

Monana

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The final meeting for 2014, on 20 October, featured John Nairn, a/ Regional Director of the South Australian Regional Office of the Bureau of Meteorology, and head of the Heatwave Warning project underway within the Bureau.

John went through the development of a new heatwave criterion, the Excessive Heat Index, a new index that allows the determination of the presence of heatwave conditions, and the severity of those, for locations across Australia.

The index compares 3-day periods of average daily temperature (the average of maximum and minimum temperature for each day) and looks at how extreme the 3-day period is statistically, in two components – one comparing the period of interest to the whole record, and secondly to what has been happening in the last 30 days.

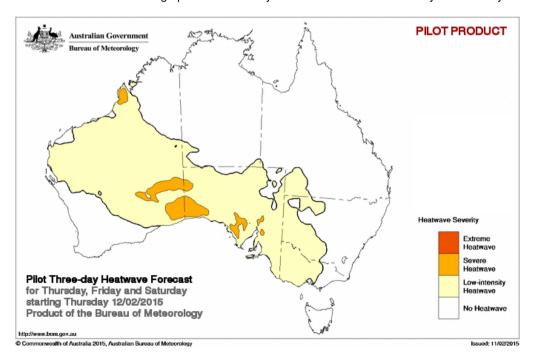
The approach has several strengths. It takes into account night time temperatures as well as daytime ones – important as hot nights strongly increase heatwave impacts. The method is also one that can be applied to any location with a record of maximum and minimum temperature available, and is not location specific - it can be as easily applied to somewhere like Andamooka in the state's north as it can be to Adelaide.

The method has also been applied to the Bureau of Meteorology gridded data sets of maximum and minimum temperature, allowing maps showing areas of heatwave across Australia to be developed. This has been done for past events, but even more importantly can be linked to Bureau of Meteorology forecasts systems to produce maps of coming heatwave events across Australia.

The maps of forecast heatwave activity form the core of a pilot short-term heatwave warning service first trialled in January 2014 for the remainder of that summer and autumn and re-started in November 2014 for the coming summer of 2014/15. With large areas of Australia currently experiencing or expecting heatwave conditions through mid-February, and looking on the cards for late February this is proving valuable, allowing people to make preparations to cope with heat events up to a week ahead in time.

With Australia experiencing more frequent and extreme heat events, this type of service has already been welcomed by users of the service in many industries. Longer term plans have research incorporating fortnightly to monthly modelling of extreme temperatures to allow extended range warning of upcoming heat events. The heatwave warning pilot service can be found online at http://www.bom.gov.au/australia/

Forecast conditions leading up to mid-February for Australia as of Wednesday 11 February:



Adelaide in October 2014

- Warmest October days in 100 years
- Very dry, with twenty-five consecutive days of no rainfall
- Five consecutive days above 32 °C in Adelaide

Both monthly mean maximum and minimum temperatures were above average across the Adelaide region during October. Particularly warm days during the latter part of the month saw Adelaide observe five consecutive days with maximum temperatures above 32 °C, setting a new October record for consecutive days above this threshold. On average, Adelaide city recorded two to three days above 30 °C during October. The warmth throughout the month resulted in the second-warmest October days on record, with a monthly mean maximum temperature of 26.0 °C; the warmest since 1914 when the October mean maximum was 26.8 °C. Several other sites across the metropolitan region had their highest October mean daily maximum temperature on record.

Along with the heat, October was very dry across the Adelaide metropolitan area. The Adelaide Kent Town observation site recorded 5.0 mm of rain over three days, well below Adelaide's average October rainfall of 42.8 mm. Typically, Adelaide records around ten days of rain in October. Adelaide experienced twenty-five consecutive days without any measurable rain this October, resulting in the longest run of consecutive days without rain since December 2012 - January 2013 (a twenty-seven day dry spell). It was the driest October for Adelaide since 2006, when 1.0 mm was observed. Most locations recorded less than 23% of their long-term October average rainfall.

The heaviest rainfall event occurred at the end of the month, when a trough of low pressure with embedded thunderstorms affected the city. Light showers in a south-westerly airstream followed the trough, though daily rainfall totals were less than 5.0 mm for most locations. Monthly rainfall totals were between 5.0 mm to 10.0 mm across metropolitan locations, while locations in the Adelaide Hills received totals up to and in excess of 15.0 mm. The wettest location was at Crafers West in the Adelaide Hills, with a monthly total of 17.0 mm.

Extremes in October 2014

Hottest day	38.8 °C at Parafield Airport on the 21st

Warmest days on average 26.4 °C at Parafield Airport 20.6 °C at Mount Lofty

Coldest day10.4 °C at Mount Lofty on the 14thColdest night1.8 °C at Parafield Airport on the 15th

Coolest nights on average 8.4 °C at Mount Crawford (Mt Crawford AWS)

Warmest nights on average 12.4 °C at Noarlunga

Warmest night 20.6 °C at Mount Lofty on the 22nd Warmest on average overall 19.1 °C at Adelaide (Kent Town)

Coolest on average overall 14.9 °C at Mount Lofty **Wettest overall** 17.6 mm at Crafers West

