



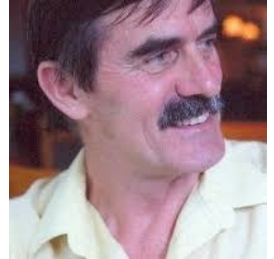
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Citizen Science, Making a Contribution to Global Climate Analysis

Mac Benoy, AMETA Volunteer Project Manager

The AMETA citizen science team is nearing the completion of a 10 year project to salvage historical Australian weather data going back to the time of settlement. By contributing data to an international initiative to model global weather, the team has made a significant southern-hemisphere contribution to the understanding of weather going back 150 years.



Part of the AMETA Volunteer Group operating out of the Bureau of Meteorology South Australian Office is the Todd Folios Team. They have scanned and photographed colonial era weather charts produced by Sir Charles Todd and his staff from 1878 to 1910, a valuable historical resource, and then continued capturing early Bureau of Meteorology weather charts through to the 1950's, resulting in 80,000 images being captured. Images of the early charts and associated newspaper clippings are available to view online at http://www.charlestodd.net/Todd_Folios/. An example is the Star of Greece shipwreck in 1880 along the Adelaide coastline.

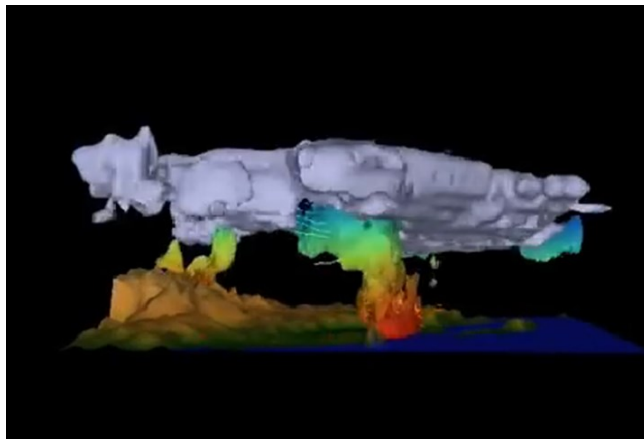
Star of Greece 13 July 1880



The aim is to complete to mid-1960, involving another 15,000 images. The team now includes volunteers in Adelaide, Hobart and Perth who are combing archives offices in these cities looking for old weather data. To date, approximately 15,000 images of paper records have been taken and are included in the project's image database. In process is the construction of a sophisticated, web-based image retrieval system that will make all this work available to researchers and the general public.

In addition, the team has digitised and sent 330,000 pressure data points from early sources to NOAA's International Surface Pressure Databank (ISPD), with another 25,000 dense data points for Cape Borda 1865-1900 about to be sent. This is feeds in to international projects to reconstruct past weather in high detail.

The teams work is connected in to international projects such as Project ACRE out of the Hadley Climate Centre in the UK. The Todd team is one of the global partners of this initiative to rescue climate history which fuels weather hindcasting models. Working with sparse historical data, these models recreate (hindcast) rich and detailed views of weather events up to 200 years ago. This allows research meteorologists to examine in detail historically significant storms, floods, droughts, heatwaves, etc. and use them as benchmarks for climate change analysis.



These models use the principles of weather forecasting, but using the models to recreate past weather, what is called hindcasting. A number of these models exist and each has its strengths. The one of particular interest to ACRE project members is the 20CR model constructed under the auspices of the NOAA's Earth Sciences Laboratory in Boulder, Colorado. This model is successfully reanalysing weather back to 1852. Outputs of the model are being used not only by meteorological researchers but also social scientists to reanalyse our climate history and its human impact. A number of videos illustrated how these recreations are visualised with such phenomena as Artic Sea ice melt and coastal cyclones.

The Todd Team has also been involved in capturing early Adelaide air temperature observations with the aim of extending the Adelaide temperature back from 1887 to 1857. This is a consequence of researchers being able to more finely tune comparisons between Glaishier and Stevenson Screen thermometer readings from the late 19th and early 20thC.

Not kept (90 min) are indicated in Red.

Daily Max. and Min. Temperature.

Date.	1887		1888		1889		1890		1891		1892		1893		1894		1895		1896		1897		1898		1899		1870		1871	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1		64.1	68.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
2	62.3	69.1	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
3		67.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
4		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
5		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
6		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
7		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
8		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
9		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
10		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
11		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
12		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
13		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
14		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
15		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
16		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
17		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	
18		66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	66.0	

Original Adelaide (West Terrace site) surface air temperature records being captured by the Volunteer Team

Adelaide in October 2015: Dry overall with above-average temperatures

Monthly mean daily maximum and minimum temperatures were above average for Adelaide, with rainfall being below or very much below average.

- Record monthly mean daily maximum, minimum and mean temperatures were recorded at a number of sites
- A warm start to the month, which resulted in an early season maximum temperature record for Adelaide
- Below average rainfall was recorded
- Record warmest October days for the city

Daily maximum and minimum temperatures were above average during October, with Adelaide reporting an early season record on the 5th (35.6 °C). The highest maximum temperatures for the month were recorded on the 15th, and the monthly mean maximum temperature was generally at least 4 °C above normal for most stations in the Adelaide region. Day time maximum temperatures at Adelaide (Kent Town) averaged 27.1 °C, resulting in the warmest October days for the city since observations began in 1887. Several other sites had their highest October mean daily maximum temperature on record. Nights were also warm with the monthly mean minimum temperature in excess of 2 °C above average at most locations across the region. In the city, the minimum temperatures averaged 14 °C for the month, resulting in the warmest October nights since 1914, while several other sites had their highest October mean daily minimum temperature on record.

October rainfall was very much below average across the Adelaide region, with stations generally reporting less than 20% of the long term October average. High pressure dominated the weather, resulting in a lack of rain bearing fronts reaching southern parts of State. The lack of rain resulted in the city reporting just 9 mm for the month. The wettest day was on the 21st as low pressure system crossed the region, producing rainfall totals of 5-15 mm across the region.

Extremes in October 2015

Hottest day	37.7 °C at Edinburgh RAAF on the 15th
Warmest days on average	27.7 °C at Parafield Airport
Coollest days on average	21.4 °C at Mount Lofty
Coldest day	13.3 °C at Mount Lofty on the 22nd
Coldest night	3.1 °C at Mount Lofty on the 27th
Coollest nights on average	10.3 °C at Mount Barker
Warmest nights on average	14.0 °C at Adelaide (Kent Town)
Warmest night	22.4 °C at Edinburgh RAAF on the 20th
Warmest on average overall	20.6 °C at Adelaide (Kent Town)
Coollest on average overall	16.0 °C at Mount Lofty
Wettest overall	33.2 mm at Ashton
Wettest day	24.0 mm at Uraidla on the 21st
Strongest wind gust	70 km/h at Kuitpo Forest Reserve on the 6th 70 km/h at Mount Crawford on the 7 th

Record highest October mean daily maximum temperature	New record	Old record	Years of record	Average for October
Mount Barker	25.5	24.4 in 2014	113	19.4
Adelaide Airport	25.4	24.5 in 2014	60	21.0
Parafield Airport	27.7	26.4 in 2014	58	21.9
Edinburgh RAAF	27.6	26.4 in 2014	42	22.2
Adelaide	27.1	26.0 in 2014	38	22.0
Mount Crawford	23.6	22.3 in 2014	21	17.9

Record highest October mean temperature	New record (°C)	Old record	Years of record	Average for October
Mount Barker	17.7	16.5 in 2014	113	13.3
Adelaide Airport	19.2	17.9 in 2014	60	15.8
Parafield Airport	20.2	18.3 in 2014	58	16.0
Edinburgh RAAF	20.1	18.4 in 2014	42	16.1
Adelaide	20.6	19.1 in 2014	38	16.7
Mount Crawford	17.6	15.4 in 2014	21	13.1

All the detail you could possibly want and more is available on the BoM website.

Visit <http://www.bom.gov.au/climate> and wander through the various archived climate reports and summaries which are available in text and graphical forms.

