Speedwell Weather

SuperPack®

Subject:	An introduction to SuperPack
Speakers:	Nick Hammond / Stephen Doherty
Date / Time:	28 Sep 2017, 15:00

Introduction and Agenda

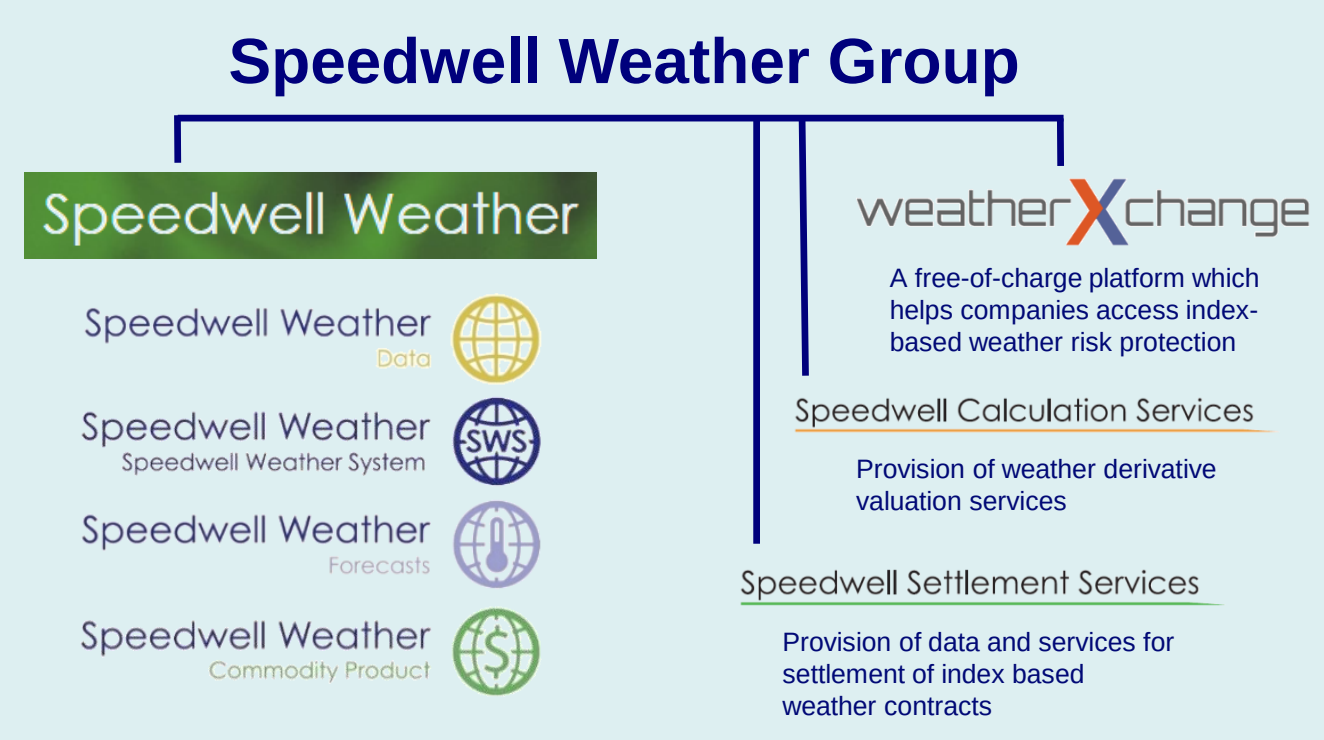
Presentation Agenda

- Introduction to Speedwell Weather
- What is SuperPack?
- Key features of the SuperPack subscription
    - Surface observations
    - Gridded data
    - Indexes
    - Climatologies
    - Online tools
    - Settlement Data
- Data delivery options
- SuperPack vs. SuperPack Premium
- Speedwell Weather System
- weatherXchange

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Introduction to Speedwell Weather Limited

- Part of the Speedwell Weather Group
- Independent company providing weather services since 1999
- Offices in the United Kingdom and the United States
- Serving over 150 clients in insurance, risk management, banking, energy, and agriculture sectors worldwide.



Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

What is SuperPack®?

- Subscription represents a unique approach to weather data provision.
- Single annual fee - a company is granted access to an unprecedented range of quality historical weather data and weather data feeds.
- Simplified administration of your weather data needs. No need for a new contract or quote for each data request.
- Subscription provides corporate-wide access to the data with a single licence.
- Additional data on “reasonable request”
- “Living Product” : always growing

Global Data Coverage

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Who uses SuperPack?

Typical subscribers include:

- Insurance / re-insurance
- Hedge funds
- Investment banks
- Energy companies
- Agriculture
- Weather risk management

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Key Features and Benefits

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

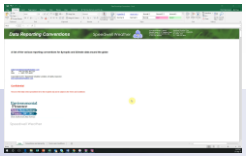
Speedwell data sourcing / processing…

1. Surface observations are sourced directly from National Meteorological Services and other accredited (official) data sources.

2. Agreements in place allow Speedwell to access and distribute a countries highest quality data (“climate data”).

3. Data is processed by Speedwell to remove gross errors, standardize formats, and document observing conventions.

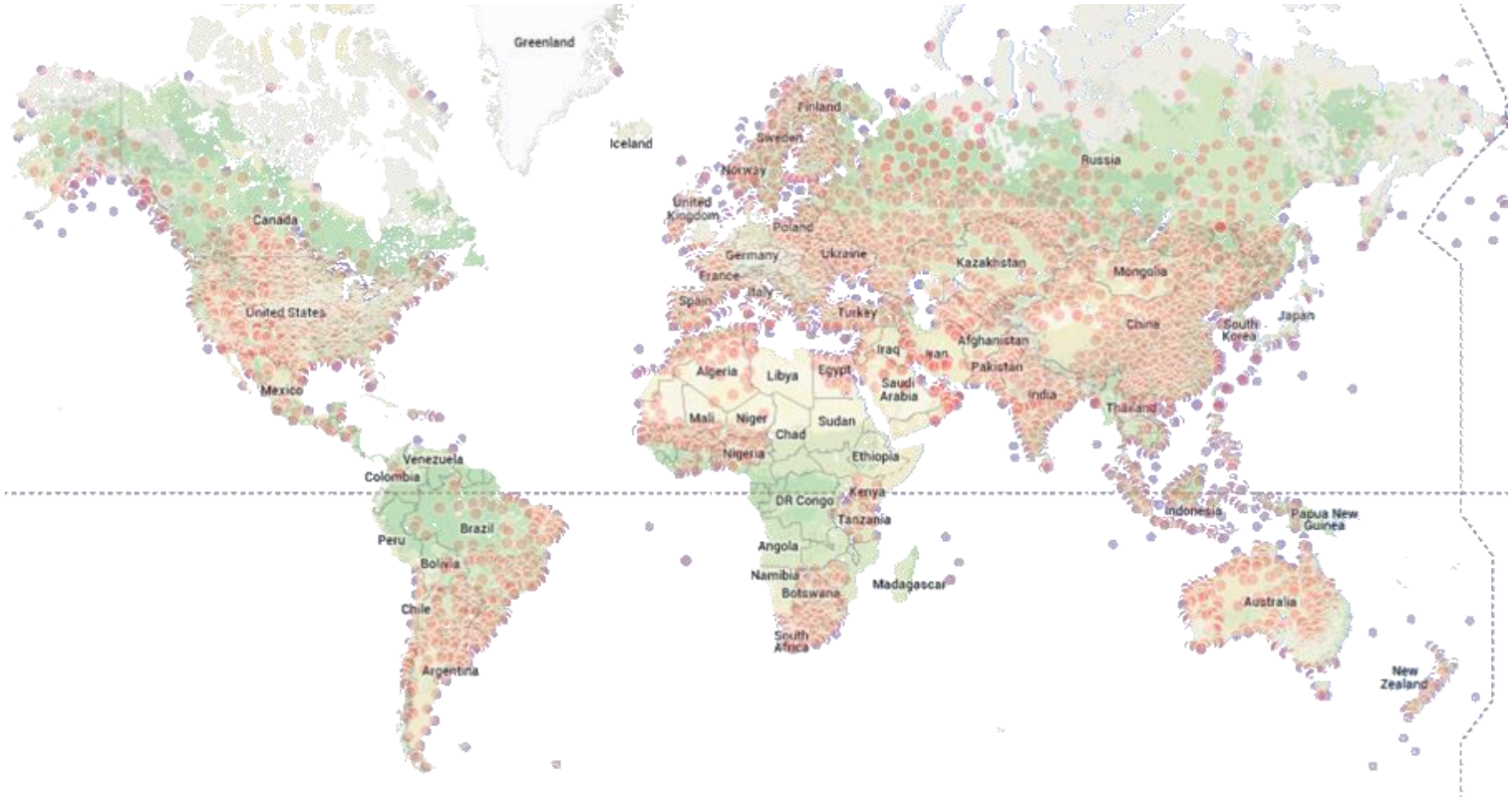
4. Data is then quality controlled (“cleaned”) to fill missing values and replace erroneous observations. Cleaning is conducted on historical data as well as ongoing feeds.



Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Key Features and Benefits

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods



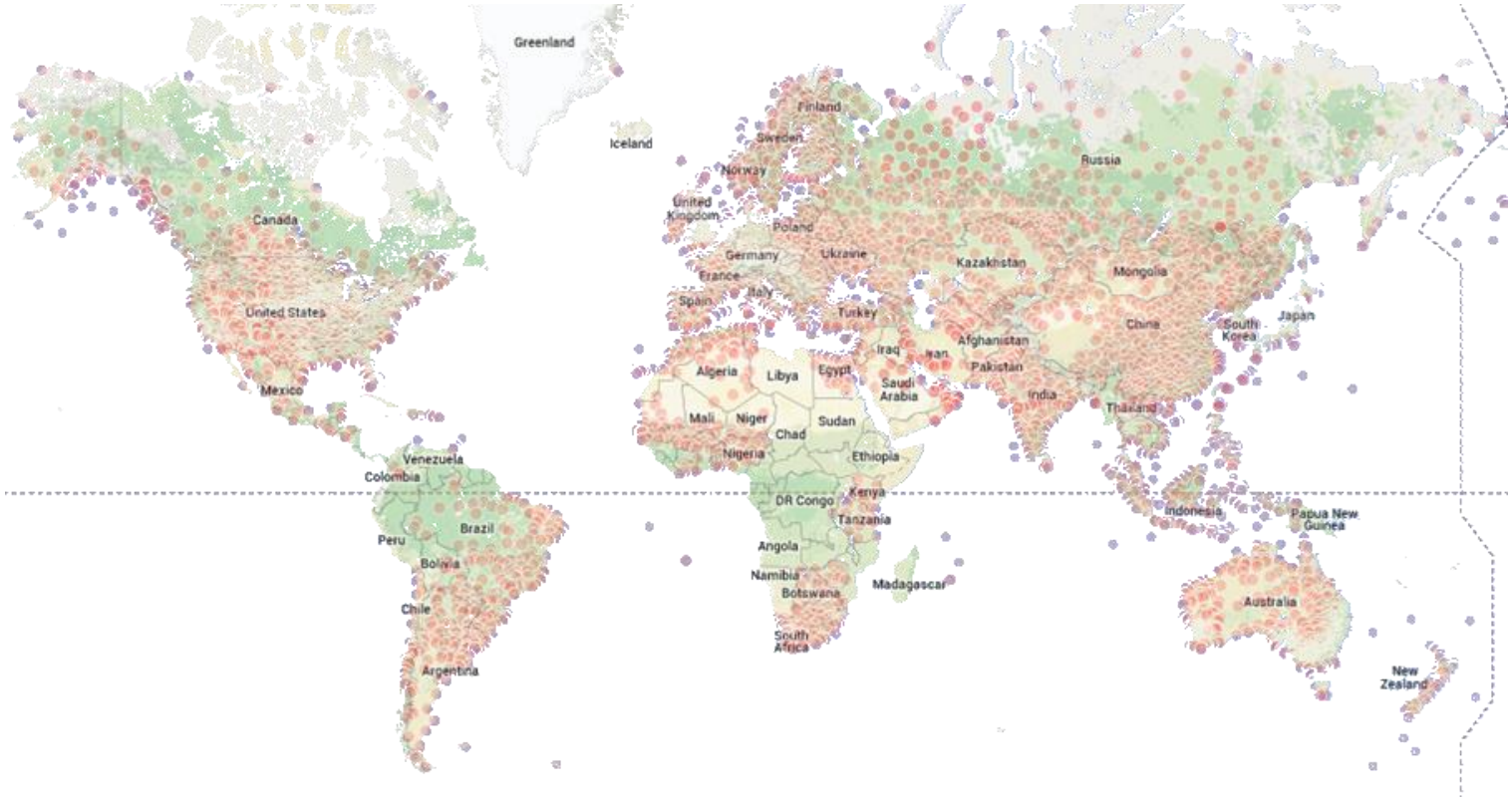
Observation types	Daily & hourly observations
Variables	Temperature, precipitation, wind speed, direction and gusts, solar radiation, snowfall, snow depth…..
Updates	Continuous updates

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Key Features and Benefits

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods



Primary station archive = 20,000+

Countries in the database = 130+

Cleaned stations = 10,000+

Secondary station archive (available on request) = 140,000+

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

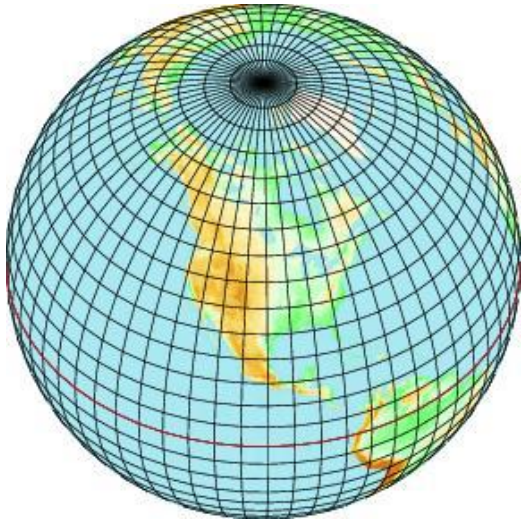
Key Features and Benefits

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Gridded data may be derived from multiple sources including observations, satellite data and “reanalysis data” which combines models with observations.

SuperPack provides a number of gridded data sets in their native resolution but also provides proprietary high-resolution derived data sets.

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



- Gridded Data access is included for SuperPack Premium users only

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

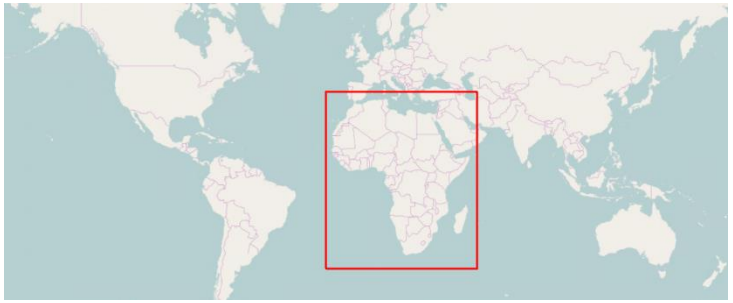
Speedwell Weather SuperPack®

Key Features and Benefits

The following products are delivered in their native resolution:

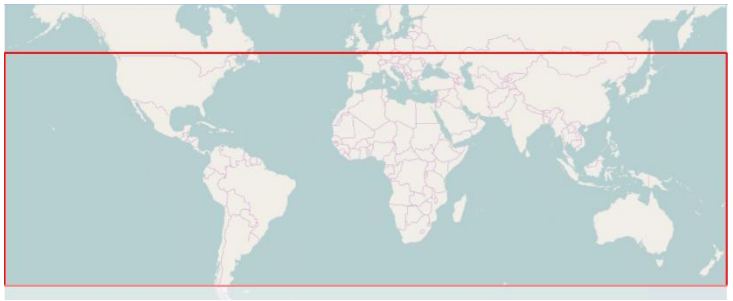
Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Africa Rainfall: ARC2 (10x10km) (1983 – present)



Australian Bureau of Meteorology (5x5km) (2000–present)

Worldwide, CHIRPS Rainfall 2.0 (5x5km) (1981 – present)



* Resolution estimates based upon 40^0 latitude

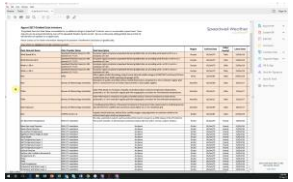
Worldwide, ECMWF ERA-Interim (85x85km) (1979 – present)

Worldwide, MODIS NDVI–MOD13C1 (5x5km) (2000 – present)

USA: NOAA – CPC Unified Rainfall (50x50km) (1979 – present)

Germany: DWD Rainfall (Regnie Project) (1x1km) (1931 – present)

