



Speedwell Weather System

The Open Weather Derivative Pricing and Risk Management System

SWS is an enterprise software application for pricing weather risk contracts, managing a portfolio of weather risk contracts and managing historical weather data and feeds. SWS provides front, middle and back-office support and helps with regulatory reporting .

SWS is integrated with the weatherXchange[®] Platform

SWS Version 12 What's New

SWS Version 12 has been released. We are pleased to announce the following important new features:

Optional weatherXchange Automated Pricing Service. The APS is a user-configurable pricing service that allows complete automation of responding to RFQs sent from the weatherXchange Platform

Full Pricing and Risk Management Support for Quantos: SWS now supports Delta_T*Delta_P type gas-settled quantos

New C# Script with access to SWS Assemblies: this powerful and extremely fast engine can remove the need to use weights series

Further integration with the weatherXchange data API and the Gridded data API

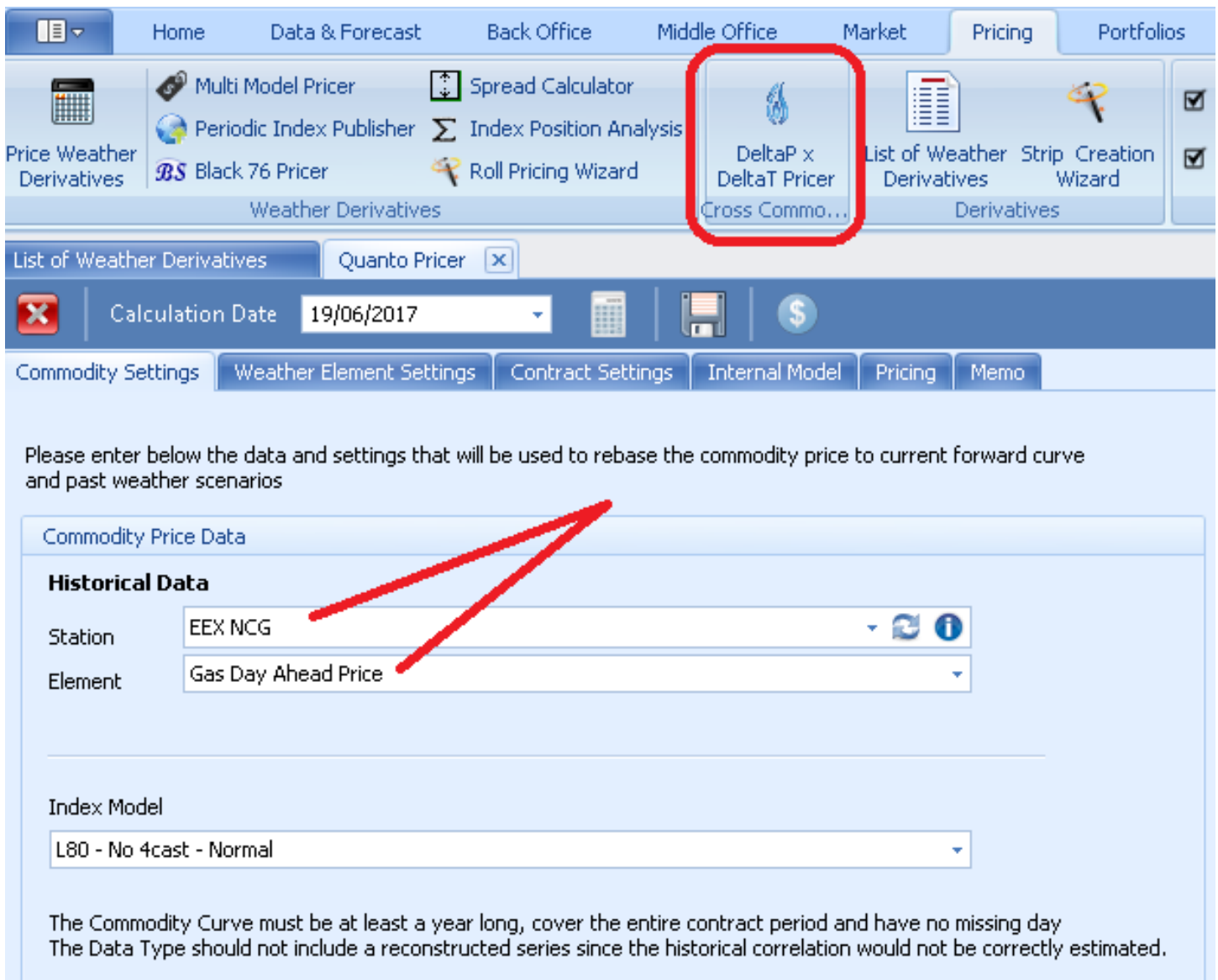
New 'Overall cap' option on Swaps in the Strip engine