Driest overall 0 mm at Echunga

Adelaide, South Australia October 2014 Daily Weather Observations

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



		Temps	Sai				Max	Max wind qust	ist			93	9am					3	3pm		
Date	Day	Min	Max	Rain	Evap	Sun	Dirn	Spd	Time	Temp	RH	Cld	Dirn	pds	MSLP	Temp	R	Cld	Dirn	Spd	MSLP
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2	Ę		19.5	0	4.0	9.0	WSW	30	12:41	14.0	25		SSE	6	1029.0	17.7	20	_	WSW	17	1025.0
3	표		26.5	0	4.0		z	26	11:46	18.4	47		NNE	1	1021.2		27	_	8	6	1016.4
4	Sa	•	31.9	0		11.3	N N N	33	12:26	24.4	23		z	13	1015.3	30.9	15	10	WNW	19	1012.1
5	Su	13.6	28.7			10.8	NNE	24	12:53	16.6	63		ESE	1	1017.3	25.1	40	_	NNE	9	1012.7
9	Mo	16.6	29.1	0		0.1	N	85	13:19	27.8	16		z	19	1002.8	22.3	64	_	WNW	33	1002.0
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80	We			0	3.6		S	28	12:35	12.9	73		NNE	7	1024.6	19.4	46	10	8	13	1023.1
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13	Mo		16.7	0	15.8		SSW	20	14:18	12.3	49		S	20	1021.0	16.1	31		SSW	19	1022.2
14	ī			0	3.8		S	39	14:37	12.8	52		SSW	15	1027.9		38		SSE	20	1026.4
15	We			0	3.0		>	31	14:09	13.1	49		WSW	7	1026.4	17.0	39	_	X	20	1023.6
16	Ħ		19.1	0	3.4		WSW	30	16:45	12.0	61		Z	7	1025.0		44	_	WSW	15	1023.5
17	Ē	8.5		0	3.2	12.4	NNE	31	08:31	17.2	38		N	20	1024.5	27.4	15	10	Ž	15	1021.4
18	Sa			0		11.1	Š	41	13:17	24.3	16		NN	15	1021.4	30.8	6	_	WNW	24	1019.3
19	Su	16.3	32.8	0		9.7	Š	39	11:33	24.8	19		Ä	7	1020.8	30.9	13		SW	13	1020.1
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22	We	20.4	32.2	0	6.4	11.5	S	43	13:47	27.2	28		z	9	1016.5	29.1	29	_	S	22	1016.1
23	Ħ		24.4	0	7.0	_	>	28	12:52	17.9	65		N N N	9	1018.0	23.1	52	01	WSW	15	1014.6
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25	Sa	15.5	25.5	0		12.5	NN/N	26	12:33	20.2	54		z	9	1017.5		51	_	WSW	19	1016.0
26	Su		28.7	0		0.0	SW	37	22:26	18.3	29		NE	6	1012.8	24.8	52	-	NE	7	1008.7
27	Mo		19.7		14.8	12.1	M	25	04:48	15.4	99		MSM	24	1016.1	18.5	47	4	MSM	24	1017.9
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30	Ę	10.9	28.2	0	4.0	12.4	>	28	11:15	17.2	64		SE	9	1016.8	25.8	20	_	Š	6	1013.0
31	Fr	14.1	35.2	0	5.2		NNN	48	11:57	26.9	18		NE	19	1005.0	32.4	17	,	SW	17	1000.8
Statistic	s for Oc	tob	114																		
	Mean	12.1	26.0		6'9	9.4				18.6	47			12	1019.0	24.4	33	3		16	1016.8
	Lowest	5.1	16.5		3.0					12.0	16		NNN	4	1002.8	15.6	6	9	NNE	9	1000.8
	Highest	20.4	37.3				MN	85		28.8	62		#	24	1029.0	36.9	64		WNW	33	1026.7
	Total			5.0	151.2	~															

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.

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South Australia in October 2014

- Record runs of days above thresholds at many locations
- Driest October on record for the state

Hottest day

Hottest October on record for the state

Maximum temperatures were well above average across South Australia during October, with many locations experiencing highest on record daytime temperatures. Across the state as a whole, the October maximum temperature was +4.1 °C above the long-term average and +0.9 °C warmer than the previous warmest October observed in 1988. Minimum temperatures were +1.5 °C above the long-term average for the state, though some central and eastern districts observed generally mild nights. In the second half of the month, northerly winds saw several locations observe both day and night temperatures that were significantly above average, with several locations observing extended periods with daily maximum temperatures above 35 °C. With respect to mean temperature, the warm days and nights across South Australia have resulted in the warmest October on record with a statewide mean temperature anomaly of +2.8 °C above average.

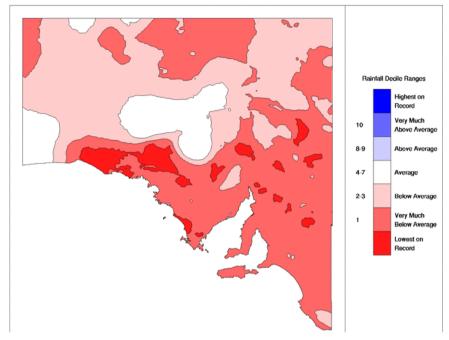
Rainfall was very much below average across most of the state, with locations across western and central agricultural districts experiencing their driest October on record. The heaviest rainfall occurred on the evening of the 26th, as a low pressure trough with embedded thunderstorms crossed central and eastern districts. Isolated showers in a fresh south-westerly airstream cleared by the afternoon of the 28th. Very little rainfall was recorded during other periods of the month which resulted in 1.6 mm of rainfall statewide (92% below normal), and the driest October on record. The previous driest October was observed in 1982 with a statewide average of 2.1 mm.

Extremes in October 2014

43.1 °C at Moomba Airport on the 26th

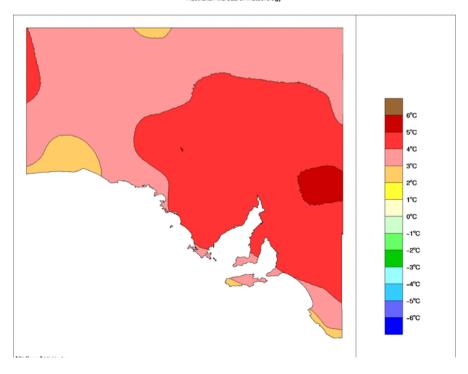
43.1 G at Mooniba Airport on the 20th
34.1 °C at Oodnadatta Airport
19.0 °C at Neptune Island
10.4 °C at Mount Lofty on the 14th
-2.1 °C at Keith (Munkora) on the 15th
6.5 °C at Keith (Munkora)
17.1 °C at Moomba Airport
28.4 °C at Moomba Airport on the 27th
25.4 °C at Moomba and Oodnadatta Airports
14.5 °C at Mount Gambier Aero
25.8 mm at Nangwarry Forestry SA Depot
20.0 mm at Glendambo on the 31st

South Australian Rainfall Deciles October 2014
Distribution Based on Gridded Data
Australian Bureau of Meteorology



Maximum Temperature Anomaly (°C) October 2014

Australian Bureau of Meteorology



Adelaide in November 2014

Above average temperatures.

Strongest wind gust

Below average rainfall, particularly in the Adelaide Hills.