…..And others including MERRA 2



Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

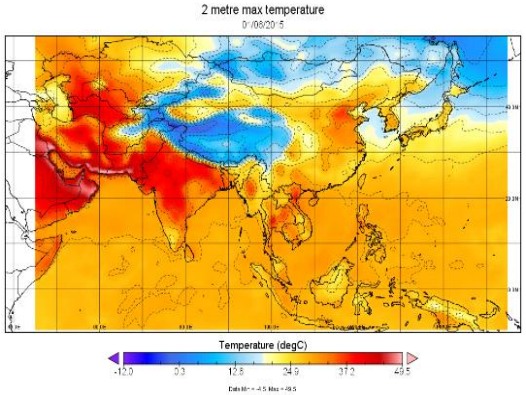
Speedwell Weather SuperPack®

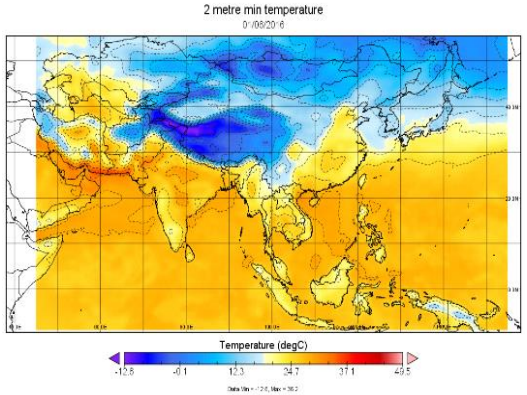
Key Features and Benefits

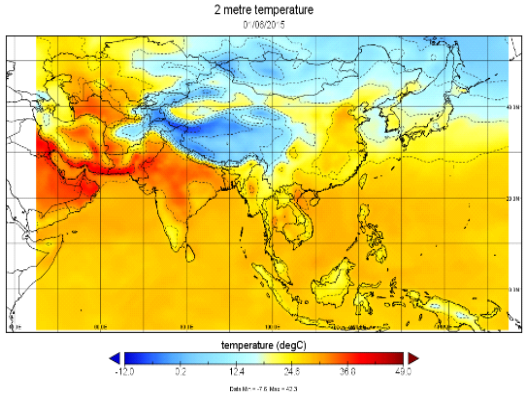
Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

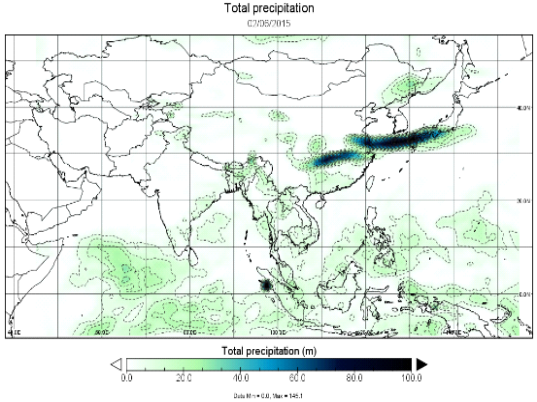
Additional gridded data sets have been developed by Speedwell to produce higher resolution datasets and additional variables. Examples include

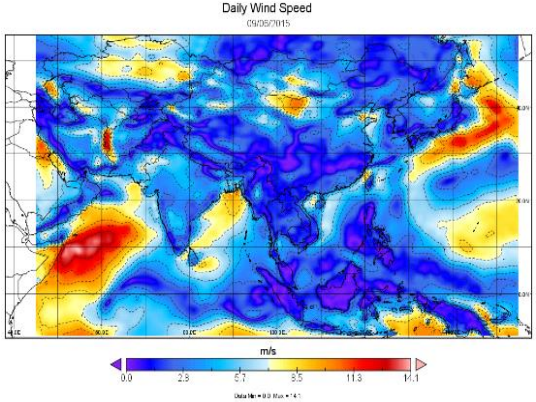
- ECMWF ERA-Interim (5x5km) (1979 – present)
- MERRA2 (5x5km) (1980 - present)

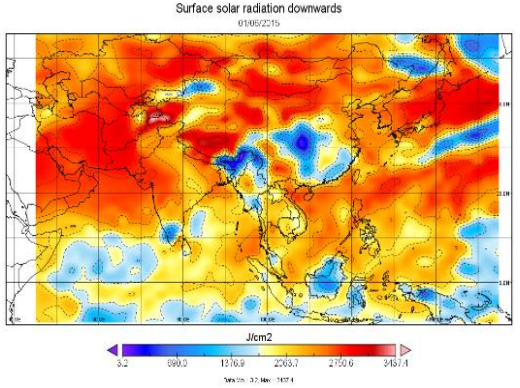












* Resolution estimates based upon 40^0 latitude

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Key Features and Benefits

Speedwell has produced a number of proprietary indexes for use by the energy, agriculture, and renewables industries. Speedwell can offer tailored indexes based on client requirements.

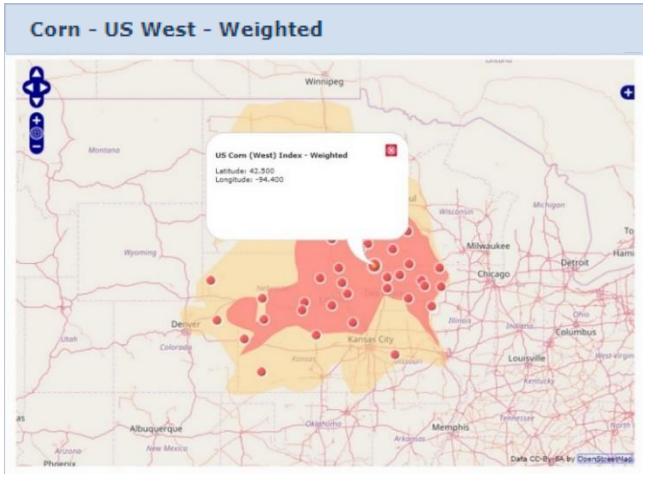
Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Agriculture Baskets

Group	Count
Argentina Barley	8
Argentina Corn	7
Argentina Sorghum	10
Argentina Soybean	10
Argentina Sunflower	8
Argentina Winter Wheat	12
Australia Sorghum	11
Australia Sugarcane	12
Australia Winter Wheat (East	17
Australia Winter Wheat (West	12
Austria Barley	7
Austria Corn	8
Austria Sugar Beet	6
Austria Winter Wheat	10
Belarus Potatoes	9
Belarus Sugar Beet	6
Belgium Winter Wheat	7
Benin Cotton	6
Brazil Citrus	5
Brazil Cocoa Coastal	11
Brazil Coffee Arabica Minas G	15
Brazil Coffee Arabica North	5
Brazil Coffee Robusta Coastal	14
Brazil Corn First Crop Central	9
Brazil Corn First Crop South	7

Population-Weighted Baskets

Group	Count
Flex Asia North	35
Flex Australia (Eastern Austra	9
Flex Australia (Western Austr	6
Flex Austria	9
Flex Belgium	8
Flex Belgium and Luxembour	9
Flex Denmark	5
Flex Egypt	11
Flex Europe - Incl Scandinavi	56
Flex Finland	4
Flex France	12
Flex GB Exc Northern Ireland	13
Flex Germany	16
Flex Greece	8
Flex Hungary	8
Flex India	20
Flex Indonesia	12
Flex Iran	10
Flex Ireland	8
Flex Italy	15
Flex Italy 2016	11
Flex Italy Northern	8
Flex Italy Southern	8
Flex Japan	12
Flex Korea South	14



Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Key Features and Benefits

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Proprietary and Client-Tailored Wind Indexes

Speedwell is able to produce a synthetic wind energy index which replicates actual output allowing index-based weather risk transfer. Gridded data is used. Gridded wind speed is transformed to mast height and the respective power curve is applied. This can be done world-wide

Eg: Spanish Peninsular Wind Power Index 2017

1. **Identified turbines in all wind farms, with exact location, height and rated output**
2. **Produced wind mast hub height wind speed histories using the MERRA 2 reanalysis series**
3. **Calculated the individual wind farm daily energy output using the respective power curves**
4. **Aggregated the outputs by wind farm and region.**
5. **Generated a daily/monthly/annual production series.**
6. **Compared against historical RRE published series.**

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Key Features and Benefits

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Speedwell Climatologies

Data | Help | About

The Speedwell Climatologies Table provides smoothed 10 and 30-year average daily values of temperature and rainfall for sample sites. We can provide daily and hourly climatologies for thousands of sites world wide on request.