A new 'Data Series type' property for elements and 'Station Type' for stations

Quantos Support

Pricing uses rebased historical data and quanto specific simulation. Both temperature and the commodity are simulated on a daily basis that respects

- temperature process
- gas process
- forward curves
- correlations

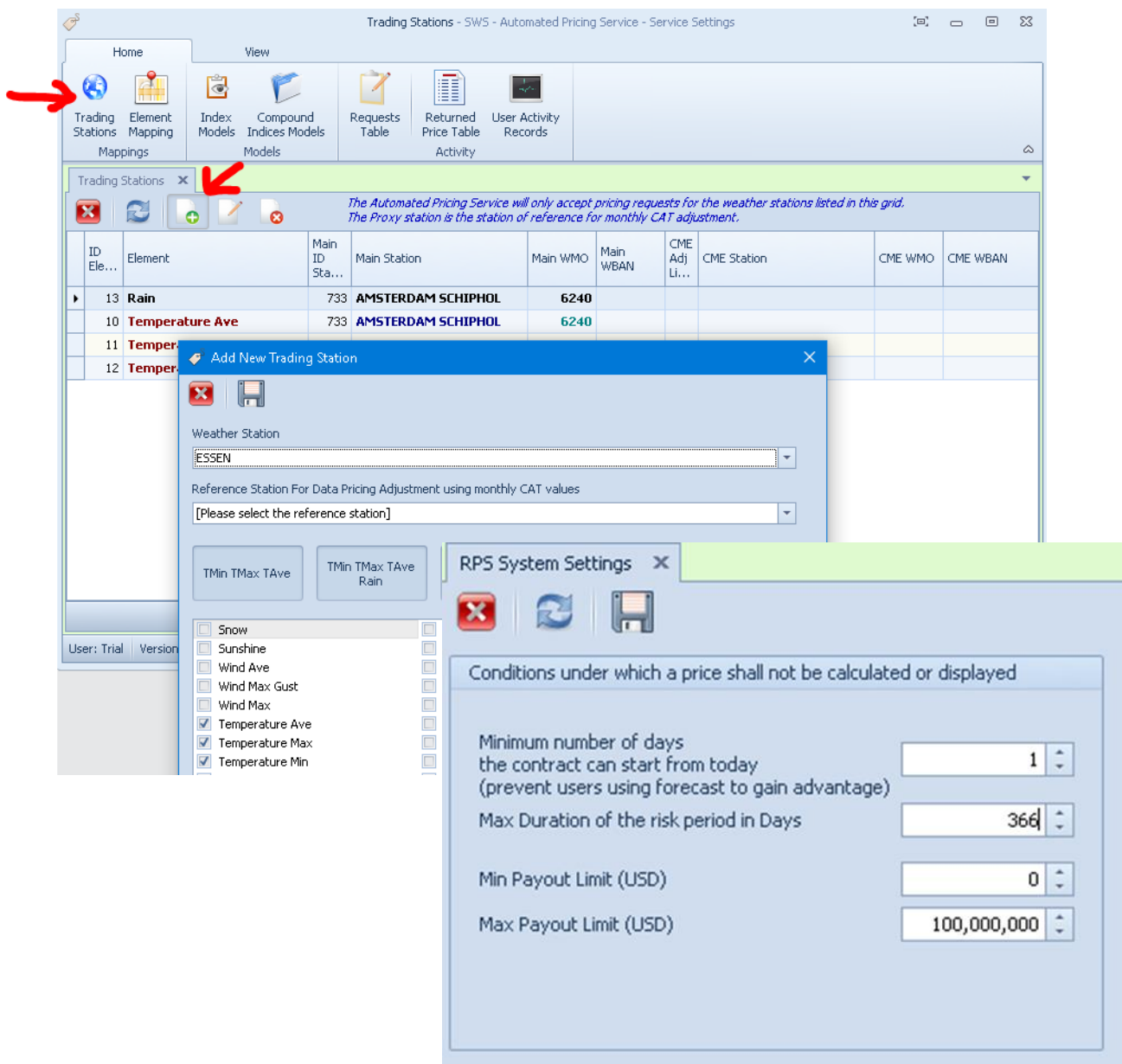


The screenshot displays the Speedwell Weather System interface. The top navigation bar includes tabs for Home, Data & Forecast, Back Office, Middle Office, Market, Pricing, and Portfolios. The Pricing tab is active, showing a toolbar with various tools. The 'DeltaP x DeltaT Pricer' tool is highlighted with a red box. Below the toolbar, the 'List of Weather Derivatives' and 'Quanto Pricer' tabs are visible. The 'Calculation Date' is set to 19/06/2017. The 'Commodity Settings' section is expanded, showing 'Weather Element Settings', 'Contract Settings', 'Internal Model', 'Pricing', and 'Memo'. The 'Commodity Price Data' section is highlighted, showing 'Historical Data' with 'Station' set to 'EEX NCG' and 'Element' set to 'Gas Day Ahead Price'. The 'Index Model' is set to 'L80 - No 4cast - Normal'. A note at the bottom states: 'The Commodity Curve must be at least a year long, cover the entire contract period and have no missing day. The Data Type should not include a reconstructed series since the historical correlation would not be correctly estimated.'

Automated Indicative Pricing Service

Speedwell Weather has developed an automated pricing service to automatically price RFPs coming from the weatherXchange® platform. This component is a WCF service and is tightly connected to the Speedwell Weather System API and database. The WCF service, referred to as the Automated Pricing Service (APS) in the rest of the document depends on the Speedwell Weather System (“SWS”) API. Another software, the Speedwell Weather APS Desktop is used to configure some of the service settings.

