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Dr Elisabeth Donnell, a numerical modeler with private weather company Weatherzone, gave an informative presentation about what is Australia's leading commercial weather provider, at the AMETA June 2014 meeting. The company, set up in 1998, has a staff of 35 and provides services to over 5 million people, through the media, mining, energy and aviation companies and agricultural service providers (Elders). The talk focused on forecasting systems used by Weatherzone, including its consensus forecasting model (Opticast), and its numerical weather and ocean wave forecasting as well as a sample of the forecasting services it provides and/or is developing.

The Opticast system uses input from 12 numerical forecasting models. It provides short term output on an hour by hour basis and daily forecasts out to 15 days for a number of sites (including capital cities) across Australia. It consistently outperforms similar forecasting systems (Fig 1).

An increasing demand for mining companies to reduce dust drift from blasting and trucking operations has led to the development of dust dispersion forecasts by Weatherzone. Using numerical modeling output of forecast wind, temperature and rainfall, along with observations, and an EPA (Environmental Protection Agency) approved dispersion model, site specific forecasts are provided for several mining locations in the Hunter Valley.

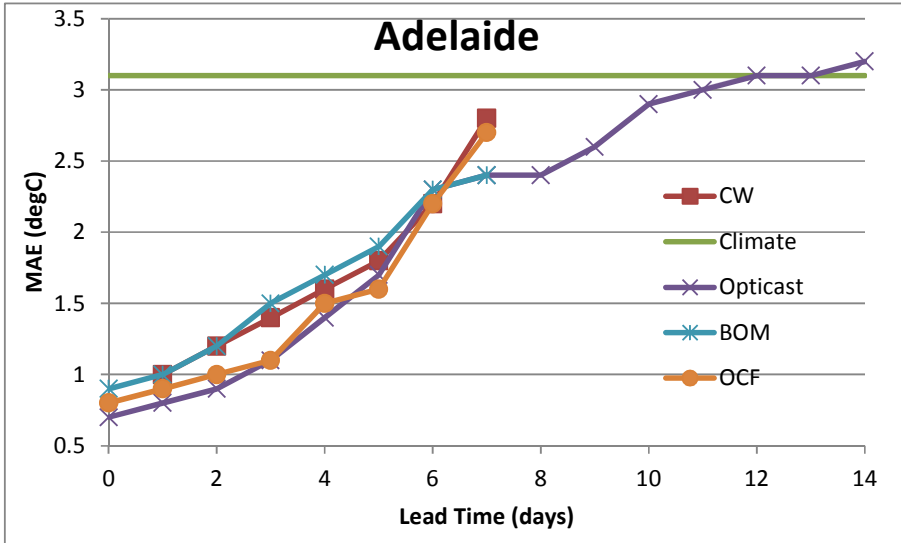


Fig 1. Comparison of the average maximum temperature forecast error for the 90-day period ending 6 June 2014 for Adelaide. Opticast is the only system forecasting out to 15 days. OCF is the Operational Consensus system used by the Bureau of Meteorology (BOM) and the BOM plot is the actual Bureau maximum temperature forecasts.

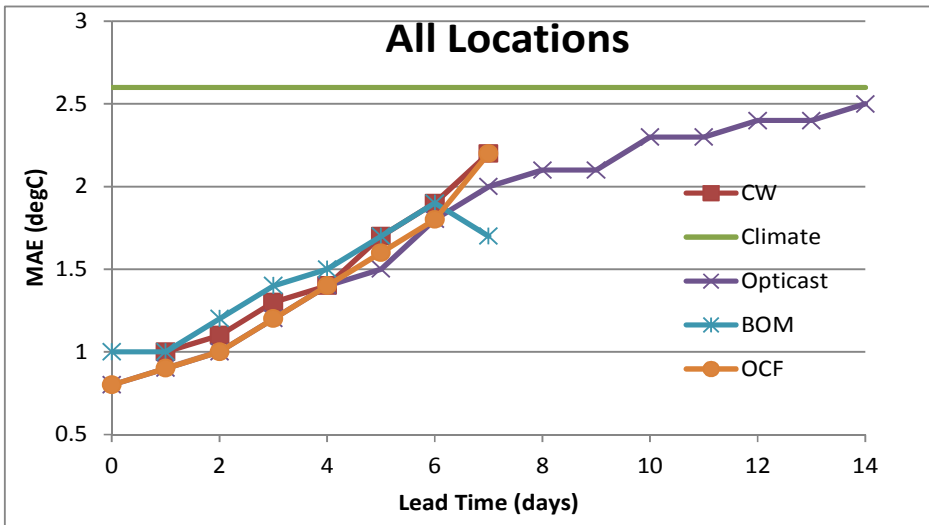


Fig 2. Comparison of the average maximum temperature forecast error for the 90-day period ending 6 June 2014 for all locations.

Recent research and development of Weatherzone’s numerical modelling group has turned to predicting lightning potential. In Australia every year around 5-10 deaths and 1000 injuries are attributed to lightning. Lightning can also damage buildings, power infrastructure and telecommunication networks as well as cause major disruption to power services and telecommunications. Australia’s annual direct damage bill from lightning is estimated at \$6-10 million. Lightning also causes around 30% of bushfires. Fires started by lightning are responsible for 90% of the area burnt out. The average annual bushfire cost to Australia is around \$77m (2001 estimate).

The lightning potential index (LPI) under development is based on the forecast temperature and vertical velocities in the lower part of cumulus clouds, where negatively charged ice particles, necessary for lightning formation, collect. A 2km resolution map of lightning potential is produced by the model (Fig 2). Initial comparison of LPI forecasts with lightning observations by GPATS shows the forecasting scheme has considerable skill with useful leadtimes.

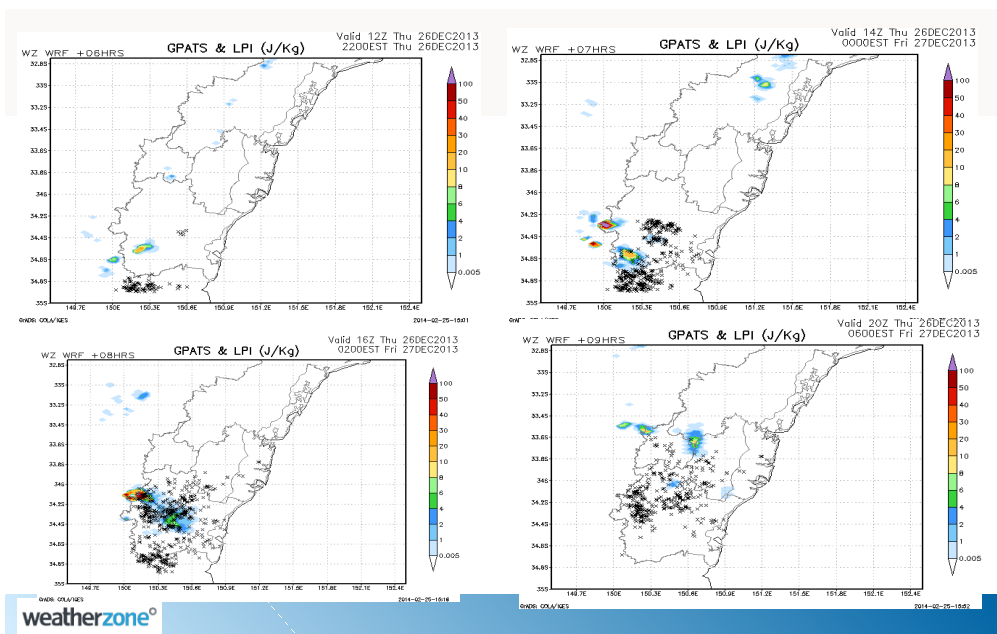


Fig 3. Lightning Potential Index (LPI) forecasts with lead times of 6, 7, 8 and 9 hours. An LPI > zero indicates lightning potential and is shown by the coloured areas on the maps. The black plots are lightning strikes observed by GPATS.