Both monthly mean maximum and minimum temperatures tended above average across the Adelaide region during November. The month began with generally cool days and nights, although temperatures began to increase and become very hot by the end of the first week ahead of a trough of low pressure that crossed South Australia. Temperatures cooled in the wake of the trough before becoming very hot again by the end of the second week in a north to northwesterly airstream. The remainder of November saw temperatures that were generally near average.

November was generally dry, with very little rain during the first two weeks of the month, and no rainfall recorded in the last week. The heaviest rainfall across the Adelaide region was recorded on the 16th as a band of thundery showers produced rainfall totals up to 10 mm. A trough of low pressure crossed the region on the 21st, producing totals of 5 to 10 mm. Showers and thunderstorms followed with similar totals being observed on the 23rd.

Extremes in November 2014

67 km/h at Mount Crawford on the 1st

67 km/h at Kuitpo Forest Reserve on the 22nd

Hottest day	40.6 °C at Edinburgh RAAF on the 13th
Warmest days on average	27.2 °C at Parafield Airport
Coolest days on average	21.1 °C at Mount Lofty
Coldest day	12.3 °C at Mount Lofty on the 1st
Coldest night	5.2 °C at Mount Barker on the 6th
Coolest nights on average	9.9 °C at Mount Lofty
Warmest nights on average	14.6 °C at Adelaide (Kent Town)
Warmest night	25.9 °C at Edinburgh RAAF on the 30th
Warmest on average overall	20.6 °C at Adelaide (Kent Town)
Coolest on average overall	15.5 °C at Mount Lofty
Wettest overall	41.8 mm at Crafers (Mt Lofty)
	41.8 mm at Crafers West
Wettest day1	6.0 mm at Millbrook Reservoir on the 23rd

November 2014 Daily Weather Observations observations observations are from Kert Town, about 2 km east of the city centre. Adelaide, South Australia



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0	12.0	23.0	0	11.0	11.7	8	31	14:57	17.1			MSM	13	1019.4			30			5 1018.8
.=	12.3	24.0	0	4.8	8.7	MMM	8	11:08	16.8	51		SW	8	1023.2			25	_		1020.9
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78	12.5	28.2	72		8.8	ш	8	22:38	19.6			Z	4	1012.2			33	WWW		1012.5
Q	18.2	23.0	0	13.8	11.7	MSM	48	10:17	20.2	20		SW	19	1012.4	4 20.5		10	MS	N 2	1015.
2	11.1	222	0	6.2	_	SW	3	1:3	16.2	8		WWW	7	1023.4			31	SSW		7 1022.5
ā	10.4	25.5	0	5.4		SS	8	15,31	17.5	22		SSE	9	1024.1	_	•	£	WSW	N	0 1021.3
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ŭ	11.8	31.6	0	7.2		WSW	8	13:55	22.8	35		MNM	7	1020.0			23	SW	×	9 1016.4
ß	15.6	35.7	0		9.3	M	8	12:00	25.6	32		SW	2	1011.8			=	×	×	1008.5
3	25.6	30.6	0		12.7	Ž	4	07:19	28.1	14		Z	19	1005.6	28.		25	_	×	7 1005.
Nov	Statistics for November 2014	2014																		
Mean	14.8	28.7		7.9	9.5				20.0	47			11		25.4		32		_	1015.5
Lowest	8.7	17.8		1.8					14.3	10			Calm	ļ		-	9		#	7 1005.
Highest	25.6	38.8	72			SW	¥		30.9	88		SW	28	1026.7	37.0	9	83	S		28 1024
	t																			

Kent Town is a suburban site with good exposure. Climate averages are available for West Terrace as well as Kent Town. Observations were drawn from Adelaide (Kent Town) (station 023090)

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South Australia in November 2014

- Very dry, particularly across western agricultural districts of the state
- Record lowest November rainfall at Lucindale, and the driest November in 20 years at several Eyre Peninsula locations
- Record hottest individual days and nights in some locations

The month began with generally cool days and nights, although temperatures began to increase and become very hot by the end of the first week ahead a trough of low pressure that crossed South Australia. Temperatures cooled in the wake of the trough before becoming very hot again by the end of the second week in a north to north-westerly airstream. In the north of the state, temperatures were very high at the end of the third week, with record high temperatures observed on the 22nd. This resulted in both daytime and night time temperatures being warmer than average this November with maximum temperatures 2.6 °C warmer than average, and minimum temperatures 1.6 °C above average for the state.

November was also generally dry, particularly across western and southern agricultural areas, with very little rain being recorded in the state during the first two weeks of the month, and no rain in the last week. The heaviest rainfall was recorded on the 16th as a band of thundery showers produced rainfall totals up to 10 mm. A trough of low pressure crossed the region on the 21st, producing totals of 5 to 10 mm. Showers and thunderstorms followed with similar totals being observed on the 23rd.

Extremes in November 2014

Hottest day 4 6.1 °C at Roxby Downs on the 22nd

Warmest days on average 36.7 °C at Moomba Airport

Coolest days on average 19.6 °C at Neptune Island

Coldest day 12.3 °C at Mount Lofty on the 1st

Coldest night 0.9 °C at Naracoorte Aerodrome on the 11th

Coolest nights on average 7.9 °C at Coonawarra

Warmest nights on average 20.8 °C at Moomba Airport

Warmest night 32.8 °C at Moomba Airport on the 23rd

Warmest on average overall 28.8 °C at Moomba Airport

Coolest on average overall 15.5 °C at Mount Lofty

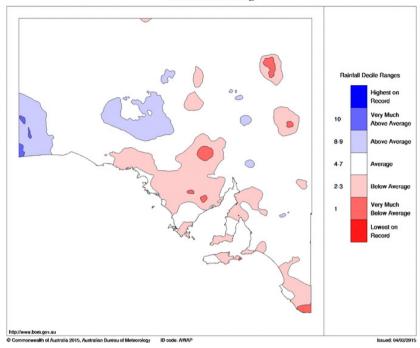
Wettest overall 46.2 mm at Cromer Road

Wettest day3 0.0 mm at Gluepot Reserve (Gluepot) on the 16th

Strongest wind gust 107 km/h at Marree Aero on the 22nd

South Australian Rainfall Deciles November 2014

Distribution Based on Gridded Data
Australian Bureau of Meteorology



Maximum Temperature Anomaly (°C) November 2014 Australian Bureau of Meteorology



Adelaide in spring 2014

- Very dry, with less than 50% of the long-term average rainfall for most sites
- Record driest spring rainfall at some Adelaide hills sites
- Second warmest spring days for Adelaide, and warmest in 100 years

Spring mean maximum and minimum temperatures were above average across the Adelaide region during the season. The season began with generally above average temperatures through September. Warm to hot conditions continued into October, that saw Adelaide have its warmest October days in 100 years. Temperatures during November continued to be above average, resulting in the city having its second warmest spring days on record and the warmest since 1914 (when combining temperature observations from both the West Terrace and the Kent Town sites).

