



Weather Forecast File Format Specification

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Weather Forecast File Format Specification

1 Introduction

This document covers the specification of the Forecast Weather data file format supported by the Speedwell Weather System (**SWS**).

Forecast Weather data in this format from *any* provider can be easily imported into SWS and made accessible to its visualisation, analytical and decision support tools.

In addition, a sample file and some background information about SWS are provided.

2 Background

SWS is a complete software product for the weather risk market and includes:

- Front Office tools (Pricing, Correlation, Statistical Analysis etc)
- Middle Office tools (VaR, Credit Risk Report etc)
- Back Office tools
- Weather Dependency Analysis

SWS is used by clients in the USA, Canada, Europe and South Africa. These include energy companies, banks, brokers, met offices and insurance/reinsurance groups.

SWS is an enterprise system hosted by the client. SWS customers therefore operate their own database with their own weather data in it.

The Historical Daily and Hourly data are imported directly from data providers tools in an automated fashion via FTP or simply via files from the network.

Forecast Weather data is currently simply imported via files from the network. However, automated FTP support is in the pipeline.

Speedwell Weather Derivatives (**SWD**) is very keen to integrate seamless data importation with as many data providers as possible. SWD remains independent and does not pay any fees to the data providers. The SWS client interested in buying data from a data provider will have a separate legal contract with this specific data provider.

3 Scope

A Forecast Weather data file contains weather measures for one or more weather elements at one or more station sites for a number of consecutive days.

The specification allows one or more forecasts, each one potentially from a different Data Distributor, for these same sites over that period to be provided.

In this way, the specification support both Ensemble and Deterministic Forecasts.

4 Specification

The Weather Forecast data file is a simple ASCII CSV file.

The first line of the file must contain header information about the content of the file. The order of the fields must be observed and all columns are mandatory. When one or more of an item type may be present, say Element[1..EN], at least one field containing that item must be present.

The rest of the file, the body, must contain the Ensemble data.

The end of the file is reached when no more member data is present, i.e. the field is empty or blank.

Please note the following notation used:

Ensemble: Forecast Weather Data set containing Members of Elements, sourced from a single Data Distributor

Element: Weather Element, such as Temperature Max

Member: Range of measure values of a weather Element at a particular weather Station Site, for the number of days of the forecast

Name[1..N]: This is equivalent to a CSV list of N fields,
as in Name1, Name2, Name3, ..., NameN

PLEASE NOTE THAT NO COLUMN NAMES MUST APPEAR IN THE FILE.

4.1 File Naming Convention

The Forecast data file must match start with the name of the provider and have a CSV extension, as in PROVIDER_xxx.csv (case insensitive, no fixed length).

4.2 Header

FIELD	DESCRIPTION
DATE OF ISSUE	Date the Weather Forecast was issued, in American, European or ISO 8601 format with years expressed with 4 digits. Examples of valid date format: DD/MM/YYYY, MM/DD/YYYY, MM-DD-YYYY, YYYY-MM-DD
NUMBER OF DAYS (DN)	Number of Days in the Forecast [<i>Integer</i>]
NUMBER OF WEEKS (WN)	Reserved for future use. Please use zero (0) [<i>Integer</i>]
NUMBER OF SITES (SN)	Number of Weather Station/Sites in Forecast [<i>Integer</i>]
NUMBER OF ENSEMBLES (FN)	Number of Ensemble Data Distributors whose Forecast data is present in the file [<i>Integer</i>]

NUMBER OF MEMBERS FOR ENSEMBLE (MN[1..FN])	<p>List of Number of Members that each Ensemble contains. The number of values must match the number of Ensembles. E.g. If the file contains FN Ensembles, then this corresponds to: MN1; MN2; ...; MNFN; Where MN1 = number of members for Ensemble 1, MN2 = number of members for Ensemble 2, MNFN = number of members for Ensemble FN <i>[Integer]</i></p>
NUMBER OF ELEMENTS (EN)	<p>Number of Elements in the Forecast <i>[Integer]</i></p>
ELEMENT (1..EN)	<p>List of names of the Elements in each Ensemble. <i>[Alphanumeric]</i> The number of names must match the number of Elements. E.g. If the file contains EN Elements, then this corresponds to Element1; Element2; ...; ElementEN</p>
ENSEMBLE[1..FN]	<p>List of names of the Data Distributors the file. <i>[Alphanumeric]</i> The number of names must match the number of Ensembles. E.g. If the file contains FN Ensembles, then this corresponds to: FDistributor1; FDistributor2; ...; FDistributorFN;</p>

Important Notes:

- Forecast data within the file may contain one or more ensembles from multiple data distributors.
- The Element names are defined by the distributor of the data. Both the names of *each data distributor and the names of all the Elements* supported by each data distributor likely to be present within the file from a provider must be made available separately so that SWS may be configured to map these names to its internal list of Weather Elements.

