



Speedwell Weather System

The Open Weather Derivative Pricing and Risk Management System

SWS Version 11 What's New?

SWS Version 11 has been released. We are pleased to announce the following important new features:

weatherXchange Data Integration: Seamless Integration with the new weatherXchange cleaned database of tradeable sites



Automation of Request for Proposal Processing: SWS 11 automates the import and export of weatherXchange Request for Proposals ("RFP"s)

Power Curve Builder Scripting Tool: SWS simplifies the transformation of a power curve table into an SWS-compatible index for weighting wind speeds

Direct Access to Speedwell Forecast Archive: Archived forecasts can be viewed and imported into SWS.

Gridded Data Services Integration: SWS is now able to provide direct access to several gridded data catalogues supported by Speedwell

weatherXchange Data Integration

SWS Desktop now allows direct access to the weatherXchange cleaned database of tradeable sites*. All stations in this database are suitable for weather risk transfer.

Search for your best proxy station using

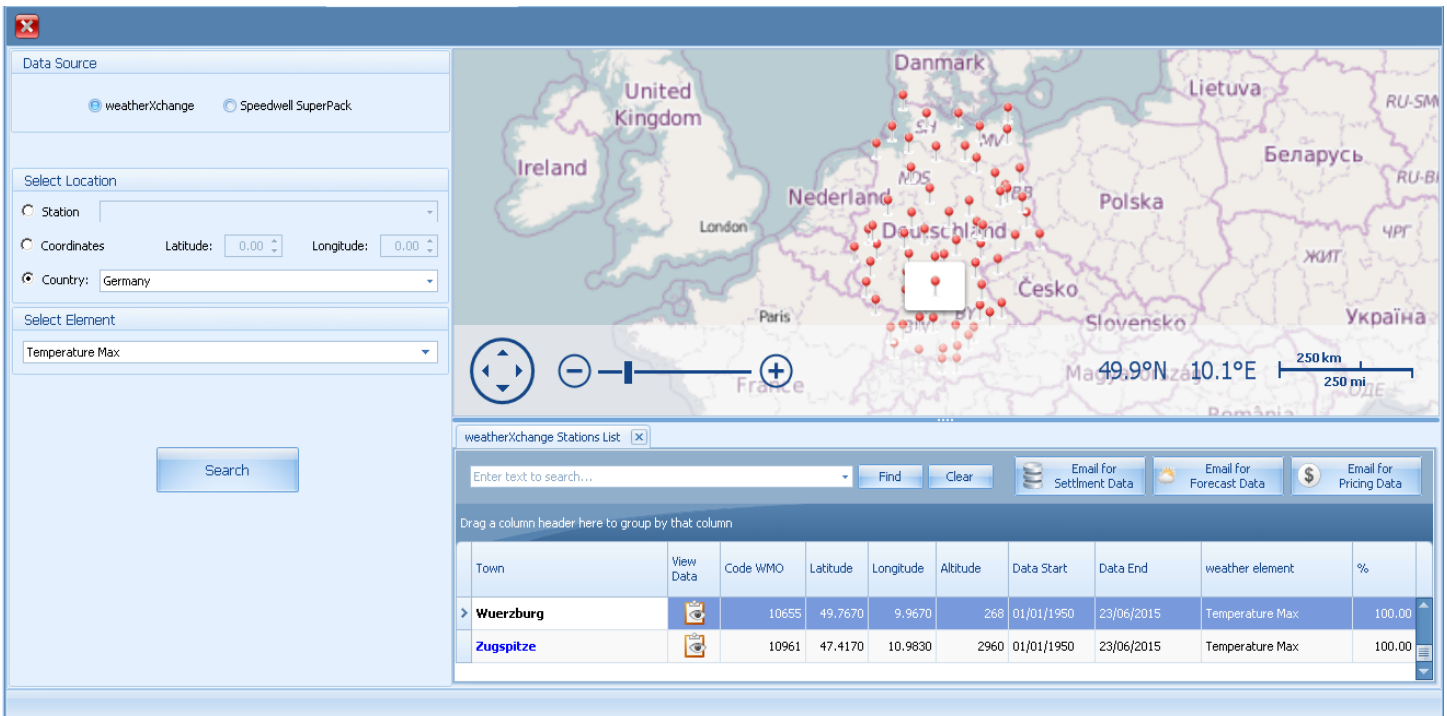
- Map interface
- Station attribute (name, latitude and longitude...)
- Radial search within a specified distance of a station or a set of coordinates