Elisabeth’s presentation gave us insight into the depth and breadth of Weatherzone’s forecasting services. It has state of the art forecasting systems and access to leading global numerical weather models; its forecasting output in some areas (eg temperature) can often outperform that of the Bureau of Meteorology. Weatherzone also undertakes research and is proving a leader in developing new products such as the lightning potential index.

Adelaide Metro & Hills in May 2014

- The first week of May sees the coldest May day since 1987 with 12.1°C on the 2nd
- Adelaide observes a record 16 consecutive days with maximum temperatures greater than 20 °C
- Warmest May days for Adelaide since 2005
- With 64.4 mm of rainfall, Adelaide has its wettest May since 2003
- Warm nights with equal record highest mean daily minimum temperature at some locations

May 2014 started with a burst of cold conditions, with much of the months rainfall occurring before the 10th. The 11th to the 16th saw a period of well above average temperatures due to strong high pressure systems centred over eastern Australia, with Adelaide observing a record run of consecutive May days with maximum temperatures above 20 °C. Despite the cooler than average temperatures at the beginning of the month, day and night temperatures averaged across the month ended up well above average. Rainfall was near average across the region as a whole, though Adelaide recorded its wettest May in 11 years.

Extremes in May 2014

Hottest day	27.4 °C at Adelaide (Kent Town) on the 16th
Warmest days on average	20.8 °C at Parafield Airport
Coolest days on average	14.9 °C at Mount Lofty
Coldest day	7.7 °C at Mount Lofty on the 2nd
Coldest night	2.7 °C at Mount Barker on the 8th
Coolest nights on average	9.8 °C at Mount Barker
Warmest nights on average	13.2 °C at Noarlunga
Warmest night	19.5 °C at Noarlunga on the 17th
Warmest on average overall	16.6 °C at Noarlunga
Coolest on average overall	12.4 °C at Mount Lofty
Wettest overall	124.2 mm at Belair
Driest overall	14.0 mm at Adelaide (Salisbury Bowling Club)
Wettest day	36.2 mm at Belair on the 27th
Highest wind gust	85 km/h at Mount Crawford (AWS) on the 27th

Adelaide, South Australia May 2014 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 °C	Max °C				Dirn	Spd km/h	Time local	Temp °C	RH %	Cld eighths	Dirn	Spd km/h	MSLP hPa	Temp °C	RH %	Cld eighths	Dirn	Spd km/h	MSLP hPa
1	Th	10.2	17.8	0	1.0	1.3	WNW	33	17:07	13.9	65		NE	11	1018.7	16.1	53	NNW	17	1014.2
2	Fr	9.6	12.1	12.4	1.2	0.1	WSW	41	10:12	10.5	91			Calim	1007.8	10.0	87	SSW	9	1006.5
3	Sa	7.2	15.8	8.0	8.3	8.3	SW	52	12:14	12.1	58	S		15	1010.6	14.8	45	SSW	20	1010.7
4	Su	5.9	16.8	0	7.9	7.9	W	26	11:51	11.6	62	NE	NE	7	1017.9	16.0	52	WSW	11	1016.7
5	Mo	11.5	17.9	0.4	4.0	2.3	SE	20	21:41	12.8	91		NNE	9	1021.8	17.2	80	SSW	4	1020.7
6	Tu	9.8	17.3	3.4	1.2	6.0	ENE	28	12:16	13.7	75			Calim	1026.6	16.4	54	E	11	1025.1
7	We	9.9	18.0	0	2.0	7.6	ESE	31	00:51	13.5	57	ENE	ENE	9	1027.5	17.8	44	ENE	13	1024.7
8	Th	7.1	17.8	0	1.8	7.3	N	41	23:23	13.3	50	NE	NE	15	1023.9	17.0	42	NE	17	1019.5
9	Fr	12.0	14.0	2.2	2.6	0.0	NE	41	01:03	12.0	88	N	N	13	1017.2	12.8	97	NE	9	1014.0
10	Sa	11.2	19.4	21.4	4.1	4.1	W	24	15:16	14.0	97	NNE	NNE	7	1019.8	19.0	70	WNNW	13	1019.5
11	Su	12.2	21.1	0	7.2	7.2	WNNW	20	13:04	15.2	86	NNE	NNE	6	1026.7	20.5	57	WNNW	7	1025.8
12	Mo	9.2	21.3	0	2.0	9.1	N	35	12:48	16.1	73	ENE	ENE	9	1029.1	20.9	39	NNE	15	1025.7
13	Tu	12.2	22.6	0	3.0	9.4	NE	24	08:51	17.6	46	NNE	NNE	13	1026.0	21.9	41	WNNW	9	1023.2
14	We	13.1	24.2	0	2.0	9.1	N	26	10:21	18.5	42	NE	NE	11	1022.8	23.9	27	NE	13	1018.8
15	Th	14.1	25.3	0	3.2	6.2	NW	44	13:34	18.9	49	NNE	NNE	9	1021.0	24.4	33	NW	19	1018.7
16	Fr	14.8	27.4	0	2.4	4.6	NNE	37	09:33	22.4	34	NNE	NNE	13	1022.5	26.5	26	NW	13	1021.0
17	Sa	18.6	24.2	0	0.0	0.0	N	22	14:03	20.8	41	NE	NE	9	1023.4	24.2	39	N	11	1021.1
18	Su	15.3	24.8	0	5.1	5.1	N	30	11:54	21.2	47	NE	NE	13	1021.7	22.8	42	NW	9	1019.5
19	Mo	12.7	22.1	0.4	7.0	3.1	NNW	26	12:03	16.9	75	NNE	NNE	9	1021.3	21.7	53	WNNW	7	1019.8
20	Tu	11.1	24.0	0	1.2	8.2	SW	19	15:59	18.1	69	NNE	NNE	6	1022.7	23.9	34	NNW	7	1020.6
21	We	11.8	26.3	0	1.6	9.6	N	28	13:34	20.2	64	NE	NE	4	1021.5	26.1	37	NNW	13	1018.4
22	Th	16.0	25.7	0	3.0	3.9	NNW	37	13:27	20.4	47	NW	NW	9	1017.7	25.0	34	NW	22	1014.3
23	Fr	16.4	21.8	0.4	1.4	5.1	W	24	13:24	16.8	90	NE	NE	7	1017.2	20.7	61	WSW	9	1014.6
24	Sa	11.8	24.8	0	8.7	8.7	N	37	21:21	17.7	71	NNE	NNE	6	1015.8	24.3	50	NNW	17	1012.6
25	Su	14.6	23.9	0	5.5	5.5	NE	24	23:35	15.9	94	NNE	NNE	9	1017.2	23.6	41	N	11	1015.2
26	Mo	15.9	20.2	1.2	5.2	0.0	NNW	37	00:50	16.8	91	SW	SW	6	1015.2	20.0	74	NNW	2	1008.8
27	Tu	13.7	17.8	9.2	0.4	5.6	NW	56	12:06	14.6	83	NW	NW	20	1005.8	16.6	74	WNNW	30	1004.5
28	We	13.3	18.1	5.0	1.4	6.7	W	39	04:43	15.0	86	NW	NW	9	1015.9	17.7	65	WNNW	13	1016.6
29	Th	11.3	20.9	0.2	1.0	3.9	NNW	28	13:31	14.9	72	N	N	7	1022.8	19.6	43	NE	11	1020.5
30	Fr	13.0	20.7	0	2.0	7.8	NE	39	23:59	16.9	49	NE	NE	15	1022.4	19.8	39	NE	19	1019.3
31	Sa	13.8	14.7	0.2	0.0	0.0	NNE	30	00:11	14.0	81	NE	NE	9	1019.0	12.9	53	NE	7	1016.6