4.3 Body

The body contains the data Ensembles ordered from left to right, where each Ensemble contains the Members for each Element in the forecast.

Each Ensemble contains a row for each day of the forecast and each site, ordered by Element Members.

FIELD	DESCRIPTION
DATE	<p>Date of the Weather measure, in American or European format with years expressed with 4 digits. Examples of valid date format: DD/MM/YYYY, MM/DD/YYYY, MM-DD-YYYY, YYYY-MM-DD</p>
SITE WMO	<p>The WMO number of a Weather Station/Site <i>[Integer]</i></p>

<p>ENSEMBLE[1..FN]_ ELEMENT[1..EN]_ MEMBER[1..MNFN]</p>	<p>List of Measure values, one for each of all the Members of all the Elements of all the Ensembles in the forecast. [List of <i>Floats</i>]</p> <p>PLEASE NOT USE FILL VALUES FOR MISSING DATA – leave empty or use a blank instead.</p> <p>The number of values must be equal to the sum of the number of Members (MN) times the number of Elements (EN) for each Ensemble.</p> <p>E.g. Given Number of Members MN, number of Elements EN and number of Ensembles FN, then a row corresponds to these values:</p> <pre> 11/04/2004;7026;Ens1_ Ele1_Mem1; Ens1_ Ele1_Mem2;; Ens1_ Ele1_MemMN; Ens1_ Ele2_Mem1; Ens1_ Ele2_Mem2;; Ens1_ Ele2_MemMN; Ens1_ EleEN_Mem1; Ens1_ EleEN_Mem2;; Ens1_ EleEN_MemMN; Ens2_ Ele1_Mem1; Ens2_ Ele1_Mem2;; Ens2_ Ele1_MemMN; Ens2_ Ele2_Mem1; Ens2_ Ele2_Mem2;; Ens2_ Ele2_MemMN; Ens2_ EleEN_Mem1; Ens2_ EleEN_Mem2;; Ens2_ EleEN_MemMN; EnsFN_ Ele1_Mem1; EnsFN_ Ele1_Mem2;; EnsFN_ Ele1_MemMN; EnsFN_ Ele2_Mem1; EnsFN_ Ele2_Mem2;; EnsFN_ Ele2_MemMN; EnsFN_ EleEN_Mem1; EnsFN_ EleEN_Mem2;; EnsFN_ EleEN_MemMN </pre>
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Important Notes:

1. The date format used by each provider must be specified separately so that SWS may be configured accordingly.
2. Missing data - **PLEASE NOT USE FILL VALUES FOR MISSING DATA – leave empty or use a blank instead.**



19/04/2004,1490,8.1,8.6,5.9,6.2,5.1,8.6,9.7,8.1,6.2,8.6,3.7,3.8,7.6,3.7,7.7,4.6,7.8,1.6,7.7,6.7,7.5,9.6,8.7,4.6,7.8,8.8,7.6,1.6,6.6,4.7,9.6,7.9,2.7,1.7,6.8,1.7,3.6,8.7,5.7,4.8,2.7,6.7,5.7,3.6,3,7.7,2.7,5.7,3.6,3,11.3,10.8,7.2,8.8,7.7,9.5,7.7,14,11.2,9.1,11.2,9.3,9.5,12.5,9.5,11.7,10.1,8.4,10.7,10.1,11.4,11.9,6,10.5,10.4,10.3,13.4,11.2,9.2,9.6,8.9,11,11.1,11.8,11.1,10.4,9.7,9.8,10.6,11.9,10.4,12.7,11.3,10.7,11.2,9.3,9.8,10.2,10.5,9.9,10.2,4.4,6.5,4.3,3,1.6,6.4,4.2,6.3,5.4,2.6,5.5,3.8,5.7,4.9,2.9,4.4,5.4,4.4,5.6,2.6,3.7,4.7,2.2,3.6,4.9,3.7,4.2,6.6,2.7,3.5,3.4,8.1,2.6,8.3,1.5,7.6,6.5,3.3,2.3,4.3,9.4,4.4,4.8,3.2,3.8,4.6,3.9,4.8,3.2,2.0,2.4,1.8,0.1,0.1,1.8,1.6,0,0,0,2.0,1.0,2.0,7.0,0,0,0,0,0,0.1,0,0,0,0.1,1.4,0,0,0.8,0,0,0,0,0.9,0.1,4.0,3.0,6.0,0.2,0,0,0.1,0,0,0,0,0,0.1