Summary statistics for October 2015

	Maximum temperatures (°C)					Minimum temperatures (°C)					Rainfall (millimetres)				
	Mean for October 2015	Diff from average	Highest for October 2015	Lowest for October 2015	Diff from average	Mean for October 2015	Lowest for October 2015	Total for October 2015	Average for October 2015	Rank of October 2015	Fraction of October average	Total for October 2015	Average for October 2015	Rank of October 2015	Fraction of October average
	Ade-laide	27.1	+5.1	36.1	15th	+2.5	14.0	7.8	9.0	41.0	low	22%	9.0	41.0	low
Ade-laide Airport	25.4	+4.4	36.2	15th	+2.4	13.0	7.3	5.2	36.1	v low	14%	5.2	36.1	v low	14%
Edinburgh RAAF	27.6	+5.4	37.7	15th	+2.8	12.8	5.3	6.8	37.1	v low	18%	6.8	37.1	v low	18%
Kuitpo Forest	22.9	+4.4	32.2	15th	+2.3	11.4	5.8	22.4	49.7	low	45%	22.4	49.7	low	45%
Mount Barker	25.5	+6.1	34.6	15th	+3.1	10.3	4.6	13.2	65.7	v low	20%	13.2	65.7	v low	20%
Mount Crawford	23.6	+5.7	33.2	15th	+3.2	11.5	4.2	13.4	45.1	low	30%	13.4	45.1	low	30%
Mount Lofty	21.4	+6.8	29.8	15th	+3.3	10.6	3.1	28.0				28.0			
Noarlunga	25.2	+4.1	34.9	15th	+2.1	13.5	8.9	5.4	31.0	low	17%	5.4	31.0	low	17%
Par-afield Airport	27.7	+5.8	37.4	5th	+2.7	12.8	4.9	9.0	40.4	v low	22%	9.0	40.4	v low	22%

Adeelaide, South Australia October 2015 Daily Weather Observations

Observations are from Kent Town, about 2 km east of the city centre.

Date	Temps		Rain	Evap	Sun	Max wind gust			9am			3pm						
	Min	Max				mm	mm	hours	Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	
	°C	°C				km/h	km/h	local	°C	%	eighths	Dirn	km/h	hPa	hPa			
1	Th	7.8	24.4	0		WSW	22	12:30	19.1	35	N		9	1028.4	23.8	WSW	15	1028.6
2	Fr	8.8	31.1	0		W	30	12:46	22.3	32	NE		9	1031.7	30.7	WNW	11	1027.9
3	Sa	15.2	33.4	0		NW	41	14:03	27.1	12	N		17	1026.5	32.7	NW	20	1021.4
4	Su	15.4	29.7	0		NW	20	12:36	18.3	44				1024.0	27.4	WNW	9	1022.4
5	Mo	14.5	35.6	0		NNW	46	14:14	27.6	16	NE		9	1019.4	35.1	NW	22	1015.3
6	Tu	18.1	23.8	0		SW	44	14:19	19.9	61	SW		11	1017.1	19.3	SW	26	1022.4
7	We	11.5	21.1	0		E	39	10:15	13.1	54	ESE		11	1035.3	20.0	ESE	15	1031.9
8	Th	12.9	29.7	0		ESE	30	12:40	17.4	40	ESE		9	1032.3	28.6	NW	11	1026.6
9	Fr	15.0	34.7	0		WSW	24	14:44	24.5	34				1026.3	33.8	WNW	9	1022.9
10	Sa	18.2	29.0	0		WSW	41	00:11	24.8	41	S		7	1024.5	26.3	ESE	9	1022.3
11	Su	14.2	21.1	0		W	28	15:40	14.8	89	WNW		7	1021.4	20.0	SSW	9	1019.4
12	Mo	12.7	19.8	0.2		WSW	37	13:23	15.1	55	SSE		9	1023.4	18.8	SW	17	1021.9
13	Tu	9.1	21.7	0		SW	28	15:53	14.6	55	SSE		7	1025.5	20.3	SW	15	1022.0
14	We	8.0	30.4	0		W	26	12:35	16.2	49	NW		6	1021.7	29.3	W	11	1017.6
15	Th	16.1	36.1	0		WNW	39	13:15	28.3	17	NE		7	1015.2	35.8	WNW	19	1012.6
16	Fr	17.5	21.0	1.0		SW	26	01:24	18.9	69	SE		4	1021.6	20.7	NNW	2	1020.8
17	Sa	13.6	24.6	2.8		ESE	24	21:31	16.0	66	SSE		7	1026.3	24.4	E	6	1025.4
18	Su	11.8	29.6	0.2		ENE	31	07:50	18.9	42	E		15	1026.6	27.8	NNE	7	1023.8
19	Mo	18.9	32.5	0		SW	43	14:19	26.6	21	NE		11	1020.1	30.9	WSW	19	1018.5
20	Tu	22.1	24.8	0		W	43	18:25	23.7	51	WNW		9	1013.1	20.4	WNW	13	1012.7
21	We	14.7	19.4	4.8		WSW	43	13:41	16.5	81	SSW		13	1018.2	18.9	WSW	20	1019.3
22	Th	12.4	19.9	0		E	31	07:04	13.3	56	SE		13	1024.5	19.1	SE	11	1022.5
23	Fr	8.9	24.3	0		WSW	24	16:06	14.1	47	E		6	1023.9	23.6	SW	11	1019.5
24	Sa	12.5	33.1	0		NW	20	13:30	21.1	33	NNE		6	1018.9	31.9	NNW	7	1014.4
25	Su	21.1	24.8	0		SW	37	14:35	22.9	48	SW		7	1014.7	21.3	WSW	15	1016.4
26	Mo	13.6	21.1	0		SSE	35	14:10	14.7	69	S		15	1023.9	20.5	SE	13	1023.0
27	Tu	10.6	25.1	0		ESE	33	00:06	15.6	46	SSE		4	1024.4	24.5	WSW	11	1020.3
28	We	14.0	28.1	0		SSW	26	17:01	19.0	45				1019.4	26.3	SW	11	1017.8
29	Th	13.7	33.9	0		WSW	35	16:55	23.5	41				1017.6	32.6	WSW	13	1014.2
30	Fr	16.6	28.1	0		WSW	24	16:36	19.5	73	N		11	1016.1	26.1	WNW	11	1014.2
31	Sa	15.0	28.0	0		SW	22	16:13	18.3	73	NNW		7	1013.7	26.7	WSW	11	1010.7

Statistics for October 2015

Mean	14.0	27.1							19.5	48			7	1022.4	25.7	34		12	1020.3		
Lowest	7.8	19.4							13.1	12				1013.1	18.8	4		NNW	2	1011.9	
Highest	22.1	36.1	4.8			NNW	46		28.3	89	N		17	1035.3	35.8	66		SW	26	1030.7	
Total			9.0																		

Observations were drawn from Adelaide (Kent Town) (station 023090)

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South Australia in October 2015: Dry with above average temperatures

In South Australia, most of the State saw below-average rainfall for October. Rainfall was very much below average across much of the agricultural districts, with the several locations in the lower southeast reporting their driest October on record. Along with the dry conditions, both maximum and minimum temperatures were very much above average to highest on record across the entire State.

- Very much below average rain across the state
- Warmest days and nights on record for the State
- Early season temperature records
- Highest mean temperature anomaly for any month
- Highest mean maximum temperature anomaly for any month

October rainfall was very much below average for South Australia as a whole, with most parts of the State recording less than 20% of the long-term October average. High pressure dominated the weather, resulting in a lack of rain bearing fronts reaching the State. The lack of rain saw this October rank as the 7th driest on record, persisting September's drier than average conditions across southern districts. Several stations in the southeast reported their lowest total October rainfall on record.

Both the statewide mean maximum and mean minimum temperatures were warmer than average across much of the State, which resulted in the warmest October on record. The month started with a high pressure ridge slowly tracking across south-east Australia as a pre-frontal trough approached South Australia from the west, resulting in a northwesterly airstream being directed across southern districts. By October 3, temperature anomalies in excess of +12 °C extended across large areas of South Australia with many stations recording early season temperature records. As the warm days and nights persisted during the month, many stations reported their warmest October on record. The statewide mean maximum temperature, mean minimum temperature anomalies were all more than 1 °C above their previous records set in 2014 and 1940 respectively.

