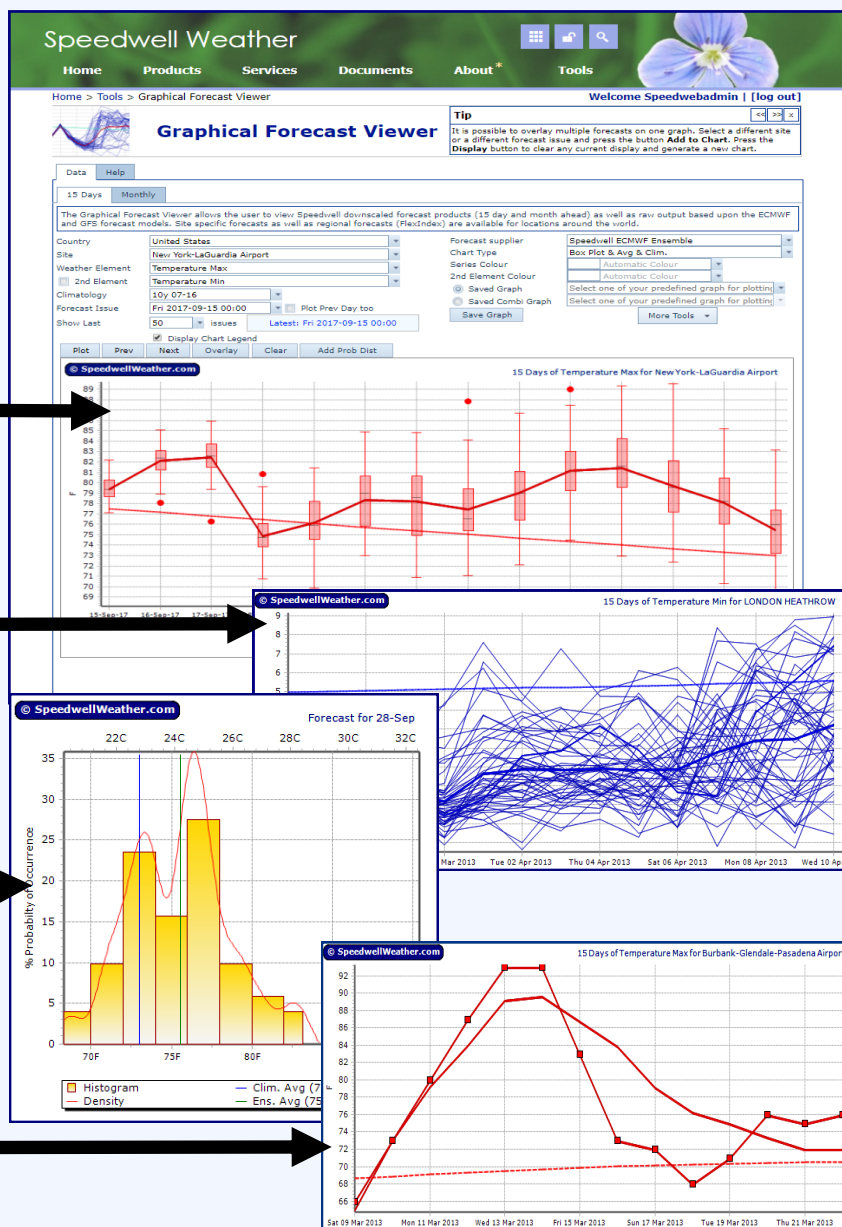
View the spaghetti plot of all the ensemble members of both the GFS and ECMWF. These plots help provide insight on risks and confidence in the model forecast.

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 on any given day.

Forecast Verification

Determine the accuracy, on a daily basis, of all the Speedwell downscaled forecasts for both temperature and rainfall going back as far as 90 days. Use this to place weight on certain models or runs over others.



Forecast Delivery

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
- Data can be made available through ZE Group's Zema data management tool



About The Speedwell Weather Group

Speedwell Weather provides quality weather data, weather forecasts, software, and weather-risk consultancy. With offices in the UK and the USA we serve clients in sectors including weather-risk, insurance, energy and agriculture world-wide.

Other Companies in the Speedwell Weather Group



weatherXchange Platform is a free-of-charge platform which helps companies access index-based weather risk protection

Speedwell Calculation Services

Speedwell Calculation Services Ltd provides weather derivative valuation services for weather risk positions providing profit and loss and other risk metrics

Speedwell Settlement Services

Speedwell Settlement Services Ltd act as a neutral third-party providing Settlement Data during the life cycle of an index-based weather transaction.

Contacts

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