



SuperPack[®] North America

Speedwell SuperPack makes available an unprecedented range of quality historical weather data, and weather data feeds for a single annual fee. SuperPack dramatically simplifies the administration of your weather data needs. A single contract covers all users, group-wide, across multiple office locations.

Speedwell SuperPack North America is unique in that this offering provides unlimited access to datasets within the specific geographies of Canada, Mexico, and the United States.

Subscription Highlights

Station Data (observations)

- Access to our surface data archive of 33,000+ stations spanning Canada, Mexico, and the United States. This includes cleaned data for over 2,800 sites.
- Multiple weather variables including hourly and daily temperature, precipitation, snowfall, wind speed, sunshine, cloud cover, dew-point, and solar radiation.
- Provision of historical data and feeds.

Gridded Data (SuperPack Premium Only)

- Access to Speedwell gridded data products: synthetic time series, grib data, proprietary derived indices.

Indices

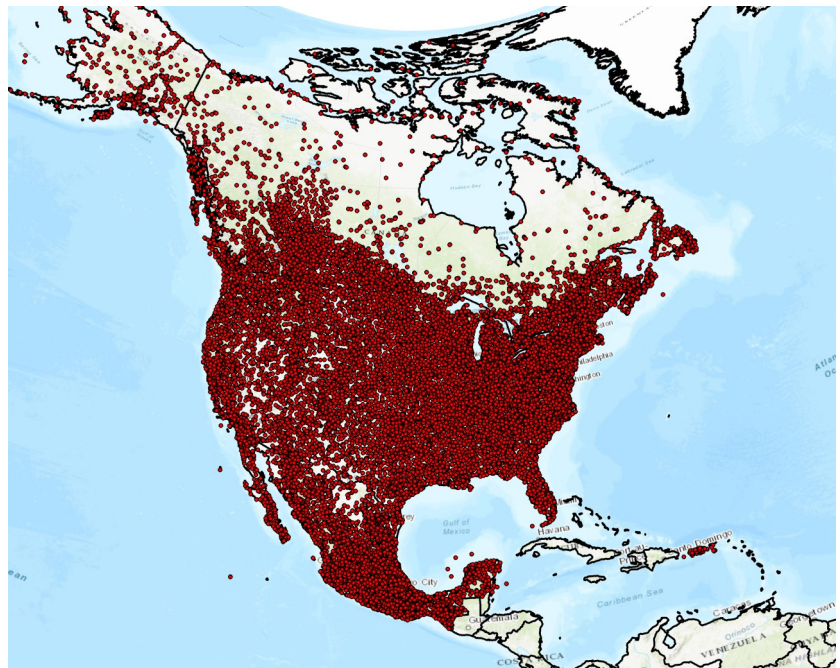
- Access to agriculture indices and population-weighted indices used for modelling energy consumption.

Smoothed Climatology

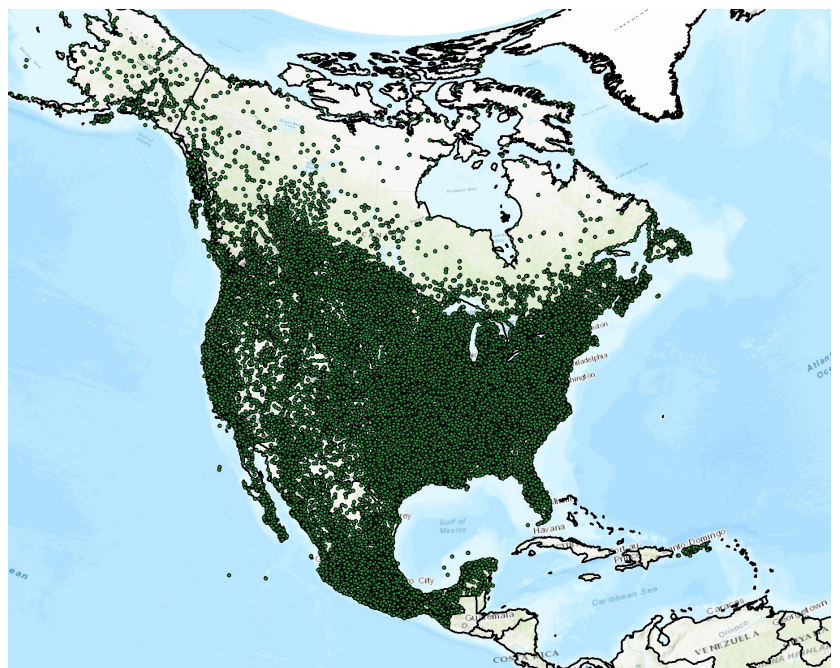
- On a reasonable request basis, we will provide smoothed climatology for any daily or hourly weather variable.