Group of station: Speedwell-Market Europe Element: Temp Ave

Climatology: 10y 04-13 Period: August

Grid Orientation: Horizontal

Display | Download (Excel Format)

Speedwell-Market Europe - Temp Ave August

Ave Value | Date

Country	Town	WMO	WBAN	01.Aug	02.Aug	03.Aug	04.Aug	05.Aug	06.Aug	07.Aug	08.Aug	09.Aug	10.Aug	11.Aug	12.Aug
Austria	INNSBRUCK FLUGHAFEN...	11120		19.55	19.51	19.47	19.42	19.38	19.33	19.29	19.25	19.20	19.16	19.12	19.08
	VIENNA SCHWECHAT-FLUGHAFEN...	11036		21.48	21.43	21.37	21.32	21.26	21.19	21.13	21.07	21.00	20.94	20.87	20.81
Czech Republic	BRNO TURANY...	11723		20.63	20.59	20.54	20.49	20.43	20.38	20.32	20.26	20.20	20.13	20.07	20.00
	PRAGUE RUZYNE...	11518		19.12	19.07	19.03	18.98	18.93	18.87	18.82	18.77	18.71	18.66	18.60	18.55
Denmark	COPENHAGEN KASTRUP...	6180		18.66	18.65	18.63	18.61	18.58	18.54	18.50	18.45	18.40	18.34	18.28	18.21
France	LYON BRON...	7480	34024	22.43	22.37	22.32	22.26	22.20	22.14	22.08	22.02	21.97	21.91	21.86	21.81
	MARSEILLE MARIGNANE...	7650	34012	25.23	25.20	25.16	25.12	25.08	25.03	24.98	24.93	24.88	24.83	24.78	24.73
	PARIS ORLY...	7149	34022	20.20	20.16	20.11	20.06	20.00	19.95	19.89	19.84	19.78	19.73	19.67	19.62
	STRASBOURG ENTZHEIM...	7190		20.37	20.32	20.27	20.22	20.16	20.11	20.05	19.99	19.94	19.88	19.83	19.78
	TOULOUSE BLAGNAC...	7630		23.01	22.98	22.95	22.92	22.89	22.86	22.83	22.80	22.76	22.73	22.70	22.67
Germany	BERLIN DAHLEM...	10381		19.64	19.63	19.61	19.59	19.56	19.53	19.49	19.45	19.41	19.36	19.31	19.25
	BREMEN ...	10224	35001	18.38	18.35	18.31	18.27	18.23	18.18	18.12	18.07	18.01	17.95	17.88	17.81
	DRESDEN KLOTZSCHE...	10488		19.35	19.30	19.25	19.20	19.15	19.09	19.03	18.97	18.92	18.86	18.80	18.74
	DUESSELDORF ...	10400		19.11	19.07	19.03	18.99	18.94	18.89	18.84	18.78	18.73	18.67	18.62	18.56
	ESSEN...	10410		18.79	18.75	18.71	18.66	18.62	18.57	18.52	18.46	18.41	18.36	18.30	18.24
	FRANKFURT FLUGHAFEN...	10637	35032	20.28	20.23	20.18	20.12	20.06	20.00	19.94	19.88	19.81	19.75	19.68	19.62
	HAMBURG FUHLSBUETTEL...	10147		18.45	18.42	18.38	18.34	18.30	18.25	18.20	18.14	18.09	18.03	17.97	17.90
	HANNOVER ...	10338		18.83	18.80	18.76	18.73	18.68	18.64	18.59	18.54	18.49	18.43	18.37	18.31
	MUNICH FLUGHAFEN...	10870		18.73	18.68	18.62	18.57	18.51	18.45	18.40	18.34	18.28	18.23	18.18	18.12
Netherlands	AMSTERDAM SCHIPHOL...	6240		18.25	18.23	18.21	18.18	18.15	18.13	18.10	18.07	18.03	18.00	17.97	17.93
Norway	OSLO BLINDERN...	1492		18.16	18.13	18.10	18.06	18.00	17.95	17.88	17.81	17.73	17.65	17.56	17.46
Poland	Katowice...	12560		19.22	19.17	19.12	19.07	19.02	18.96	18.90	18.84	18.78	18.72	18.66	18.60
	WARSAW OKECIE...	12375		20.11	20.07	20.02	19.97	19.91	19.85	19.79	19.72	19.65	19.58	19.50	19.42
Spain	BARCELONA AEROPUERTO...	8181		25.72	25.72	25.71	25.70	25.69	25.68	25.66	25.64	25.62	25.60	25.58	25.56
	BILBAO SONDICA...	8025		21.41	21.39	21.38	21.36	21.34	21.32	21.30	21.28	21.25	21.23	21.21	21.18
	MADRID BARAJAS...	8221	14007	26.01	25.98	25.95	25.91	25.87	25.82	25.77	25.72	25.67	25.61	25.55	25.49
Sweden	STOCKHOLM...	2485		19.19	19.16	19.12	19.08	19.03	18.97	18.91	18.84	18.76	18.68	18.59	18.49
Switzerland	GENEVA COINTRIN...	6700		20.53	20.48	20.43	20.37	20.31	20.25	20.19	20.14	20.08	20.02	19.96	19.91
	ZURICH VILLE...	6660		19.19	19.14	19.09	19.03	18.98	18.93	18.87	18.82	18.77	18.73	18.68	18.64
United Kingdom	BIRMINGHAM (COLESHILL)...	3535		17.15	17.14	17.12	17.10	17.07	17.04	17.01	16.97	16.94	16.90	16.85	16.81
	GLASGOW (BISHOPTON)...	3134		15.51	15.49	15.46	15.44	15.41	15.38	15.35	15.32	15.28	15.24	15.21	15.17
	LONDON HEATHROW...	3772		19.04	19.01	18.97	18.93	18.89	18.84	18.79	18.74	18.69	18.63	18.57	18.52

SuperPack clients can request a smoothed climatology for any variable, hourly or daily, for any site where Cleaned data is available.

A selection of standard smoothed climatologies are available for download from the Speedwell web site.

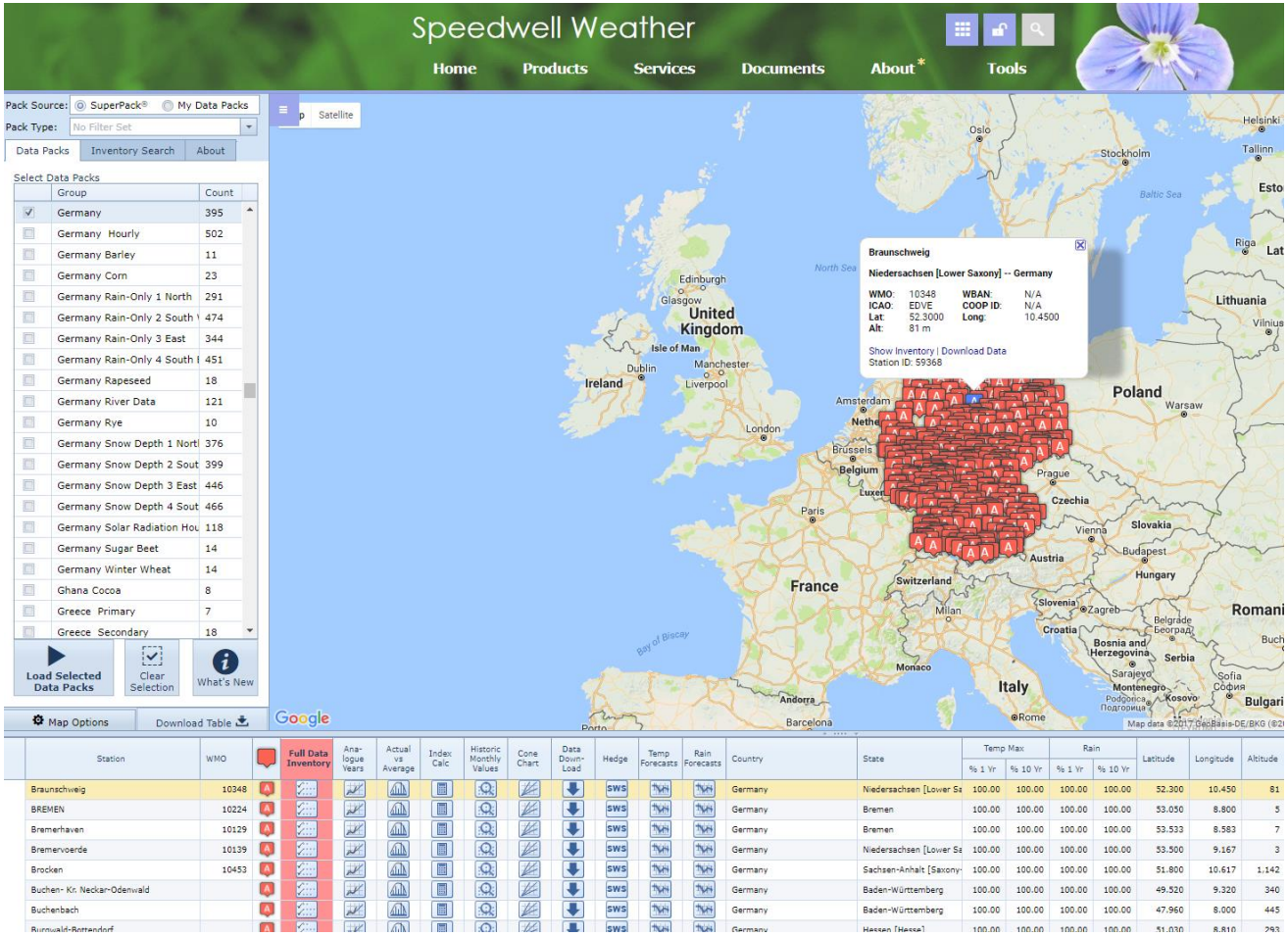
Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Key Features and Benefits

The Map Tool shows the weather data sets available in Speedwell's primary archive. For SuperPack users it provides immediate access to data inventories, analytics, and data downloads