Spring was very dry, with most locations struggling to record 50% of the long term spring average, and rainfall totals in the Adelaide Hills being only 30-40% of the November average. Most locations across the city observing about half of the September total. October was very dry for Adelaide with a 25 consecutive day dry spell and only 5 mm being observed for the month. November was generally dry, with very little rain during the first two weeks and last week of the month.

Extremes in spring 2014

Hottest day 4	0.6 °C at Edinburgh RAAF on 13 Nov
Warmest days on average	25.0 °C at Parafield Airport
Coolest days on average	18.8 °C at Mount Lofty
Coldest day	9.0 °C at Mount Lofty on 18 Sep
Coldest night 1	.8 °C at Parafield Airport on 15 Oct
Coolest nights on average	8.7 °C at Mount Lofty
Warmest nights on average	12.7 °C at Noarlunga
Warmest night	25.9 °C at Edinburgh RAAF on 30 Nov
Warmest on average overall	18.5 °C at Adelaide (Kent Town)
Coolest on average overall	13.8 °C at Mount Lofty
Wettest overall	117.4 mm at Crafers West
Wettest day	16.0 mm at Piccadilly (Woodhouse) on 9 Sep
	16.0 mm at Millbrook Reservoir on 23 Nov

Strongest wind gust

Record lowest spring total rainfall (mm)

109 km/h at Adelaide Airport on 6 Oct

				-,
New	record	Old record	Years of record	Average for spring
Woodside	62.4	64.8 in 1896	119	199.0
Owen	36.2	39.6 in 1938	81	114.2
Lenswood	81.4	85.2 in 1982	46	238.0
Williamstown	66.2	66.8 in 2006	46	168.3
Mount Crawford	48.8	62.6 in 2012	21	149.1

	Observed	Most recent	Years since	Average for spring
Lobethal	74.6	69.9 in 1914	99	213.3
Gawler	42.2	26.7 in 1896	67	118.7
Uraidla	98.5	96.0 in 1982	31	254.4
Willunga	52.6	51.8 in 1982	29	153.

Record highest spring mean daily maximum temperature (°C)

	New	Old	Years of record	Spring Average
Mount Barker	22.9	22.4 in 2006	112	19.5
Parafield Airport	25.0	25.0 in 2006	57	22.0
Edinburgh RAAF	24.8	24.8 in 2009	41	22.3
Adelaide	24.5	24.2 in 2006	37	22.1
Mount Crawford	21.0	20.9 in 2006	20	18.4

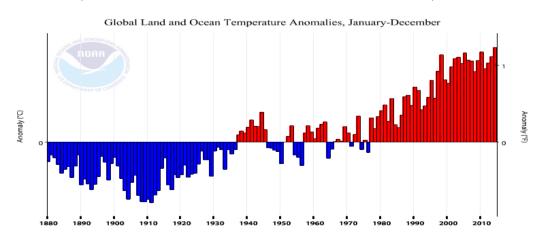
Record highest spring mean temperature (°C)

	New	Old	Years of record	Spring Average
Mount Barker	15.8	15.3 in 2009	111	13.4

Another hot year for Australia, and globally

Data collected and analysed by the Bureau of Meteorology show that 2014 was Australia's third-warmest year on record while rainfall was near average nationally. For South Australia 2014 was second hottest year on record after 2013.

Global temperatures from international centres show 2014 as the warmest year on record



Summary statistics for spring 2014

Ma	iximum tei	Maximum temperatures(°C)	(၁့)		Minim	Minimum temperatures (°C)	erature	(C)) si		Rainfall	Rainfall (millimetres)	
	Mean	Diff from aver-	軍	Highest	Mea	Diff from aver- age	Γο	Lowest	Total	Average for spring	Rank of spring 2014	Fraction of spring average
Adelaide (Kent Town)	24.5	+2.4	38. 8	13 Nov	12.5	+0.7	5.1	15 Oct	8.09	131.7	wol	46%
Adelaide	23.3	+2.3	37.	13 Nov	11.7	+0.9	4.1	5	53.8	106.5	wol	21%
Edinburgh	24.8	+2.5	40.	13 Nov	10.7	+0.4	2.3	18	39.0	108.6	v low	%98
Kuitpo For- est Reserve	21.0	+2.1	35. 5	13 Nov	10.2	+0.7	4.7	2 Sep	59.2	154.5	v low	38%
Mount Bark-	22.9	+3.4	37.	13 Nov	8.8	+1.5	1.9	3	77.0	190.8	v low	40%
Mount Craw-	21.0	+2.6	35.	13 Nov	9.3	+0.5	3.1	15	48.8	149.1	lowest	33%
Mount Lofty	18.8	+4.0	32. 7	13 Nov	8.7	+1.2	2.9	19 Sep	103.2			
Noarlunga	23.4	+1.9	37. 4	21 Oct	12.7	+0.8	5.9	3 Sep	46.8	102.2	wol	46%
Parafield	25.0	+3.0	39.	13 Nov	11.0	+0.6	1.8	15	46.2	110.8	v low	42

South Australia in spring 2014

- Very dry across agricultural districts, with record lowest spring rainfall at several locations.
- Warmest spring on record for South Australia.
- 14th driest spring on record for the state.