Extremes in October 2015

Hottest day	41.0 °C at Nullarbor on the 14th
Warmest days on average	36.7 °C at Oodnadatta Airport
Coollest days on average	19.3 °C at Neptune Island
Coldest day	12.5 °C at Parawa on the 7th
Coldest night	-0.9 °C at Naracoorte Aerodrome on the 8th
Coollest nights on average	8.1 °C at Kingscote Aero 8.1 °C at Naracoorte Aerodrome
Warmest nights on average	19.5 °C at Oodnadatta Airport
Warmest night	28.4 °C at Moomba Airport on the 30th
Warmest on average overall	28.1 °C at Oodnadatta Airport
Coollest on average overall	15.1 °C at Parndana Cfs AWS
Wettest overall	33.2 mm at Ashton
Wettest day	24.0 mm at Uraidla on the 21st
Strongest wind gust	85 km/h at Renmark Aero on the 20 th

Record lowest October total rainfall	New record (mm)	Old record	Years of record	Average for October
Penola Post Office	1.5	4.6 in 1963	154	56.2
Mount Gambier	3.6	12.2 in 1969	74	60.6
Mount Schank	4.4	17.4 in 2006	46	58.7
Coonawarra	0.8	6.7 in 1991	31	44.4
Goolwa Barrage	3.4	3.8 in 2006	29	34.5

Lowest October total rainfall for at least 20 years	Observed (mm)	Most recent lower	Average for October
Mount Hope	1.2	0.0 in 1927	27.7
Lucindale	3.0	2.8 in 1969	38.7
Meningie	1.8	0.8 in 1991	38.5

** note: there are gaps in the historical record at this site, so it is possible a lower value has gone unreported.*

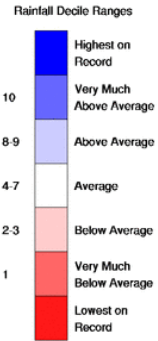
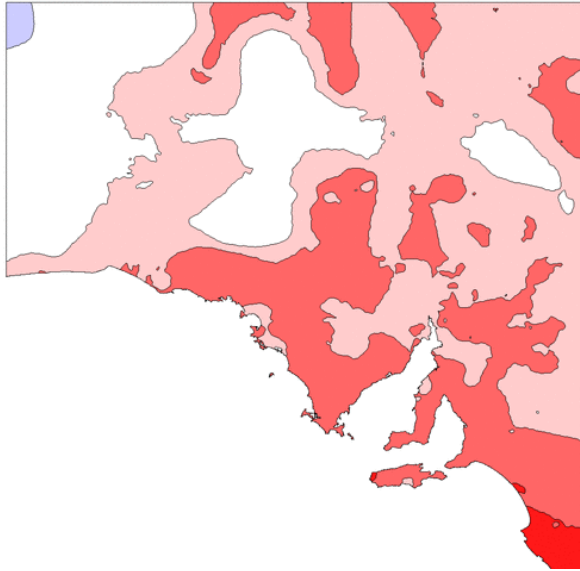
Record highest October temperature	New record	Old record	Years of record	October Average
Edithburgh	37.4 on the 5th	36.8 on the 12th in 2004	24	20.3

Record highest October daily minimum temperature				
	New record (°C)	Old record	Years of record	October Average
Eudunda	22.4 on the 6th	21.8 on the 13th in 1977	51	8.0
Leigh Creek	25.8 on the 20th	25.3 on the 9th in 1999	32	12.5
Cape Jaffa	16.9 on the 20th	= 16.9 on the 12th in 2006	24	9.2
Moomba	28.4 on the 30th	= 28.4 on the 27th in 2014	21	15.7
Nuriootpa	20.2 on the 20th	= 20.2 on the 20th in 2011	20	8.1

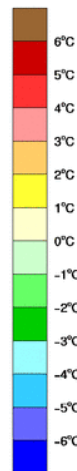
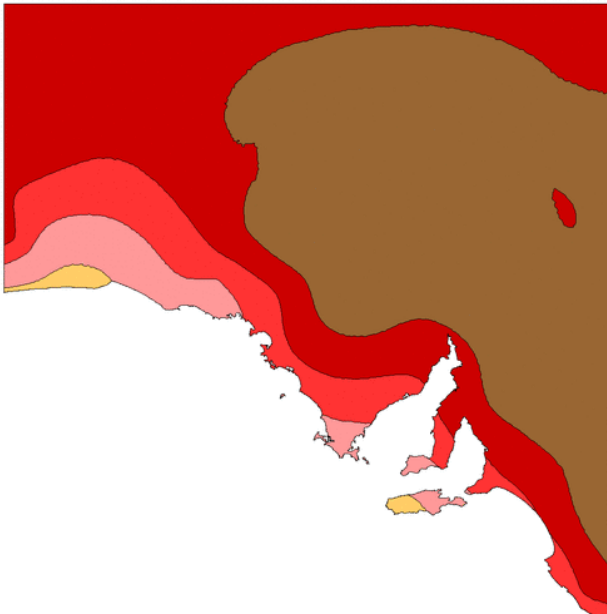
Many other record maximum, minimum and mean temperatures were also set in October. For more information please see

<http://www.bom.gov.au/climate/current/month/sa/archive/201510.summary.shtml>

South Australian Rainfall Deciles October 2015
 Distribution Based on Gridded Data
 Australian Bureau of Meteorology



Maximum Temperature Anomaly (°C) October 2015
 Australian Bureau of Meteorology



Adelaide in November 2015

The month was mostly dry across the Adelaide region with the wettest period occurring during the first week of the month. Temperatures were generally above average during the month, continuing on from record heat reported during October.

- Wet start; but dry for most of the month
- Rainfall was generally about half of the November average
- Warm days and warm nights

Daily maximum and minimum temperatures were above average during November. The highest maximum temperatures for the month were recorded on the 18th, and the monthly mean maximum temperature was generally more than 1.5 °C above normal for most stations in the Adelaide region. Day time maximum temperatures at Adelaide (Kent Town) tended above average for most days, and nights were also above average throughout most of the month.

Rainfall was very much below average across the Adelaide region, with stations generally reporting less than 60% of the long term November average. The wettest period occurred at the start of the month as a slow moving low pressure system crossed South Australia which saw some locations record 10 to 20mm on the 4th and 5th. For the remainder of the month, high pressure systems dominated the weather, resulting in a lack of rain bearing fronts reaching southern parts of State.

Extremes in November 2015

Hottest day	40.6 °C at Edinburgh RAAF on the 18th
Warmest days on average	27.7 °C at Parafield Airport
Coollest days on average	21.2 °C at Mount Lofty
Coldest day	13.4 °C at Mount Lofty on the 5th
Coldest night	4.6 °C at Mount Barker on the 27th
Coollest nights on average	10.4 °C at Mount Barker
	10.4 °C at Mount Lofty
Warmest nights on average	14.5 °C at Adelaide (Kent Town)**
Warmest night	23.0 °C at Mount Crawford AWS on the 18th
Warmest on average overall	21.0 °C at Adelaide (Kent Town)**
Coollest on average overall	15.8 °C at Mount Lofty
Wettest overall	29.8 mm at Mount Lofty
Wettest day	20.6 mm at Mallala on the 4th
Strongest wind gust	93 km/h at Mount Crawford AWS on the 30 th

Many other rainfall and temperature records were also set in November. For more information plus a summary of statistics please see:

<http://www.bom.gov.au/climate/current/month/sa/archive/201511.adelaide.shtml>

Summary statistics for November 2015

	Maximum temperatures (°C)			Minimum temperatures (°C)			Rainfall (millimetres)			
	Mean for November 2015	Diff from average	Highest for November 2015	Mean for November 2015	Diff from average	Lowest for November 2015	Total for November 2015	Average for November	Rank of November 2015	Fraction of November average
Adelaide**	27.5	+2.2	40.1	14.5	+0.5	8.4	9.8	29.6	low	33%
Adelaide Airport	25.4	+1.4	39.3	14.1	+1.3	8.3	13.2	24.6	average	54%
Edinburgh RAAF	27.5	+1.7	40.6	13.8	+0.9	5.8	28.6	23.9	average	120%
Kuitpo	23.0	+1.1	35.3	11.4	+0.2	6.3	22.4	34.7	average	65%
Mount Barker	25.6	+3.0	36.0	10.4	+1.5	4.6	17.6	39.5	low	45%
Mount Crawford	24.3	+2.0	36.0	11.5	+0.7	5.8	15.6	30.6	low	51%
Mount Lofty	21.2	+3.7	33.4	10.4	+1.3	5.1	29.8			
Noarlunga	25.1	+0.2	37.5	13.9	-0.2	8.6	13.6	22.4	low	61%
Parafield Airport	27.7	+2.4	40.5	13.1	+0.3	6.2	20.2	26.2	average	77%

Adelaide, South Australia November 2015 Daily Weather Observations

Observations are from Kent Town, about 2 km east of the city centre.