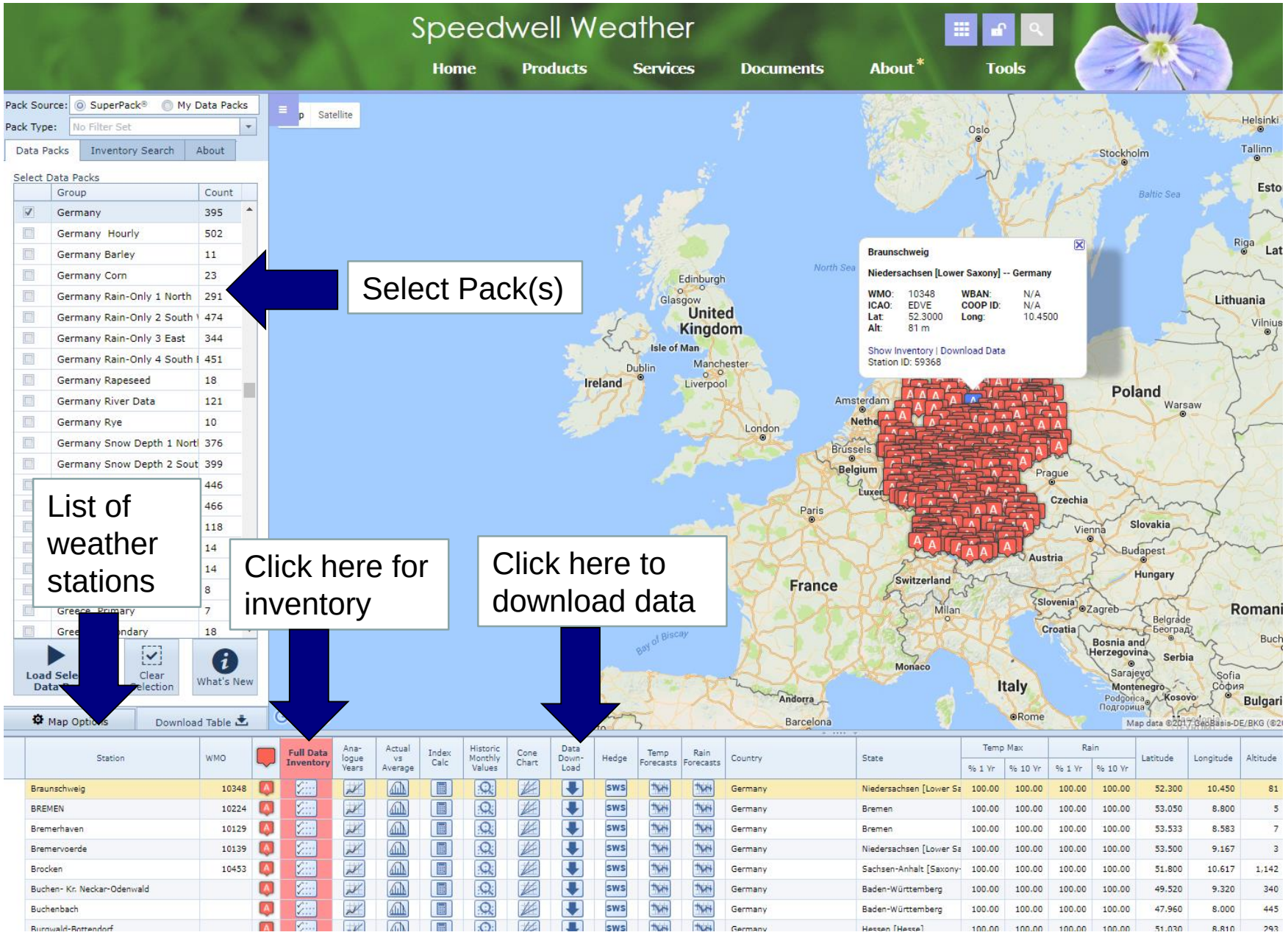
Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods



- Search by geography, sector, or radial map search
- View inventories on a station-by-station and variable-by variable basis
- Directly access analytics tools:
  - Analogue years
  - Actuals vs. Climatology
  - Cone Chart
  - Monthly calculator
- Download historic weather data directly to your desktop

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®



Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

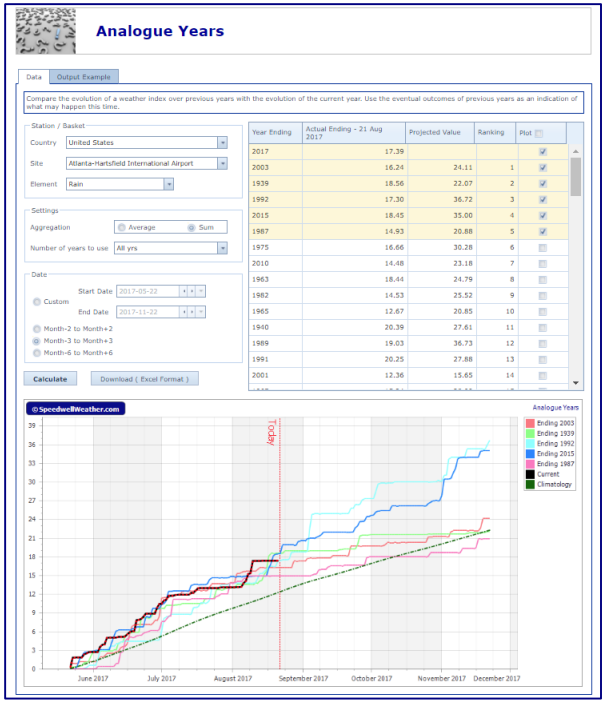
Speedwell Weather SuperPack®

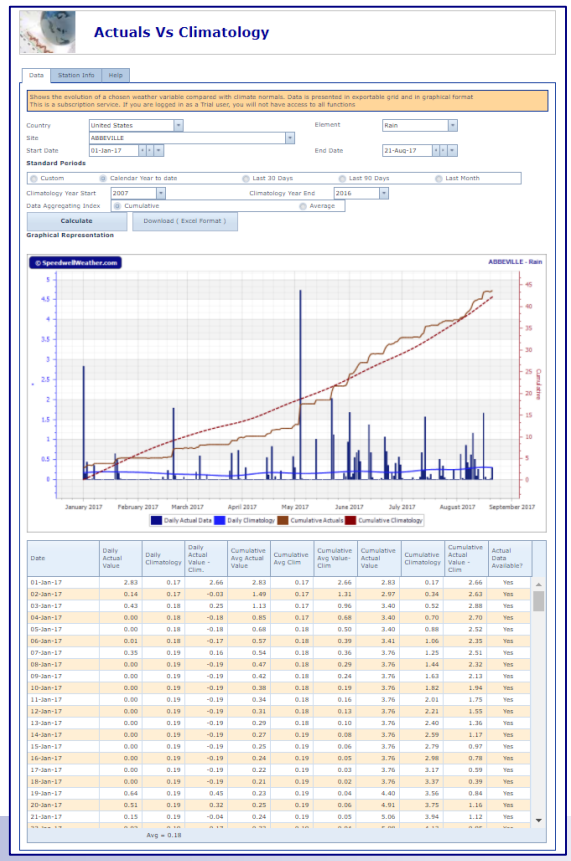
Key Features and Benefits

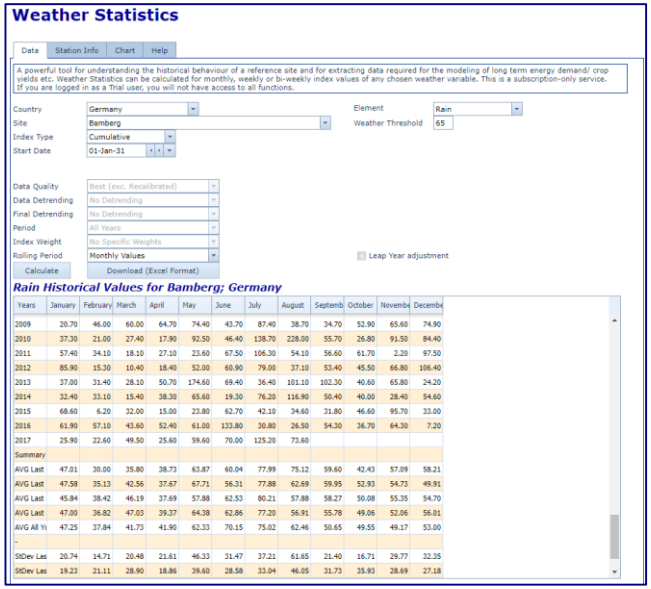
Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Additional analytical tools are available for SuperPack subscribers:

- Actuals vs. Climatology – compare recent weather conditions against climatological normal
- Analogue Years – compare recent weather patterns against historical patterns looking for matches that can be used as predictors.
- Monthly / weekly weather index value calculator
- SWSConnect weather derivative pricing tool







Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Key Features and Benefits

SWSConnect weather derivative pricing tool

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Configure | Charts | Historical Values | Station Info | Help | About

Derivative Type: Put

Latest 15 Days Forecast: 26-Sep-17 - Time: 0

Recalibrated data NOT YET available. Please contact us if you require this level of data quality for this station.

