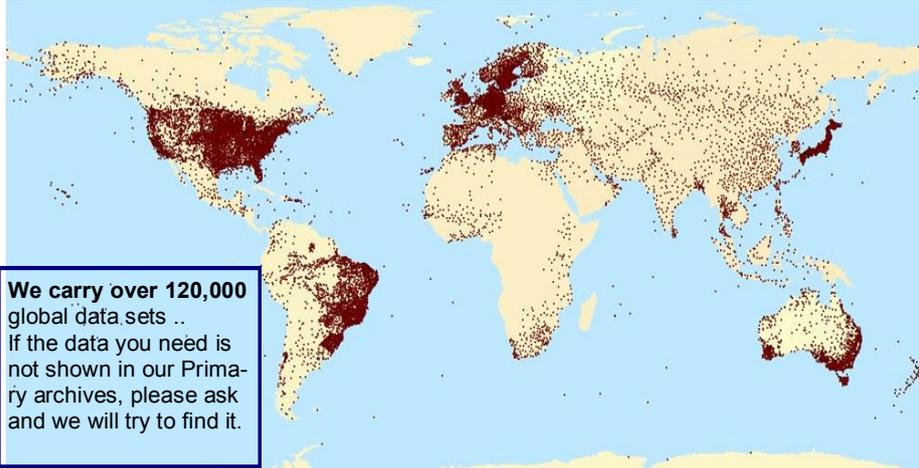


Speedwell Weather



Speedwell Data Services

Speedwell is the leading supplier of high quality historical and real-time weather data around the globe. Our data originates from a range of national meteorological services, supplied under data supply agreements and from carefully selected public sources. We are a single-point of contact for quality weather data in the energy, commodity, insurance, agriculture and weather risk markets as well as academic and public users. We are the dominant provider of Settlement Data for parametric weather risk contracts



We carry over 120,000 global data sets... If the data you need is not shown in our Primary archives, please ask and we will try to find it.

Full inventory of our primary archive of over 20,000 of data sets with breakdown by weather variable available online at: <http://www.speedwellweather.com/Pages/Others/DataInventory.aspx>

Station	WMO	Full Data Inventory	Actual	Weather	Code	Unit	Time	Country	State	Time Zone	Lat	Long	Altitude
Aachen-Oberbach	0505	Yes	Yes	Yes	Yes	Yes	Yes	Germany		UTC+01:00	50.743	5.930	50.743
Aix-les-Bains	0514	Yes	Yes	Yes	Yes	Yes	Yes	Germany	Northrhine-Westphalia	UTC+01:00	51.283	5.887	51.283
Angermunde	0091	Yes	Yes	Yes	Yes	Yes	Yes	Germany	Brandenburg	UTC+01:00	52.000	13.000	52.000
Arfara	0092	Yes	Yes	Yes	Yes	Yes	Yes	Germany	Northrhine-Westphalia	UTC+01:00	50.000	10.000	50.000
Aschberg	0062	Yes	Yes	Yes	Yes	Yes	Yes	Germany	Bavaria	UTC+01:00	48.000	10.000	48.000

Speedwell SuperPack®

One contract, one charge covers all...

Under a single contract and for a single annual fee a SuperPack licence provides corporate-wide access to our archives of worldwide hourly and daily historical weather data and feeds - including over 6,000 cleaned (ie quality controlled) data sets.

SuperPack offers a dramatic simplification of the financial and legal administration involved in data provision and provides immediate access to weather data to all users in the organisation through our web download tool.

SuperPack is a "living product" which is growing continuously.

- Historical data / real-time updates
- Temperature, precipitation, wind, solar, snowfall, visibility,...
- Daily and hourly data available
- Over 6,000 cleaned data sets and feeds available
- Instant access to primary archive of over 20,000 data sets
- On-line inventory www.SpeedwellWeather.com
- Data available via web download, FTP, API or ZE's Zema



Online data inventory tool. Search for stations via predefined data packs, data quality or by area

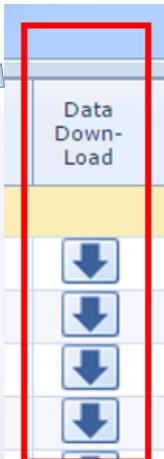
Angermunde - Germany
 WMO: 0091, WMO: N/A, ICAO: N/A, COOP ID: N/A, Lat: 52.000, Long: 13.000, Alt: 56.000, SWS: 5075, Source ID: 0091, SWS: 5075

Please note in many cases, especially for hourly variables, we show only part of our data inventory, if weather variables you include are missing or broken a shorter than you require, please contact us.

Checked daily temperature and rainfall data history and Feeds: Convention: These 0000 UTC 0 to 2359 UTC 00, This 0000 UTC 00 to 2359 UTC 00, valid from 0000 UTC to 0000 UTC 01.

Note: The times of day when Chinese standards are made have changed many times over the last 100 years in Germany. The 1980 the former East and West German Met Services adopted different conventions for climate reporting etc. The most recent changes to the reporting convention took place in 2005 when the correct structure of reporting extreme temperatures between 0000 UTC and 0000 UTC 01 was implemented.

