

## Speedwell Settlement Data

Speedwell Settlement Data is used in the index-based weather risk market for the full range of weather risk products including energy market hedges, event insurance, exchange traded products and the largest weather transactions on record<sup>1</sup>. Since 2010 over one billion dollars in contract notional value has been settled using Speedwell's Settlement Data services.

Just as traders expect accurate, timely, and independent settlement information for financial products such as natural gas, soybeans and coffee, so we believe they should expect the same quality of information for any parametric weather transaction. This is what Speedwell Settlement Data delivers.

With a background in weather derivatives from 1999, Speedwell have a deep understanding of the weather risk market. We regard weather data as a form of financial market data. The provision of Settlement Data, is treated with the highest degree of importance due to the direct financial exposure attached to the information.

Speedwell Settlement Data is based on the observations and records from National Meteorological Services ("NMS") which are then subject to additional levels of quality control to ensure that missing data and gross errors are replaced before official publishing to all counterparties. Speedwell Weather has license agreements in place with a wide range of NMS to re-distribute and publish both their data and derived products.

The method for producing Settlement Data is defined within a Settlement Data contract which can then be referenced in the term sheet. Wherever possible, the Settlement Data is based upon the official local weather observations made by the relevant NMS, except where reports are missing or contain gross errors or in the case of station closure. The use of Speedwell Settlement Data ensures that all counterparties are referencing the same data series or index which avoids potential disputes and the need to produce complex fallback methodologies and terminology in the term sheet

Speedwell has provided Settlement Data for a wide range of weather variables including temperature, HDD, CDD, rainfall, wind, solar radiation, sunshine hours and high-altitude snow-depth observations. We are able to do this for daily or hourly data. Locations range from the most heavily traded markets across Europe and North America to the remotest regions of the Australian outback and South American High Andes.

Speedwell Settlement Data helps facilitate trading, hedging, and market growth by removing data uncertainties and standardising the language used within weather hedging contracts.

**Settlement Data is provided through Speedwell Settlement Services Limited ("SSS"), a subsidiary of Speedwell Weather Limited. SSS will be regulated as a Benchmark Administrator under forthcoming Eu Benchmark regulations.**

## **Q: How is Speedwell Settlement Data different to the Speedwell Cleaned Data that I already have from Speedwell, or from the data that is published by my local NMS?**

- Speedwell Cleaned Data is a “living” series: late revisions or irregularly published data from the original observer is added and included within the series. Values may change over time.
- However, Settlement Data is published to a strict timetable defined within each Settlement Data contract.
- The methodology used to generate Settlement Data is tailored to each weather contract. However, Speedwell Cleaned Data series uses a generic cleaning methodology.
- Data coming from a local source or NMS is not produced according to a specific weather contract specification. Inconsistencies may arise due, for example, to reporting convention differences.
- The data from an NMS may not be the same on two consecutive days, as all data is subject to revisions. This may result in market disputes where the counterparties are referencing differing data series picked up at different times from the same NMS.
- NMS data is not always subject to quality control prior to publication and may contain missing dates or gross errors.

## **Q: What is the Speedwell methodology used to produce Settlement Data?**

The methodology used to produce Settlement Data is dependent upon the weather station, weather variables, and complexity of the situation. For high quality sites a standardised approach is possible and has been implemented in the Speedwell Standard Sites Settlement Data product (“SSSD”).

For more complex locations, where the local micro-climate or geographical features strongly impact weather readings, settlement methodologies need to take in to account local conditions and involve additional information resources such as weather radar, webcam, additional instrumentation and consideration of the regional synoptic meteorology. Other factors to consider include issues such as speed of delivery of revised data from the National Met office, availability of proxy data to verify data and the integrity of local reports. For more complex transactions, the Settlement Data methodology is negotiated with the hedgers and risk takers. Speedwell has over 15 years’ of experience in the parametric weather market and its detailed knowledge of the possible problems of data from a particular provider to meet the needs of a particular situation.

