

## Monana

## THE OFFICIAL PUBLICATION OF THE AUSTRALIAN METEOROLOGICAL ASSOCIATION INC April 2019

#### **Measuring The Rain**

About thirty people attended a presentation on various types of rain measuring equipment and a Home Weather Rain Gauge Setup at the Bureau of Meteorology (BOM) headquarters in Adelaide on the 19th February 2019. The Speakers were Mark Little and Jon Lethbridge. The presentation outlined various types of rain measuring equipment, followed by a discussion about a home rain gauge setup that sort to measure and analyse rainfall patterns primarily in relation to the state of flow in Brownhill Creek.

The introduction to rain measuring equipment by Mark ranged from the simple measuring cylinder and the common tipping bucket rain gauge to some more unusual ones such as a simple pan full of flour and a range of disdrometers, used to measure drop size distribution and velocity of falling hydrometers (rain, hail, etc). An example of one type of disdrometer is shown to the left.

Various factors that affect the accuracy of rain gauges were also discussed. These included shading by structures and trees, blocking of the rain gauge by debris such as leaves, seeds, dirt and bird droppings. The effect of the wind on the accuracy of rain measurements was also discussed.



The home rain gauge presentation by Jon showed a setup using multiple instrument types to measure the rainfall within the limitations of a suburban area. The station has records from 1975 to the present.

A wide range of weather information from the BOM and water levels & flows from WaterConnect

SA were combined with the local rain gauge readings to provide a more detailed picture of local rain

events and resulting changes to the creek.

While home weather stations rarely meet professional standards often due to location factors beyond the citizen's control, their observations can be coupled with the public professional information to provide a greater level of understanding of the weather conditions that can occur in micro-climate of their immediate area.



Greater Adelaide in January 2019: very hot and dry

Daytime temperatures during January were amongst the hottest on record for Greater Adelaide. The highest temperature ever at the Bureau's official city site was recorded on the 24th, with 46.6 °C at West Terrace / ngayirdapira. Night-time temperatures weren't as extreme but were still warmer than average for January throughout. January was very dry, with little or no rain around Greater Adelaide, and it was the first January since 1957 that no rainfall was recorded in the city.

#### Little or no rain

- January rainfall totals were very much below average (less than 6% of average)
- In the city, West Terrace / ngayirdapira recorded 0.0 mm for the month, which has only happened six times in January (combined observations from West Terrace and Kent Town began in 1839); the most recent occurrence was more than six decades ago in 1957
- No rainfall for the month was recorded at sites throughout Greater Adelaide including Kent Town, Morphettville, Burnside, Mount Lofty, Edinburgh RAAF, and Parafield Airport
- Numerous sites had either their lowest total January rainfall on record or their lowest total January rainfall for at least 50 years

#### Very hot at times

- Mean maximum temperatures were 3–6 °C above average across Greater Adelaide; most sites had their warmest January for 18 years since 2001, while Mount Barker had its warmest January (month) in 117 years of record
- The hottest day of the month was the 24th, with daytime temperatures in excess of 40 °C at all sites across Greater Adelaide, including 41.1 °C at Mount Lofty, the site's first 40 °C
- Adelaide (West Terrace / ngayirdapira) recorded 46.6 °C on the 24th, the highest temperature recorded at the Bureau's official Adelaide city site in its history
- Numerous sites had their highest January temperature on record on the 24th, including Greater Adelaide's highest temperature of 47.7 °C at Adelaide (Kent Town) and Parafield Airport
- Minimum temperatures weren't as extreme as the maxima, but nights were still warmer than average throughout Adelaide and the Hills
- Mean minimum temperatures ranged from 1.0 °C warmer than average at Noarlunga to 2.6 °C warmer than average at Mount Barker
- A few sites had their highest January mean daily maximum temperature on record and Kuitpo Forest also had its highest January mean temperature on record
- Further information about the heatwaves that have affected large areas of the country can be found in the Special Climate Statement Widespread heatwaves during December 2018 and January 2019

#### Adelaide (West Terrace / ngayirdapira)

- Total rainfall was 0 mm, 0% of the long-term average of 19.7 mm
- The mean daily maximum temperature was 33.0 °C, 4.4 °C above the long-term average of 28.6 °C. The warmest day was 46.6 °C on the 24th, and the coolest day was on the 5th when the temperature reached 23.1 °C
- The mean daily minimum temperature was 18.1 °C, 1.5 °C above the long-term average of 16.6 °C. The coldest morning was 12.8 °C on the 8th, and the warmest morning was on the 24th when the minimum temperature was 30.7 °C