Web Tools

- Map Tool shows the weather data sets available in Speedwell's primary archive. Immediate access to data inventories, analytics, and data downloads.
- Access to the Speedwell suite of data analysis and visualization tools including Weather Index Cone, Actuals vs. Climatology, Analogue Years...



Raw daily temperature: red dots represent weather stations with a minimum of 1 year of historical data (Canada = 5,672, Mexico = 5,705, and the United States = 14,116 stations).



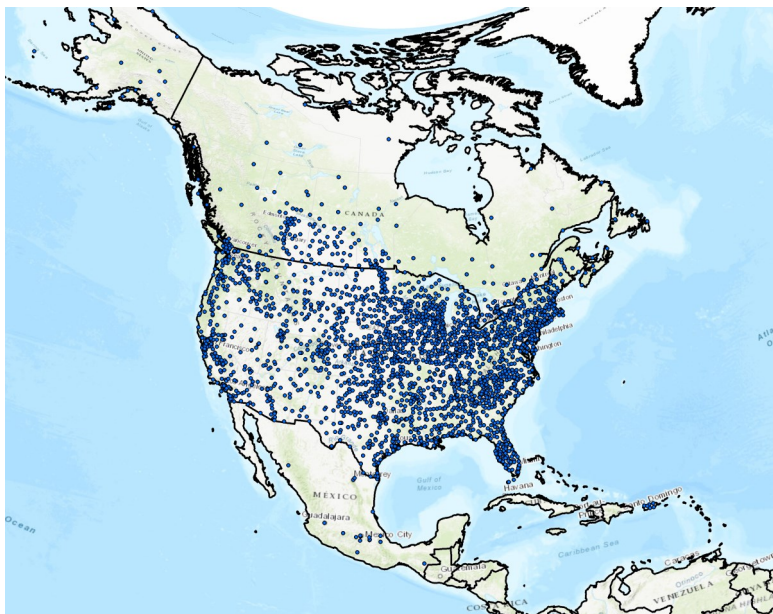
Raw daily precipitation: green dots represent weather stations with a minimum of 1 year of historical data (Canada = 6,993, Mexico = 5,908, and the United States = 20,584 stations).

Station Data

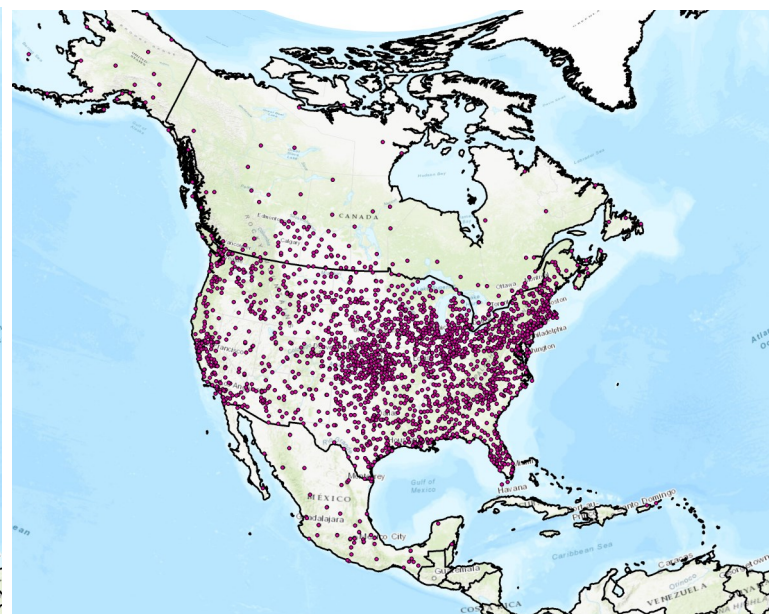
Historical data and ongoing feeds are sourced directly from relevant National Meteorological Services. For each country, we have an agreement in place such that we are able to obtain the highest quality data. Upon processing the data into our database the data is cleaned in order to fill missing values and detect and replace erroneous observations. The cleaning process is performed upon historical data with data feeds being cleaned on a daily basis. The result of this process is a dataset ready for your use.