Spring 2014 saw persistently warm conditions, particularly across the north of the state, with maximum temperatures 3.0 °C above average for South Australia, and minimum temperatures 1.3 °C above average. This resulted in South Australia having the warmest spring on record with the average of both maximum and minimum temperatures +2.2 °C above normal, and surpassing the previous record set in 2006 when temperatures were 2.0 °C above average for November.

Spring was very dry with the statewide rainfall 55% below normal, and the 14th driest spring since statewide rainfall totals commence in 1900. Rainfall across agricultural districts was very much below average with some locations experiencing lowest spring rainfall on record. Rainfall was generally below average through all of the spring months, with October being particularly dry for the entire state which was the driest October on record for South Australia.

Extremes in spring 2014

Hottest day 46.1 °C at Roxby Downs on 22 Nov

Warmest days on average 33.0 °C at Oodnadatta Airport

Coolest days on average 18.7 °C at Neptune Island

Coldest day 9.0 °C at Mount Lofty on 18 Sep

Coldest night -2.3 °C at Naracoorte Aerodrome on 19 Sep

Coolest nights on average 6.9 °C at Keith (Munkora)

Warmest nights on average 16.5 °C at Moomba Airport

16.5 °C at Oodnadatta Airport

Warmest night 32.8 °C at Moomba Airport on 23 Nov

Warmest on average overall 24.7 °C at Oodnadatta Airport

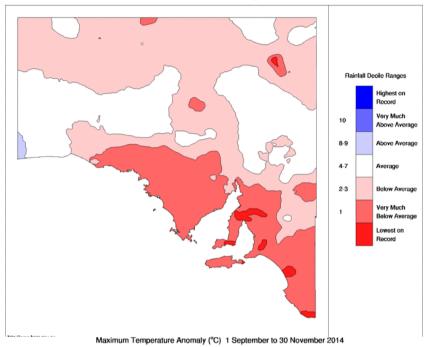
Coolest on average overall 13.8 °C at Mount Lofty

Wettest overall 117.4 mm at Crafers West

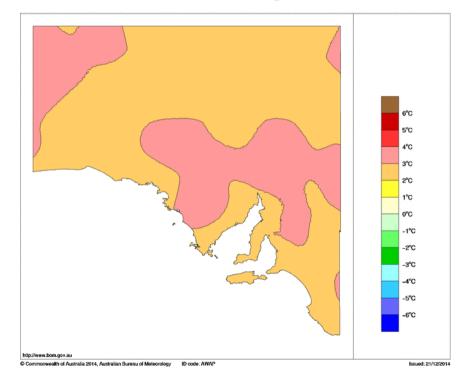
Wettest day 30.0 mm at Gluepot Reserve (Gluepot) on 16 Nov

Strongest wind gust 135 km/h at Coober Pedy Airport on 31 Oct

1 September to 30 November 2014 South Australian Rainfall Deciles Distribution Based on Gridded Data Australian Bureau of Meteorology



Australian Bureau of Meteorology



Adelaide in December 2014

- Adelaide's driest December in 23 years
- Adelaide's coolest December days in 4 years
- Adelaide's coolest December nights in 6 years

Mean maximum and minimum temperatures tended below average across the Adelaide region during December. The month began with generally mild days and warm nights, although daytime temperatures increased and became warmer than average by the end of the second week ahead a trough of low pressure that crossed South Australia. Temperatures cooled in the wake of the trough before becoming warm to hot by the end of the third week in a north to north-westerly airstream. The remainder of December saw temperatures tend generally below average.

December was very dry across the Adelaide region, with just 6.4 mm of rainfall recorded on 6 rain days, resulting in the driest December since 1991 when 5.8 mm was observed. The long-term average rainfall for Adelaide during December is 28 mm (with a median of 38 mm) typically recorded over about 7 rain days. The lack of significant rainfall resulted in several locations having their lowest total December rainfall for at least 20 years. The heaviest rainfall was recorded on the 11th as a band of thundery showers produced rainfall totals of 3-5 mm across most locations.

Extremes in December 2014

Hottest day	37.5 °C at Edinburgh RAAF on the 21st
-------------	---------------------------------------

Warmest days on average 27.2 °C at Parafield Airport

Coolest days on average 21.5 °C at Mount Lofty

Coldest day 16.1 °C at Mount Lofty on the 29th
Coldest night 6.3 °C at Mount Barker on the 26th

Coolest nights on average 10.6 °C at Mount Lofty

Warmest nights on average 15.4 °C at Adelaide (Kent Town)

Warmest night 22.6 °C at Adelaide (Kent Town) on the 22nd

Warmest on average overall 21.2 °C at Adelaide (Kent Town)

Coolest on average overall 16.0 °C at Mount Lofty

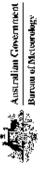
Wettest overall 22.0 mm at Balhannah (Killara Park)

Driest overall 2.2 mm at Belair

Wettest day1 2.6 mm at Eden Valley (Mt Adam) on the 11th

Strongest wind gust 85 km/h at Mount Crawford on the 16th

December 2014 Daily Weather Observations Observations are from Kent Town, about 2 km east of the city centre. Adelaide, South Australia