**Extremes in January 2019** 

Hottest day 47.7 °C at Kent Town and Parafield on the 24th Warmest days on average 34.8 °C at Rosedale (Turretfield Research Centre)

Coolest days on average 28.3 °C at Mount Lofty

Coldest day 18.6 °C at Mount Lofty on the 5th Coldest night 7.2 °C at Mount Lofty on the 10th

Coolest nights on average 14.4 °C at Mount Lofty

Warmest nights on average 19.0 °C at Adelaide (Kent Town)

Warmest night 31.1 °C at Parafield Airport on the 24th

Warmest on average overall 26.4 °C at Adelaide (Kent Town)

Coolest on average overall 21.4 °C at Mount Lofty

Wettest overall 1.6 mm at Kuitpo Forest Reserve and McLaren Vale

Driest overall 0 mm at many locations

Wettest day 1.2 mm at Williamstown on the 19th

Strongest wind gust 100 km/h at Outer Harbour (Black Pole) on the 16<sup>th</sup>

#### Some notable statistics for January were:

	Record lowest	January total r	ainfall	
	New record (mm)	Old record	Years Held	Average
Hahndorf	0.1	0.3 in 1957	134	26.8
Prospect Hill	1.2	= 1.2 in 2009	51	28.0
Aldgate	1.5	2.6 in 2009	49	33.5
Edinburgh RAAF	0.0	0.2 in 2009	47	21.2
Kent Town	0.0	0.4 in 1992	42	20.1
Belair	0.0	1.0 in 2009	21	20.8

	Record highe	est January temperature	•	
	New record (°C)	Old record	Years Held	Average
West Terrace	46.6 on the 24th	46.1 on the 12th in 1939	95	28.6
Adelaide Airport	45.8 on the 24th	44.1 on the 4th in 2013	64	28.2
Parafield Airport	47.7 on the 24th	46.4 on the 25th in 2003	63	29.7
Mount Barker	44.5 on the 24th	= 44.5 on the 28th in 2009	62	27.3
Rosedale	47.2 on the 24th	46.4 on the 31st in 1968	58	30.6
Edinburgh RAAF	47.5 on the 24th	46.2 on the 23rd in 1982	47	30.1
Kent Town	47.7 on the 24th	45.7 on the 28th in 2009	42	29.5
Mount Crawford	43.7 on the 24th	43.3 on the 28th in 2009	25	27.6
Kuitpo Forest	44.0 on the 24th	42.7 on the 28th in 2009	21	26.2
Mount Lofty	41.1 on the 24th	37.9 on the 28th in 2018	20	22.1

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

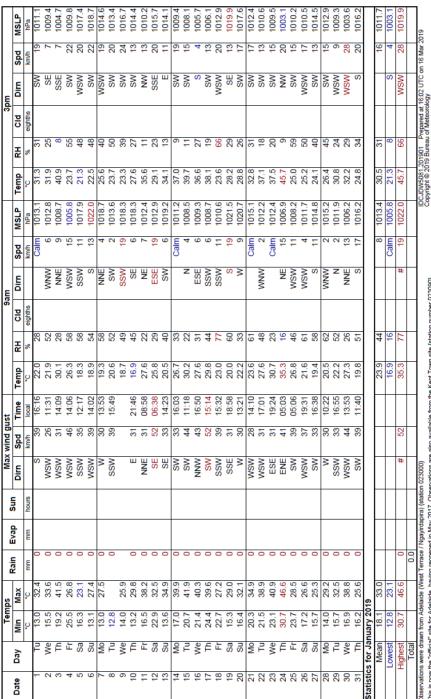
http://www.bom.gov.au/climate/current/month/sa/archive/201901.adelaide.shtml

# Adelaide (West Terrace / Ngayirdapira), South Australia January 2019 Daily Weather Observations

Australian Government

Bureau of Meteorology

The official site for Adelaide, having reopened in May 2017



This is now the "official" site for Adelaide, having reopened in May 2017. Observations are also available from the Kent Town site {station number 023090} Observations were drawn from Adelaide (West Terrace / Ngayirdapira) (station 023000)

Users of this product are deemed to have read the information and nttp://www.bom.gov.au/climate/dwo/IDCJDW0000.pdf accepted the conditions described in the notes at

#### South Australia in January 2019: warmest days on record and very dry

South Australia had its warmest January on record for mean maximum temperature and fourth-warmest January on record for mean minimum temperature. All areas of the State had very much above average daytime temperatures, with record warm days experienced in the north, east, and southwest, while the whole State also had above average overnight temperatures. Rainfall in January was below average to very much below average in southern and eastern agricultural districts, and near-average in most areas of the northern and western districts.