The APS service can be hosted by Speedwell or within your organisation. available to SWS Enterprise and SuperPack premium users. SWS and SuperPack Premium users will get Speedwell’s Automated Pricing System for free.



The screenshot displays the 'Trading Stations - SWS - Automated Pricing Service - Service Settings' application. The main window features a navigation bar with icons for 'Trading Stations', 'Element Mapping', 'Index Models', 'Compound Indices Models', 'Requests Table', 'Returned Price Table', and 'User Activity Records'. A red arrow points to the 'Trading Stations' icon. Below the navigation bar is a 'Trading Stations' table with the following data:

ID	Element	Main ID Sta...	Main Station	Main WMO	Main WBAN	CME Adj Li...	CME Station	CME WMO	CME WBAN
13	Rain	733	AMSTERDAM SCHIPHOL	6240					
10	Temperature Ave	733	AMSTERDAM SCHIPHOL	6240					
11	Temper...								
12	Temper...								

An 'Add New Trading Station' dialog box is open, showing the 'Weather Station' dropdown set to 'ESSEN' and a 'Reference Station For Data Pricing Adjustment using monthly CAT values' dropdown set to '[Please select the reference station]'. Below this, there are two buttons: 'TMin TMax TAve' and 'TMin TMax TAve Rain'. The 'RPS System Settings' dialog box is also open, showing 'Conditions under which a price shall not be calculated or displayed' with the following settings:

- Minimum number of days the contract can start from today (prevent users using forecast to gain advantage): 1
- Max Duration of the risk period in Days: 366
- Min Payout Limit (USD): 0
- Max Payout Limit (USD): 100,000,000

At the bottom left, a list of weather elements is visible, with 'Temperature Ave', 'Temperature Max', and 'Temperature Min' checked.

C# script with access to SWS assemblies

The new C# engine simplifies and speeds up complicated index calculations. It allows access to the SWS database to allow climatologies for a station to be retrieved, for example. All data points in the current risk period are passed in to the calculation function, allowing for example:

