







## Australian Data Services

	<b>Historical Data</b>	Daily temperature, daily precipitation, wind speed, wind direction, hourly & 3 hourly observations for hundreds of stations (raw & cleaned)
	<b>Recalibrated Data</b>	Recalibrated data for four locations (Sydney-Bankstown, Brisbane, Melbourne, Adelaide Kent Town)
	<b>Ongoing Feeds</b>	Real-time and Bureau of Meteorology quality controlled observations for hundreds of stations. (raw, cleaned, and CME settlement data)
	<b>Probabilistic Forecasts</b>	ECMWF based downscaled forecasts for six locations.



### CME Settlement Data

Heating Degree Day (HDD) and Cooling Degree Day (CDD) contracts on both Monthly and Seasonal futures and options for three locations:

- Brisbane, WMO #94578
- Melbourne, WMO #94868
- Sydney, WMO #94765

Speedwell Weather is the official settlement index provider for these contracts.

\* Weather observations sourced from the Australian Bureau of Meteorology



	Temperature (cleaned)	Precipitation (cleaned)	Wind Speed (raw data)	Hourly Temperature (raw data)	Hourly Precipitation (raw data)
<b>Historical Data</b>					
One Station	\$200	\$200	\$100	\$200	\$200
CME Package	\$700				
Bulk Package	\$3,000	\$3,000	\$1,000		
<b>Recalibrated Data</b>					
One station	\$3,000 / yr				
CME Package	\$8,000 / yr				
Bulk Package					
<b>Ongoing Feeds</b>					
One station	\$300 / yr	\$300 / yr			
CME Package	\$700 / yr				
Bulk Package	\$3,000 / yr	\$3,000 / yr			

\* Bulk Package = 51 stations (see page #3)

\* Additional variables, packages, and stations available by request

## Observation Attribute Information

Daily maximum temperature (day =  $d$ ) = the highest temperature observed over a 24-hour period from 0900 $_d$  to 0859 $_{d+1}$  LST

Daily minimum temperature (day =  $d$ ) = the lowest temperature observed over a 24-hour period from 0900 $_{d-1}$  to 0859 $_d$  LST

Daily precipitation (day =  $d$ ) = the total liquid equivalent observed over a 24-hour period from 0900 $_{d-1}$  to 0859 $_d$  LST

## Delivery Schedule

Delivery options include: FTP (push / pull), Speedwell web site, and e-mail

- Cleaned data (previous day) to be delivered daily by start of business Sydney (delivered overnight)

- CME settlement data provided by 6:30 am Chicago Local Time (exchange business days)

- Bureau of Meteorology quality controlled data available after 90-days

## Formatting

Speedwell has the ability to provide data in a number of different formats as well as provide data per user specifications. Most reasonable requests can be accommodated without the need for additional fees.

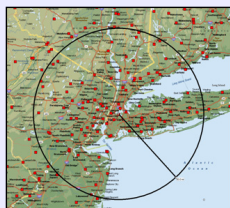
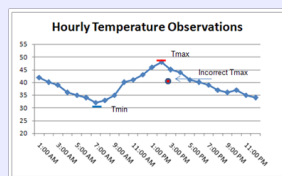
Typical format (example): WMO, SWS ID, City, Station Name, Type, QC, Latitude, Longitude, Elevation, Date, Daily Tmax, ...

## Speedwell Cleaned Data

Cleaned data is data that has been processed to fill missing values and correct erroneous observations. The end result is a dataset that is ready to be use for analysis.

Speedwell's proprietary cleaning methodologies use a mixture of automated processing to flag possible errors followed by manual inspection. In relation to the cleaning of daily data\*, tests that are performed include:

- How does the obs. compare against climatology?
- How does the obs. compare against consecutive obs.?
- Is the obs. meteorologically possible?
- How do the daily obs compare with hourly data
- How does the obs. compare against the forecast?
- Comparison of the observation against observations from surrounding stations. Observations are compared against the median of a basket of proxies



Observations that are missing or declared suspect undergo further testing and manual review. In the event that a value needs to be filled or corrected a series of estimation techniques are employed including:

- median and local regression using de-seasonalized data,
- daily estimates based upon hourly observations
- reconstructed data from other data types (eg Synoptic),
- ECMWF forecasted values,
- direct communication with the NWS,...
- Archived local media sources

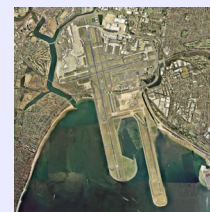
\* Speedwell also has proprietary cleaning methods for hourly data and real-time cleaning that are not discussed here.