Data Sources

Speedwell has direct supply agreements with many National Meteorological Services worldwide allowing us to supply official climate data for many countries.



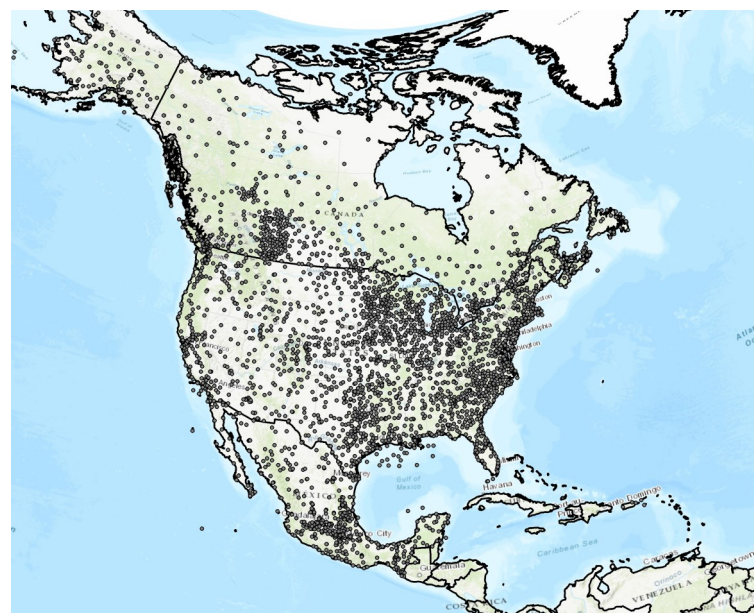
Cleaned daily temperature: blue dots represent weather stations with a minimum of 1 year of historical data (Canada = 260, Mexico = 19, and the United States = 2,480 stations).



Cleaned daily precipitation: purple dots represent weather stations with a minimum of 1 year of historical data (Canada = 152, Mexico = 64, and the United States = 2,017 stations).



Raw hourly temperature: orange dots represent weather stations with a minimum of 1 year of historical data (Canada = 1,064, Mexico = 562, and the United States = 2,657 stations).



Raw hourly wind: grey dots represent weather stations with a minimum of 1 year of historical data (Canada = 991, Mexico = 498, and the United States = 2,152 stations).

Gridded Data (*SuperPack Premium only*)

Speedwell processes a number of gridded datasets globally. For the North American geography we offer access to the following datasets

- CHIRPS version 2.0
- ECMWF ERA-Interim
- MERRA 2
- MODIS—MOD 13C1
- NOAA—CPC Unified Rain Gauge

In addition to the datasets listed above Speedwell has produced proprietary high-resolution versions of the following gridded datasets:

- ECMWF ERA-Interim (5km global)
- MERRA 2 (5km global)

SuperPack clients are provided with access to historical data as well as ongoing updates.

Gridded data is supplied in gridded data format, as synthetic weather stations, or as indices representative of a geographical region.

