

Speedwell Weather



**Weather Data**  
**Weather Forecasts**  
**Weather Risk Consultancy**  
**Weather Risk Management Software**

# **SWS Weather Data Format**

## 1 Background

The Speedwell Weather System (SWS) is an enterprise software product for the parametric weather risk market and includes:

- Front Office tools relating to the pricing, correlation, statistical analysis of specific weather risk contract etc)
- Middle Office tools relating to managing a portfolio of weather risk contracts VaR, Credit Risk report etc)
- Back Office tool

SWS is an open system offering seamless data importation from multiple data providers. SWS requires the data file to be formatted in a specific format. The idea is to have one unique format whether the file, formatted as a CSV file, contains multiple sites information, multiple data quality for the same days, etc.

SWS users operate their own database with their own weather data in it. The historical daily and hourly data are imported directly from data providers through automatic tools:

1. The software automatically connects to the FTP server of the data provider. A manual mode is also available.
2. The software downloads any files that had not been previously downloaded.
3. The software populates the new sites/locations, if any, and imports the data automatically.

Please find the specification for the SWS weather data import file format in the next section followed by two example files, one for daily and one for hourly data.



## 2 Fields Specification

The fields name can be edited in the SWS Data Manager. At a minimum, SWS expects information regarding the station (Unique vendor ID and Name), a Date and a measure value. If the data type information is not provided, SWS will import all the measure value into the default datatype configured in the system.

COLUMN NAME	DESCRIPTION	MANDATORY
<b>DATE</b>	Date the MEASUREMENT was taken, in ISO, American or European format with years expressed with 4 digits. The date format must be unique for all the files provided by the data provider. Examples of valid date format: DD/MM/YYYY MM/DD/YYYY MM-DD-YYYY YYYY-MM-DD	<b>Y</b>
<b>HOURL</b>	Hour of the Measure as an integer format as HH:MM, ONLY FOR HOURLY DATA	<b>N</b>
<b>SRC_ID</b>	Alphanumeric (max length 50 char). This ID is the unique ID of the station specified by the data provider	<b>Y</b>
<b>TYPE</b>	Type of the data (integer). Please refer to the Data Type Table Appendix for the list of valid integer values.	<b>Y</b>
<b>WMO_NO</b>	Station WMO ID (integer)	<b>N</b>
<b>WBAN</b>	Station WBAN ID (integer)	<b>N</b>
<b>COOPID</b>	Station COOPID (integer)	<b>N</b>
<b>NWS</b>	Station NWS ID (alphanumeric - max length 15 char)	<b>N</b>
<b>ICAO</b>	Station ICAO ID (alphanumeric - max length 15 char)	<b>N</b>
<b>TIMEZONE</b>	Text (alphanumeric - max length 15 char)	<b>N</b>
<b>ISO A3 Country Code</b>	The ISO A3 Alphanumeric Code (3 char)	<b>N</b>
<b>STN_NAME</b>	Text (alphanumeric - max length 255 char)	<b>N</b>
<b>INFO or FLAG POSTFIX</b>	Alphanumeric keyword that allows an information column to be specified for a number of weather elements <sup>i</sup> in the same file. When this keyword is applied as a postfix to a weather element column in the file, it gives the expected name for the Info column for this weather element. E.g. If weather element name is say 'RAIN' and data info column name for it is 'RAIN_INFO', then specify the INFO POSTFIX field as '_INFO'	<b>N</b>
<b>LAT</b>	Latitude (float) (Positive for North, negative for South). Range is -90 to 90	<b>N</b>
<b>LONG</b>	Longitude (float) (positive for East, Negative for West). Range is -180 to 180	<b>N</b>
<b>ALT</b>	Altitude (Float)	<b>N</b>
<b>ELEMENT_NAME</b>	Measure value (float). If no data: leave blank or specify "NIL". The element name is looked up using the SWS Data Import Filter	<b>N</b>



Notes:

- Columns may appear in any order in the data file.
- As a minimum, a data file in this format would have these minimum set of columns (although, as a rule the more optional fields present in the data file, the more useful the data – please see Section 3 *Weather Variables Supported* for a full list of supported fields):

Daily Data:        **DATE, SRC\_ID, STN\_NAME, TYPE, A\_WEATHER\_VARIABLE\* i**

Hourly Data:      **DATE, HOUR, SRC\_ID, STN\_NAME, TYPE, A\_WEATHER\_VARIABLE\***

Where *A\_WEATHER\_VARIABLE\** denotes a placeholder for a weather variable column as defined above.



### 3 Weather Variables Supported

SWS supports over 100 weather, marine, space-weather and energy elements as standard including the following common weather elements:

Cloud Cover	Sunshine Hours
Dew point	Temperature Ave
Humidity	Temperature Max
Rain	Temperature Min
River Flow	Visibility
Sea Temperature	Waves Significant Height
Snowfall	Waves Max Height
	Wind Ave
Snow Depth	
Sun Radiation Global	Wind Max Gust
	Wind Power

Additionally, SWS users can create new fields at a press of a button.

For each weather element a corresponding column may be present in the data file.