## Speedwell Recalibrated Data Sets

Speedwell Recalibrated Data Sets re-base historical data to current site location, conditions and instrumentation by adjusting for historical temperature discontinuities. This is critical to a complete understanding of the behavior of a weather reference site. Recalibration does not involve detrending

### Historical Recalibration

- Cleaned time series
- Recalibrated time series
- Supporting documentation (station overview, proxy stations, statistical results, metadata, discontinuities, valuation impact)



### On-going Recalibration

- Monthly station updates alerting to developing behavior or notified (eg via NWS) changes
- Client access to web-based real-time monitoring tool allowing analysis of current performance or resent discontinuities.

## About Speedwell Weather Derivatives, SWD

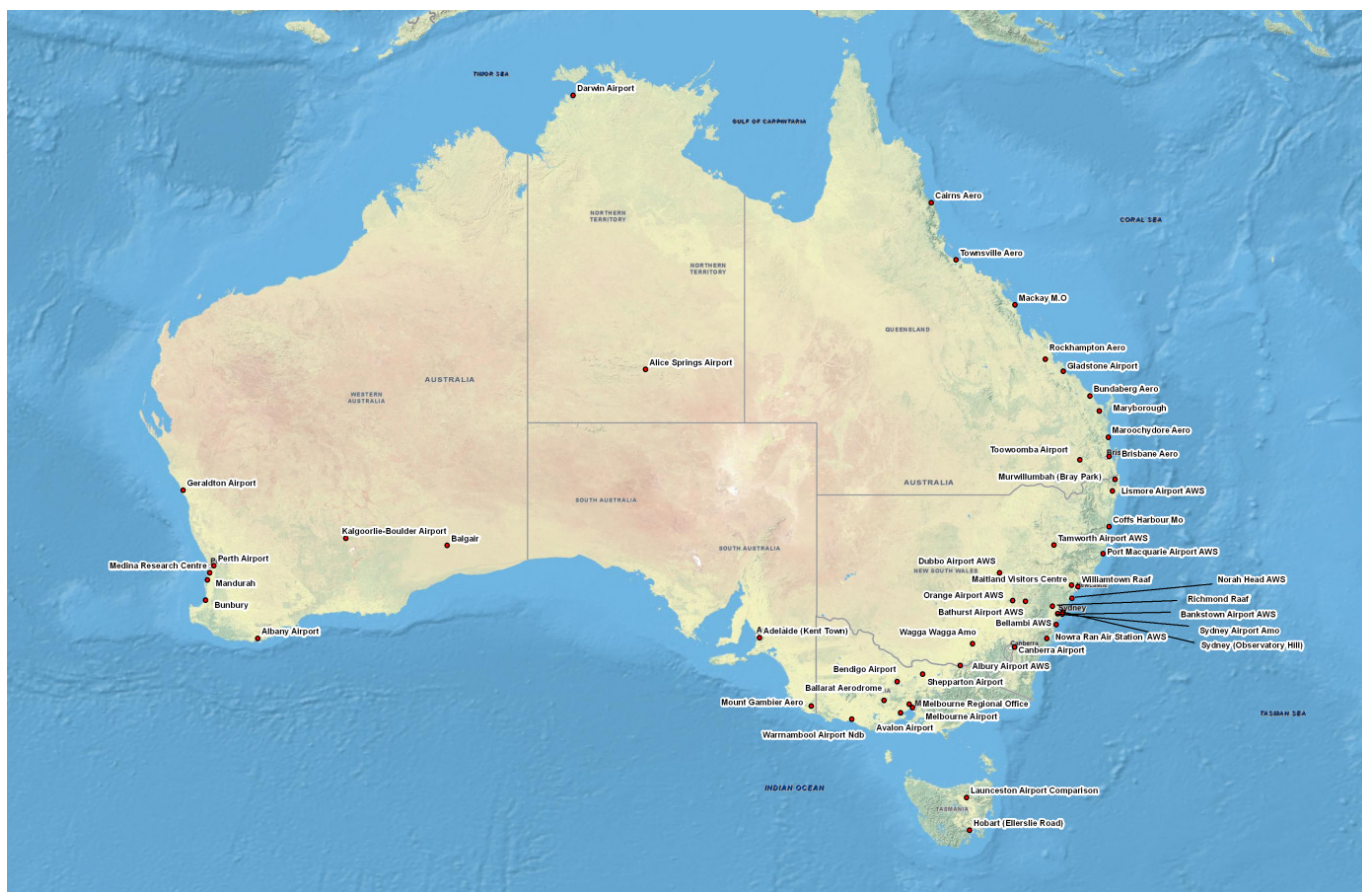
Founded in 1999, SWD provides software, weather data, forecasts and consultancy to the energy and weather derivative markets. SWD is the provider of the Speedwell Weather System (SWS), the pre-eminent weather derivative pricing and risk management software.

Speedwell Weather Derivatives supplies historical and real-time weather data feeds for thousands of weather reference sites across the globe. SWD has direct data supply agreements with a wide range of national meteorological services and provides a single-point of contact for the provision of official weather data to the energy, agriculture and weather derivative markets.