* Tradable sites are stations that meet the following criteria:

- Lengthy historical record
- Availability of ongoing feeds
- Meet data quality criteria for the production of Settlement Data

Data can be previewed using the viewing tool and then easily imported directly into SWS ready for analysis

weatherXchange



Town	View Data	Code WMO	Latitude	Longitude	Altitude	Data Start	Data End	weather element	%
Wuerzburg		10655	49.7670	9.9670	268	01/01/1950	23/06/2015	Temperature Max	100.00
Zugspitze		10961	47.4170	10.9830	2960	01/01/1950	23/06/2015	Temperature Max	100.00

Additional Data Integration functionality enables users to directly contact DataTeam (via e-mail) in order to request Settlement Data and Forecasts.



Automation of Request for Proposal (RFP)

Communicating the terms of a weather deal between clients and risk takers has been revolutionised with the integration of Speedwell WeatherML. Once the terms of a deal have been captured using either the weatherXchange website, or another user's SWS, a WeatherML file can be generated and sent to interested counterparties. These counterparties are able to import the WeatherML file directly into SWS and then download the relevant historical data, if required, to price the deal.

Speedwell WeatherML

Click to save structure in SWS for easy pricing

```
<?xml version="1.0" encoding="utf-16"?>
<CSWSRequest xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <WebAppID>
    <ID>df451bb5-f125-497a-9d3f-7b72e3eece83</ID>
    <SystemID>SWSDESKTOP</SystemID>
  </WebAppID>
  <IsFirmPrice>false</IsFirmPrice>
  <IsLong>true</IsLong>
  <Cashflow>0</Cashflow>
  <IsCalculateGreeks>false</IsCalculateGreeks>
  <ValueAtRiskLevel />
  <SummaryStatYears />
  <PricingDate>2015-12-04T00:00:00+00:00</PricingDate>
  <WeatherDerivative xsi:type="CSWSWeatherDerivative">
    <SWSIDOption>390</SWSIDOption>
    <CalculationPeriodFirstDate>2015-12-01T00:00:00</CalculationPeriodFirstDate>
    <CalculationPeriodLastDate>2015-12-31T00:00:00</CalculationPeriodLastDate>
    <StripQuantity>1</StripQuantity>
    <WeatherIndexClassName>Speedwell.WeatherIndex</WeatherIndexClassName>
    <WeatherIndex>
      <SWSIDIndex>3852</SWSIDIndex>
      <IDIndexType>0</IDIndexType>
      <IndexType>C_IndexHDD</IndexType>
      <Location>
        <SWSStnID>888</SWSStnID>
        <SpeedwellExternalID>16920</SpeedwellExternalID>
        <Name>PRAQUE RUCZYNE</Name>
        <Country>
          <IDCountry>64</IDCountry>
          <CountryName>Czech Republic</CountryName>
        </Country>
        <IsCNEStation>false</IsCNEStation>
        <COOPID xsi:nil="true" />
        <Latitude>50.099</Latitude>
        <Longitude>14.22</Longitude>
        <Altitude>365</Altitude>
        <ICAO>LCPR</ICAO>
        <WBAN xsi:nil="true" />
      </Location>
    </WeatherIndex>
  </WeatherDerivative>
</CSWSRequest>
```

Please enter the weatherXchange RFP file path:
C:\Temp\lhr2.WML

Preview Import

RFP Specification

Company Requesting RFP	Speedwell Weather Derivatives Ltd
The counterparty would like to:	Counterparty would like to BUY
Counterparty Message	

Derivative High Level Detail Summary:

- Station Name: LONDON HEATHROW
- Station Code: 708
- Element: Temp Ave
- Index Type: HDD Like
- Period Start Date: 01/04/2016 00:00:00
- Period End Date: 30/04/2016 00:00:00
- Derivative Type: Call (capped)
- Strike: 1,000.00

Automatically Retrieve All Pricing Data Open Pricer

Summary of weather structure derived from Speedwell WeatherML

Power Curve Builder Scripting Tool

Using SWS to calculate a user-defined function is nothing new. For the past decade SWS users have used indices to transform underlying weather elements. Examples include El Nino weighted time series or more complicated indices adjusting hourly wind speed observations according to a wind power curve.