- Entering an index to calculate the departure from normal for an automatically-calculated Normal curve can be done in just a few lines
- Returning the average of **an index** value **for** this year and previous year
- **Returning** the sum of the 10 smallest values in the risk period
- Calculating indices that are path dependent (eg the average of current year and previous year)

```
// example 2: Return on the last day the average value of the period
if (MeasDate == DataDates[DataDates.Length-1])
    return Average(DataValues[0]);
else
    return 0.0;

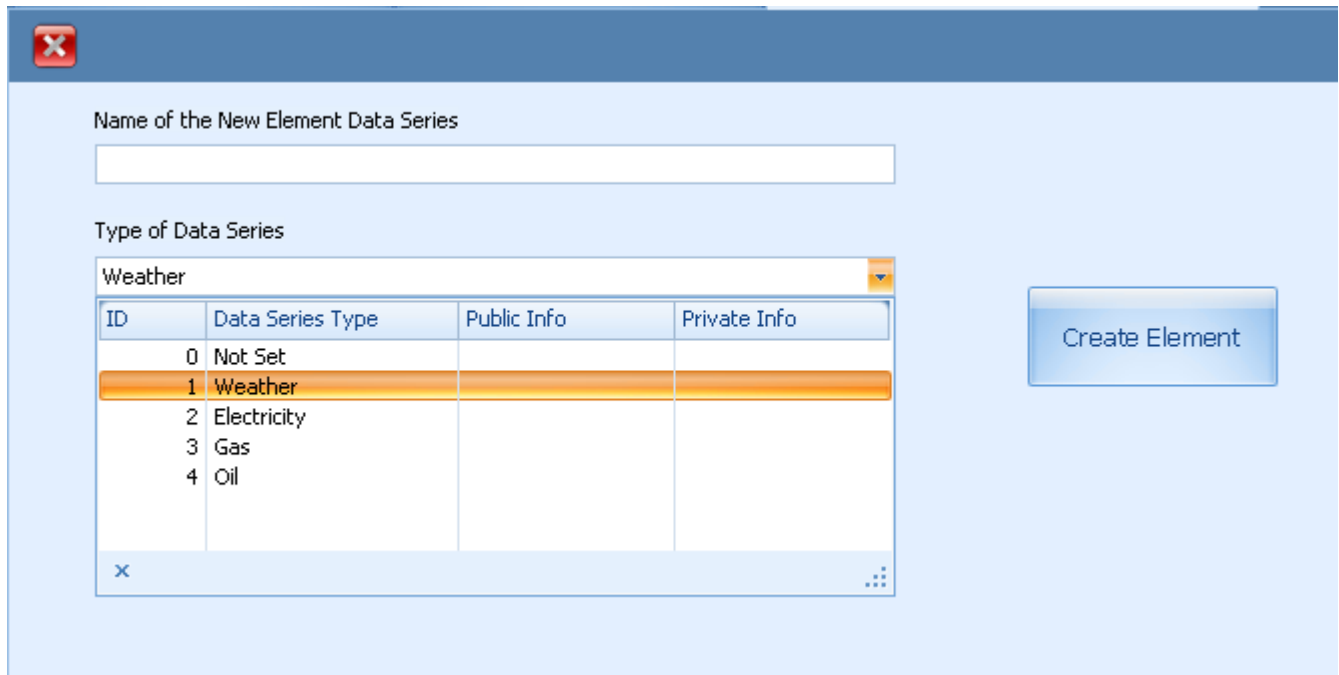
// example 3: Return On the last day the sum of the 10 smallest values
if (MeasDate == DataDates[DataDates.Length-1])
{
    var r = (from d in DataValues[0]
            orderby d ascending
            select d).Take(10);
    return r.Sum();
}
else
    return 0.0;

// example 4: Returns where possible the average of the value and 1
if (m_DDL == null)
    m_DDL = GetFullHistory(2082, 10);
DateTime wPrevYear = MeasDate.AddYears(-1);
if (m_DDL.ContainsDate(wPrevYear))
    return (m_DDL[wPrevYear].Value + WR[0]) / 2.0;
else
    return WR[0];

// example 5: Calculate the departure from Normal
if (m_Climatology == null)
{
    LoadClimatology(2082, 10);
}
return DifferenceVsClimatology(MeasDate, WR[0]);
```

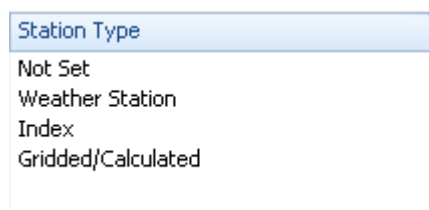
Data series type property

An element data series can now be allocated a Data series type eg 'weather', 'electricity', 'gas' etc



Station Type

Stations can be marked as follows. This allows easy searching/filtering for all gridded data stations for example



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.

About weatherXchange Limited

weatherXchange® is an independent, platform which provides free access to thousands of quality weather data sets worldwide and a wizard to simplify the design of weather protection contracts. weatherXchange connects the hedger directly with multiple protection sellers, allowing easy price comparison, or with brokers who can advise and intermediate on the hedger's behalf. The weatherXchange Platform also offers post-transaction services necessary to settle a transaction and to monitor a hedge by providing daily P&L and VaR reports. weatherXchange is part of the Speedwell Weather Group. weatherXchange is authorised and regulated by the Financial Conduct Authority

Contacts

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Annual Market Rankings

Winners: 2007-2015

Best Advisory/Data Service

**Best Global Weather Risk Management
Advisory / Data Service Winner for the 10th
consecutive year**

**Environmental
Finance 2016**

Annual Market Rankings

Winner