Date	Temps		Rain mm	Evap mm	Sun hours	Max wind gust			9am					3pm					
	Min	Max				Dirn	Spd km/h	Time local	Temp °C	RH %	Cld eighths	MSLP hPa	Temp °C	RH %	Cld eighths	Dirn	Spd km/h	MSLP hPa	
	°C	°C																	Dirn
1	Su	15.1	25.2	0.4			WSW	28	17:11	18.5	68		1010.3	24.1	21	21	WSW	13	1009.7
2	Mo	15.5	23.6	0			WSW	30	12:06	17.8	74		1014.0	22.0	47		WSW	13	1014.2
3	Tu	15.8	28.2	0			W	31	18:58	18.5	54		1013.1	26.8	33		ENE	15	1009.3
4	We	18.4	25.9	4.8			E	33	00:19	22.2	72		1007.9	25.6	51		WSW	7	1005.2
5	Th	15.5	20.9	2.2			WSW	28	02:14	17.4	79		1008.5	19.4	67		SW	15	1008.9
6	Fr	14.4	22.1	0.8			SSW	30	17:38	15.1	90		1016.0	20.4	56		SW	13	1015.5
7	Sa	9.3	28.3	0.2			SW	24	15:43	17.3	47		1020.8	28.0	26		WSW	13	1018.6
8	Su	15.0	35.8	0			WSW	26	12:45	25.2	38		1020.3	35.0	15		WSW	6	1018.2
9	Mo	20.5	36.7	0			SE	50	21:59	30.6	17		1016.5	36.5	18		W	11	1013.8
10	Tu	19.1	26.0	0.2			SE	46	23:01	22.6	51		1016.9	24.4	47		SSE	9	1016.5
11	We	15.7	27.0	0			NNE	20	23:20	18.1	56		1018.1	25.9	37		NE	6	1015.6
12	Th	15.4	27.5	0			SSW	37	15:14	22.6	46		1016.1	25.5	42		WSW	20	1015.5
13	Fr	11.0	22.1	0			SSE	39	10:43	18.1	43		1020.6	20.3	42		SSE	17	1019.0
14	Sa	10.6	22.1	0			SSW	35	11:54	16.8	51		1022.2	20.7	52		WSW	17	1020.2
15	Su	12.1	25.0	0			S	28	23:12	15.5	52		1022.1	23.6	31		E	11	1018.0
16	Mo	11.1	31.3	0			W	28	12:17	20.1	43		1016.7	30.4	19		W	9	1013.7
17	Tu	14.3	35.7	0			WSW	31	12:39	26.4	22		1013.6	35.1	14		W	17	1011.7
18	We	17.3	40.1	0			SW	43	19:56	30.6	17		1012.5	39.4	12		WNW	17	1009.8
19	Th	22.4	37.4	0			S	43	17:13	26.3	55		1015.0	32.3	36		WSW	19	1011.0
20	Fr	18.4	22.7	0						20.2	60		1016.9	21.7	47		SW	19	1018.9
21	Sa													21.5	40		SW	22	1023.3
22	Su	10.3	20.9	0			SSW	41	16:14	15.9	51		1023.2	19.3	46		WSW	19	1020.1
23	Mo	13.9	23.2	0			WSW	35	17:01	17.3	51		1021.8	22.4	36		WSW	17	1020.3
24	Tu	10.6	28.9	0			WSW	24	13:00	17.2	57		1019.4	27.4	22		WSW	9	1015.2
25	We	16.0	31.9	0			NNW	48	11:46	28.7	15		1003.6	24.9	40		SSW	17	1001.3
26	Th	12.3	19.5	1.0			WSW	48	00:15	14.9	40		1015.5	18.7	36		SW	22	1017.7
27	Fr	8.4	21.5	0.2			SSW	31	15:13	16.1	45		1021.3	19.1	41		SW	13	1019.9
28	Sa	9.8	23.6	0			WSW	28	11:56	17.5	46		1019.2	22.2	34		SW	15	1017.3
29	Su	12.6	28.8	0			WSW	24	13:01	18.2	51		1016.8	24.5	39		SW	13	1013.9
30	Mo	17.9	34.7	0			NNW	46	10:06	28.1	25		1003.6	24.0	57		SW	22	1004.1
Statistics for November 2015																			
Mean																			
14.5																			
27.5																			
Lowest																			
8.4																			
19.5																			
Highest																			
22.4																			
40.1																			
4.8																			
9.8																			
Total																			

Observations were drawn from Adelaide (Kent Town) (station 023090)

IDCJDW5002.201511 Prepared at 16:08 GMT on 16 Jan 2016
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<http://www.bom.gov.au/climate/dwo/IDCJDW0000.pdf>

South Australia in November 2015: A wet start; above average temperatures

In South Australia, most of the State saw average to above average rainfall for November, owing mostly to heavy rainfall at the start of the month. Rainfall was average across much of the southeast agricultural districts. Temperatures were very much above average across the entire State, continuing the warmer than usual days and nights that were experienced in October.

- Wet start gives above average rain
- Two wet days, but dry for the rest of the month
- Warm days and warm nights

Despite heavy rainfall that resulted in above average monthly totals at several locations across central districts, it was mostly dry across the State during November. Several locations recorded more than twice their long term monthly average in just two days when a low pressure system tracked over central districts on the 4th and 5th. Some sites reported their highest November daily rainfall on record with some sites even reporting their highest total November rainfall on record. High pressure dominated the weather for much of the remainder of the month, resulting in a lack of rain bearing fronts reaching the State.

Both the statewide mean maximum and mean minimum temperatures were warmer than average across much of the State, which resulted in the seventh-warmest November on record with respect to the statewide mean temperature. The statewide mean maximum temperature was more than 2.0 °C above average and the mean minimum temperature anomalies were more than 1.9 °C above average.

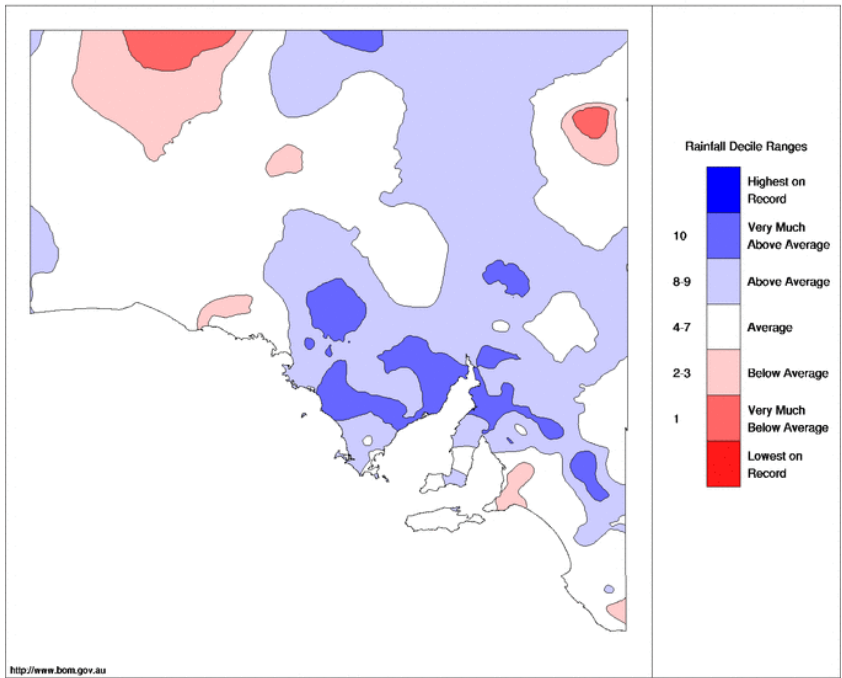
On the 25th, a large bushfire in the Mid North occurred in hot, dry and very windy conditions, as a cold front swept across southern parts of the State.

Extremes in November 2015

Hottest day	45.8 °C at Ceduna AMO on the 18th
Warmest days on average	36.5 °C at Oodnadatta Airport
Coollest days on average	19.9 °C at Neptune Island
Coldest day	13.4 °C at Mount Lofty on the 5th
Coldest night	1.2 °C at Cummins Aero on the 27th
Coollest nights on average	9.3 °C at Naracoorte Aerodrome
	9.3 °C at Padthaway South
Warmest nights on average	20.8 °C at Moomba Airport
Warmest night	29.1 °C at Oodnadatta Airport on the 30th
Warmest on average overall	28.6 °C at Oodnadatta Airport
Coollest on average overall	15.8 °C at Mount Lofty
Wettest overall	108.6 mm at Jamestown
Wettest day	88.4 mm at Jamestown on the 5th
Strongest wind gust	93 km/h at Mount Crawford AWS on the 30 th