The core of the methodology is to first generate a synthetic observation by using information from a variety of sources including neighboring sites. This work involves a combination of human review and statistical analysis. In the event that the raw observation from the primary station differs materially from that which is expected, then the observation is flagged for further manual review. The Speedwell Data team will then research the situation in depth using a variety of tools and information. Depending upon data availability the team will analyse:

- Other observations from the same site – In the event that the weather station observes multiple variables and/or the same variable at an alternative temporal resolution this information is used to verify the suspect report(s). Tests are focused on meteorological relationships such as rainfall requiring clouds, or rainfall events and anticipated spikes in humidity
- External observations – Information which may include data from surrounding weather stations, RADAR, satellite imagery, gridded data, re-analysis data and media reports... are all combined to verify the suspect observation.
- Observations that are declared erroneous are then replaced using the synthetic observation. All aspects of the methodology and result are carefully documented in order to provide full transparency to the process. In this situation Speedwell then informs all parties to the transaction of the change.

## “Do No Harm”

It is important to note that entire settlement methodology functions under the premise of “do no harm”. The benefit of the doubt is always on the side of the original observation delivered by the NMS. Any changes are made on a strict evidence-based approach and are signed off by a senior Speedwell meteorologist before approval.

## **Q: We currently use National Meteorological Service (NCDC, DWD, BoM, UKMO...) data for settlement, why should we switch to Speedwell Settlement Data?**

While *generally* these NMS deliver reliable data, using raw NMS observations can still cause problems. These may arise due to:

- Station closure during the risk period
- Missing or delayed data feeds
- Erroneous data (eg “+5C versus “-5C”)
- Non-availability of data at the end of the risk period: the NMS does not have any contractual obligations for continuity
- Lack of transparency with the NMS quality control process
- Misunderstandings: your definition of “Temperature Average” may be quite different to that of the NMS
- Ambiguity of source: an NMS may make data available through multiple sources and this data may not be identical (eg their web download vs their data feed)

## **Q: How different is Speedwell Settlement Data from the original National Meteorological Service (NCDC, DWD, BoM, UKMO...) data?**

When everything goes well, there is no difference. Speedwell is there as a “safety net” and independent “referee”. In general, for *most* major NMS weather stations *most* data is reported timely and accurately. Settlement Data is designed to guard against the problems that may occur.

## **Q: Are there other benefits for using Speedwell Settlement Data?**

In addition to correcting erroneous observations and filling missing observations Speedwell Settlement Data may help guard against the problem of “Moral hazard” – this is the term used to describe the risk of observation tampering. Its most insidious form is one in which a meteorological observer has a financial incentive to report inaccurate observations for the purpose of benefiting one counterparty over the other. While the likelihood of this occurring is low at major observing stations it may be an issue at local weather stations in certain countries.

The use of Speedwell Settlement Data means that there is complete certainty on the availability of data on which to settle a transaction.

## **Q: Why can't I just use a prescriptive settlement methodology in my term sheet?**

A prescriptive settlement methodology such as a fallback method can never anticipate all possible problems. For example, a regional network failure may mean that no data is available for the fallback sites either. In more remote parts of the world there is also a possible issue relating to moral hazard: to the extent that moral hazard is an issue, a prescriptive fallback method can be “gamed”. Speedwell would be pleased to provide more information on this issue on request.

## Q Without a prescriptive settlement methodology how can users understand changes made to the data?

The Speedwell settlement methodology is designed to provide transparency to the process. All data processing is carefully tracked and subject to audits. In the event that a raw observation is declared erroneous we carefully document the rationale behind this decision. Parties to the transaction will receive a detailed report describing (1) the raw observation, (2) the corrected value, and (3) a brief description of the logic behind our decision and the sources used to support that decision. All data changes are confirmed by senior staff with all reports undergoing review before publication.

## Q: What are Speedwell Settlement Certificates?

Settlement Certificates are published with the release of final Settlement Data. These certificates are formal documents (pdfs) that state the details of the transaction (begin date, end date, variable, and data source, etc.) along with the meteorological observations as published by Speedwell. Each certificate is approved and signed by Speedwell senior staff. Copies of each certificate can be provided to the transaction counterparties.