#### **Drier than average**

- January rainfall for South Australia as a whole was 79% below average, the driest January since 2013
- Many locations, particularly those in southern and eastern districts, recorded little or no rain for the month
- The month was very much drier than average in southern and eastern agricultural districts, with most areas having less than 20% of their January average rainfall
- The highest totals were in the Northwest Pastoral district, with Ernabella (Pukatja) having 18.2 mm for the month
- The wettest day was the 27th, when a cloud band associated with a broad area of low pressure and instability brought showers and thunderstorms over inland South Australia and daily rainfall totals of close to 10 mm in the Flinders district
- Some sites had either their lowest total January rainfall on record or their lowest total January rainfall for at least 20 years

#### Highest mean maximum temperature on record

- For monthly mean maximum temperature, South Australia had its warmest January on record (4.66 °C warmer than average), exceeding the previous record set in 2001 (+4.50 °C)
- All areas had mean maximum temperatures very much above average
- The daily mean maximum temperature for South Australia on the 24th was 45.69
  °C, the State's hottest day on record (previous highest was 45.26 °C on 2
  January 1960), and was part of the run of five consecutive days (21–25 January)
  when the State's mean maximum temperature exceeded 40 °C
- Port Augusta recorded 49.5 °C on the 24th, which was the fourth-highest temperature ever recorded at a Bureau site in South Australia and highest since 49.6 °C at Moomba on 12 January 2013
- Many sites had their highest January temperature on record, particularly the 24th
- In the State's north, Oodnadatta Airport had a total of 14 days with maximum temperatures of 45 °C or above during January, exceeding its previous record count of such days in January of 11 days in 2018
- Minimum temperatures generally weren't as extreme as the maximum temperatures, but were still warmer than average throughout the State, including large areas of very much above average in Pastoral and eastern districts
- South Australia's mean minimum temperature was 3.07 °C warmer than average, which was the fourth-highest on record for January and highest since 2006
- A few sites had their warmest January night on record, including Moomba Airport recording 36.1 °C on the 26th, the highest minimum temperature on record for South Australia
- For overall mean temperature, South Australia had its second-warmest January on record and warmest since 2001

- South Australia had its second-warmest day on record on the 24th when the mean temperature (average of maximum and minimum temperature) was 37.01° C (the highest on record is 37.20°C on 23 January 1982)
- Many sites had their highest January mean daily max. temperature on record
- Two sites in the Pastoral districts had their highest January mean daily minimum temperature on record
- A number of sites had their highest January mean temperature on record
- Further information about the heatwaves that have affected large areas of the country can be found in the Special Climate Statement Widespread heatwaves during December 2018 and January 2019

#### **Extremes in January 2019**

Hottest day 49.5 °C at Port Augusta Aero on the 24th

Warmest days on average 43.1 °C at Moomba Airport Coolest days on average 24.1 °C at Cape Willoughby

Coldest day 17.9 °C at Parawa (Second Valley Forest) on the 9th

Coldest night 3.5 °C at Coonawarra on the 10th

Coolest nights on average 11.7 °C at Coonawarra Warmest nights on average 29.2 °C at Moomba Airport

Warmest night 36.1 °C at Moomba Airport on the 26th

Warmest on average overall 36.2 °C at Moomba Airport Coolest on average overall 19.1 °C at Robe Airfield

Wettest overall 18.2 mm at Ernabella (Pukatja)

Driest overall 0 mm at many locations

Wettest day 14.6 mm at Ernabella (Pukatja) on the 19th

Strongest wind gust 100 km/h at Outer Harbour (Black Pole) on the 16<sup>th</sup>