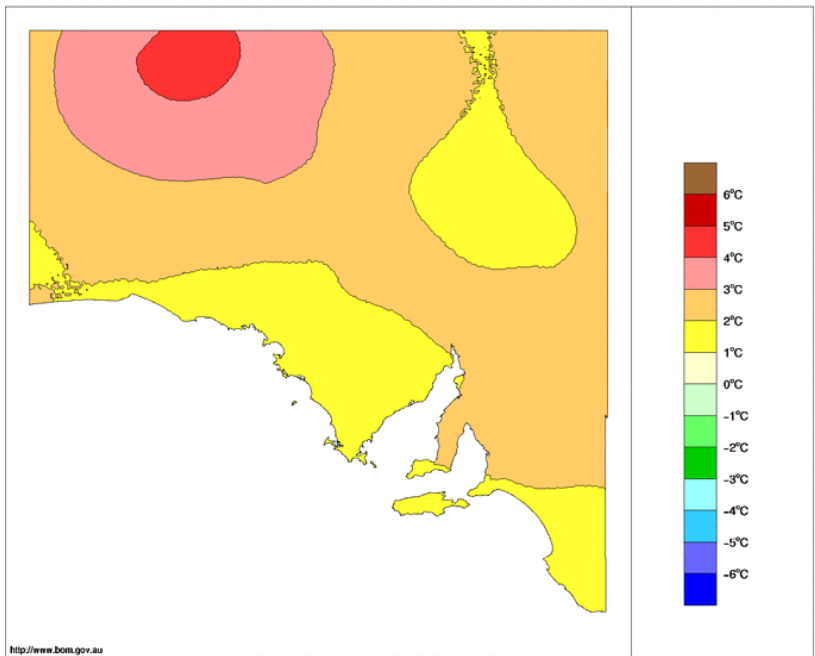
Many other rainfall records were also set in November. For more information plus a summary of statistics please see:

<http://www.bom.gov.au/climate/current/month/sa/archive/201511.summary.shtml>



Maximum Temperature Anomaly (°C) November 2015

Australian Bureau of Meteorology



Adelaide in spring 2015: Warm and dry

Both maximum and minimum temperatures were warmer than average during spring, owing to particularly warm periods through October and November. Rainfall was generally below average across Adelaide, with most locations across the region receiving less than 60% of their long term average.

- Dry through October and November
- Warmer than average days
- Warmer than average nights

The season started with average rainfall throughout September. Rainfall tended below average in October and November. This resulted in the city receiving less than 60% of the long-term average seasonal total. With high pressure systems dominating weather throughout much of the season, several sites had their lowest total spring rainfall on record and some other sites had their lowest total spring rainfall for at least 20 years.

Early October saw a burst of heat not seen in Adelaide since 1914, and 40.1°C recorded on the 18th November was the hottest November day in 6 years, and the second earliest date this temperature was reached in spring for Adelaide. Overall, both maximum and minimum temperatures tended above average across the region. Maximum temperatures tended up to 2°C above average across the metropolitan region, while nights were more than 1°C above average. At Kent Town**, daytime temperatures averaged 24.6°C. The spring mean minimum temperature averaged 12.5°C. The warmer days and nights through October and November resulted in some sites having their highest spring mean daily maximum temperature on record and their highest spring mean temperature on record.

Extremes in spring 2015

Hottest day	40.6 °C at Edinburgh RAAF on 18 Nov
Warmest days on average	25.0 °C at Parafield Airport
Coollest days on average	18.6 °C at Mount Lofty
Coldest day	7.8 °C at Mount Lofty on 2 Sep
Coldest night	1.0 °C at Mount Barker on 8 Sep
Coollest nights on average	8.9 °C at Mount Barker
Warmest nights on average	12.5 °C at Adelaide (Kent Town)**
Warmest night	23.0 °C at Mount Crawford AWS on 18 Nov
Warmest on average overall	18.5 °C at Adelaide (Kent Town)**
Coollest on average overall	13.8 °C at Mount Lofty
Wettest overall	162.4 mm at Mount Lofty
Wettest day	37.6 mm at Ashton on 8 Sep
Strongest wind gust	93 km/h at Mount Crawford AWS on 30 Nov

*** note: Instrument failure on the 21st means that the actual monthly mean temperatures at Adelaide (Kent Town) may differ from the values reported in these tables*

Record lowest spring total rainfall

	New record (mm)	Old record	Years of record	Average for spring
Willunga	48.6	51.8 in 1982	151	152.4

Record lowest spring total rainfall

	New record (mm)	Old record	Years of record	Average for spring
Willunga	48.6	51.8 in 1982	151	152.4

Lowest spring total rainfall for at least 20 years

	Observed (mm)	Most recent lower	Average for spring
Brighton	43.4	35.0 in 1938*	123.2
Blackwood	71.6	71.1 in 1982*	165.1
Happy Valley	63.8	55.6 in 1982*	147.3

**note: there are gaps in the historical record at this site, so it is possible a lower value has gone unreported.*

Record highest spring mean daily maximum temperature

	New record (°C)	Old record	Years of record	Spring Average
Mount Barker	23.1	22.9 in 2014	113	19.5
Parafield Airport	25.0	= 25.0 in 2014	58	22.1
Adelaide**	24.6	24.5 in 2014	38	22.1
Mount Crawford	20.9	= 20.9 in 2014	21	18.5

Record highest spring mean temperature

	New record(°C)	Old record	Years of record	Average for spring
Mount Barker	16.0	15.9 in 2014	112	13.4
Mount Crawford	15.4	15.1 in 2014	21	13.7

Summary statistics for spring 2015	Maximum temperatures (°C)				Minimum temperatures (°C)				Rainfall (millimetres)			
	Mean for spring 2015	Diff from average	Highest for spring 2015	spring 2015 Mean	Diff from average	Lowest for spring 2015	Total for spring 2015	Average for spring	Rank of spring 2015	Fraction of spring average		
Adelaide**	24.6	+2.5	40.1	12.5	+0.7	4.3	71.0	128.4	low	55%		
Adelaide Airport	23.1	+2.0	39.3	11.9	+1.1	3.5	33.6	105.4	v low	32%		
Edinburgh RAAF	24.7	+2.4	40.6	11.2	+0.9	1.8						
Kuitipo Forest	20.5	+1.4	35.3	10.2	+0.7	4.2	102.2	151.4	low	68%		
Mount Barker	23.1	+3.6	36.0	8.9	+1.6	1.0	85.4	190.1	v low	45%		
Mount Crawford	20.9	+2.4	36.0	10.0	+1.2	1.2	76.8	145.8	low	53%		
Mount Lofty	18.6	+3.8	33.4	9.1	+1.6	1.2	162.4					
Noarlunga	22.8	+1.2	37.5	12.4	+0.4	4.8	44.2	98.5	low	45%		
Parafield Airport	25.0	+2.9	40.5	10.9	+0.5	2.0	56.8	110.0	v low	52%		

South Australia in spring 2015: dry with above average temperatures

Spring was generally drier and warmer than normal across much of South Australia. It was particularly dry across the southeast and it was warmer than normal across the whole State. Night time temperatures were the warmest on record when averaged across the State.

- Warmer than average days, with record mid-season heat
- Warmest spring nights on record
- Below average spring rainfall across southern cropping areas

Spring rainfall was below average for South Australia as a whole, with particularly dry areas across the southeast and western agricultural and pastoral parts of the State. Several locations had their lowest total spring rainfall on record while some other sites had their lowest total spring rainfall for at least 20 years. Most of the spring total rainfall was recorded in just 4 days over the season; on the 2nd and 3rd of September and on again the 4th and 5th of November, the latter of which resulted in some sites having their highest spring daily rainfall on record.

Both spring mean maximum and mean minimum temperatures were very much above average across South Australia, owing to particularly warm conditions through October and November. In early October, temperature anomalies in excess of +12 °C extended across large areas of South Australia with many stations recording early season temperature records. The warmer conditions through that period resulted in some sites having their highest spring mean temperature on record and their highest spring mean daily maximum temperature on record or their highest spring mean daily minimum temperature on record.