ECMWF ERA-Interim



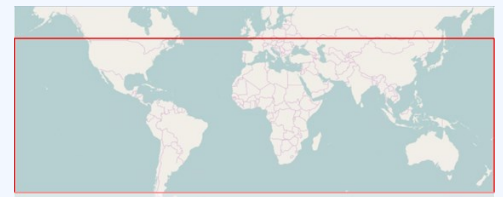
MERRA 2



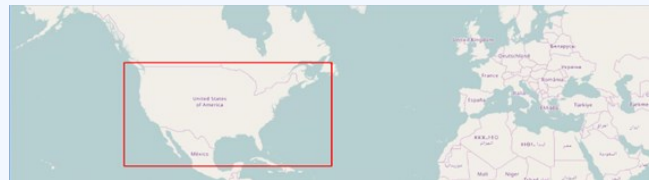
MODIS



CHIRPS version 2.0



NOAA – CPC Unified Rain



Smoothed Climatology

A selection of standard smoothed climatologies are available from the Speedwell web site. SuperPack clients can also request a smoothed climatology for any variable - hourly or daily - for any site where cleaned data is available.

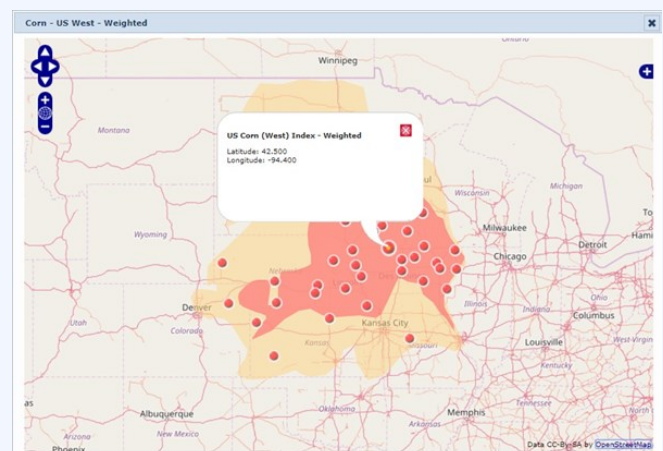
Indices

Speedwell has produced indices for the following sectors:

- Agriculture (crop production weighted)
- Energy (population / energy weighted)
- Renewables (hydropower, wind, solar)

Historical data and ongoing feeds are available for all indices.

Custom indices are available for an additional fee.



Web Tools

A number of web tools are provided at no additional charge which can be used to analyze and interrogate data for sites in our surface data archive.

- Map Tool (access to data inventories)
- Actuals vs. Climatology Calculator
- Weather Statistics Calculator
- Weather Index Cone Viewer
- Correlation Analysis Calculator
- Analogue Years Calculator
- Weather Data Inventory Tool

Analogue Years

Data | **Output Example**

Compare the evolution of a weather index over previous years with what may happen this time.

Station / Basket
Country: United States
Site: Atlanta-Hartsfield International Airport
Element: Rain

Settings
Aggregation: Average | Sum
Number of years to use: All yrs

Date
Start Date: 2017-05-22
End Date: 2017-11-22

Month-2 to Month+2
Month-3 to Month+3
Month-6 to Month+6

Calculate | **Download (Excel Format)**

Speedwell@Weather.com

Actuals Vs Climatology

Data | **Station Info** | **Help**

Shows the evolution of a chosen weather variable compared with climate normals. Data is presented in exportable grid and in graphical format. This is a subscription service. If you are logged in as a Trial user, you will not have access to all functions.

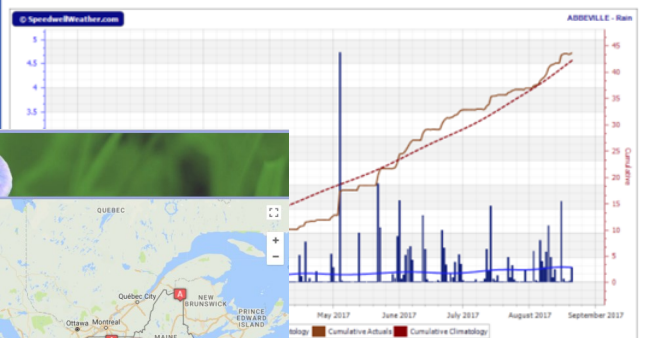
Country: United States | Element: Rain
Site: ABBEVILLE
Start Date: 01-Jan-17 | End Date: 21-Aug-17