#### Some notable statistics for January were:

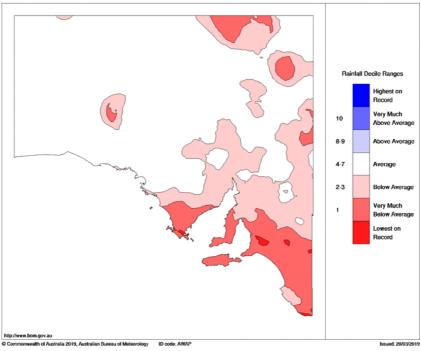
Record lowest	January total	rainfall		
	New record	Old record	Years Held	Average
Hahndorf	0.1	0.3 in 1957	134	26.8
Prospect Hill	1.2	= 1.2 in 2009	51	28.0
Mount Schank	1.6	3.0 in 2001	50	28.7
Aldgate	1.5	2.6 in 2009	49	33.5
Edinburgh RAAF	0.0	0.2 in 2009	47	21.2
Port Parham	0.0	1.0 in 1992	47	18.0
Kent Town	0.0	0.4 in 1992	42	20.1
Kingscote	0.4	0.6 in 2012	26	14.7
North Shields	0.0	0.8 in 2009	25	15.3
Nuriootpa	0.2	0.8 in 2000	23	16.7
Strathalbyn	0.8	1.0 in 2009	23	16.5
Roseworthy	0.4	= 0.4 in 2008	22	17.3
Belair	0.0	1.0 in 2009	21	20.8

Record highes	t January tempe	rature	,	
	New record (°C)	Old record	Years Held	Average
West Terrace	46.6 on the 24th	46.1 on the 12th in 1939	95	28.6
Ceduna	48.6 on the 24th	47.9 on the 2nd in 1990	77	28.7
Adelaide Airport	45.8 on the 24th	44.1 on the 4th in 2013	64	28.2
Cleve	46.0 on the 24th	45.2 on the 31st in 1968	63	28.3
Parafield Airport	47.7 on the 24th	46.4 on the 25th in 2003	63	29.7
Mount Barker	44.5 on the 24th	= 44.5 on the 28th in 2009	62	27.3
Yongala	43.5 on the 24th	= 43.5 on the 28th in 2009	62	30.9
Elliston	44.3 on the 23rd	43.2 on the 14th in 2014	58	25.9
Rosedale	47.2 on the 24th	46.4 on the 31st in 1968	58	30.6
Eudunda	45.0 on the 24th	43.5 on the 28th in 2009	55	29.3
Meningie	46.1 on the 24th	45.1 on the 28th in 2009	53	26.2
Kimba	47.0 on the 24th	46.0 on the 4th in 2013	52	31.5
Andamooka	48.1 on the 24th	47.8 on the 25th in 2011	49	36.6
Edinburgh RAAF	47.5 on the 24th	46.2 on the 23rd in 1982	47	30.1
Hawker	46.0 on the 24th	= 46.0 on the 19th in 2003	47	34.4
Kent Town	47.7 on the 24th	45.7 on the 28th in 2009	42	29.5
Maitland	46.3 on the 24th	45.0 on the 28th in 2009	37	29.4
Leigh Creek	46.9 on the 24th	46.3 on the 6th in 2013	36	35.7
Whyalla Aero	48.5 on the 24th	47.2 on the 4th in 2013	35	30.2
Cape Jaffa	41.8 on the 24th	41.6 on the 14th in 1996	28	24.7
Edithburgh	47.9 on the 24th	44.9 on the 29th in 2009	27	25.4
North Shields	48.3 on the 24th	46.1 on the 21st in 2006	27	26.2
Clare	44.9 on the 24th	43.7 on the 28th in 2009	25	30.3
Coober Pedy	47.8 on the 16th	47.4 on the 1st in 2014	25	36.8
Kingscote	45.4 on the 24th	43.8 on the 29th in 2009	25	26.7
Mount Crawford	43.7 on the 24th	43.3 on the 28th in 2009	25	27.6
Parawa	43.5 on the 24th	42.5 on the 28th in 2009	25	23.7
Cleve	47.0 on the 24th	46.1 on the 4th in 2013	23	29.1
Minnipa	48.0 on the 24th	46.9 on the 4th in 2013	23	33.1
Nuriootpa	46.0 on the 24th	44.1 on the 28th in 2009	23	30.1
Stenhouse Bay	46.7 on the 24th	44.0 on the 16th in 2014	23	25.2
Strathalbyn	46.7 on the 24th	46.3 on the 28th in 2009	23	28.0
Roseworthy	48.3 on the 24th	46.7 on the 28th in 2009	22	31.9
Kuitpo Forest	44.0 on the 24th	42.7 on the 28th in 2009	21	26.2
Snowtown	47.3 on the 24th	46.0 on the 25th in 2003	21	32.8
Tarcoola	49.1 on the 24th	48.9 on the 1st in 2014	21	36.7
Yunta	46.0 on the 15th	45.0 on the 14th in 2001	21	33.9
Mount Lofty	41.1 on the 24th	37.9 on the 28th in 2018	20	22.1