Contract Specifications

Standard Indexes

Country: Index
Site: Flex Germany
Index Type: HDD Weather Threshold: 18

Start Date: 01-Nov-17
End Date: 31-Mar-18
Element: Temp Ave

Strike: 1900 Tick Value: 5000 Monetary value per index unit (enter 1 for CME-style tick price)

Price | Additional Tools

Buy | Sell

Pricing Options

Standard Models

Data Quality	Best (exc. Recalibrated)	Type of data to be used for pricing
Data Detrending	LOESS 80%	Detrending of the meteorological data
Final Detrending	No Detrending	Detrending of the final index
Forecast used	Speedwell ECMWF Ens	Forecast used in pricing
Forecast Period	15 Days	Number of days of forecast to use for pricing
Forecast Weight	80%-20% All Days	How the forecast is used
Index Weight	No Specific Weights	Applies weights to price using El Nino / La Nina conditions

Modeling Options

Period	All Years	Number of years of data for modelling
Distribution	Normal	statistical model for analysis

Other Options

Override Mean and Vol Mean: 0 Vol: 0
Cash Flow: 0 Amount paid or received
Calculation Date: 26-Sep-17 Allows retrospective pricing

Results

Available to Premium Subscribers only

Expected P&L	**43,963.73**	
Buy Price	8,078.55	*Derived from the Fair Price by subtracting 20% of the payoff StDev.*
Fair Price	43,963.73	*Estimated value of the contract based on numerical integration with chosen distribution and detrending methods.*
Sell Price	79,848.92	*Derived from the Fair price by adding 20% of the payoff StDev.*

Burn Summary

Flex Germany; Temp Ave; HDD; From 01/Nov/2017 To 31/Mar/2018; Put

Num. Of Years	Index Avg	Index StDev	Profit Avg	Non Det. Index Avg	Non Det. Index StDev	Non Det. Profit Avg
1	2,167.14	0.00	0.00	2,171.54	0.00	0.00
5	2,088.47	192.40	0.00	2,101.17	194.74	0.00
10	2,156.64	169.84	0.00	2,179.20	175.47	0.00
20	2,132.57	172.96	32,855.99	2,174.93	173.28	21,778.12
30	2,116.85	184.89	37,550.92	2,180.15	180.24	14,518.75
40	2,150.01	187.53	28,163.19	2,234.46	197.60	10,889.06
48	2,140.40	187.08	32,225.58	2,242.88	196.16	9,074.22

Available to Premium Subscribers only

Accrued Index including Chosen Forecast
Value 0.00 Date 31-Oct-17

CME Future Price Close
Value --- Date ---

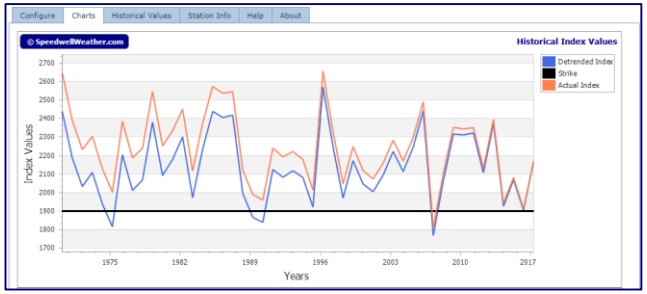
Greeks

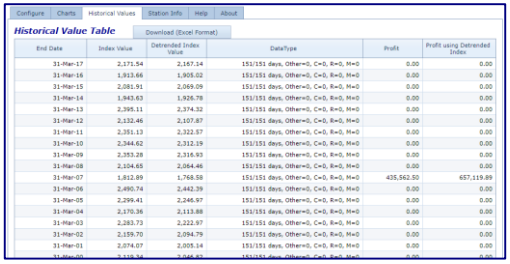
Delta	-497.00
Gamma	4.67
Vega	873.58
Theta	0.00
Rho	-2.24

Probability of Loss %	0.00
Pay off StDev	179,425.92
Worst Case	0.00
Best Case	657,119.89

	VaR	Empirical VaR	Return on Empirical VaR
95%	0.00	0.00	0.00
97.5%	0.00	0.00	0.00
99%	0.00	0.00	0.00

- SWSConnect is a web-delivered weather derivatives pricing tool
- Appropriate for simpler weather risk contracts.
- Allows user to choose index distribution and to apply different detrending models





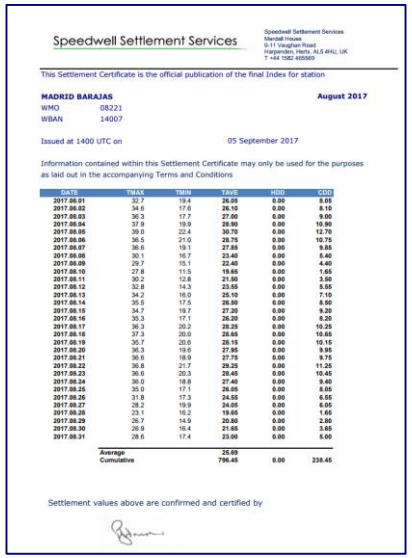
Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Key Features and Benefits

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

- Settlement Data is a product designed to match the specification of a weather risk contract. It is used for calculating any payout due at the end of a contract term.
- Data undergoes a thorough quality control and cleaning to ensure that the highest quality data is delivered in accordance with the specific contract.
- Over 1300 Standard Settlement Sites (daily average temperature and precipitation) are included in the SuperPack licence for no additional charge.
- Settlement Data is provided by Speedwell Settlement Services



Speedwell Settlement Services

This Settlement Certificate is the official publication of the final Index for station

MADRID BARAJAS **August 2017**

WMO 08221
WBAN 14007

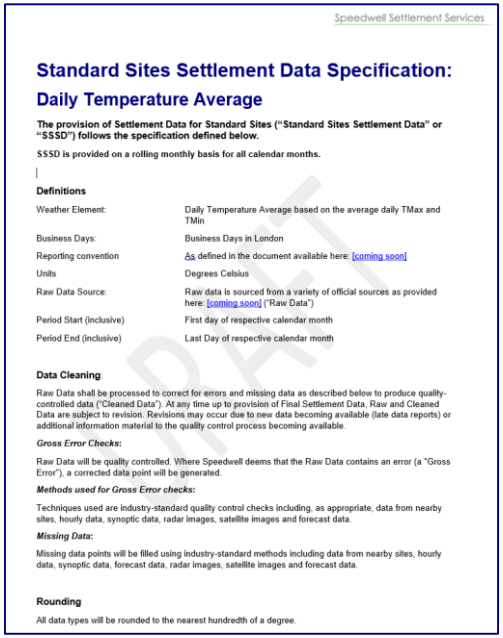
Issued at 1400 UTC on 05 September 2017

Information contained within this Settlement Certificate may only be used for the purposes as laid out in the accompanying Terms and Conditions

DATE	TMAX	TMIN	TAVE	HDD	CDD
2017.08.01	32.7	19.4	26.05	0.00	8.05
2017.08.02	34.6	17.6	26.10	0.00	8.10
2017.08.03	36.3	17.7	27.00	0.00	9.00
2017.08.04	37.9	19.9	28.90	0.00	10.90
2017.08.05	39.0	22.4	30.70	0.00	12.70
2017.08.06	36.5	21.0	28.75	0.00	10.75
2017.08.07	36.6	19.1	27.85	0.00	9.85
2017.08.08	30.1	16.7	23.40	0.00	5.40
2017.08.09	29.7	15.1	22.40	0.00	4.40
2017.08.10	27.8	11.5	19.65	0.00	1.65
2017.08.11	30.2	12.8	21.50	0.00	3.50
2017.08.12	32.8	14.3	23.55	0.00	5.55
2017.08.13	34.2	16.0	25.10	0.00	7.10
2017.08.14	35.5	17.5	26.50	0.00	8.50
2017.08.15	34.7	19.7	27.20	0.00	9.20
2017.08.16	35.3	17.1	26.20	0.00	8.20
2017.08.17	36.3	20.2	28.25	0.00	10.25
2017.08.18	37.3	20.0	28.65	0.00	10.65
2017.08.19	35.7	20.6	28.15	0.00	10.15
2017.08.20	36.3	19.6	27.95	0.00	9.95
2017.08.21	36.6	18.9	27.75	0.00	9.75
2017.08.22	36.8	21.7	29.25	0.00	11.25
2017.08.23	36.6	20.3	28.45	0.00	10.45
2017.08.24	36.0	18.8	27.40	0.00	9.40
2017.08.25	35.0	17.1	26.05	0.00	8.05
2017.08.26	31.8	17.3	24.55	0.00	6.55
2017.08.27	28.2	19.9	24.05	0.00	6.05
2017.08.28	23.1	16.2	19.65	0.00	1.65
2017.08.29	26.7	14.9	20.80	0.00	2.80
2017.08.30	26.9	16.4	21.65	0.00	3.65
2017.08.31	28.6	17.4	23.00	0.00	5.00
Average			25.69		
Cumulative			796.45	0.00	238.45

Settlement values above are confirmed and certified by

Settlement Certificate



Speedwell Settlement Services

Standard Sites Settlement Data Specification:
Daily Temperature Average

The provision of Settlement Data for Standard Sites ("Standard Sites Settlement Data" or "SSSD") follows the specification defined below.