		len	emps				Max	Max wind gust	ıst			93	9am					3	3pm		
Date	Day	Win	Max	Kall	Evap	Sun	Dim	Spd	Time	Temp	RH	PIO	Dirn	Spd	MSLP	Temp	RH	PIO	Dim	Spd	MSLP
		ľ		mm	шш	ž		kmh	local	္	sp.	eighths		km/h	P _a		æ	eighths		km/h	Pa
_	Wo			0	20.0		>	31	05:10	18.7	69		×	15	1010.3		48		MSM	15	1009.1
2	그			0	3.8	5.6	ENE	74	20:35	20.7	53		SSW	13	1010.0		35		SSW	7	1008.9
e	We			0	4.8	-	>	8	14:41	26.3	4		NN N	15	1007.9		88		*	20	1006.8
4	Ē			0	9.2		SW	88	17:44	20.2	71		WSW	15	1013.5		22		MSM	17	1012.2
S	Ē			0	4.2		WSW	43	15:13	18.7	83		S	15	1012.8		48		*	20	1010.7
8	Sa					8.5	S	43	13:38	18.8	83		S	15	1012.1	21.6	20		SSE	20	1010.8
7	S					8.7	WSW	37	16:48	18.1	67		S	=	1008.8		51		SW	19	1007.0
∞	Wo			0	16.2	11.5	8	36	12:15	21.1	62		SSW	8	1011.1	28.7	4		SSE	15	1009.7
0	ī			0	6.6	13.1	WSW	3	13:23	22.4	51		Ž	7	1012.8		28		MSM	17	1011.1
10	We			0	7.4	0.0	SS	43	18:51	22.7	25		SW	9	1010.9		88		뿐	9	1011.8
=	Ę			3.0	2.0	_	뽒	4	07:09	18.6	27		¥	7	1016.4		42		SSE	19	1016.9
12	Ē			0	7.2	13.8	ESE	88	02:52	21.6	46		Ш	13	1018.8		88		MSM	15	1015.6
13	Sa					12.8	WSW	43	17:41	29.1	20		N	15	1012.3		13		MNM	22	1009.1
14	S	19.7	28.6	0.4		12.9	MSM	3	17:08	24.4	61		*	9	1010.1		39		MSM	17	1009.5
15	Wo			0	24.8	13.0	MSM	31	11:51	20.0	48		SSE	4	1007.7		88		MS	11	1003.9
18	르			0	7.2	11.4	SW	8	15:31	19.9	70		Ž	F	1003.3		4		MSM	28	1005.8
17	We			0	8.8	10.4	>	3	15:48	16.7	20		Ž	9	1011.7	23.7	8		SW	19	1009.0
18	F			0	5.6	10.5	>	43	15:54	20.0	51		MNM	20	1011.3		43		SW	24	1012.9
19	ŭ			0	6.0		>	4	18:22	18.2	45		SSW	=	1020.4		4		MSM	17	1020.0
2	S			0		12.9	WSW	38	15:45	18.1	20		ESE	7	1019.6		25		SW	13	1015.2
21	S			0		_	Ž	38	10:55	30.3	20		빙	15	1011.5		18		>	15	1009.9
22	Wo			0	22.4		WWW	38	08:12	24.4	90		ENE	9	1006.8	25.6	Ĩ		SSW	1	1007.3
23	1			1.6	1.2	9.2	SW	2	14:02	18.8	73		SW	15	1013.0		8		SW	38	1015.3
24	We			0	6.6	_	SW	8	18:12	17.4	\$		SSE	F	1018.1		45		SW	24	1015.0
25	F			0			SW	4	16:36	17.8	\$		WSW	13	1014.7		48		MSM	24	1013.2
28	Ē			0		12.4	SS	88	18:47	16.5	48		SSW	18	1020.4	22.3	8		띯	17	1018.2
27	S			0	18.6		SW	31	14:27	17.8	51		Z	9	1021.2		88		MSM	19	1018.1
28	S			0		12.1	>	8	12:48	21.5	30		Š	7	1015.3		23		MSM	11	1010.3
28	Wo	16.3		1.4	13.2	10.9	M	28	08:01	17.3	æ		M	22	1008.1		Ì		MSM	22	1010.4
8	2			0			>	4	08:15	18.4	\$		WSW	19	1016.0				S	17	1015.9
31	We	12.1		0	11.0	13.0	SW	31	14:48	18.4	28		NN	2	1017.6	26.8	38		MSM	13	1013.4
Statistic	s for De	Statistics for December	2014																		
	Mean	15.4	27.0		8.7	10.3				20.5	22			11	1013.0		41			11	1011.7
	Lowest	10.2	23.0		1.2	0.0				16.5	20		NNE	2	1003.3		13		NE	9	1003.9
	Highest		36.1	3.0			SW	28		30.3	æ		M	22	1021.2	34.8	88		MSM	28	1020.0
	Lota			6.4	7	308.0											L				
Observation	of spece do	wen from A	Artelairies (Marri	Town)	PORCU uulkta	100				1	1					CLUMSTON 201413	CHPHUC	Dramonerd at	4C-051 ITC	200 Apr 7015	

Observations were drawn from Adelside (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.

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South Australia in December 2014

- Below average rainfall in the west and southeast agricultural areas
- Above average day and night temperatures across Pastoral districts
- Day and night temperatures tending cooler than average across agricultural districts

The month began with generally mild temperatures for both days and nights. Temperatures began to increase, tended warmer than average by the end of the second week ahead a trough of low pressure that crossed South Australia. Temperatures cooled in the wake of the trough before becoming warm to hot again by the end of the third week in a north to north-westerly airstream. In the north of the State, temperatures were very high, peaking at 46.5°C at Oodnadatta on 10 December, while both day and night temperatures tended cooler throughout the month across the agricultural districts. However, across the state as a whole, both daytime and night time temperatures were warmer than average this December with maximum temperatures 1.19 °C warmer than average and minimum temperatures 0.78 °C above average.

December was also generally dry, with very little rain being recorded across most areas but particularly dry across western and south-eastern agricultural areas. The heaviest rainfall was recorded at the start of the month in the north of the State where locally severe thunderstorms with damaging winds were observed across Pastoral districts. Several locations across the agricultural areas had their lowest total December rainfall for at least 20 years.

Extremes in December 2014

Hottest day	6.5 °C at Oodnadatta Airport on the 10th
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Warmest days on average	38.2 °C at Oodnadatta Airport
Coolest days on average	20.1 °C at Cape Willoughby
Coldest day	14.8 °C at Parawa on the 10th
Coldest night	2.9 °C at Robe Airfield on the 27th
Coolest nights on average	9.9 °C at Naracoorte Aerodrome

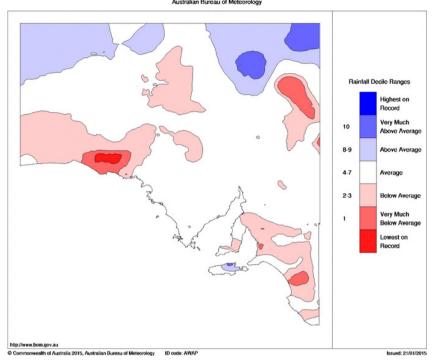
occioci ingino cii arciago	ord o at manageonte more and
Warmest nights on average	23.9 °C at Moomba Airport