Statistics for May 2014

Mean	12.2	20.6	2.3	5.5	6.8	16.0	68			9	1020.0	19.8	52			12	1017.7			
Lowest	5.9	12.1	0.4	0.0	3.4	10.5	34			Calim	1005.8	10.0	26			NNW	2	1004.5		
Highest	18.6	27.4	21.4	7.0	9.6	22.4	97			NW	20	1029.1	26.5	97		WNNW	30	1025.8		
Total	64.4	50.6	163.7																	

Observations were drawn from Adelaide (Kent Town) (station 023058)
 Kent Town is a suburban site with good exposure. Climate averages are available for West Terrace as well as Kent Town.
 Prepared at 16:06 UTC on 2 Jul 2014
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http://www.bom.gov.au/climate/dwo/IDC_IDW0000.pdf

South Australia in May 2014

- Warmest May on record for the state, with daytime and night-time temperatures together being 2.7 °C above average
- Fifth-warmest May daytime temperatures across the state as whole, being 2.3 °C above average
- Warmest May nights on record, with night-time temperatures 3.0 °C above average

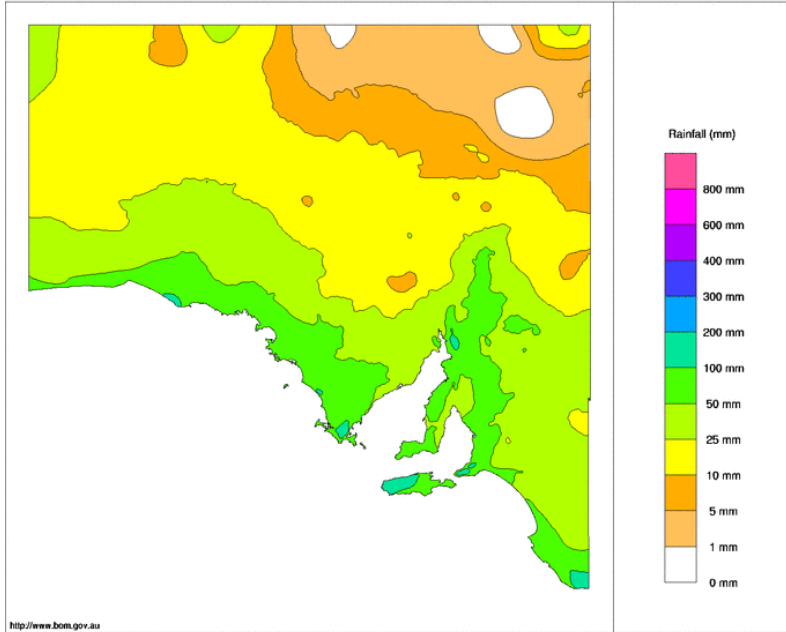
The month started with a burst of cold conditions and significant rainfall events up to the 10th. From the 11th to the 26th well above average temperatures persisted resulting in record runs of warm temperatures for May across the state. Because of this, and despite the cool start, monthly mean day and night temperatures were well above average across the state, resulting in the record warmest May for South Australia looking across both daytime and nighttime temperatures. Rainfall was above average across the state as a whole, with western agricultural districts observing rainfall totals in excess of 150% of the seasonal monthly average, while pockets in the east of the state were closer to average, though tending below average in pockets of the southeast and northeast pastoral districts.

Many locations with record runs of days above various temperature thresholds, see [Special Climate Statement 49](#) for further information.

Extremes in May 2014

Hottest day	32.1 °C at Moomba Airport on the 26th
Warmest days on average	26.4 °C at Moomba Airport
Coollest days on average	14.9 °C at Mount Lofty
Coldest day	7.7 °C at Mount Lofty on the 2nd
Coldest night	-1.3 °C at Coonawarra on the 8th
Coollest nights on average	7.2 °C at Yongala
Warmest nights on average	15.3 °C at Neptune Island
Warmest night	19.8 °C at Cleve Aerodrome on the 17th
Warmest on average overall	19.5 °C at Moomba Airport
Coollest on average overall	12.4 °C at Mount Lofty
Wettest overall	173.0 mm at Parndana (Turkey Lane)
Driest overall	0 mm at Coultia (Coles Point)
Wettest day	2.8 mm at Parawa (Second Valley Forest AWS) on the 10th
Highest wind gust	94 km/h at Cape Willoughby on the 9th

South Australian Rainfall Totals (mm) May 2014
Product of the National Climate Centre

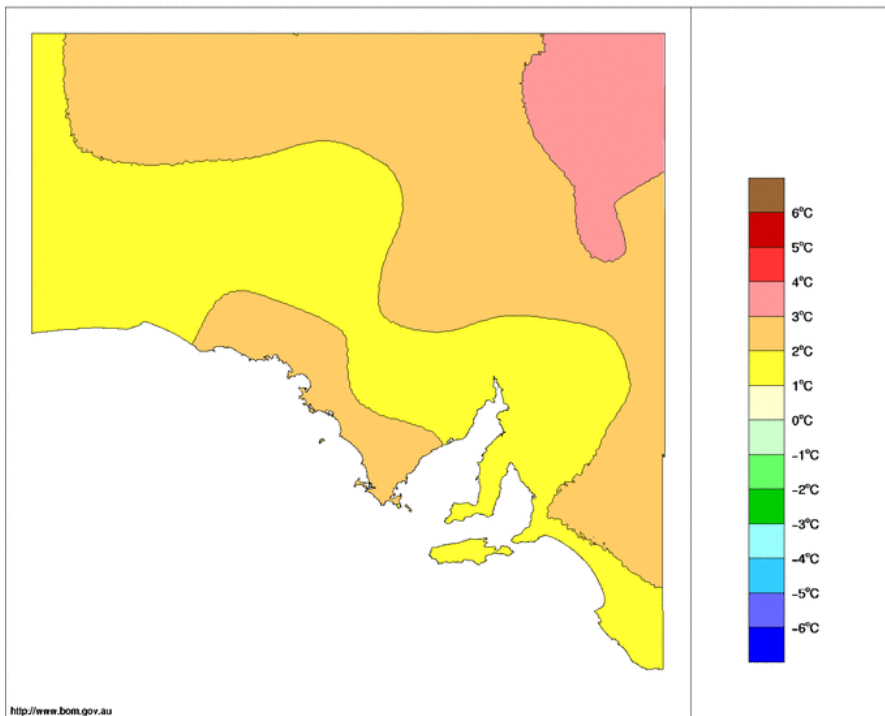


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Maximum Temperature Anomaly (°C) May 2014

Issued: 21/06/2014

Product of the National Climate Centre



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Issued: 21/06/2014

Adelaide Metro & Hills in June 2014

- Adelaide has warmest June nights overall since 2008
- Rainfall above average as severe weather crosses the city in the latter part of the month
- Year-to-date rainfall for Adelaide (346.6 mm) is the wettest first half of the year since 1971 (43 years)

Rainfall was average tending above average across the Adelaide region during June, with Adelaide (Kent Town) recording 104.2 mm. Rainfall was recorded 19 days, as compared to a typical 15 days. The heaviest rain was recorded in the last week of the month as a series of cold fronts and deep low pressure systems saw several locations across the plains and throughout the hills observe daily totals in excess of 30 mm on the 24th and again on the 28th.