Element Name	Units	Start Date	End Date	% Last	% Last	% Last	% Last	Observed	Quality	Other
rain	mm	01/01/1951	27/06/2012	100.00	100.00	100.00	100.00	100.00	Yes	Yes
Temperature Air	°C	01/01/1947	27/06/2012	100.00	100.00	100.00	100.00	100.00	Yes	Yes
Temperature Max	°C	01/01/1947	27/06/2012	100.00	100.00	100.00	100.00	100.00	Yes	Yes
Temperature Min	°C	01/01/1947	27/06/2012	100.00	100.00	100.00	100.00	100.00	Yes	Yes
Pressure Sea Level	hPa	20/05/2011	27/06/2012	100.00	100.00	100.00	100.00	100.00	Yes	Yes
Relative Humidity	%	01/01/1951	27/06/2012	100.00	100.00	100.00	100.00	100.00	Yes	Yes
Solar Radiation Global	W/m²	24/06/2007	13/04/2010	100.00	100.00	100.00	100.00	100.00	Yes	Yes
Solar Radiation Global	W/m²	01/01/1951	27/06/2012	100.00	100.00	100.00	100.00	99.83	Yes	Yes
Solar Radiation Global	W/m²	01/01/1951	27/06/2012	100.00	100.00	100.00	100.00	99.87	Yes	Yes
Solar Radiation Global	W/m²	01/01/1951	27/06/2012	100.00	100.00	100.00	100.00	99.94	Yes	Yes
Wind Max Gust	km/h	01/01/1979	27/06/2012	100.00	99.82	99.81	99.80	99.88	Yes	Yes
Wind Temperature Air	°C	01/01/1951	27/06/2012	100.00	100.00	100.00	100.00	99.86	Yes	Yes
Hourly Rain	mm	01/01/1951	27/06/2012	99.01	99.14	98.80	99.04	99.95	Yes	Yes
Hourly Cloud Cover	%	01/01/1951	27/06/2012	100.00	100.00	100.00	99.86	99.88	Yes	Yes
Hourly DewPoint	°C	01/01/1951	27/06/2012	100.00	100.00	100.00	99.86	99.88	Yes	Yes



Instant data download via the Speedwell website
 Data also available via API



Individual Stations and Data Packs

For users who don't need the full SuperPack offering, data sets are sold as individual sites or as packs of sites. We offer industry specific packages agriculture, energy, and weather risk markets and will also create packs on request. For example some standard data packs include:

- Agriculture: including Brazil coffee, U.S. cotton, China cotton, US Soybeans, Russia sugar beet, Argentina corn, Ivory Coast, Ghana cocoa....etc.
- Energy: including U.S. Gas-Weighted Degree Days, TX wind, German hourly solar, Chilean hydropower, German population-weighted basket...etc.
- Weather Risk: Speedwell-Market quoted weather weather derivative sites, Recalibrated data,...
- Regional: eg: European hourly data pack, US Primary pack...etc. etc.

Data coverage can be viewed here: <http://www.speedwellweather.com>



Meteorological data often has spurious values or missing data points. ". As the dominant provider of weather data for the pricing and settlement of weather risk contracts we understand the importance of quality. There is a lot of bad weather data out there!

Our cleaning techniques build on a very substantial software infrastructure which, in turn, uses a database of over 120,000 worldwide weather stations. We also use satellite, radar and forecast information in the cleaning process. Our tools alert us to improbable values by the use of methods including proxy testing, analysis of hourly reports and satellite imagery. However, we believe weather data cleaning can never, and should never, be fully automated. Our data cleaning processes are always manually overseen by meteorologists.

Hourly Average Temperature Data (Climatology)

Many clients approach us to buy hourly data which they use to calculate an average value for each hour for each day of the year. This is something we can provide saving the costs of buying and handling large hourly data sets. The output is a file with 24*366 data points and can be delivered by FTP or by email. This can be provided for any variable for any site for which we carry hourly data. The average can be calculated with or without kernel smoothing. The average can be based on any period with 10 years being the most requested. We carry historical hourly data for many thousands of sites in Europe, Australia, Asia and the Americas.

Data Tools



Historical Data Warehouse

Let us manage your data sets for you: SuperPack® clients can download data from our



Weather Statistics Extractor

Calculate and export weekly or monthly statistics such as cumulative temperature, HDDs, CDDs.



Analogue Years

View the evolution of a weather index relative to other chosen historical periods to see what happened next.



Actuals Vs Climatology

Tabular or graphical view of any weather variable relative to climate normals for any period.



Weather Analytics

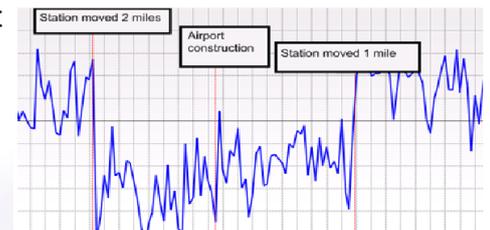
The Speedwell weather analytics tool presents weather data summaries for retailers and energy companies.

Recalibrated Data

Recalibrated Data Sets rebase historical temperature data to current observation conditions by adjusting for discontinuities. Trends are not removed.

Typical causes of discontinuities include:

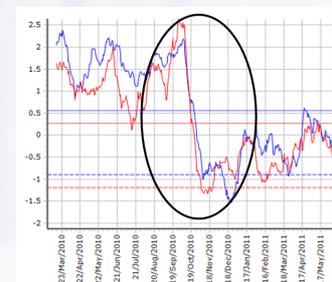
- Station moves
- Equipment changes
- Equipment failure
- Changes to the immediate environment
- Airport construction



We offer two Recalibrated data products:

“Light Recalibration” - A cleaned time series, with the significant discontinuities removed. Provided with a web-delivered monitor showing the performance of the site versus its proxies on a weekly basis.

Full Recalibration - A detailed analysis of metadata and the site-to-proxies relationship to correct for **all** material discontinuities. Delivered as a time-series with supporting documentation, metadata review, monthly update, and web-delivered real-time monitors allowing subscribers to see current behaviour.



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