SSSD is provided on a rolling monthly basis for all calendar months.

Definitions

Weather Element:	Daily Temperature Average based on the average daily TMax and TMin
Business Days:	Business Days in London
Reporting convention	As defined in the document available here: [coming soon]
Units	Degrees Celsius
Raw Data Source:	Raw data is sourced from a variety of official sources as provided here: [coming soon] ("Raw Data")
Period Start (inclusive)	First day of respective calendar month
Period End (inclusive)	Last Day of respective calendar month

Data Cleaning

Raw Data shall be processed to correct for errors and missing data as described below to produce quality-controlled data ("Cleaned Data"). At any time up to provision of Final Settlement Data, Raw and Cleaned Data are subject to revision. Revisions may occur due to new data becoming available (late data reports) or additional information material to the quality control process becoming available.

***Gross Error Checks*:**

Raw Data will be quality controlled. Where Speedwell deems that the Raw Data contains an error (a "Gross Error"), a corrected data point will be generated.

***Methods used for Gross Error checks*:**

Techniques used are industry-standard quality control checks including, as appropriate, data from nearby sites, hourly data, synoptic data, radar images, satellite images and forecast data.

***Missing Data*:**

Missing data points will be filled using industry-standard methods including data from nearby sites, hourly data, synoptic data, forecast data, radar images, satellite images and forecast data.

Rounding

All data types will be rounded to the nearest hundredth of a degree.

Settlement Data Specification Contract

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Delivery Methods

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Delivery Methods

- Data can be delivered via FTP to a secure account on one of our many servers

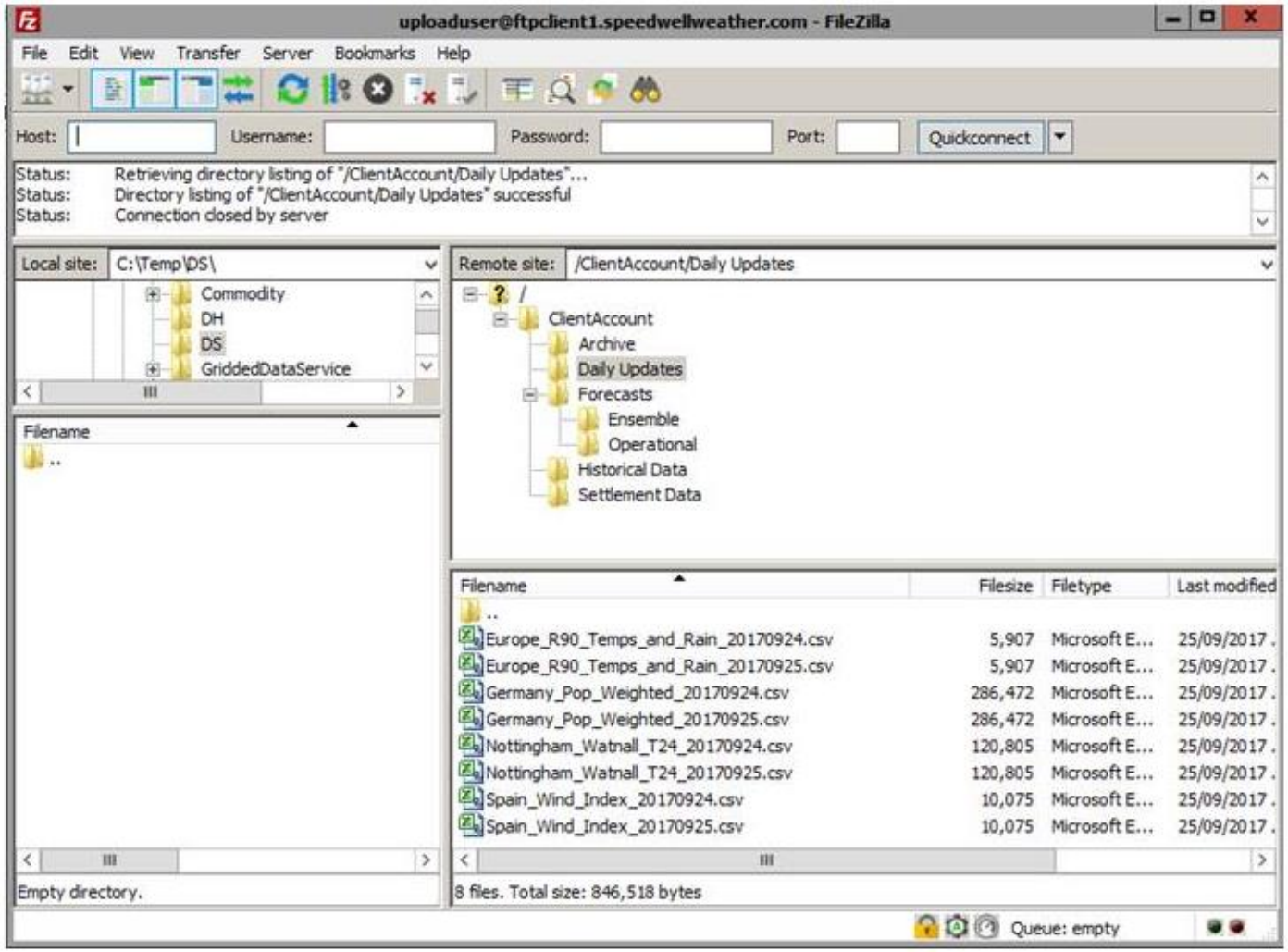
Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Delivery Methods

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods



Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Delivery Methods

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

- Data can be delivered via FTP to a secure account on one of our many servers
- Download directly from the Speedwell website (web tools)

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

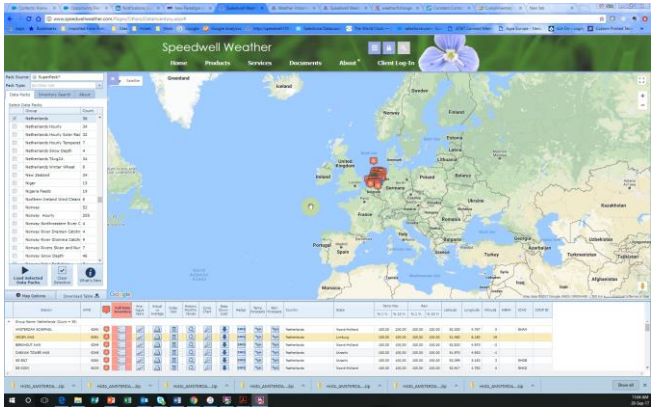
Speedwell Weather SuperPack®

Key Features and Benefits

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

Web site download

Web site download via the “Weather Data” short cut allows immediate access to multiple weather variables for >20,000 stations by all users across your organisation



Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Delivery Methods

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

- Data can be delivered via FTP to a secure account on one of our many servers
- Download directly from the Speedwell website (web tools)
- Direct programmatic access via Speedwell API.

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Delivery Methods - API

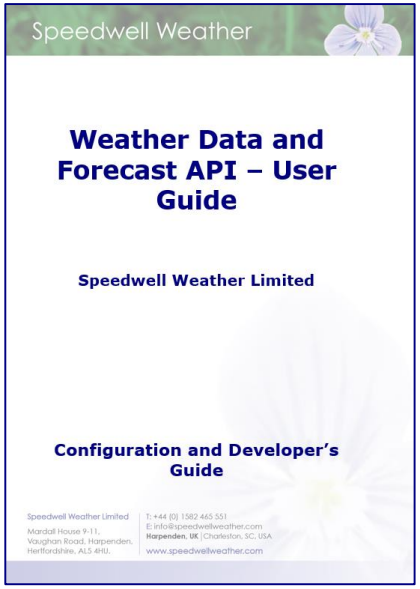
Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