Extremes in spring 2015

Hottest day	45.8 °C at Ceduna AMO on 18 Nov
Warmest days on average	33.1 °C at Oodnadatta Airport
Coollest days on average	18.4 °C at Cape Willoughby 18.4 °C at Neptune Island
Coldest day	7.8 °C at Mount Lofty on 2 Sep
Coldest night	-3.6 °C at Keith (Munkora) on 23 Sep
Coollest nights on average	7.3 °C at Naracoorte Aerodrome
Warmest nights on average	17.0 °C at Moomba Airport
Warmest night	29.1 °C at Oodnadatta Airport on 30 Nov
Warmest on average overall	24.9 °C at Oodnadatta Airport
Coollest on average overall	13.8 °C at Mount Lofty
Wettest overall	162.4 mm at Mount Lofty
Wettest day	88.4 mm at Jamestown on 5 Nov
Strongest wind gust	93 km/h at Neptune Island on 6 Sep 93 km/h at Mount Crawford AWS on 30 Nov

Record lowest spring total rainfall

	New record (mm)	Old record	Years of record	Spring Average
Goolwa	32.0	40.5 in 1967	153	114.5
Willunga	48.6	51.8 in 1982	151	152.4
Mount Pleasant	50.2	55.3 in 1938	138	167.1
Mount Compass	65.6	66.6 in 1938	89	193.1
Goolwa Barrage	32.4	43.6 in 1995	24	106.8

Record highest spring daily rainfall

	New record (mm)	Old record	Years of record
Darke Peak	67.0 on 4 Nov	41.7 on 23 Oct 1920	102
Jamestown	88.4 on 5 Nov	64.3 on 6 Nov 1934	132
Cleve	54.2 on 4 Nov	44.7 on 18 Nov 1964	52
Whyalla	57.6 on 4 Nov	52.0 on 27 Sep 1979	33
Lameroo	59.6 on 5 Nov	39.4 on 6 Oct 1980	40
Tarlee	69.6 on 5 Nov	64.4 on 31 Oct 1997	132
Jamestown	81.2 on 5 Nov	70.2 on 31 Oct 1997	65
Stockport	70.4 on 5 Nov	60.6 on 31 Oct 1997	57
Arno Bay	45.0 on 4 Nov	41.6 on 26 Nov 2002	109

Lowest spring total rainfall for at least 20 years

	Observed (mm)	Most recent lower	Spring Average
Birdwood	59.8	58.5 in 1914*	177.7
Palmer	32.5	27.6 in 1938*	107.3
Finniss	38.8	37.2 in 1938*	124.0
Brighton	43.4	35.0 in 1938*	123.2
Victor Harbor	64.0	55.9 in 1967	165.4
Echunga	78.4	73.6 in 1967*	199.1
Port Elliot	48.6	42.5 in 1967*	122.4
Blackwood	71.6	71.1 in 1982*	165.1
Happy Valley	63.8	55.6 in 1982*	147.3
Adelaide (Seaton)	40.5	39.6 in 1982*	109.5

* note: there are gaps in the historical record at this site, so it is possible a lower value has gone unreported.

Record highest spring daily minimum temperature

	New record (°C)	Old record	Years of record	Spring Average
Nullarbor	26.6 on 18 Nov	25.8 on 31 Oct 1987	30	10.3

Record highest spring mean daily maximum temperature

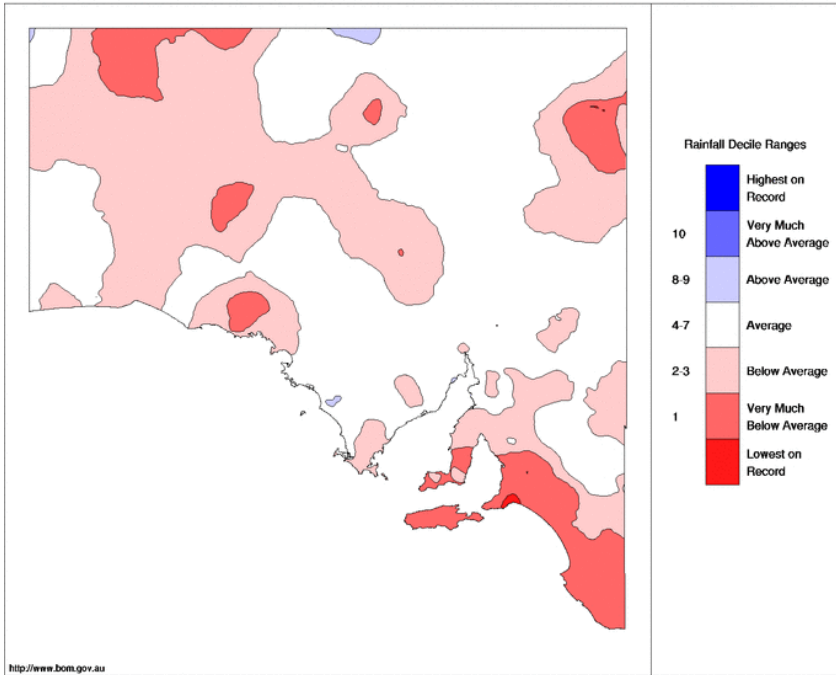
	New record (°C)	Old record	Years of record	Spring Average
Mount Barker	23.1	22.9 in 2014	113	19.5
Oodnadatta	33.1	33.0 in 2013	65	30.3
Keith	24.7	24.4 in 2014	61	21.7
Parafield Airport	25.0	= 25.0 in 2014	58	22.1
Andamooka	30.6	30.5 in 2014	45	28.3
Adelaide**	24.6	24.5 in 2014	38	22.1
Loxton	26.8	26.3 in 2014	31	24.2
Cape Jaffa	20.1	= 20.1 in 2014	23	18.7
Cooper Pedy	31.2	31.1 in 2014	21	28.8
Mount Crawford	20.9	= 20.9 in 2014	21	18.5
Renmark	27.6	27.2 in 2014	20	25.5

Many other rainfall and temperature records were also set in Spring. For more information plus a summary of statistics please see:

<http://www.bom.gov.au/climate/current/season/sa/archive/201511.summary.shtml>

South Australian Rainfall Deciles 1 September to 30 November 2015

Distribution Based on Gridded Data
Australian Bureau of Meteorology

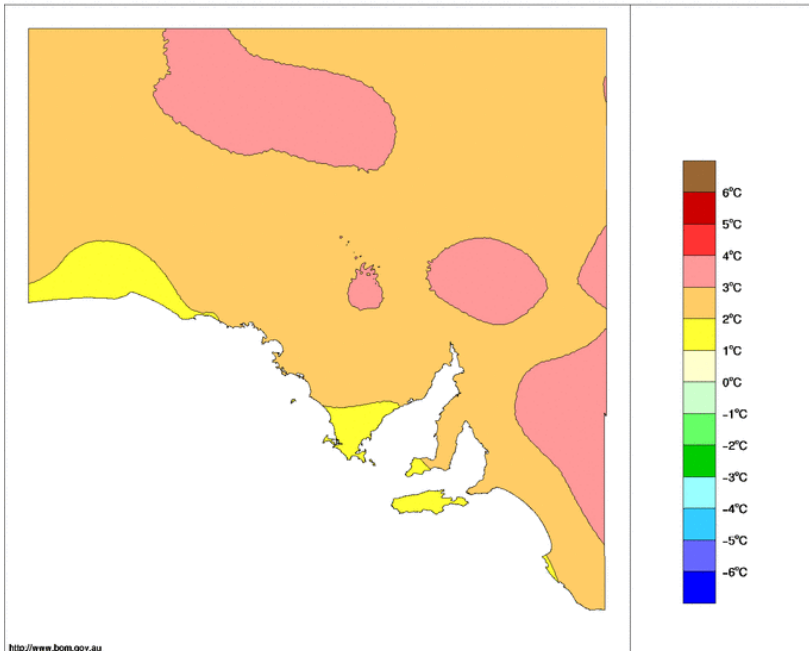


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Issued: 24/12/2015

Maximum Temperature Anomaly (°C) 1 September to 30 November 2015

Australian Bureau of Meteorology



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Issued: 21/12/2015

Adelaide in December 2015: a hot, dry end to the year

December was mostly dry across the Adelaide region, but thunderstorms did bring some rain. Temperatures were well above average for most of the month, with several records occurring during heatwave conditions.

- Record early summer heatwave brings six consecutive days over 36 °C
- Record seven days in the month over 40 °C
- Daytime temperatures more than 5 °C above average
- Rainfall about half the December average

The month began with below average temperatures across the Adelaide region, dropping to 7.9 °C at Kent Town on the morning of the 2nd, the lowest December temperature on record. The previous lowest December minimum for the Kent Town location was 8.0 °C on 3 December 1987. However, the cool start was short lived and daily maximum temperatures exceeded 40 °C on the 5th and 6th. On the morning of the 7th several stations around the city reported their warmest December night (highest daily minimum temperature) on record. Later in the month, a second spell of heat saw the city record six consecutive days over 36 °C, four of which (16th to 19th) were above 40 °C, peaking at 43.2 °C on the 19th. The month ended with another hot day, with Kent Town reaching 40.6 °C on the 31st.

In total, there were seven days where the temperature at Kent Town reached 40 °C, exceeding the previous record of six 40 °C days in a month (in January 2014 and January 2009). The previous greatest number of 40 °C days in December was three, in 2007. The old Adelaide observing site (at West Terrace) had ten days of 40 °C in January 1908, and four December days of 40 °C in 1897 and 1898. Elsewhere around the city, Edinburgh RAAF Base and Mount Crawford recorded their highest December temperature on record. More information about the heat, which affected much of the State as well as Victoria and Tasmania, can be found in the Special Climate Statement: Widespread record December temperatures in southeast Australia.