#### 3.1 Data Comments

**In the USA, the hour and date should be LST** In all other parts of the world hour and data should be GMT. It is important that all the files issued have a unique format for the date and hour unrelated to the usual date/hour format of the country where the measures were read. The hour should be formatted as HH:MM from 00:00 to 23:59. It is necessary that the date is formatted using a four year digit format. So the following samples are supported by SWS:

DATE	HOUR
01/01/1900	01:00
01/02/1900	02:00
01/03/1900	01:15
01/04/1900	00:001

But this is not acceptable:

DATE	HOUR
01/01/00	1:00
01/02/00	0130
01/03-1900	10
01041900	0

**NB: some data provider report the hour = "24". SWS does not recognize this hour which corresponds in SWS to "00:00" on the following day.**

**Dates:** Data files should be created with a consistent data format (DD/MM/YYYY, MM/DD/YYYY, YYYY/MM/DD ...). SWS sets a date format as part of the filter for a given data provider so that a European, Japanese or South Africa user can import any provider's data even though the date may not be properly formatted for him. The date separator can be "/", "-", "." or a few other uncommon symbols. SWS then reformats the date for the customer.



If there is no data value for a day then no value should appear. Please do not use a -999 or other value in the weather variable column to represent a missing data point. SWS supports a blank or "NIL". .

If rain is zero, it must be explicitly stated as such. The absence of rain data will not be interpreted as representing zero rainfall.

SWS requires the data provider's unique station identifier (SRC\_ID) and we need to have as much information as available concerning WMO, WBAN, COOPID, NWS, ICAO, time zone, etc.

The information for the town must appear in the first row but not necessarily in the succeeding rows except for the Station ID which must be repeated (it is used as a key in the database). The repetition can be avoided if disk space is a matter and compression is not used.



## 4 Sample files

### 4.1 Daily data .csv examples

#### i) Single station:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	WMO_NO	WBAN	COOPID	NWS	ICAO	TIMEZONE	SRC_ID	CITY	STN_NAME	TYPE	QC	LAT	LONG	ALT	DATE	DAILY_RAIN	DAILY_MAX_TEMP	DAILY_MIN_TEMP	DAILY_MEAN_WIND	12Z_MSLP	12Z_REL_HUM	SUNSHINE
2	3772						7080	LONDON	HEATHROW	1	2	51.483	-0.45	25	01/01/1961	NIL	8	-5	7	1010	75	3.5
3	3772						7080	LONDON	HEATHROW	2	2	51.483	-0.45	25	01/01/1961	5	7	1	7	995	85	1
4	3772						7080	LONDON	HEATHROW	1	2	51.483	-0.45	25	02/01/1961	2.2	6	-2	7	981	79	3

#### ii) Multiple Stations

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	
1	WMO_NO	COUNTRY	SRC_ID	CITY	STN_NAME	TYPE	QC	LAT	LONG	ALT	DATE	DAILY_RAIN	DAILY_MAX_TEMP	DAILY_MAX_TEMP_INFO	DAILY_MIN_TEMP	DAILY_MEAN_WIND	12Z_MSLP	12Z_MSLP_INFO	12Z_REL_HUM	SUNSHINE	
2	3772		7080	LONDON	HEATHROW	1	2	51.483	-0.45	25	01/01/1961	NIL			8	-5	7	1010		75	3.5
3						2	1				01/01/1961	5			7	1	7	995		85	1
4						1					02/01/1961	2.2			6	-2	7	981		79	3
5	7149	F	FRA112		PARIS ORLY	1		48.44	2.4	89	01/01/1961				9	-FO--		1015	-GO--		NIL
6						2					01/01/1961				8.5	-FO--		1010	-GO--		NIL
7						1					02/01/1961				7	-FO--		990	-GO--		NIL



## APPENDIX DATA TYPE TABLE

ID	Description
1	Climate QC1/Unedited
2	Synop QC1/Unedited
3	Reconstructed
5	Synop QC2/Edited
6	Climate QC2/Edited
7	Recalibrated SWD
8	Recalibrated
10	Synop Cleaned
11	Synop Auto Cleaned
13	Climate Synthetic
14	Climate Auto Cleaned
15	Climate Cleaned
20	Exchange Initial
25	Exchange Final
30	Climate TOBS
31	Recalibrated TOBS
40	METAR
50	LQ1 - Low Quality
51	LQ2 - Low Quality
90	GSOD
100	User's Serie Level 1
101	User's Serie Level 2
102	User's Serie Level 3
103	User's Serie Level 4
104	User's Serie Level 5
110	Private Use
111	Temporary
112	Working



## Contact Us

Regarding software and consultancy services please see [www.SpeedwellWeather.com](http://www.SpeedwellWeather.com) or contact:

Stephen Doherty [stephen.doherty@SpeedwellWeather.com](mailto:stephen.doherty@SpeedwellWeather.com)

Dr Michael Moreno [michael.moreno@SpeedwellWeather.com](mailto:michael.moreno@SpeedwellWeather.com)

David Whitehead (USA) [david.whitehead@SpeedwellWeather.com](mailto:david.whitehead@SpeedwellWeather.com)

Regarding world-wide weather data and forecasts please see [www.SpeedwellWeather.com](http://www.SpeedwellWeather.com) or contact:

Phil Hayes [phil.hayes@SpeedwellWeather.com](mailto:phil.hayes@SpeedwellWeather.com)

David Whitehead (USA) [david.whitehead@SpeedwellWeather.com](mailto:david.whitehead@SpeedwellWeather.com)

### Telephone:

UK office: +44 (0) 1582 465 569

US office: + 1 843 737 4843

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

Address USA: 418 King St, Floor 2, Charleston, SC 29403, USA

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