Warmest night	30.1 °C at Oodnadatta Airport on the 10th
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Warmest on average overall	30.9 °C at Moomba Airport
Coolest on average overall	16.0 °C at Mount Loftv

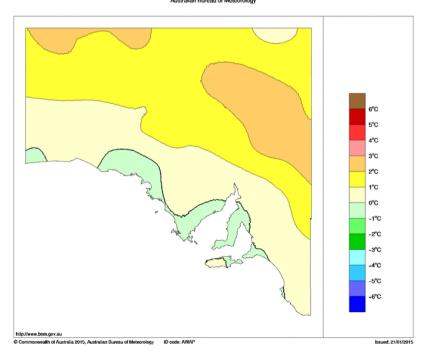
Wettest overall	50.0 mm at Ernabella (Pukatja)
Wettest day	29.4 mm at Kalamurina on the 3rd
Strongest wind gust	106 km/h at Marree Aero on the 10th

South Australian Rainfall Deciles December 2014 Distribution Based on Gridded Data Australian Bureau of Meteorology



Maximum Temperature Anomaly (°C) December 2014

Australian Bureau of Meteorology



Adelaide in January 2015

- Tropical activity and low pressure systems bring significant rainfall in the second week
- Adelaide Hills records wettest January in more than 20 years
- Adelaide's coolest but most humid January days in 11 years

Despite above average temperatures during the first week of January daytime temperatures for the month as a whole were cooler than average across the Adelaide region, resulting in the coolest January days since 2004. Humidity levels were also high throughout the month, the most humid January conditions since 2004. Night-time temperatures were slightly warmer than average. Daytime temperatures cooled significantly during the second week, as an upper level trough and a burst of tropical activity produced moderate to heavy rainfall for most locations across the metropolitan area and hills regions between 8 to 11 January. This continued on 13 January as a low pressure system located south of the State extended another trough across the region. The rainfall from these systems resulted in the monthly total rainfall to exceed two to three times the January average across the Adelaide Hills, with several locations having their wettest January in more than 20 years. A persistent south-easterly airstream along southern coasts resulted in milder conditions continuing through the second half of the month.

Extremes in January 2015

Hottest day 44.1 °C at Adelaide (Kent Town) on the 2nd

Warmest days on average 29.1 °C at Parafield Airport

Coolest days on average 22.6 °C at Mount Lofty

Coldest day 12.5 °C at Mount Lofty on the 10th
Coldest night 6.8 °C at Mount Lofty on the 27th

Coolest nights on average 11.9 °C at Mount Lofty

Warmest nights on average 17.5 °C at Adelaide (Kent Town)

Warmest night 27.0 °C at Adelaide (Kent Town) on the 7th

Warmest on average overall 23.1 °C at Adelaide (Kent Town)

Coolest on average overall 17.3 °C at Mount Lofty

Wettest overall 95.8 mm at Ashton

Driest overall 7.4 mm at Gawler Council Depot
Wettest day 42.8 mm at Ashton on the 13th

Strongest wind gust 70 km/h at Mount Crawford on the 13th

January 2015 Daily Weather Observations observations observations are from Kent Town, about 2 km east of the city centre. Adelaide, South Australia



		Temps	Sdi				Max	Max wind gust	ıst			98	9am					3	3pm		
Date	Day	Win	Max	E S	Evap	une	Dim	Spd	Lime	Temp	RH	PIO	Dirn	Spd	MSLP	Temp	EH	PIO	Dim	Spd	MSLP
		ò	o	mm	шш	hours		kmh	local	ç	ge.	eighths		km/h	hPa	o.	æ	eighths		km/h	hPa
-	£		37.0	0		12.3	WWW	31	14:58	23.9	43		SW	11	1012.1	34.2	20		NN.	В	1009.3
2	Ē		4	0		13.1	Ž	4	11:18	34.8	12		Z	17	1009.4		10		ž	20	1008.7
8	S		38.2	0		8.8	SW	8	14:44	29.2	8		SSW	15	1005.8		17		S	28	1007.3
4	ß	17.7	30.5	0		13.6	S	g	00:51	21.6	51		SS	13	1016.4	28.9	S		띯	13	1014.8
5	Mo		34.9	0	43.4		ESE	20	22:57	24.1	45			Calm	1016.7	32.4	28		뿞	13	1014.7
9	르		39.4	•	10.2	ī	ESE	48	23:33	30.2	31		ENE	=	1015.4	38.0	25		MSM	18	1013.1
7	We		42.2	0	10.8	8.0	>	48	17:55	35.1	29		Z	17	1011.8	39.4	23		MMM	17	1008.7
80	Ē		27.2				SSW	22	07:12	22.3	g		S	0	1010.5	25.6	2		z	15	1008.6
0	ŭ		21.4				SSE	49	17:28	20.0	75		SW	4	1009.3	19.6	89		SS.	17	1007.8
10	S		20.2				띯	2	04:10	14.7	79		ESE	15	1010.1		67		퓓	13	1010.1
=	S		28.3	22			ENE	38	17:08	18.4	73		SSE	13	1013.8		51		ESE	40	1010.4
12	Mo		29.9				Z	31	20:56	252	98		ENE	15	1008.3	25.3	83		3	÷	1005.1
13	2		20.5	Ī	2.8	0.0	>	읈	10:43	18.7	g		M	17	1004.4		8		MSM	22	1004.5
4	We		23.5	2.4			WSW	4	02:32	18.8	8		S	20	1011.8		51		MSM	8	1011.5
15	Ē		24.0	0	6.2		WSW	38	12:43	18.4	8		S	13	1014.3	22.8	48		>	2	1012.7
18	ŭ		25.6	0	5.0		WSW	38	17:47	18.4	89		뮏	2	1013.0		48		>	15	1012.0
17	S		25.3	0			WSW	88	17:29	19.2	28		SSW	13	1015.9		38		MSM	18	1015.3
18	S		25.8	0		10.0	SSE	37	16:38	18.3	20		S	00	1019.0	24.1	41		띯	F	1016.4
19	Mo		31.7	0	19.2		ESE	31	03:44	20.9	43		ENE	=	1014.1	29.6	28		8	90	1010.0
20	2		33.1	0	8.0		Z	4	12:38	26.9	38		뮏	F	1001.4		48		M	24	988.8
21	We		28.1	9.4	5.8	10.5	>	43	17:00	20.1	78		S	=	1010.5		20		MSM	F	1010.0
22	Ę		31.5	0	5.2		WSW	37	13:00	21.6	61		Z	4	1011.0		45		MSM	49	1008.7
23	Ē		28.0	0	7.0		SSW	4	17:13	21.9	71		SSW	13	1009.9	25.1	48		MSM	20	1008.7
24	S		25.4	0			SSW	Ż	20:18	19.6	28		MNM	18	1008.9		48		>	9	1007.7
25	S		22.4	0			SW	4	14:08	17.6	22		SSW	19	1013.5		37		MSM	74	1014.3
28	Mo		21.4	0			SSE	30	17:35	17.1	32		SSE	13	1018.6		45		SS	22	1017.1
27	1		23.4	0	25.6		SS	4	19:32	17.3	47		S	=	1018.6		4		K	1	1016.4
78	We		25.8	0	5.6		SS	43	04:05	16.2	92		SS	F	1018.4		8		SS	15	1015.7
29	f		30.2	0	7.2		S	Ż	02:00	20.1	4		K	15	1017.5	28.5	19		SS	15	1015.5
8	ŭ		28.7	0	8.8		88	43	03:55	20.0	4		SS	9	1016.6		23		S	F	1013.7
31			24.1	0	7.8		SS	4	13:56	17.7	25		SS	19	1016.5	22.6	4		SSE	28	1015.0
Statistics	s for Jar	nuary 20	Н5																		
	Mean	17.5	28.7		10.0					21.6	SS			12	1012.7	<u> </u>	41			41	1011.0
	Lowest	13.2	20.2							14.7	12			Calm	1001.4		10		M	8	988.8
	Highest	27.0	44.1	14.8			SW	99		35.1	æ		S	20	1019.0	42.8	84		#	28	1017.1
	Lota			38.0	200.0	158.0															
Observations		were drawn from Adelaide (Kent T	telaide (Ke	nt Town) (station 023	1060									Q	DCJDW5002,201501		Prepared at	Prepared at 13:06 UTC on 2 Feb 2015	on 2 Feb 2	315