Standard Periods
Custom | Calendar Year to date | Last 30 Days | Last 90 Days | Last Month

Climatology Year Start: 2007 | Climatology Year End: 2016
Data Aggregating Index: Cumulative | Average

Calculate | **Download (Excel Format)**

Graphical Representation

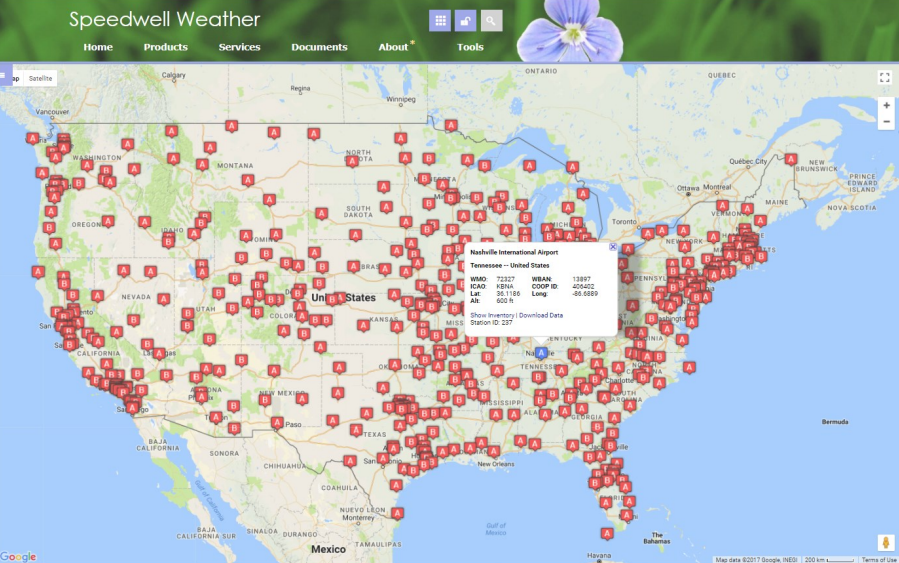


ABBEVILLE - Rain

Month	Cumulative Actuals	Cumulative Climatology
May 2017	0.17	2.66
June 2017	0.17	3.11
July 2017	0.17	3.96
August 2017	0.17	4.68
September 2017	0.18	5.50

Speedwell Weather

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Station | WIND | **Full Data Inventory** | Analogue Years | Actual Average | Hourly Mean | Historic Hourly Mean | Data Chart | Data Download | Hedge | Temp Forecasts | Rain Forecasts | Country | State | Temp Max | % 1-1h | % 1-2h | % 1-3h | % 1-6h | Rain | Latitude | Longitude | Altitude | WBAN | ICAO | COOP ID | SWIS ID

Station	WIND	Full Data Inventory	Analogue Years	Actual Average	Hourly Mean	Historic Hourly Mean	Data Chart	Data Download	Hedge	Temp Forecasts	Rain Forecasts	Country	State	Temp Max	% 1-1h	% 1-2h	% 1-3h	% 1-6h	Rain	Latitude	Longitude	Altitude	WBAN	ICAO	COOP ID	SWIS ID
Muskogee County Airport	72036											United States	Georgia	100.00	100.00	100.00	100.00	100.00	43.171	-88.237	625	16840	KMGW	205712	111	
Nashville International Airport	72337											Tennessee	Tennessee	100.00	100.00	100.00	100.00	100.00	36.119	-86.689	600	13897	KBNV	406402	237	
New Orleans International Airport	72231											United States	Louisiana	100.00	100.00	100.00	100.00	100.00	29.953	-90.251	4	12916	KMSY	166660	119	
New York-Central Park	70466											United States	New York	100.00	100.00	100.00	100.00	100.00	40.789	-73.967	130	94728	KNYC	305901	122	
New York-Laguardia Airport	72913											United States	New York	100.00	100.00	100.00	100.00	100.00	40.635	-73.782	11	94783	KLGA	305903	298	
Newark-Liberty International Airport	72950											United States	New Jersey	100.00	100.00	100.00	100.00	100.00	40.683	-74.169	7	14734	KEWR	280236	272	
Northak International Airport	72308											United States	Virginia	100.00	100.00	100.00	100.00	100.00	36.903	-76.192	30	13737	KORF	446139	130	
Northak Karl Stefan Airport	72556											United States	Nebraska	100.00	100.00	100.00	100.00	100.00	41.986	-97.432	1,551	16461	KOPK	255995	124	