Rainfall was below average across the Adelaide region, with stations generally reporting less than half of their December average. Kent Town's monthly total of 13 mm was about half the December average, but not as dry as December 2014. The wettest period was on the 8th as a slow moving low pressure system and thunderstorms crossed South Australia and brought falls of around 5 to 10 mm across Adelaide. Later in the month, the passage of a low pressure trough saw several locations across the region receive another 5 mm or so on the 20th and 21st.

Extremes in December 2015

Hottest day	43.5 °C at Edinburgh RAAF on the 19th
Warmest days on average	32.5 °C at Adelaide and Parafield Airport
Coollest days on average	26.4 °C at Mount Lofty
Coldest day	11.7 °C at Mount Lofty on the 1st
Coldest night	4.6 °C at Mount Barker on the 2nd
Coollest nights on average	12.8 °C at Mount Barker
Warmest nights on average	18.1 °C at Adelaide (Kent Town) and Noarlunga
Warmest night	31.7 °C at Edinburgh RAAF on the 7th
Warmest on average overall	25.3 °C at Adelaide (Kent Town)
Coollest on average overall	20.2 °C at Mount Lofty
Wettest overall	25.2 mm at Kuitpo Forest and Piccadilly
Wettest day	14.4 mm at Gawler on the 8th
Strongest wind gust	94 km/h at Edinburgh RAAF on the 19th

For more information plus a summary of statistics please see:<http://www.bom.gov.au/climate/current/month/sa/archive/201512.adelaide.shtml>

So what happened in 2015?

With 2015 being the 5th warmest on record for Australia, and 7th warmest for South Australia, and record October and December temperatures, all the detail is available in the 2015 Climate summaries for South Australia and nationally at:

<http://www.bom.gov.au/climate/current/annual/sa/summary.shtml>

http://www.bom.gov.au/climate/annual_sum/2015/



Adelaide, South Australia December 2015 Daily Weather Observations

Observations are from Kent Town, about 2 km east of the city centre.

Date	Temps		Rain mm	Evap mm	Sun hours	Max wind gust			3pm												
	Day	Min °C				Max °C	Dirn	Spd km/h	Time local	Temp °C	RH %	Cid eighths	Dirn	Spd km/h	MSLP hPa	MSLP hPa	RH %	Cid eighths	Dirn	Spd km/h	MSLP hPa
1	Tu	14.8	19.7	0			SSW	50	16:00	16.8	67	WNW	19	1012.9	15.9	65	SSW	17	1016.3		
2	We	7.9	21.0	0.6			WSW	39	14:00	15.5	43	SSE	9	1025.9	19.5	42	SW	20	1026.3		
3	Th	9.9	28.3	0			WSW	30	16:51	18.3	39	ENE	9	1027.0	27.2	24	SW	15	1023.4		
4	Fr	15.0	34.8	0			WNW	30	12:38	26.9	22	NNE	9	1020.6	34.0	17	SW	15	1016.5		
5	Sa	20.7	40.2	0			SE	31	20:22	33.4	18	NE	9	1015.3	38.6	13	WSW	13	1012.1		
6	Su	26.6	41.5	0			ESE	52	21:37	34.6	18	NNE	9	1011.8	40.7	16	SW	17	1008.5		
7	Mo	30.7	38.5	0			ESE	57	03:18	34.3	19	E	19	1004.8	37.1	21	WNW	13	1005.1		
8	Tu	18.4	26.4	5.8			SSW	44	16:10	21.9	66	NNW	17	1011.2	24.5	49	W	20	1011.9		
9	We	17.7	26.1	0.2			SSW	28	08:16	20.9	63	SW	13	1017.5	24.6	46	W	11	1016.9		
10	Th	14.1	26.3	0			WSW	35	14:30	19.9	56	SW	7	1016.8	25.2	42	WSW	19	1015.1		
11	Fr	14.4	23.1	0			SW	43	08:54	17.8	61	NW	15	1016.8	21.7	44	SW	20	1016.8		
12	Sa	10.0	23.7	0			WSW	30	14:10	20.6	45	SW	2	1014.4	32.4	42	SW	15	1017.2		
13	Su	13.1	32.8	0			W	30	13:23	29.4	52	SW	2	1012.2	35.6	13	W	11	1011.8		
14	Mo	17.0	37.2	0			SW	33	20:24	29.4	52	N	2	1012.2	35.6	13	SW	11	1010.5		
15	Tu	22.0	36.2	0			E	35	15:53	27.6	32	N	7	1013.7	31.4	28	SSW	9	1011.8		
16	We	23.9	41.1	0.2			SSE	30	00:31	31.3	32	WNW	7	1012.4	40.4	13	WSW	15	1009.8		
17	Th	24.5	42.9	0			E	35	00:34	34.9	16	NNE	11	1009.9	41.4	11	NW	13	1007.9		
18	Fr	23.7	40.8	0			ESE	33	19:40	30.0	42	W	6	1008.9	39.7	16	WSW	9	1006.3		
19	Sa	26.8	43.2	0			N	50	10:20	37.5	15	NNE	11	1004.8	41.4	12	W	19	1001.6		
20	Su	19.7	23.5	2.8			WSW	37	16:22	19.9	93	SW	13	1008.6	20.8	69	SW	7	1012.5		
21	Mo	15.1	24.3	2.0			S	28	14:13	18.3	56	ESE	9	1021.8	22.1	42	ESE	9	1020.7		
22	Tu	14.2	31.9	0			WNW	35	14:52	22.1	37	ENE	11	1020.6	29.2	18	E	7	1017.3		
23	We	16.8	34.5	0			WSW	33	15:25	24.4	31	SE	7	1017.0	34.2	13	WSW	15	1013.6		
24	Th	18.1	39.1	0			SW	28	13:43	28.5	22	WNW	4	1011.8	37.7	10	SW	17	1007.9		
25	Fr	24.8	37.2	0			SW	46	18:22	31.5	19	N	15	1004.8	34.9	17	WNW	13	1001.3		
26	Sa	14.7	23.8	1.4			W	50	13:23	18.0	47	SSW	15	1014.2	21.9	35	SSW	19	1016.1		
27	Su	11.4	25.9	0			ENE	37	22:26	17.2	44	ESE	9	1024.9	24.6	19	SE	13	1022.4		
28	Mo	16.0	29.4	0			SE	43	01:22	21.5	35	SE	9	1024.9	26.4	30	SW	19	1021.7		
29	Tu	17.0	34.4	0			SW	31	16:25	25.7	33	WSW	6	1020.9	32.8	15	WSW	15	1017.3		
30	We	21.5	38.1	0			NNE	26	08:41	30.8	16	NNE	11	1013.5	36.9	10	WNW	11	1011.5		
31	Th	20.7	40.6	0			WSW	31	12:39	32.5	12	NE	7	1011.6	39.2	10	WSW	15	1010.0		
Statistics for December 2015																					
Mean		18.1	32.5							25.4	38			9	1015.0	30.8	27		14	1013.5	
Lowest		7.9	19.7							15.5	12			2	1004.8	15.9	10		7	1001.3	
Highest		30.7	43.2	5.8			ESE	57		37.5	93			19	1027.0	41.4	69		20	1026.3	
Total				13.0																	

Observations were drawn from Adelaide (Kent Town) (station 023090)

ICDCIM502_201512 Prepared at 16:07 GMT on 2 Feb 2016

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South Australia in December 2015

The year ended very warm for South Australia, with a heatwave during the middle of December that saw several locations report record high December temperatures. Rainfall was very much below average across the southern half of the State, whereas the northern Pastoral districts saw average to above average rainfall, mainly from a trough of low pressure that crossed in the second half of the month.

- Warmest December on record for South Australia
- Record early summer heat
- Very dry across agricultural districts
- Above average rainfall in northern Pastorals

The South Australian mean temperature for December was a record 2.69 °C above average, well clear of the previous record from 1972. The State's mean minimum temperature was also a record at 2.42 °C above average, and the mean maximum temperature was 2.96 °C above average (second-highest to 1972). Numerous sites set new December records for highest mean daily maximum temperature, highest mean daily minimum, or highest mean temperature.

The month began with below average temperatures across southern parts of South Australia, and a few locations in the central districts recorded their lowest December temperature on record on the 2nd. The cooler temperatures were short lived as a northerly airstream saw daytime and overnight temperatures at least ten degrees above average across much of the southern and eastern districts between the 5th and 7th, and on the morning of the 7th several sites in central districts had their warmest December minimum temperature on record.