Observations were drawn from Adelade (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.

South Australia in January 2015

- Tropical activity and low pressure systems bring record high daily and monthly rainfall totals
- 8th wettest January on record for the state
- Coolest January days for South Australia in 23 years
- Coolest nights for the state in 10 years

Despite hot days through the first week of the month, cooler than normal conditions from the second week of the month onwards resulted in the coolest January days experienced across the state since 1992. Nights were generally near average for much of South Australia, though tending warmer across coastal regions, resulting in the coolest January nights for the state since 2005. Between 8 to 11 January an upper level trough and a burst of tropical activity produced moderate to heavy rainfall for many locations across northern, central and eastern districts. This continued on 13 January as a low pressure system located south of the State extended another trough across the State. The rainfall from these systems saw several sites reporting their highest January daily rainfall on record. Some stations recorded two to three times their long-term January average, resulting in their highest total January rainfall on record. A persistent southeasterly airstream along southern coasts resulted in milder conditions continuing throughout the second half of the month.

Extremes in January 2015

Hottest day	46.4 °C at Port Augusta Aero on the 3rd

Warmest days on average 36.4 °C at Moomba Airport 22.3 °C at Neptune Island

Coldest day12.5 °C at Mount Lofty on the 10thColdest night3.2 °C at Coonawarra on the 27thCoolest nights on average11.8 °C at Naracoorte Aerodrome

Warmest nights on average 23.8 °C at Moomba Airport

Warmest night 31.2 °C at Marree Aero on the 3rd

Warmest on average overall 30.1 °C at Moomba Airport

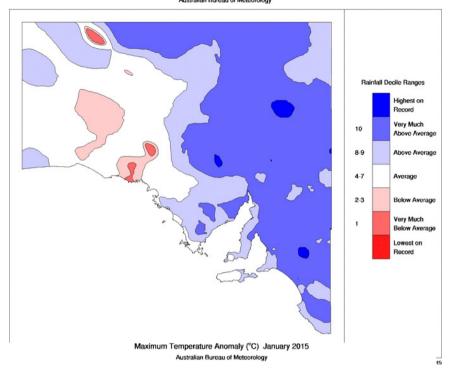
Coolest on average overall 17.3 °C at Mount Lofty

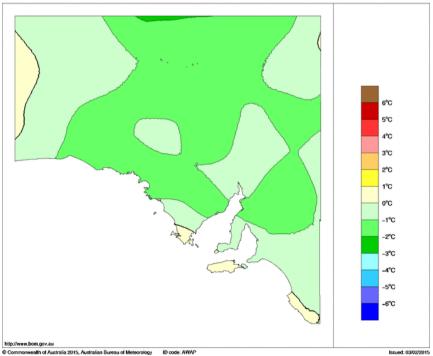
Wettest overall 280.0 mm at Marree (Dulkaninna)

Wettest day 146.5 mm at Marree (Dulkaninna) on the 12th

Strongest wind gust 104 km/h at Keith (Munkora) on the 7th

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







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

NEXT MEETING

5.30 PM MONDAY 16 February 2015

Conference room, Bureau of Meteorology 25 College Road, Kent Town

Reminder: Please note that AMETA membership of \$15 for 2014/15 are due for those who have not yet paid.

Subject: Spray Drift—Seminar on meteorological factors

affecting agricultural spraying

Speaker: Dr Warwick Grace from Grace

Research (formerly with BoM)

With GPS navigation and other technical advances, an increasing amount of pesticide and other agricultural spraying is being conducted at night. Meteorological factors such as overnight temperature inversions and low level turbulence can have unexpected impacts on direction and concentration of resulting spray drift. As a result adverse effects of off-target spray may show up a few days later in other crops several kilometres away.



Spray drift damage

A field experiment measuring inversions, turbulence and wind is currently being undertaken over the wheat fields of Western Australia by met scientists, Warwick Grace and Graeme Tepper. Preliminary analysis of the data will be presented.

We look forward to seeing you. For further information contact

Secretary:	Darren Ray
Phone:	8366 2664
Fax:	8366 2693

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