The new scripting tool now makes it much easier to transform a complicated discrete power curve with multiple steps into an SWS-compatible weighted index. Both step function and linear interpolation functions are supported.



Script Builder

Please select the type of script you would like to create.

Step Function

Linear Interpolation

Choose Step or linear interpolation between points

This screen helps quickly create Formula script for Steps and Linear Interpolated type of indices.

A step index takes constant values between various ranges.
As an example it could be defined as:

- * If weather value between 0 and 5 exclusive the index value is say 10
- * If weather value between 5 and 10 exclusive the index value is say 100
- * If weather value between 50 and 100 exclusive the index value is say 1000
- * elsewhere the converted value will be zero

	A	B	C	D	E	F	G	H	I	J	K
1	Input Value	Index Value									
2	0	0									
3	1	0									
4	2	0									
5	3	0									
6	4	0.14									
7	5	0.26									
8	6	0.43									
9	7	0.65									
10	8	0.85									
11	9	1.05									
12	10	1.23									
13	11	1.32									
14	12	1.31									
15	13	1.2									
16	14	1.05									

Copy Power Curve

Press Create Script

Create Script

Once the script is generated, simply copy and paste the script into the index formula box.

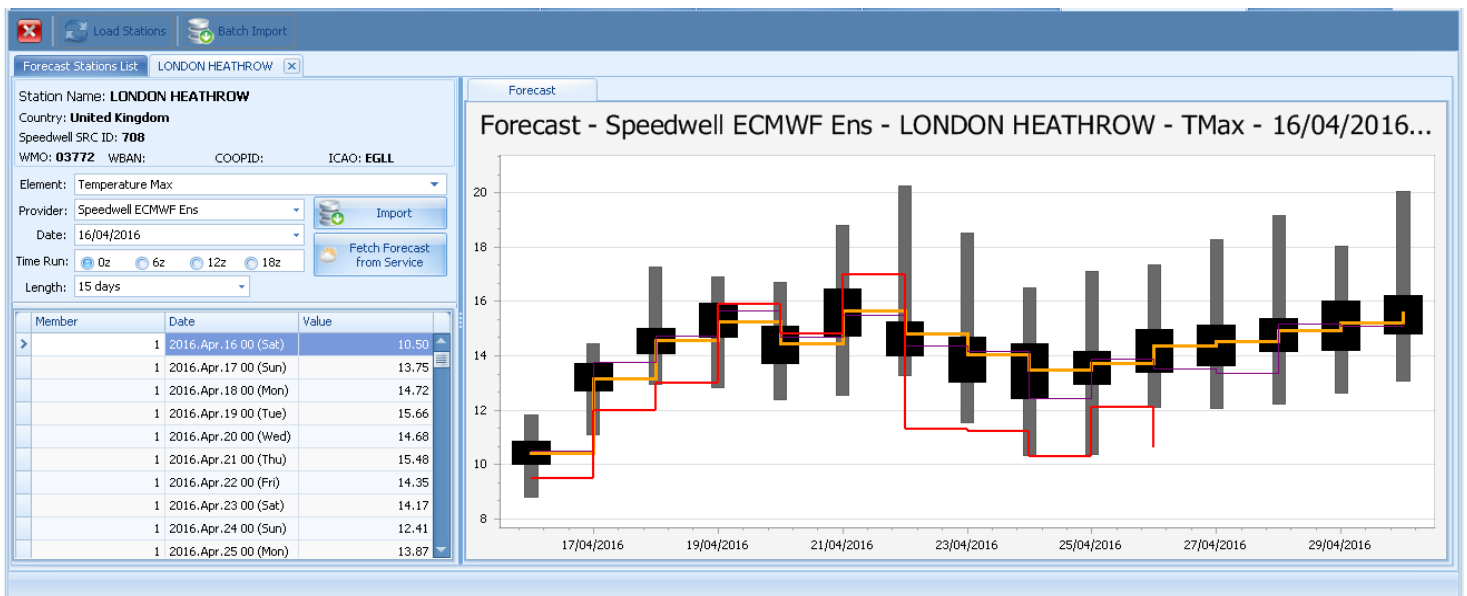
```
LinIntExt(0,0,1,0,1,0,WR1)+LinIntExt(1,0,2,0,1,0,WR1)+LinIntExt(2,0,3,0,1,0,WR1)+LinIntExt(3,0,4,0,14,1,0,WR1)+LinIntExt(4,0,14,5,0,26,1,0,WR1)+LinIntExt(5,0,26,6,0,43,1,0,WR1)+LinIntExt(6,0,43,7,0,65,1,0,WR1)+LinIntExt(7,0,65,8,0,85,1,0,WR1)+LinIntExt(8,0,85,9,1,05,1,0,WR1)+LinIntExt(9,1,05,10,1,23,1,0,WR1)+LinIntExt(10,1,23,11,1,32,1,0,WR1)+LinIntExt(11,1,32,12,1,31,1,0,WR1)+LinIntExt(12,1,31,13,1,2,1,0,WR1)+LinIntExt(13,1,2,14,1,05,1,0,WR1)+LinIntExt(14,1,05,15,0,9,1,0,WR1)+LinIntExt(15,0,9,16,0,75,1,0,WR1)+LinIntExt(16,0,75,17,0,6,1,0,WR1)+LinIntExt(17,0,6,18,0,45,1,0,WR1)+LinIntExt(18,0,45,19,0,3,1,0,WR1)+LinIntExt(19,0,3,20,0,15,1,0,WR1)+LinIntExt(20,0,15,21,0,1,1,WR1)
```