Temperatures remained above average for much of the month, and became extremely warm in the third week when heatwave conditions extended across large areas. High temperatures occurred through much of South Australia during this period, with December records for long spells of consecutive hot days occurring in the central districts and around Adelaide. These included four consecutive days of 40 °C or above from the 16th to the 19th at Snowtown, and six consecutive days of 35 °C or above from the 14th to the 19th at Eudunda. The heatwave resulted in several locations reporting their highest December temperature on record. There was a return to hot conditions at the end of the month, with temperatures again exceeding 40 °C in southern and eastern districts on the 31st. More information about the heat, which also affected Victoria and Tasmania, can be found in the Special Climate Statement: Widespread record December temperatures in south-east Australia.

Dry conditions persisted across southern agricultural districts throughout the month, resulting in December rainfall that was very much below average in those areas, and several sites reporting their lowest total December rainfall since 1991. In the north of the State, a trough of low pressure brought moderate to locally heavy falls around the 21st, and gave total monthly rain above the December average.

Extremes in December 2015

Hottest day	47.2 °C at Port Augusta Aero on the 19th
Warmest days on average	38.1 °C at Moomba Airport
Coollest days on average	23.9 °C at Cape Willoughby and Neptune Island
Coldest day	11.7 °C at Mount Lofty on the 1st
Coldest night	0.2 °C at Coonawarra on the 2nd
Coollest nights on average	10.8 °C at Naracoorte Aerodrome
Warmest nights on average	24.2 °C at Moomba Airport
Warmest night	34.1 °C at Moomba Airport on the 7th
Warmest on average overall	31.2 °C at Moomba Airport
Coollest on average overall	19.8 °C at Mount Gambier Aero
Wettest overall	102.2 mm at Mount Dare
Wettest day	47.8 mm at Marree (Farina) on the 21st
Strongest wind gust	122 km/h at Woomera Aerodrome on the 7th

Highest December total rainfall for at least 20 years

	Observed (mm)	Most recent higher	December Average
Marree (Farina)	78.4	78.5 in 1975*	15.1
Mount Dare	102.2	103.6 in 1991	20.0

** note: there are gaps in the historical record at this site, so it is possible a higher value has gone unreported.*

Record lowest December total rainfall

	New record (mm)	Old record	Years of record	December Average
Loxton	1.6	3.2 in 1995	32	24.1
Edithburgh	1.8	2.0 in 2002	23	16.4
Parawa	8.0	9.8 in 2002	22	33.7

Record highest December temperature

	New record (°C)	Old record	Years of record	December Average
Neptune Island	35.1 on the 19th	34.3 on the 11th 1998	53	20.5
Eudunda	41.8 on the 18th	41.7 on the 30th 2005	51	26.9
Edinburgh RAAF	43.5 on the 19th	= 43.5 on the 10th 1980	44	27.8
Whyalla	45.8 on the 19th	44.9 on the 23rd 2012	32	28.2
Clare	41.7 on the 19th	41.4 on the 30th 2005	22	27.3
Mount Crawford	39.7 on the 6th	39.6 on the 31st 2007	22	24.8

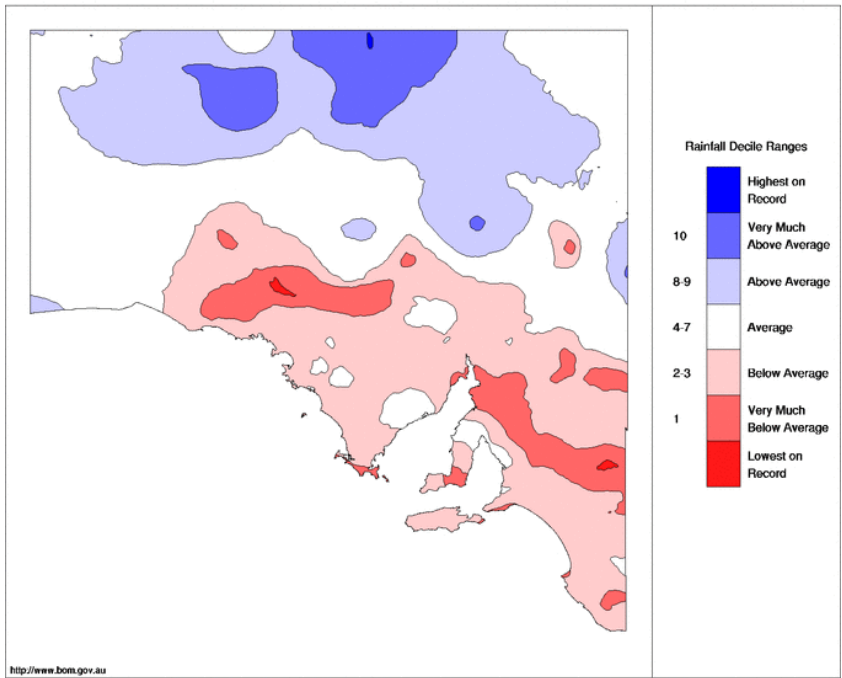
Record lowest December temperature

	New record	Old record	Years held	December Average
Rosedale	2.2 on the 2nd	3.1 on the 5th in 1995	53	13.4
Adelaide	7.9 on the 2nd	8.0 on the 3rd in 1987	39	15.6
Loxton	4.4 on the 12th	4.5 on the 1st in 2001	32	13.0
Coonawarra	0.2 on the 2nd	0.5 on the 1st in 1994	31	10.1
Nuriootpa I	1.1 on the 2nd	3.0 on the 18th in 1996	20	12.3

Many other rainfall and temperature records were also set in December. For more information plus a summary of statistics please see:

<http://www.bom.gov.au/climate/current/month/sa/archive/201512.summary.shtml>

Distribution Based on Gridded Data
 Australian Bureau of Meteorology

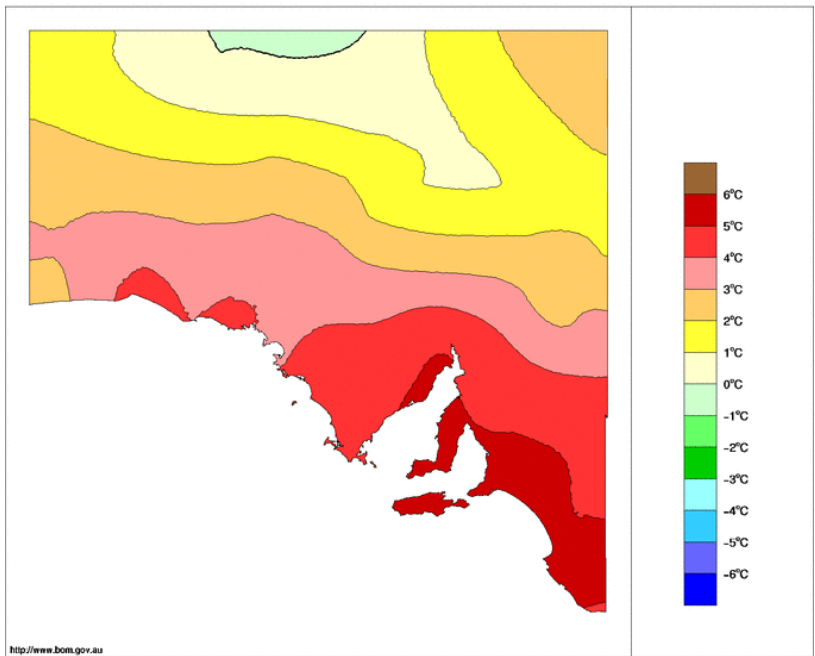


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Maximum Temperature Anomaly (°C) December 2015

Australian Bureau of Meteorology



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Australian Meteorological Association Inc (AMetA)
www.ameta.org.au

NEXT MEETING

6.00 PM TUESDAY 16 February 2016

*Bureau of Meteorology offices, Level 4, corner of South Terrace & King
William Street, Adelaide*

Please also note that subscriptions for 2015/2016 (\$15) are now due

Subject: .Chasing Tornadoes in the USA

**Speaker: Jon Fischer, Forecasting Meteorologist in the
Bureau of Meteorology South Australia Regional
Forecasting Centre.**

Jon is a Forecasting Meteorologist with the Bureau of Meteorology, based in the South Australian Regional Forecasting Centre. He has had extensive experience as a storm chaser in the United States over several years chasing tornadoes. In what is sure to be a fascinating presentation, he will recount his experiences and discuss Australian tornadoes, the slightly milder but still significant variety experienced in South Australia.

To manage numbers and seating if you could RSVP on the Eventbrite site below it would be helpful...

<https://www.eventbrite.com.au/e/chasing-tornadoes-in-the-usa-tickets-21360055501>

We look forward to seeing you.

For further information contact

<i>Secretary:</i>	<i>Darren Ray</i>
<i>Phone:</i>	<i>8366 2664</i>
<i>Fax:</i>	<i>8366 2693</i>

Inquiries or suggestions, please contact the Secretary on the phone number listed above.