Both maximum and minimum temperatures were near average, though tending above average for the month across the region. The average maximum temperature at Adelaide was 16.4 °C, 0.3 °C above the long-term average, and the warmest June since 2011 for the city. Average to above average daytime temperatures were recorded elsewhere across the city. Nights were also warmer than average across the city, with Adelaide (Kent Town) observing an average of overnight temperature of 9.4 °C, resulting in the warmest June nights in 6 years.

Extremes in June 2014

Hottest day	19.5 °C at Parafield Airport on the 7th
Warmest days on average	16.5 °C at Adelaide Airport 16.5 °C at Parafield Airport
Coollest days on average	10.8 °C at Mount Lofty
Coldest day	6.7 °C at Mount Lofty on the 28th
Coldest night	2.2 °C at Parafield Airport on the 10th
Coollest nights on average	6.4 °C at Mount Lofty
Warmest nights on average	10.3 °C at Noarlunga
Warmest night	13.9 °C at Adelaide (Kent Town) on the 3rd
Warmest on average overall	13.2 °C at Noarlunga
Coollest on average overall	8.7 °C at Mount Lofty

Adelaide, South Australia June 2014 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				Dir	Spd km/h	Time local	Temp °C	RH %	Cld eighths	Dir	Spd km/h	MSLP hPa	Temp °C	RH %	Cld eighths	Dir	Spd km/h	MSLP hPa
	°C	°C				°C	km/h	°C	°C	°C	°C	°C	°C	hPa	°C	°C	°C	°C	hPa	
1	Su	10.4	15.5	4.8	2.4	WSW	24	16:02	13.1	78		WSW	15	1020.1	15.0	76	WSW	13	1018.5	
2	Mo	11.1	18.2	1.0	4.0	S	24	14:51	14.5	88		WSW	15	1020.3	17.1	77	WSW	15	1019.1	
3	Tu	13.9	18.0	0.2	0.6	5.7	WNW	28	13:20	15.0	92	N	SW	7	1022.1	16.7	59	WNW	15	1021.1
4	We	12.6	17.9	0.2	1.2	0.4	WNW	30	13:37	14.5	72	NNE	S	7	1026.3	15.1	88	S	7	1025.5
5	Th	8.4	18.3	1.0	1.0	6.6	SSE	19	15:48	12.5	87	NNE	S	2	1031.0	17.8	46	S	9	1029.4
6	Fr	6.1	17.7	0	1.2	7.2	SE	26	11:45	10.8	81	NNE	WSW	11	1034.2	16.7	59	WSW	11	1031.9
7	Sa	9.5	19.3	0	0	7.8	SSE	28	15:28	12.5	91	SE	S	4	1035.0	19.0	51	S	13	1032.2
8	Su	9.8	17.0	0	6.1	6.1	SSE	26	15:02	14.1	67	SE	SSE	4	1034.9	16.6	53	SSE	13	1032.9
9	Mo	6.7	14.5	0	1.9	1.9	NNE	24	11:27	9.2	72	NNE	N	7	1033.3	13.9	52	NE	9	1029.2
10	Tu	5.7	19.0	0	4.4	7.7	NNE	33	11:51	13.6	48	N	N	17	1027.2	18.5	41	N	17	1022.8
11	We	9.7	17.2	0	2.0	0.5	N	30	10:43	15.1	54	NNE	NNE	13	1020.6	16.3	53	NNE	7	1017.0
12	Th	11.4	17.1	0	0.6	0.9	NNW	39	00:00	14.0	67	NE	N	7	1012.5	16.8	50	N	15	1009.0
13	Fr	9.5	13.6	4.0	3.2		E	44	14:21	9.8	92	NNE	NNE	17	1008.5	11.9	74	E	13	1006.9
14	Sa	7.9	15.3	7.0	7.0		SSE	41	11:58	13.6	73	SSW	SSW	17	1020.3	14.2	67	S	15	1021.4
15	Su	7.6	15.8	0.2	2.7	2.7	WSW	30	15:13	9.8	97	NNW	WSW	17	1025.5	15.3	64	WSW	15	1023.9
16	Mo	9.7	16.5	0.4	2.8	0.9	WNW	39	13:46	14.3	85	WNW	S	15	1025.6	14.3	93	S	11	1025.6
17	Tu	6.8	15.4	2.2	0.6	0.1	SSW	17	15:10	11.2	91	N	Calim	7	1032.4	15.2	62	SSW	7	1031.2
18	We	5.0	16.9	0	0.6	8.7	NE	30	22:56	11.0	78	NNE	N	13	1030.7	16.3	55	N	13	1026.9
19	Th	11.0	15.5	0	1.4	1.7	NNE	39	03:01	13.5	60	NE	NE	13	1021.2	15.0	59	NNE	13	1015.6
20	Fr	10.5	17.9	0	1.8	0.8	NW	43	12:53	11.9	86	N	N	15	1014.6	14.8	88	WNW	19	1013.7
21	Sa	11.3	16.1	8.6		2.5	WSW	33	11:48	13.0	96	N	N	2	1020.1	15.5	75	WSW	13	1020.1
22	Su	8.9	16.8	0.4	2.3	2.3	NW	52	22:14	13.2	69	NE	NE	15	1019.0	16.7	52	NNE	20	1011.6
23	Mo	8.6	12.8	13.0	4.4	4.2	SW	72	15:03	10.9	73	SW	W	19	1007.0	11.7	67	W	22	1009.3
24	Tu	8.1	15.9	26.6	1.2	3.6	WSW	54	16:32	12.7	94	WNW	WSW	26	1013.4	15.2	68	WSW	26	1014.8
25	We	12.0	16.1	6.0	0.8	1.1	NW	54	14:44	12.9	92	W	WSW	17	1021.2	14.0	79	WSW	24	1019.7
26	Th	12.7	15.7	1.6	0.8	1.3	NW	39	00:25	13.0	92	N	N	11	1022.2	14.6	70	NNW	20	1019.9
27	Fr	11.5	17.1	0	1.8	5.7	NW	72	17:39	13.2	56	N	N	24	1008.1	15.9	49	NNW	26	1001.2
28	Sa	8.1	13.1	22.8		6.9	WSW	59	07:51	10.6	64	WSW	WSW	22	1003.6	11.7	58	WSW	26	1005.7
29	Su	9.4	14.4	1.6	7.5	7.5	WSW	43	13:20	10.5	83	WSW	WSW	11	1013.6	13.0	56	WSW	22	1015.5
30	Mo	6.5	15.3	0.6	4.6	3.0	WNW	26	13:23	9.7	90	NE	WNW	6	1025.7	15.0	67	WNW	15	1025.7
Statistics for June 2014																				
Mean		9.3	16.3		1.9	3.7			12.5	78			10	1021.7	15.3	63		15	1019.9	
Lowest		5.0	12.8		0.6	0.1			9.2	48			Calim	1003.6	11.7	41		7	1001.2	
Highest		13.9	19.3	26.6	4.6	8.7	#	72	15.1	97		WNW	26	1035.0	19.0	93	#	26	1032.9	
Total				102.2	39.0	103.4														

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

Kent Town is a suburban site with good exposure. Climate averages are available for West Terrace as well as Kent Town.