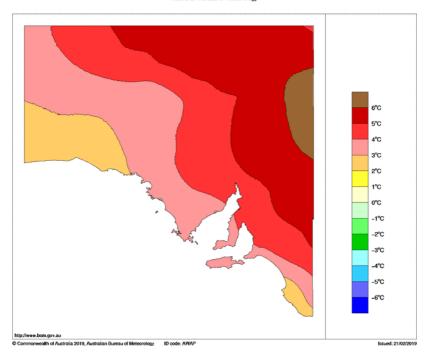
Many other rainfall & temperature records were also set in January. For more information plus a summary of statistics please see:

http://www.bom.gov.au/climate/current/month/sa/archive/201901.summary.shtml

South Australian Rainfall Deciles January 2019
Distribution Based on Gridded Data
Australian Bureau of Meteorology



Maximum Temperature Anomaly (°C) January 2019
Australian Bureau of Meteorology



#### Greater Adelaide in February 2019: drier than average, hot at times

Rainfall was below the long-term February average at all sites in Adelaide and the Hills. The month ended with heatwave conditions and above average temperatures, in contrast to cooler than average temperatures through the middle of the month. The monthly mean temperatures for February varied from close to average at many sites on the Plains to above average in the Hills.

#### Drier than average

- Rainfall was below the long-term average at all sites in Adelaide and the Hills
- Ashton in the Adelaide Hills had Greater Adelaide's wettest day, recording 31.0 mm on the 9th and a monthly total of 44.0 mm
- Rainfall totals for the month ranged from 11% of average at Edinburgh RAAF to 67% of average at Kuitpo Forest Reserve

#### Near-average temperatures for the month

- Daytime temperatures were above average at both the start and end of the month, but Adelaide had below average conditions through the middle of February.
- Heatwave conditions affected Adelaide from the 23rd and the month ended with most sites on the Plains having seven consecutive days of maximum temperatures of 30 °C or above (the latest such run in the city since 2016)
- Monthly mean maximum temperatures were generally close to average, but were above average in the Hills
- A strong cold front crossed Adelaide on the 12th, bringing strong winds and cool air, making it the city's coolest day of the month
- Mean maximum temperatures ranged from 0.1 °C warmer than average at Adelaide Airport to 2.5 °C warmer than average at Mount Lofty
- Mean minimum temperatures ranged from 0.8 °C cooler than average at Rosedale to 0.6 °C warmer than average at Mount Barker

#### Adelaide (West Terrace / ngayirdapira)

- Total rainfall was 6.6 mm, which is 32% of the long-term average of 20.5 mm
- The mean daily maximum temperature for was 29.5 °C, which is 0.9 °C above the long-term average of 28.6 °C. The warmest day was 37.9 °C on the 2nd, and the coolest day was on the 12th when the temperature reached 20.7 °C
- The mean daily minimum temperature was 16.8 °C, which is 0.1 °C below the long -term average of 16.9 °C. The coldest morning was 11.3 °C on the 14th, and the warmest morning was on the 25th when the minimum temperature was 25.4 °C

#### **Extremes in February 2019**

Hottest day

Warmest days on average Coolest days on average

Coldest day Coldest night

Coolest nights on average

Warmest nights on average

Warmest night

Warmest on average overall Coolest on average overall

Wettest overall
Driest overall
Wettest day

42.0 °C at Rosedale on the 3rd

31.1 °C at Rosedale (Turretfield Research Centre)

24.9 °C at Mount Lofty

14.0 °C at Mount Lofty on the 12th 6.2 °C at Mount Barker on the 14th

12.5 °C at Mount Barker

17.3 °C at Adelaide (Kent Town)

25.4 °C at Adelaide (West Terrace) on the 25th

23.8 °C at Adelaide (Kent Town)