WBAN	Cumulative Avg Clim	Cumulative Avg Value-Clim	Cumulative Actual Value	Cumulative Climatology	Cumulative Actual Value - Clim	Actual Data Available?
63	0.17	2.66	2.93	0.17	2.66	Yes
49	0.17	1.31	2.97	0.34	2.63	Yes
13	0.17	0.96	3.40	0.52	2.88	Yes
85	0.17	0.68	3.40	0.70	2.70	Yes
68	0.18	0.50	3.40	0.88	2.52	Yes
57	0.18	0.39	3.41	1.06	2.35	Yes
54	0.18	0.36	3.76	1.25	2.51	Yes
47	0.18	0.29	3.76	1.44	2.32	Yes
42	0.18	0.24	3.76	1.63	2.13	Yes
38	0.18	0.19	3.76	1.82	1.94	Yes
34	0.18	0.16	3.76	2.01	1.75	Yes
31	0.18	0.13	3.76	2.21	1.55	Yes
29	0.18	0.10	3.76	2.40	1.36	Yes
27	0.19	0.08	3.76	2.59	1.17	Yes
25	0.19	0.06	3.76	2.79	0.97	Yes
24	0.19	0.05	3.76	2.98	0.78	Yes
22	0.19	0.03	3.76	3.17	0.59	Yes
21	0.19	0.02	3.76	3.37	0.39	Yes
23	0.19	0.04	4.40	3.56	0.84	Yes
25	0.19	0.06	4.91	3.75	1.16	Yes
24	0.19	0.05	5.06	3.94	1.12	Yes

Data Delivery

Speedwell offers a number of solutions for data delivery. Customizable file formats as well as API access to SuperPack tradable 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

Features Summary

Feature	SuperPack® North America	SuperPack® Premium North America
Station Data		
Access to over 33,000 core sites plus 2,800+ cleaned data sets		
Access to daily data, hourly data, and sub-hourly data		
Data cleaning on request*		
Historical data and ongoing feeds		
Access to all weather variables		
Custom Data Requests*		
Gridded Data		
Access to native and derived gridded data sets for multiple weather elements. Includes proprietary gridded data sets eg Speedwell high resolution turbine-height wind series. Delivery in gridded data format, as synthetic stations or computed geographical indices		
Indices		
Access to Speedwell's agriculture, hydro and population-weighted energy indices histories and feeds.		
Smoothed Climatology		
Unlimited access to historical data sets*		
Web Tools / Data Delivery		
Access to web-delivered data tools		
Custom Delivery Formats**		
Access to the Speedwell API (tradable stations)		

* On a reasonable-request basis.

** A single data format for delivery is supported as standard

About Speedwell Weather Limited

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. We are the major provider of Settlement Data for parametric weather risk contracts.

Other Companies in the Speedwell Weather Group



weatherXchange® is an independent 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

For more information about Commodity Product or other data and forecast services please see www.SpeedwellWeather.com or contact:

info@SpeedwellWeather.com

Telephone:

Europe: +44 (0) 1582 465 551

USA: +1 843 737 4843

Address UK: *Mardall House, Vaughan Rd, Harpenden, Herts, AL5 4HU*

Address USA: *418 King Street, Charleston, SC 29403*