IDC:IDW5002.201406 Prepared at 13:06 UTC on 7 Jul 2014
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<http://www.bom.gov.au/climate/dwo/IDC:IDW0000.pdf>

South Australia in June 2014

- Statewide maximum 0.6 °C, warmest June since 2007
- Statewide minimum 0.8 °C
- Rainfall below average; 27% below across the state as a whole

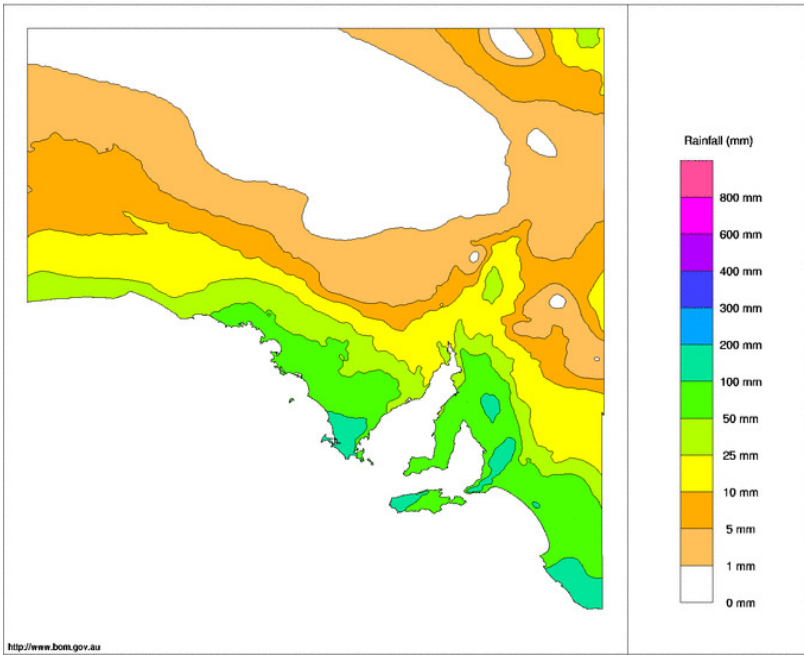
Rainfall was below average across much of South Australia during June, though tending above average across southern parts of the Agricultural districts. Several fronts, troughs and low pressure systems crossed southern parts of the State during the latter half of June, bringing rainfall to southern parts. Notably, a deep low pressure system tracked south of the State on the 24th, and another on the 28th, both producing significant rainfall and strong, gusty winds. Several sites reported record high rainfall for June, with the wettest location at Uraidla in the Adelaide Hills which had a total 222.0 mm for the month. Averaged across the State, rain was 27% below normal.

Warm conditions continued into June and despite a few cooler days, overall temperatures were generally above average for the month across the State. A few sites reported their warmest mean June temperatures since at least 1991. The twelve months to the end of June 2014 has been South Australia's warmest such period on record for mean temperatures.

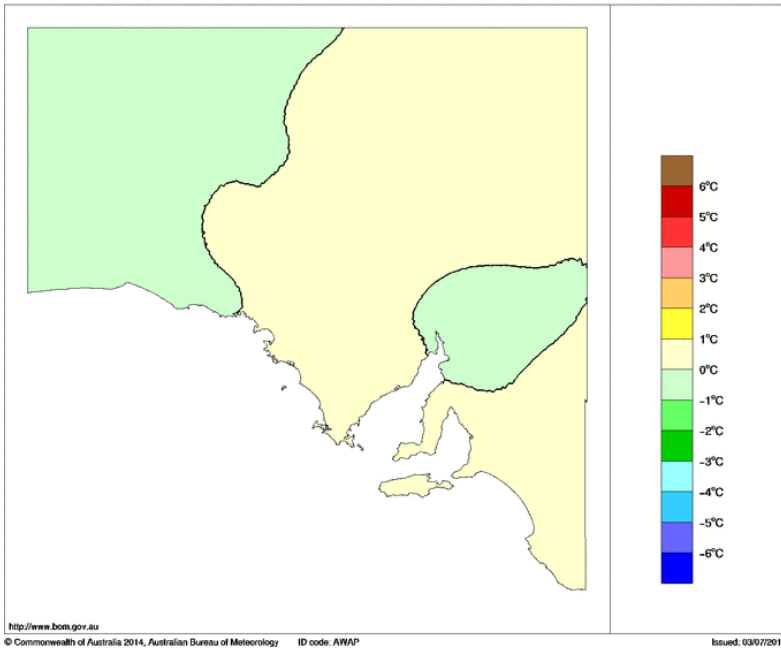
Extremes in June 2014

Hottest day	27.6 °C at Marla Police Station on the 22nd
Warmest days on average	20.9 °C at Marree Comparison
Coollest days on average	10.8 °C at Mount Lofty
Coldest day	6.7 °C at Mount Lofty on the 28th
Coldest night	-2.0 °C at Gluepot Reserve (Gluepot) on the 10th
Coollest nights on average	4.7 °C at Ernabella (Pukatja) 4.7 °C at Marla Police Station
Warmest nights on average	13.1 °C at Neptune Island
Warmest night	15.3 °C at Neptune Island on the 17th
Warmest on average overall	14.8 °C at Neptune Island
Coollest on average overall	8.7 °C at Mount Lofty
Wettest overall	222.0 mm at Uraidla
Driest overall	0 mm at Ernabella (Pukatja) 0 mm at Marree Comparison 0 mm at Oodnadatta Airport 0 mm at Willochra Plain (Gum Glen)
Wettest day	55.6 mm at Port Lincoln (White Flat) on the 13th
Highest wind gust	124 km/h at Neptune Island on the 22nd

South Australian Rainfall Totals (mm) June 2014
Product of the National Climate Centre



Maximum Temperature Anomaly (°C) June 2014
Product of the National Climate Centre



Adelaide Metro & Hills in autumn 2014

- Adelaide observes 134.0 mm of rainfall
- Generally warmer days and warmer nights
- Very warm start to April with a near record high temperatures
- Warm throughout most of May with a record long warm spell

Temperatures across the Adelaide region tended above average for autumn as warm spells at the start and end of March and through much of May, brought record high temperatures. Rainfall tended above average across the region as a whole, with the most significant rain events occurring in late April and the first half of May with daily rainfall totals in excess of 20mm.