19.0 °C at Mount Lofty 44.0 mm at Ashton

2.0 mm at Edinburgh RAAF 31.0 mm at Ashton on the 9th

## Adelaide (West Terrace / Ngayirdapira), South Australia February 2019 Daily Weather Observations

#### For more information plus a summary of February's statistics please see:

http://www.bom.gov.au/climate/current/month/sa/archive/201902.adelaide.sht

Australian Government	Bureau of Meteorology

The official site for Adelaide, having reopened in May 2017	site for Ade	elaide, havii	ig reoperie																		
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12	2	15.9	20.7	1.2			WSW	54	03:55	18.0	75		WSW	20	1001.5		43	~	SW	7	1005.6
13	We	11.9	21.6	2.8			SW	41	14:36	16.1	61		S	7	1015.5	20.2	39	_	WSW	72	1017.2
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24	Su		36.8	0			SE	35	20:13	26.3	31		NNE	2	1020.2		14	_	WSW	19	_
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Statistic	s for Fe	Statistics for February 2019	019																		
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	Highest	25.4	37.9	2.8			WSW	24		31.9	75		WSW	24	1022.9	35.9	92	-	SW	7 26	1021
	Total			9.9																	

IDC.IDVISDB1.201902 Prepared at 13:02 UTC on 21 Mar 2019 oppyging 8:07 pleased of Mehorology Users of this product are deemed to have read the information and excepted the conditions described in the notes at http://www.bom.gov.auc/immate/howIDC.IDVIN000.pdf

This is now the "official" site for Adelaide, having reopened in May 2017. Observations are also available from the Kent Town site (station number 023090); Observations were drawn from Adelaide (West Terrace / Ngayirdapira) (station 023000)

#### South Australia in February 2019: drier than average, warm days

Rainfall in February was below average in most northern and western districts, although totals were closer to average in the South East agricultural districts. Rainfall was the ninth-lowest on record in February for the State as a whole. Daytime temperatures were warmer than average in the west and some central and northeast areas of the State, but close to average elsewhere. Night-time temperatures were generally close to or slightly cooler than average.

#### Drier than average

- Rainfall for South Australia in February was 92% below average, the State's ninth -driest February on record and driest since 2009
- Most locations had less than 10 mm of rainfall for the month, with monthly totals less than 20% of average throughout northern and western districts
- The highest monthly totals were in the eastern Agricultural districts, with 44 mm recorded at Ashton in the Adelaide Hills
- Ashton had the wettest day for the month, recording 31.0 mm on the 9th
- Little or no rain fell in the Pastoral districts during February
- There were rain days in early February at most locations, but there were many dry days during the month, including the 3rd and 19th when no single location across the State recorded any rainfall

#### Warm days, slightly cooler than average nights

- The mean maximum temperature for South Australia in February was 1.73 °C warmer than average—the State's most recent cooler than average February for maximum temperature was in 2012
- Mean maximum temperatures were above average across most northeastern and western districts
- The mean minimum temperature for South Australia in February was 0.22 °C cooler than average, making it the lowest in February since 2012 and first cooler than average month for minimum temperature since September 2018
- Mean minimum temperatures were generally close to average in most districts, but were below average in some isolated areas scattered across the State
- On the 14th, several sites had their lowest February temperature on record

#### **Extremes in February 2019**

Hottest day
Warmest days on average

Coolest days on average Coldest day

Coldest day
Coldest night

Coolest nights on average Warmest nights on average

Warmest night

Warmest on average overall

Coolest on average overall Wettest overall

Driest overall Wettest day

Strongest wind gust

44.7 °C at Port Augusta Aero on the 3rd

38.2 °C at Oodnadatta Airport 21.6 °C at Cape Willoughby

14.0 °C at Mount Lofty on the 12th 3.5 °C at Cummins Aero on the 14th

11.1 °C at Coonawarra 23.8 °C at Moomba Airport

29.2 °C at Moomba Airport on the 7th

30.8 °C at Moomba Airport 18.8 °C at Robe Airfield

44.0 mm at Ashton

0 mm at several sites

31.0 mm at Ashton on the 9th

91 km/h at Kuitpo Forest Reserve on the 12<sup>th</sup>

#### Some notable statistics for February were:

#### **Record lowest February temperature**

	New record (°C)	Old record	Years Held	Average
North Shields	6.8 on the 14th	8.6 on the 17th in 1998	27	16.2
Clare	5.8 on the 14th	6.2 on the 3rd in 1996	25	15.0
Kingscote	4.7 on the 14th	4.8 on the 21st in 2017	25	13.6
Cleve	8.5 on the 14th	8.6 on the 2nd in 2005	23	16.3