Regulated by the UK Financial Services Authority, SWD helps companies looking to hedge against weather risk by quantifying such exposure, structuring an appropriate hedge and placing the risk within the weather market.

With offices in the United Kingdom and the USA, Speedwell Weather Derivatives have clients in insurance, banking and energy sectors in Europe, North America, Africa and the Asia Pacific region.





WMO	Station Name	Begin Date	End Date
94675	Adelaide (Kent Town)	Jan-57	<i>present</i>
94802	Albany Airport	Apr-65	<i>present</i>
95896	Albury Airport AWS	May-93	<i>present</i>
94326	Alice Springs Airport	Jan-50	<i>present</i>
94854	Avalon Airport	Apr-95	<i>present</i>
94643	Balgair	Apr-83	<i>present</i>
94852	Ballarat Aerodrome	Jan-57	<i>present</i>
<b>94765</b>	<b>Bankstown Airport AWS</b>	<b>Jul-68</b>	<b><i>present</i></b>
94729	Bathurst Airport AWS	Jul-90	<i>present</i>
94749	Bellambi AWS	Apr-97	<i>present</i>
94855	Bendigo Airport	Nov-91	<i>present</i>
<b>94578</b>	<b>Brisbane Aero</b>	<b>Apr-94</b>	<b><i>present</i></b>
94604	Bunbury	Nov-95	<i>present</i>
94387	Bundaberg Aero	Jul-90	<i>present</i>
94287	Cairns Aero	Jan-50	<i>present</i>
94926	Canberra Airport	Jan-50	<i>present</i>
94791	Coffs Harbour Mo	Aug-51	<i>present</i>
94120	Darwin Airport	Jan-50	<i>present</i>
95719	Dubbo Airport AWS	Jan-93	<i>present</i>
94403	Geraldton Airport	Jan-50	<i>present</i>
94381	Gladstone Airport	Oct-93	<i>present</i>
94970	Hobart (Ellerslie Road)	Jan-50	<i>present</i>
94637	Kalgoorlie-Boulder Airport	Jan-50	<i>present</i>
94968	Launceston Airport Comparison	Jan-50	<i>present</i>
94572	Lismore Airport AWS	Mar-02	<i>present</i>
94367	Mackay M.O	Sep-59	<i>present</i>

WMO	Station Name	Begin Date	End Date
94605	Mandurah	Oct-01	<i>present</i>
94569	Maroochydore Aero	Jul-94	<i>present</i>
94567	Maryborough	Jan-57	<i>present</i>
95608	Medina Research Centre	Apr-83	<i>present</i>
94866	Melbourne Airport	Jul-70	<i>present</i>
<b>94868</b>	<b>Melbourne Regional Office</b>	<b>Jan-50</b>	<b><i>present</i></b>
94821	Mount Gambier Aero	Jan-50	<i>present</i>
94582	Murwillumbah (Bray Park)	Oct-72	<i>present</i>
95770	Norah Head AWS	Feb-95	<i>present</i>
94750	Nowra Ran Air Station AWS	Nov-00	<i>present</i>
95726	Orange Airport AWS	Apr-96	<i>present</i>
94610	Perth Airport	Jan-50	<i>present</i>
94786	Port Macquarie Airport AWS	Jul-95	<i>present</i>
95753	Richmond Raaf	Oct-93	<i>present</i>
94374	Rockhampton Aero	Jan-50	<i>present</i>
94875	Shepparton Airport	Jul-96	<i>present</i>
94768	Sydney (Observatory Hill)	Jan-50	<i>present</i>
94767	Sydney Airport Amo	Jan-50	<i>present</i>
95762	Tamworth Airport AWS	Feb-92	<i>present</i>
95551	Toowoomba Airport	Jul-96	<i>present</i>
94294	Townsville Aero	Jan-50	<i>present</i>
94910	Wagga Wagga Amo	Jan-50	<i>present</i>
94837	Warrnambool Airport Ndb	Oct-98	<i>present</i>
94776	Williamstown Raaf	Aug-50	<i>present</i>

\* yellow shading indicates CME package

## Contacts

---

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

Phil Hayes (UK) [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 465 551  
US office: +1 (0) 703 535 8800

---

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

Stephen Doherty (UK) [stephen.doherty@SpeedwellWeather.com](mailto:stephen.doherty@SpeedwellWeather.com)  
Dr Michael Moreno (UK) [michael.moreno@SpeedwellWeather.com](mailto:michael.moreno@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 (0) 703 535 8800

**Address UK:** *Mardall House, Vaughan Rd, Harpenden, Herts, AL5 4HU*  
**Address USA:** *101 N Columbus Street, Second Floor, Alexandria VA 22314 USA*