Extremes in autumn 2014

Hottest day	37.9 °C at Edinburgh RAAF on 1 Apr
Warmest days on average	24.1 °C at Parafield Airport
Coollest days on average	17.7 °C at Mount Lofty
Coldest day	7.7 °C at Mount Lofty on 2 May
Coldest night	2.7 °C at Mount Barker on 8 May
Coollest nights on average	10.3 °C at Mount Lofty
Warmest nights on average	14.1 °C at Noarlunga
Warmest night	24.0 °C at Noarlunga on 1 Apr
Warmest on average overall	18.6 °C at Adelaide (Kent Town)
Coollest on average overall	14.0 °C at Mount Lofty
Wettest overall	239.8 mm at Belair
Driest overall	1.4 mm at Adelaide (Salisbury Bowling Club)
Wettest day	48.0 mm at Belair on 29 Apr
Highest wind gust	100 km/h at Mount Crawford (AWS) on 11 Mar

South Australia in autumn 2014

- Fourth-warmest autumn mean temperatures on record, with daytime and nighttime temperatures together being +1.6 °C warmer than average
- Warmest autumn nights on record with nights +1.9 °C warmer than average
- Rainfall above average across the state as a whole, the wettest since 2011
- Several locations have their wettest autumn on record for at least 20 years

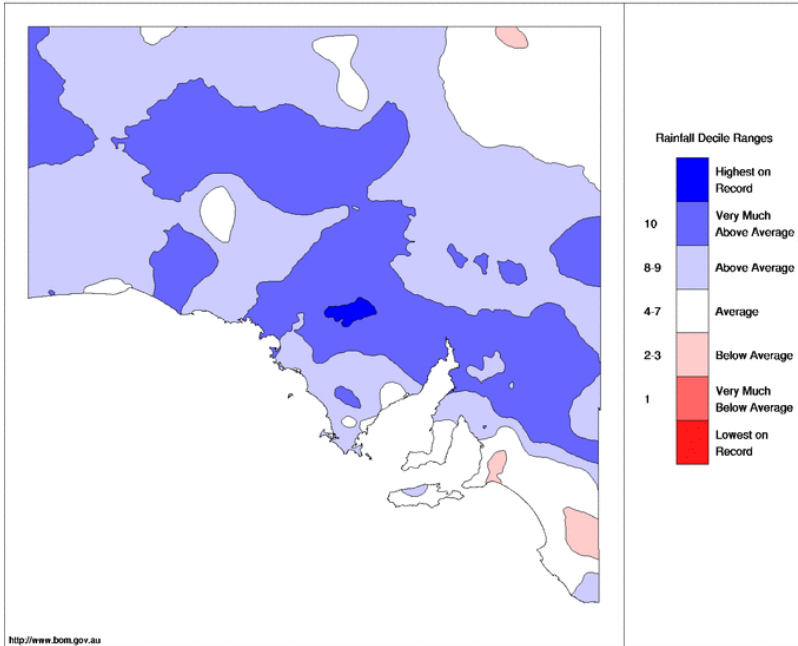
Both day and night temperatures were above average through autumn with temperatures more than 2 °C above average across northern districts. Rainfall was above average across most of South Australia, with totals in excess of 200% of the seasonal average at locations across northern agricultural districts and pastoral districts, mainly due to rain events in late March and the first half of April. Several sites had record highest autumn daily rainfall totals from the early April rainfall event. Rainfall in the southeast of the state was near average though tending below average in some areas. The start to the cropping season came early for the northern agricultural districts due the early April rainfall, though areas further south on lower Eyre and Yorke Peninsulas, Kangaroo Island and the South East districts missed much of this rainfall, waiting until the 29th of April for significant rainfall to start the season.

Extremes in autumn 2014

Hottest day	41.0 °C at Marree Comparison on 10 Mar
Warmest days on average	30.7 °C at Moomba Airport
Coollest days on average	17.7 °C at Mount Lofty
Coldest day	7.7 °C at Mount Lofty on 2 May
Coldest night	-1.3 °C at Naracoorte Aerodrome on 27 Apr -1.3 °C at Coonawarra on 8 May
Coollest nights on average	9.1 °C at Padthaway South
Warmest nights on average	17.0 °C at Moomba Airport
Warmest night	27.9 °C at Oodnadatta Airport on 15 Mar
Warmest on average overall	23.8 °C at Moomba Airport
Coollest on average overall	4.0 °C at Mount Lofty
Wettest overall	248.8 mm at Parndana (Turkey Lane)
Driest overall	9.2 mm at Coultia (Coles Point)
Wettest day	15.0 mm at Coober Pedy Airport on 10 Apr
Highest wind gust	100 km/h at Mount Crawford (AWS) on 11 Mar

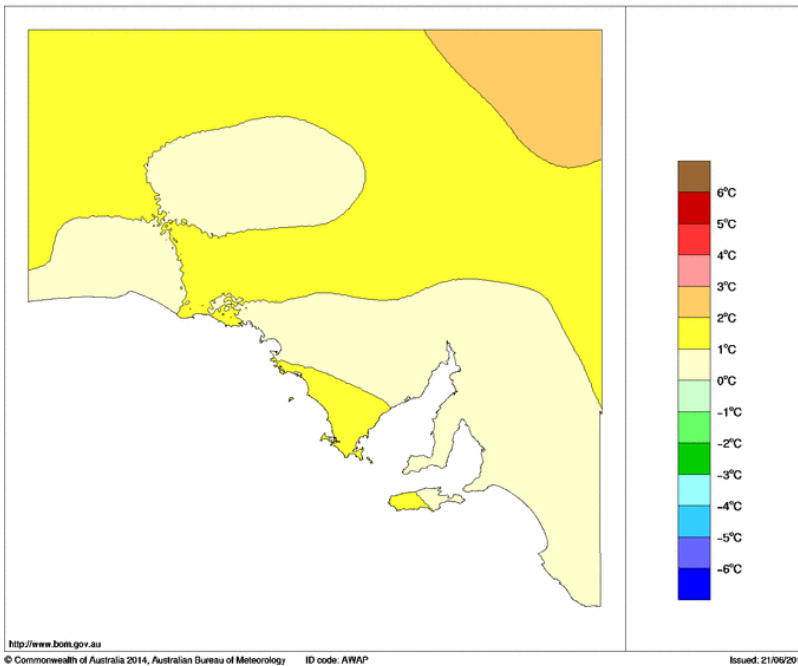
South Australian Rainfall Deciles 1 March to 31 May 2014

Distribution Based on Gridded Data
Product of the National Climate Centre



Maximum Temperature Anomaly (°C) 1 March to 31 May 2014

Product of the National Climate Centre



Adelaide Metro & Hills in July 2014:

July saw above average rainfall across Adelaide, with the Kent Town office recording 99.6 mm (+31% above the long-term July average). Rainfall was recorded over 16 days (the July average is 16 days), with the heaviest rainfall occurring between the 8th and 11th, the 17th and 18th and again on the 24th. Vigorous cold fronts delivered daily totals in excess of 15 mm on these days and were also associated with very strong winds and isolated thunderstorms. Another strong cold front to the south of the Great Australian Bight produced isolated squally showers and strong wind gusts across the Adelaide region on the 31st. Monthly rainfall totals were generally between 80 and 110 mm across metropolitan locations while many locations in the Adelaide Hills received totals in excess of 160 mm. The wettest location was Uraidla in the Adelaide Hills with a monthly total of 261.4 mm, with 48 mm observed in the 24 hours to 9am on the 9th.

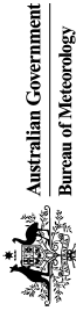
Both monthly mean maximum and minimum temperatures were near average across the Adelaide metro and hills region. Above average temperatures were generally experienced in the days preceding the passage of the cold fronts as warm northerly winds were directed across the state. Daytime temperatures were coolest in the cold air mass that followed the passage of the fronts. The Adelaide (Kent Town) office recorded its coldest day on the 9th, with a maximum of just 10.9 °C, which was the coldest July day for Adelaide in 9 years. Mount Lofty observed the coldest day for any location on the 9th, with a maximum of just 5.7 °C. The third week of July saw generally warmer than average daytime temperatures for most locations which remained to the end of the month.