20/04/2004,1490,8.8,7.3,7.4,7.2,6.1,8.7,7.1,9.4,7.9,6.9,8.4,7.2,6.3,10.1,7.7,8.7,7.7,9.4,8.1,7.8,7.6,4.8,6.7,8.9,9.3,7.9,9.6,6.7,6.5,8.1,9.9,6.9,7.6,6.1,7.7,4.7,4.6,6.6,6.6,8.6,6.9,7.9,7.6,7.1,6.7,7.6,9.3,9.3,11,10.4,10.9,10.6,9,11.7,9.6,10.4,10.5,9.5,11.9,11.1,10.7,13.5,9.5,10.7,12.9,8,10.7,14.3,12.7,9.3,11.6,8.3,8.9,14.1,12,11.2,13.9,9.5,10.2,9.9,11.4,11.7,9.6,10.8,10.7,11.3,11.5,9.5,9.3,9.8,12.8,9.4,9.8,11.4,11.5,6.8,11.7,13.4,13.2,6.1,3.8,3.8,4.3,3.7,6.4,4.8,7.1,5.7,4.6,5.2,4.4,2.2,6.2,4.8,5.7,3.2,4.9,3.3,4.7,3.8,6.4,4.1,6.3,6.3,9.6,7.4,9.6,4.4,2,3.3,5.4,6.7,9.4,7.4,4.1,8.3,3.3,3.5,3.4,4.2,9.5,7.3,9.5,9.4,6.3,2.5,3.9,5.6,6.4,0.1,1.0,7.3,7.0,2.0,8.0,7.0,9.0,5.0,0,0,2.2,0,3.6,0.5,0.7,0,0,0,0,3.0,0.7,1.9,0.5,0.7,0,0,0,1.0,2.3,0.5,0.8,0,0,0,3.0,3.1,0.0,2.0,1.0,3.8,0,0,0

21/04/2004,1490,8.4,8.5,8.5,6.2,7.3,8.1,7.4,7.5,6.8,5.3,8.1,8.5,6.3,8.8,6.7,7.2,10.3,6.8,8.1,10.5,9.4,7.9,8.2,4.5,6.3,11.4,9.2,6.9,7.9,5.7,9.2,9.7,9.9,5.6,1.9,8.8,11.8,6.6,2.7,8.8,5.7,8.8,9.8,9.4,7.9,2.10.1,9.6,12.9,12.6,11.9,10.9,10.5,11.7,10.4,8.5,10.2,9.1,11.8,11.7,7.8,10.6,9.1,11.4,13.8,9.1,11.5,15.9,12.5,9.1,12.7,8.8,9.4,14.3,12.4,12.11.8,8.1,13.3,12.7,11.5,13,10.2,12.9,12.2,14.9,12.1,8.9,11.6,11.4,12.5,13.2,11.2,13.4,10.7,9.5,11.3,13.8,12.6,3.9,4.3,5.3,1.3,5.1,4.5,4.8,5.4,3.1,7.4,4.5,7.4,3.6,9.4,5.2,5.7,2.5,5.3,5.3,6.1,6.3,9.0,2.3,2.8,9.6,5.1,8.3,4.2,8.5,8.6,3.3,3.6,9.1,4.7,9.4,7.8,4.5,6.4,3.3,7.6,2.2,9.5,4.5,2.6.1,2.2,4.6,7.9,5.8,7.1,0,0,0,2.0,0.3,0,0,2.0,5.0,0,0,28.8,5.1,1.3,0.2,0,10.7,0,0,0,7.6,0.2,0.4,5.1,4.0,0.1,3.8,0,0,5.6,0.1,4.2,0.6,0.5,0,0,0,2.2,2.6,3.6,0,0,1.6,0,0,2.4,0.6,0,1,0