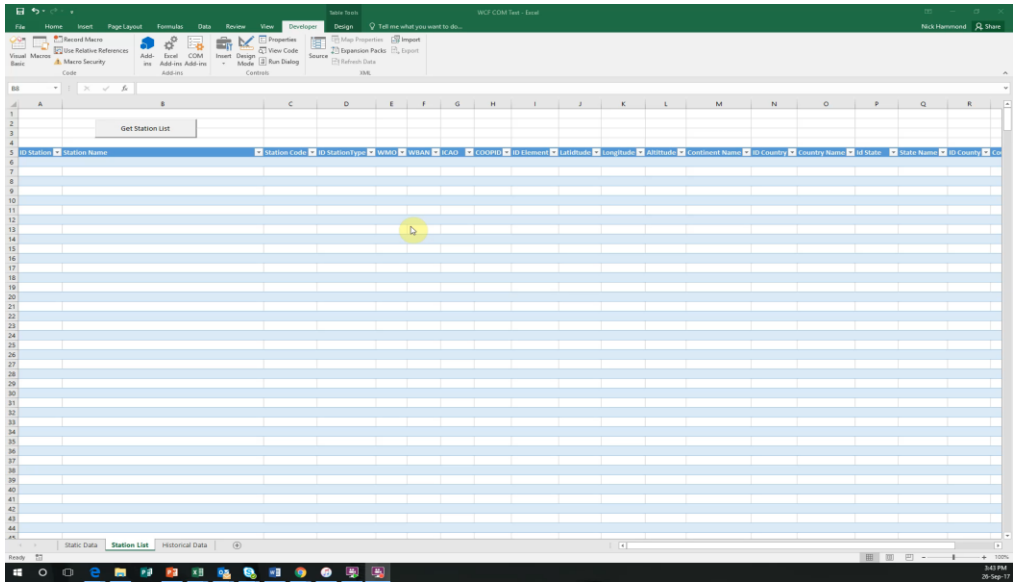
API access

The Speedwell Data API allows station weather data to be pulled into your application programmatically

Full documentation, sample code and training are provided

C#.NET. A wrapper allows use in MS Excel:





Coming soon: Gridded Data API allowing extraction of single-point time series

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Delivery Methods

Features:
- ✓ Surface observations
- ✓ Gridded data
- ✓ Indexes
- ✓ Climatologies
- ✓ Online tools
- ✓ Settlement Data
- ✓ Multiple Delivery Methods

- Data can be delivered via FTP to a secure account on one of our many servers
- Download directly from the Speedwell website (web tools)
- Direct programmatic access via Speedwell API.
- Data can be made available through ZE Group's Zema data management tool or through Morningstar's data delivery products.
- Station and gridded data can be accessed via the Speedwell Weather System (Oasis Data Manager)

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

SuperPack Licencing

Two subscription options:

- SuperPack
- SuperPack Premium

SuperPack Premium is required for access to gridded data.

Feature	SuperPack®	SuperPack® Premium
Station Data		
A choice of over 20,000+ core sites shown on the Speedwell map tool including over 10,000 cleaned data sets	✓	✓
Access to Speedwell's secondary archive of over 140,000 weather stations*	✓	✓
Access to daily data, hourly data, and sub-hourly data	✓	✓
Data cleaning on request*	✓	✓
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 world wide agriculture, hydro and population-weighted energy indices histories and feeds.	✓	✓
Smoothed Climatology		
Unlimited access to historical data sets*	✓	✓
Unlimited access to data feeds*	✓	✓
Web Tools / Data Delivery		
Access to web-delivered data tools	✓	✓
Custom Delivery Formats**	✓	✓
Access to the Speedwell API (tradable stations)	✓	✓
Speedwell Settlement Data		
Access to 1,300+ Standard Settlement Sites of daily temperature and precipitation	✓	✓
Data required to be a Protection Seller on the weatherXchange® Platform		
Subscription to SuperPack Premium is required to function as a Global Broker-Advisor or Protection Seller on the weatherXchange Platform		✓

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

SuperPack and weatherXchange®

weatherXchange® is a web-based, independent platform, that streamlines the process of placing risk, monitoring / reporting risk, and then finally settling weather risk.

The weatherXchange Platform

Structuring & Pricing

- Provides Hedgers with **free weather data** for thousands of sites and basket-indexes as well as **gridded** data
- Deploys **free structuring tools** to help new Hedgers through the process of designing a hedge
- Facilitates **free price comparison** for buyers of risk protection (instantaneous indicative pricing & RFP firm pricing)
- Streamlines communications through technology thus **improving efficiency** between Hedgers and Protection Sellers

Valuation Services — Speedwell Calculation Services

- Seamless access to pre-trade, in-trade, and post-trade services
- **Daily analysis of risk metrics** (mark-to-model, VaR, P&L,…)

Settlement Data — Speedwell Settlement Services

- **Standardizes** settlement methodologies
- Standardizes **documentation** (term sheet)
- **Streamlines pricing** and accessibility

weatherXchange

SuperPack Premium provides access to the underlying weather data necessary for Protection Sellers to respond to pricing requests delivered over the weatherXchange Platform

A subscription to SuperPack Premium is required to function as a Global Broker-Advisor or as a Protection Seller on the weatherXchange Platform

The weatherXchange Platform is owned and operated by weatherXchange Limited, a subsidiary of the Speedwell Weather Group of companies.

weatherXchange Limited is regulated by the Financial Conduct Authority

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

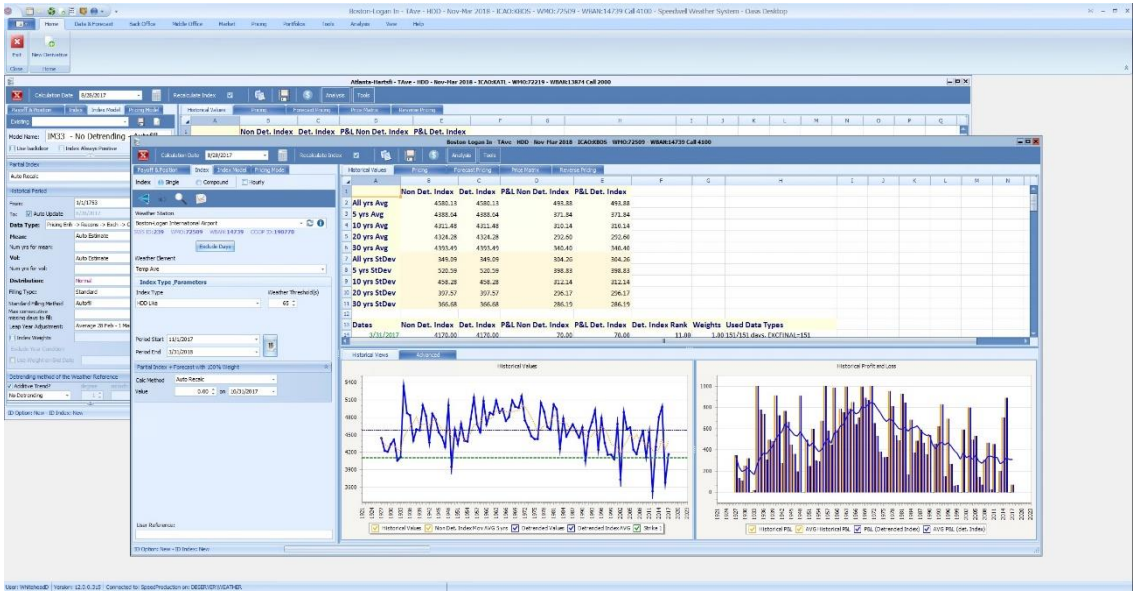
weatherXchange
How It Works
Industries
Joining
Participants
Legal
Resources & Events
About
+44 1582 280 130
Client Portal
English
Weather Risk?
weatherXchange
The independent platform which helps companies access Index-Based Weather Risk Protection
Buy Protection
Scroll down for more information
Design Weather Protection Contract
Free
Use our free on-line tool to design the weather protection contract you need with free access to thousands of weather data sets and more on request.
Request Prices
Free
Send pricing requests to multiple Protection Sellers at a click of a button to compare quotes. Or, contact a Broker-Advisor for in-depth advice or anonymity.
Request Settlement Data
Data paid for by the Protection Seller
After buying a weather protection contract, request Settlement Data.
Request Calculation Services
Optional service, chargeable
After buying a weather protection contract, request Calculation Services to value the deal for internal and / or regulatory reporting.

SuperPack - Integration with The Speedwell Weather System

Speedwell Weather
Speedwell Weather System

SWS is an enterprise software which enables users to:

- Manage historical weather data, feeds and forecasts
- Price weather risk contracts and provide analysis
- Manage risk and create risk reports
- Manage contracts, invoices, settlement
- Help meet regulatory requirements



SWS can be used as a weather data warehouse

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Summary: Advantages of SuperPack

Administrative Simplicity

One contract covers all weather data needs.

Enterprise License

Corporate wide access to the subscription is standard.

Optional Extras

Integration with the Speedwell Weather System and access to weatherXchange as a Protection Seller or Global Broker

Economies of Scale

Access a vast amount of information for a fixed annual fee.

Evolving Product

SuperPack continues to expand (data sets, online tools, compatibility with other Speedwell products)

Data Delivery

Data can be delivered via FTP, web-based download or accessed programmatically via API

Copyright © 2017 Speedwell Weather Ltd. All rights reserved.

Speedwell Weather SuperPack®

Any questions?

T: +44 (0) 1582 465 551
E: sales@speedwellweather.com
Harpenden, UK / Charleston, SC, USA

www.speedwellweather .com

Speedwell Weather