Extremes in July 2014

Hottest day	19.0 °C at Adelaide (Kent Town) on the 22nd
Warmest days on average	15.5 °C at Parafield Airport
Coolest days on average	9.1 °C at Mount Lofty
Coldest day	5.7 °C at Mount Lofty on the 9th
Coldest night	0.7 °C at Parafield Airport on the 18th
Coolest nights on average	5.2 °C at Mount Lofty
Warmest nights on average	8.9 °C at Noarlunga
Warmest night	12.9 °C at Adelaide Airport on the 30th
Warmest on average overall	11.8 °C at Adelaide (Kent Town)
Coolest on average overall	7.1 °C at Mount Lofty
Wettest overall	261.4 mm at Uraidla
Driest overall	14.6 mm at Belair
Wettest day	48.0 mm at Uraidla on the 9th
Highest wind gust	100 km/h at Mount Crawford (AWS) on the 31st

Adeelaide, South Australia July 2014 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			MSLP hPa							
	Day	Min °C				Max °C	Dirn	Spd kmh	Time local	Temp °C	RH %	Cld eighths	Dirn	Spd kmh		MSLP hPa	Temp °C	RH %	Cld eighths	Dirn	Spd kmh	MSLP hPa
1	Tu	9.0	16.0	5.6	0.6	2.4	13:49	10.3	94	NE	6	1031.5	14.9	65	1030.6	SW	9	1030.6				
2	We	10.0	16.5	0.6	0.8	7.7	N	24 15:16	12.3	74	NNE	2	1031.1	15.4	55	N	11	1027.3				
3	Th	8.1	15.9	0.2	1.4	9.2	NNW	43 15:52	12.0	54	N	19	1023.5	15.5	52	N	24	1018.0				
4	Fr	10.2	15.7	0	1.2	1.9	W	46 14:04	11.3	90	N	11	1017.6	14.1	62	WNW	24	1017.1				
5	Sa	11.0	13.8	3.0	0	1.0	WSW	41 01:20	12.8	62	WSW	17	1022.6	13.4	71	W	17	1021.2				
6	Su	9.6	15.5	17.2	7.8	7.8	WSW	31 10:38	11.2	95	ENE	2	1019.7	14.9	55	W	13	1018.7				
7	Mo	6.3	15.2	0.2	2.4	3.9	N	46 12:31	11.6	67	N	19	1015.2	15.0	52	N	19	1010.5				
8	Tu	11.6	18.5	0	2.6	0.7	NNW	69 17:05	13.6	39	NNE	19	1003.4	18.2	30	N	26	995.2				
9	We	8.0	10.9	12.4	1.6	0.0	WSW	74 16:33	8.6	93	SSW	20	999.5	9.3	88	SW	13	1004.9				
10	Th	6.8	14.4	14.0	1.0	6.5	WSW	50 00:10	10.1	91	S	4	1017.0	12.2	75	W	19	1018.3				
11	Fr	7.6	15.9	0	1.4	3.7	NW	43 12:44	9.2	92	N	13	1019.9	15.4	69	NW	28	1018.0				
12	Sa	5.8	13.5	1.4	5.7	SSE	31 14:15	9.3	81	SE	6	1030.0	12.3	58	SSW	4	1028.3					
13	Su	3.8	13.5	0.2	7.8	7.8	ENE	24 22:23	7.6	70	NE	11	1029.5	12.6	46	E	11	1031.5				
14	Mo	6.1	11.9	0	3.4	0.1	ENE	33 22:57	8.9	59	NE	11	1029.5	11.6	47	NNE	11	1023.3				
15	Tu	7.2	13.3	1.4	1.0	0.2	N	37 12:31	8.5	82	NNE	13	1013.7	12.6	65	N	15	1009.1				
16	We	8.4	16.6	2.8	0.4	5.2	NNW	57 17:14	10.5	92	N	13	1013.6	15.5	63	NNW	22	1011.6				
17	Th	9.3	12.8	4.4	1.0	3.7	WSW	50 16:42	9.6	86	N	19	1016.5	12.4	55	WSW	24	1018.2				
18	Fr	2.3	13.5	8.0	2.0	1.8	S	24 12:01	6.2	88	N	6	1030.0	12.3	58	WSW	13	1029.6				
19	Sa	6.2	13.2	0	1.9	1.9	WSW	22 14:42	10.0	70	SE	7	1032.9	11.6	68	W	15	1030.3				
20	Su	4.7	14.5	0	3.3	3.3	N	24 13:13	8.0	83	NE	9	1023.1	14.2	52	NNE	13	1024.0				
21	Mo	8.0	16.9	0	1.8	4.9	N	24 10:44	12.0	52	NE	9	1023.1	15.6	41	NNW	9	1020.8				
22	Tu	3.7	19.0	0	1.4	9.4	N	24 14:33	9.6	75	NNE	10	1024.2	18.5	32	NNE	11	1021.1				
23	We	9.6	15.8	0	2.6	0.0	NE	52 21:00	14.7	35	NNE	9	1017.9	15.4	51	NE	20	1011.5				
24	Th	10.1	15.5	16.2	0.8	1.9	NNE	50 02:32	11.2	96	NW	17	1007.4	14.0	80	NW	26	1008.0				
25	Fr	11.2	16.2	1.4	0.6	1.7	NW	30 01:06	13.0	89	WNW	13	1018.4	15.3	70	WNW	15	1019.2				
26	Sa	10.3	16.2	3.0	5.4	5.4	NNW	22 13:51	10.4	99	N	7	1028.2	15.7	59	NNW	15	1026.1				
27	Su	6.4	17.4	0	4.2	4.2	N	43 10:49	12.2	63	N	9	1024.8	16.5	53	NNW	17	1020.0				
28	Mo	9.9	16.7	0	3.8	2.9	NW	37 16:26	12.0	70	N	11	1019.1	16.1	73	NW	19	1016.5				
29	Tu	9.1	16.9	0	0.8	0.9	NW	50 13:26	12.7	85	NNW	19	1016.9	15.4	79	NW	17	1016.3				
30	We	12.7	17.3	3.2	0.4	2.1	NNW	43 14:54	13.5	88	NW	15	1018.8	16.3	73	NW	20	1015.6				
31	Th	10.1	16.4	0	1.4	2.6	W	80 19:21	14.2	65	NNW	19	1007.2	11.2	95	WSW	20	1006.1				
Statistics for July 2014																						
Mean	8.2	15.3		1.5	3.6				10.9	76			10	1020.4	14.3	61		16	1018.3			
Lowest	2.3	10.9		0.4	0.0			6.2	35			Caln	999.5	9.3	30		SSW	4	995.2			
Highest	12.7	19.0		17.2	3.8	9.4	W	80	14.7	99			20	1034.5	18.5	95		28	1031.5			
Total				95.2	34.4	110.5																

Observations were drawn from Adelaide (Kent Town) (station U23050).
 Kent Town is a suburban site with good exposure. Climate averages are available for West Terrace as well as Kent Town.
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 Users of this data should read the information and accepted the conditions described in the notes at
http://www.bom.gov.au/climate/dwo/IDC_IDW00000.pdf
 ICC_IDW00000201407 Prepared at 13:06 UTC on 2 Aug 2014

South Australia in July 2014

- Warmer nights but cool days across southern districts
- Average rainfall across southern parts, dry in the northeast
- Strong cold fronts bring damaging winds

Both maximum (+0.8 °C) and minimum (+0.4 °C) temperatures were above average for South Australia during July, with cooler days and warmer than average nights across southern parts of the State. Minimum temperatures were cooler across the northeast parts of the state, associated with below average rainfall and generally warmer days for pastoral districts. Rainfall was below average across the state as a whole, though tended average to above average for some southern agricultural districts.