SWS-readable index created to transform wind speed

Direct Access to Speedwell Forecast Archive

Using the station search tool, archived forecast data can be viewed and then imported into SWS (subject to subscriptions). Supported forecasts include:

- Speedwell downscaled ECMWF operational
- Speedwell downscaled ECMWF ensemble
- Speedwell downscaled GFS operational
- Speedwell downscaled GFS ensemble
- Raw ECMWF operational
- Raw ECMWF ensemble
- Raw GFS operational
- Raw GFS ensemble



Gridded Data Services Integration

SWS now provides direct access to several gridded data catalogues supported by Speedwell (subject to subscription). Point data is available for any latitude/longitude within a given catalogue. In addition to point data, users can apply mathematical functions over user-defined areas or standard regions. For example, this could be daily average over a given region or the maximum/minimum of all data points within a chosen area.

Gridded Data Services - Region

Data Element Name	Data Provider Name	Earliest Data	Is Hourly	Latest Data	Measure Units
Rain	ARC2	01/01/2015	<input type="checkbox"/>	14/12/2015	mm
Rain	Aus BOM	01/01/1900	<input type="checkbox"/>	15/04/2016	mm
Solar Exposure	Aus BOM	01/01/1990	<input type="checkbox"/>	28/04/2016	MJ/m ²
Rain	CHIRPs	01/01/1988	<input type="checkbox"/>	13/02/1988	mm
Mean Wave Direction	ERA 0.75 resolution	01/01/1979	<input checked="" type="checkbox"/>	31/01/2016	degrees
Sea Surface Tempera...	ERA 0.75 resolution	01/01/1979	<input checked="" type="checkbox"/>	31/01/2016	K
Temperature 2m	ERA 0.75 resolution	01/01/1979	<input checked="" type="checkbox"/>	31/01/2016	K
Wave Height and Swell	ERA 0.75 resolution	01/01/1979	<input checked="" type="checkbox"/>	31/01/2016	m
Wind u +10m	ERA 0.75 resolution				
Wind v +10m	ERA 0.75 resolution				