## Q: Does Speedwell produce Settlement Data for gridded datasets?

Yes, many of the same concerns that apply to surface based observations apply to gridded datasets. Considerations must be made for (1) continued access to the dataset, (2) continuity homogeneity of the gridded dataset between model releases, (3) contingency and method for missing data and gross errors. The Speedwell settlement methodology accounts for these concerns in order to produce Settlement Data and Settlement Certificates for any transaction.

## Q: What does Speedwell Settlement Data cost?

For a large number of normally high quality national met office sites, the cost of Settlement Data is formula-based on the period and the size of the transaction involved.

For more complex deals where negotiation of the Settlement Data methodology with the counterparties is required and for transactions in areas where we see more problems with data, then the cost will be dependent on a range of factors including:

**Metrological variable** – Highly localised meteorological variables require additional effort to analyse. The processing of hourly precipitation data and daily snowfall, for example, are more difficult than standard temperature observations.

**Transaction duration** – The length of the transaction and the data publication schedule impacts Settlement Data pricing.

**Complexity of the meteorology / methodology** – Complex solutions are sometimes needed where the situation does not allow for the implementation of standard methodologies. These situations are often the result of extreme micro climates, lack of surrounding data, especially poor data quality at the primary station.

**The size of the transaction**

[Continued...](#)

## *Free-of-charge Settlement Data*

For clients who already licence data feeds from us whether individually, by groups or by Super-Pack®, Speedwell provides Settlement Data for no additional charge for over 1,000 Standard Settlement Sites.

## *Standardised pricing*

The global weather stations included as part of the weatherXchange initiative have been pre-screened such that the pricing of Settlement Data is usually formulaic. This has been done to make it easy for users to anticipate the cost of Settlement Data.

## *Tailored solutions*

These non-standard solutions may include sourcing of additional data, facilitating data reporting, and the installation of independent weather stations. Pricing is calculated on a case-by-case basis.

## **Q: Can Speedwell act as a Calculation Agent?**

Yes, Speedwell has acted in this capacity for some of the largest weather transactions on record. As calculation agent Speedwell is responsible for incorporating the Speedwell Settlement Data into the transaction index. The index is then reviewed to determine if a financial payout has been triggered. Speedwell is responsible for the notification and paperwork required for this process. Speedwell can also provide daily or monthly valuations relating to bilateral margining obligations.

## **Q: Can Speedwell act as a Valuation Agent?**

Yes. We are able to produce valuations integrating the latest reported weather and forecasts for using our industry-standard weather derivative software, the Speedwell Weather System (SWS). These may be relevant for internal valuation or margining purposes. These can be provided on a daily, weekly or monthly basis as required.

## **Q: How do I use Speedwell Settlement Data for my next transaction?**

The first step is to contact Speedwell to confirm the availability of Settlement Data for your selected weather station and variable. You will need to provide details concerning the weather station (name, identification numbers...), weather variable (daily maximum temperature, hourly precipitation...), the start date of your hedge, the end date of your hedge and the size of the hedge. Once we confirm that it is possible to produce data of the quality required for Settlement Data we will provide a quote for this service.

## **References**

1: Please see

<http://www.speedwellweather.com/Pages/PressDocument/Press%20Release%20World%20Bank%20Hedge%202014.pdf>

## 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. Speedwell Weather is the parent company of Speedwell Settlement Services Limited.

## About Speedwell Weather Limited

Settlement Data is provided through Speedwell Settlement Services Limited (“SSS”), a subsidiary of Speedwell Weather Limited. SSS will be regulated as a Benchmark Administrator under forthcoming Eu Benchmark regulations (2017/18)

## World-wide weather data

Speedwell carries an archive of many tens of thousands of quality weather data sets world-wide. Historical data and feeds are available via web download, by Speedwell API or by FTP. Our data sets are available for individual sites or, for users looking for unlimited access through SuperPack<sup>®</sup>. SuperPack makes available an unprecedented range of quality historical weather data and weather data feeds on-demand for a single annual fee.

## Contacts

For more information about Settlement Services or other data, forecast or consultancy services please see [www.SpeedwellWeather.com](http://www.SpeedwellWeather.com) or contact:

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