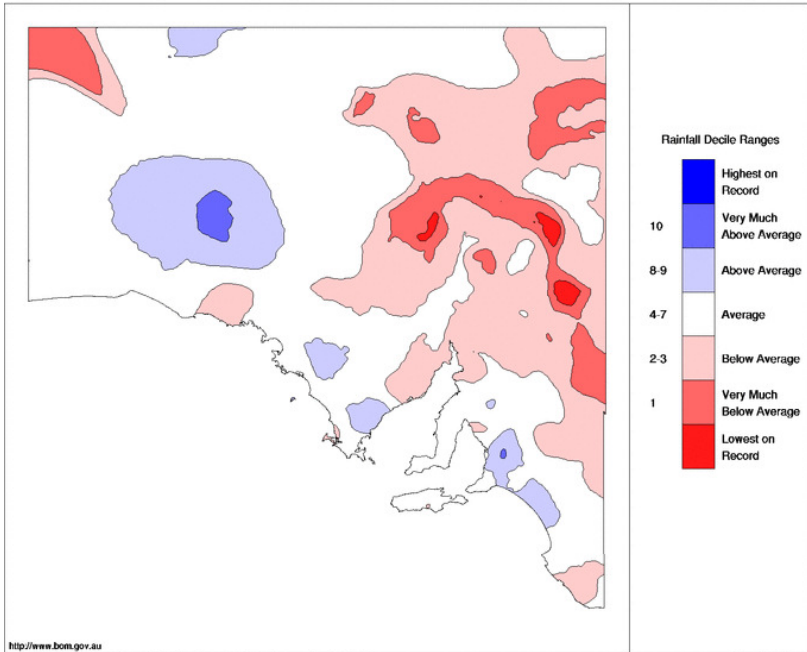
Vigorous cold fronts delivered the heaviest rainfall to most parts of the state between the 8th and 11th, the 17th and 18th and again on the 24th. The cold fronts were also associated with very strong winds and isolated thunderstorms, particularly across southern parts of the state. Wind gusts reached 117 km/h at Port Lincoln on the 8th. A fast moving front crossed the central and eastern parts of the state on the 17th, with an associated rainband and thunderstorms producing small hail and isolated showers. Another strong cold front to the south of the Great Australian Bight produced isolated squally showers and strong wind gusts for southern districts on the 31st.

Extremes in July 2014

Hottest day	27.5 °C at Oodnadatta Airport on the 28th 27.5 °C at Oodnadatta Airport on the 31st
Warmest days on average	20.9 °C at Oodnadatta Airport
Coollest days on average	9.1 °C at Mount Lofty
Coldest day	5.7 °C at Mount Lofty on the 9th
Coldest night	-5.2 °C at Yunta Airstrip on the 13th
Coollest nights on average	2.7 °C at Arkaroola
Warmest nights on average	11.7 °C at Neptune Island
Warmest night	16.0 °C at Oodnadatta Airport on the 23rd
Warmest on average overall	13.4 °C at Neptune Island
Coollest on average overall	7.1 °C at Mount Lofty
Wettest overall	261.4 mm at Uraidla
Driest overall	0 mm at Moomba Airport 0 mm at Spicer Flat
Wettest day	48.0 mm at Uraidla on the 9th
Highest wind gust	117 km/h at North Shields (Port Lincoln AWS) on the 8th

South Australian Rainfall Deciles July 2014

Distribution Based on Gridded Data
Product of the National Climate Centre

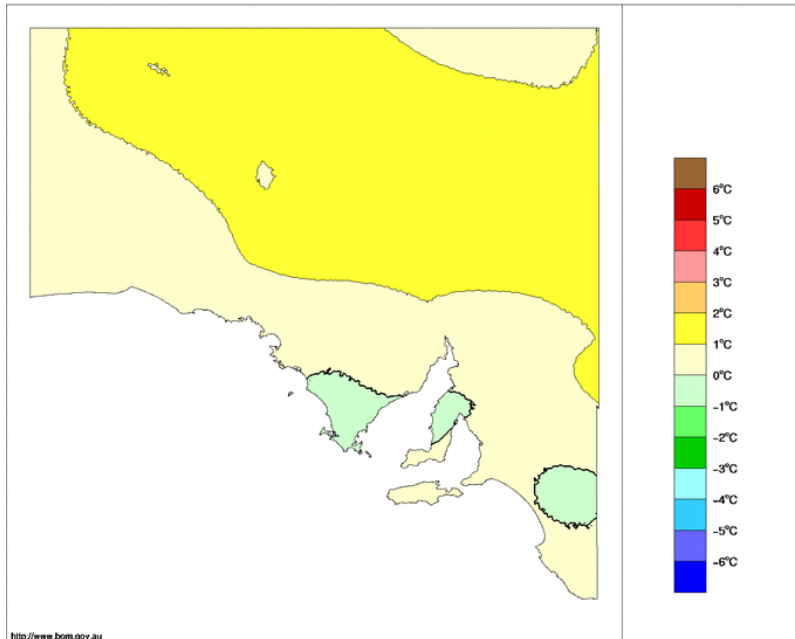


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Issued: 03/08/2014

Maximum Temperature Anomaly (°C) July 2014

Product of the National Climate Centre



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Issued: 03/08/2014

Looking for Weather Detectives!!

A new Australian citizen science initiative has just started that may interest AMETA members. The Weather Detective website invites anyone, from the comfort of their desk, to make a small contribution to the understanding of meteorology and climate change. It is similar to the work being done by one of our volunteer teams at the Bureau.

A PhD student at the University of Queensland has re-discovered a trove of logs from sailing ships of the 1890's that were gathered by one of Charles Todd's contemporaries, Clement Wragge in Queensland. They contain unique ocean weather observations that need to be captured and included in the global databases of weather history. This project has been chosen as the national citizen science project for Science Week 2014 and received funding from the ABC and CSIRO to allow the data capture to be done by anyone through

<http://www.weatherdetective.net.au/>

Have a look. You can donate 3 minutes, 3 hours or 3 days of your time if you are so moved. This is a unique initiative which will add to the 19th century terrestrial climate record being built by our own volunteers.

For background you may get value from viewing <http://player.vimeo.com/video/15388983> and www.oldweather.org

By Mac Benoy



Australian Meteorological Association Inc

NEXT MEETING

5.30 PM Monday 18 August 2014

This meeting will be a non-election Annual General Meeting

Subject: 'A season forecasting on the ice'

***Speaker: Tina Donaldson, Forecasting meteorologist,
South Australian Regional Forecasting Centre, Bureau
of Meteorology***

In the summer of 2013/14 Tina Donaldson completed a stint aviation forecasting in Antarctica at Davis station. This was after making the voyage down on the Aurora Australis, which then went on to be stuck in sea ice after dropping off the Davis crew.

Tina will relate her experiences down in Antarctica and how aviation forecasts are produced and used in what is an extreme part of the world.

In addition, Darren Ray will give a short introduction to the new Seasonal Outlook tool from the Bureau of Meteorology, to be released in late July 2014

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.