22/04/2004,1490,9.6,7.9,9.5,8.2,8.1,6.8,7.8,6.2,9.4,6.9,8.1,8.4,4.7,6.2,7.2,6.5,9.6,6.5,8.4,11.5,10.7,8.6,8.6,1.6,1.1,12.5,8.9,11.1,9.5,6.9,9.8,6.9,7.7,3.6,4.9,2.11.4,8.9,4.2,11.2,6.3,6.5,8.7,8.7,6.8,3.7,8.5,7,11.8,7.13.6,9.9,11.5,12.9,10.8,9.8,12.4,8.9,12.8,12.3,11.1,11.6,8.4,9.1,10.6,11.1,11.4,10.1,13.5,16.1,13.2,10.3,10.8,9.9.1,16.4,11.3,13.8,12.7,10.3,12.7,7.3,9.7,13.3,12.6,10.3,13.2,15.6,12.3,5.8,13.5,9.5,9.3,12.7,11,10.8,13.1,10.7,5.7,15.5,11.4,7.3,4.5,7.3,5.1,5.2,3.7,3.3,6.6,9.1,5.5,1.5,1.0,6.3,8.4,4.1,5.9,3.2,5.3,9.8,2.6,7.5,4.2,8.3,2.4,8.8,5,6.6,9.4,6.1,8.6,6.8,7.1,6.6,8.1,6.2,5.5,7.7,5.6.1,2.8,3.2,6.3,2.2,8.4,4.5,1.4,7.4,9.5,9.7,6.6,5.0,2.1,4.2,5.0,0,0,0,0,0,0,0.1,4.5,24.1,0.6,9.0,3.0,0,0,0.3,0.7,4.8,1.3,0.0,4.4,5.0,0,0,7.0,1.0,9.0,0.6,0,0,1.2,2.8,0.2,4.3,2.8,0.2,1.0,2.0,3.4,10.7,0,0.1

14/04/2004,1497,4.9,5.1,4.7,5.6,1.6,1.5,5.5,8.5,1.4,9.6,2.4,9.5,4.4,9.5,3.4,9.5,3.5,4.4,7.5,2.5,1.5,7.5,5.4,8.4,9.5,3.5,8.5,1.5,9.4,8.5,9.5,6.4,9.4,7.4,9.5,1.5,4.9,4.7,4.9,4.8,4.8,5.2,5.8,5.8,5.4,6.1,4.7,5.8,4.6,4.5,9.9,8.4,9.6,9.4,9.8,9.1,9.1,9.4,9.8,10.9,6.9,6.10.5,9.4,9.9,9.7,10.3,9.8,8,10.2,9.8,10.4,11.9,8.9,1,10.4,9,10.2,9.4,9.2,8.9,10.4,9.9,8.6,9.1,8.5,9.8,9.8,9.4,9.6,9.6,9.7,9.7,10.7,9.6,9.9,9.6,9.8,8.7,8.6,9.5,0.1,0.7,-0.8,0.8,2.6,3.1,2.5,3.0,2,-0.3,3.1,0.7,0.3,0.6,0.5,-0.3,0.2,2.2,-0.3,0.1,0.2,1.0,3.0,2.0,5.0,3,-0.3,2.9,0.3,2.8,1.1,-0.2,-0.3,0.8,1.5,0.1,0.2,0.1,0.8,0.3,0.0,3.1,8.2,6.0,4.2,9.0,1,2.9,0,-0.1,0.8,0.9,0.5,0.6,0.9,0.8,0.7,0.8,0.7,0.8,0.8,0.8,0.9,0.8,0.9,0.6,0.8,0.8,0.9,0.7,1,1.0,6.1,0.6,0.7,0.8,0.5,0.9,0.9,0.8,0.8,0.9,0.8,0.8,0.7,0.7,0.8,0.8,0.8,0.9,0.8,0.7,0.7,0.6,0.9,0.8,1.2,0.8,0.7

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