Select gridded data source

Region Definition

Name: Portugal
Description: Portugal rough outline

POLYGON((-8.87962652071294 41.8632915297247, -8.20396734102544 42.1408724539827, -8.09410405977544 42.0430409978139, -8.22593999727544 41.928713622414, -8.1867878602544 41.8141808955725, -7.8743749727544 41.8960109530633, -7.42393804415044 41.8551090563241, -7.23717046602544 41.8632915297247, -7.18223882540044 41.928713622414, -7.06138912602544 41.961399537071, -6.9759465572671 41.961399537071, -6.83067632540044 41.9450586736961, -6.6031339456069 41.936886671658, -6.4901001532544 41.650207042502, -6.17149661790044 41.5845002908454, -6.33826421602544 41.3622459491397, -6.6329241915044 41.2384421493278, -6.8416626532544 41.0647221400955, -6.94033960665044 41.0313804239117, -6.8416626532544 41.7824857888568, -6.8196899727544 41.515751299222, -6.7673917711134 40.34213480138, -7.00844720119637 40.2131160875137, -6.83809238297401 40.0379925161865, -7.03941655977544 39.7176133268375, -7.0688223808794 39.6568603813544, -7.55028081758794 39.45040044 39.4466503099046, -7.20970464571294 39.1616809912814, -7.12730718477544 39.1022187031002, -7.0366875559949 39.1192679052031, -6.9515137317636 39.004057709011, -7.07233754415044 38.8203118192977, -7.2591424469469 38.7175222994515, -7.33889184776541 38.4512977883843, -7.06138921602544 38.1754513148872, -6.92955327852544 38.222370862496, -7.0009641133794 38.0180369188046, -7.24615679415044 37.9722089405904, -7.48500639692037 37.5335462137382, -7.3822586366815 37.1420537244134, -7.91056935366815 37.0018915730338, -8.94329419741815 37.1070150147464, -8.72355763491815 38.456925065022, -9.03117482241815 38.461452862853, -9.49260060366815 38.736212444558, -9.31681933566815 39.267520371897, -8.94329419741815 40.202219902509, -8.6356670091815 41.0455075024528, -8.85539357241815 41.868860462757, -8.87962652071294

Define the area with the cursor tool

Transform data (eg sum / max / min / average) and extract to SWS

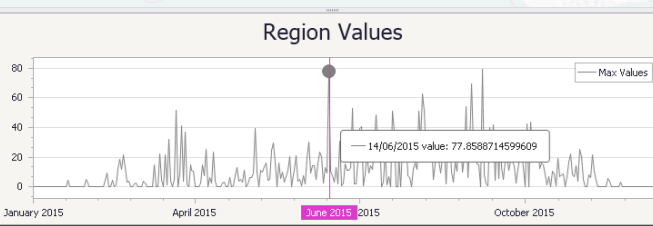
Gridded Data Services - Point

Select Region - Data Points

Region: Benin
Point Set: Benin Custom 7x7 ARC2 Rain
Math: Daily Max Over Region
Start Date: 01/01/2015
End Date: 14/12/2015
 Do INCLUDE null values in the result!

Dates	Location Values	Region in Period Values
19/02/2015 00:00:00	Values MAX	11.9273929595947
20/02/2015 00:00:00		21.5278015136719
21/02/2015 00:00:00		12.9529247283936
22/02/2015 00:00:00		2.94439458847046
23/02/2015 00:00:00		3.74000763893127
24/02/2015 00:00:00		0
25/02/2015 00:00:00		0
26/02/2015 00:00:00		1.60956907272339
27/02/2015 00:00:00		2.67812395095825
28/02/2015 00:00:00		0
01/03/2015 00:00:00		0
02/03/2015 00:00:00		0
03/03/2015 00:00:00		3.93532705307007
04/03/2015 00:00:00		2.28043985366821
05/03/2015 00:00:00		0
06/03/2015 00:00:00		0
07/03/2015 00:00:00		0
08/03/2015 00:00:00		0
09/03/2015 00:00:00		14.8961143493652
10/03/2015 00:00:00		0
11/03/2015 00:00:00		0

Region Values





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, energy and agriculture world-wide. We are the dominant provider of settlement data for parametric weather risk contracts.

Contacts

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