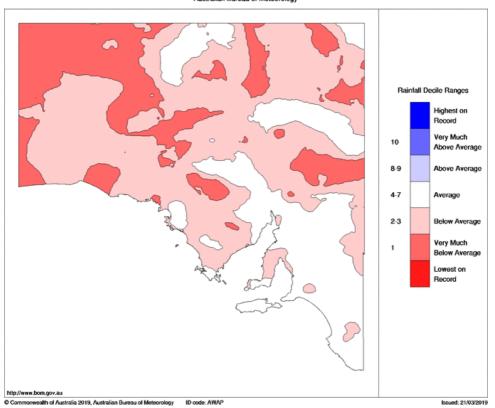
### For more information on February's temperatures and rainfall plus a summary of statistics please see:

http://www.bom.gov.au/climate/current/month/sa/archive/201902.summary.shtml

South Australian Rainfall Deciles February 2019

Distribution Based on Gridded Data

Australian Bureau of Meteorology



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

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

#### Greater Adelaide in summer 2018-19: warmer and drier than average

Rainfall totals for summer were below average throughout Adelaide and the Hills. Several heatwave events resulted in many sites setting new temperature records during the season and both daytime and night-time temperatures were warmer than average for summer.

#### Drier than average

- Rainfall totals for summer were below average throughout Adelaide and the Hills
- Edinburgh RAAF had its driest summer for 27 years; Adelaide Airport and Noarlunga had their driest summer since 2000–01; several other sites around Greater Adelaide had their driest summer for at least 10 years
- The wettest sites were in the Adelaide Hills where Ashton recorded 90.0 mm.
- The lowest totals for summer were generally in suburbs north of the city, with Regency Park recording just 10.4 mm for the season
- Mount Lofty had 47 consecutive days with no recorded rainfall from 21 December 2018 to 5 February 2019, exceeding the site's previous longest run of 24 such dry days from 4–27 February 2015
- Rainfall totals ranged from 24% of average at Edinburgh RAAF to 74% of average at Kuitpo Forest Reserve
- Edinburgh RAAF had its lowest total summer rainfall since 1990–91

#### Warmer than average

- On 24 January, several sites had their highest summer temperature on record, including 46.6 °C in the city at Adelaide (West Terrace / ngayirdapira), which was highest temperature on record at the Bureau's official Adelaide city site
- Mean maximum temperature differences from average ranged from +1.8 °C at Noarlunga to +4.6 °C at Mount Lofty
- Mean minimum temperatures ranged from 0.7 °C warmer than average at Parafield Airport to 1.9 °C warmer than average at Mount Barker
- Adelaide (Kent Town) and Kuitpo Forest Reserve had their highest summer mean daily maximum temperature on record
- Further information about the heatwaves that affected large areas of the country during summer can be found in the Special Climate Statement Widespread heatwaves during December 2018 and January 2019

#### Adelaide (West Terrace / ngayirdapira)

- The Adelaide (West Terrace / ngayirdapira) site suffered an equipment outage on 19 December 2018 and total rainfall on that day is not known; based on surrounding sites, it is estimated that at least 3 mm fell at the site on the day, in addition to the 26.4 mm on the remaining days of summer, compared to a longterm average of 66.9 mm
- The mean daily maximum temperature for Adelaide (West Terrace / ngayirdapira) was 30.9 °C, which is 2.9 °C above the long-term average of 28.0 °C. The warmest day was 46.6 °C on 24 January, and the coolest day was on 13 December when the temperature reached 16.5 °C
- The mean daily minimum temperature for Adelaide (West Terrace / ngayirdapira) was 17.2 °C, which is 1.0 °C above the long-term average of 16.2 °C. The coldest morning was 10.6 °C on 23 December, and the warmest morning was on 24 January when the minimum temperature was 30.7 °C

Extremes in summer 2018-19

Hottest day 47.7 °C at Adelaide (Kent Town) and Parafield

Airport on 24 Jan 2019

Warmest days on average 32.6 °C at Rosedale (Turretfield Research Centre)

Coolest days on average 25.8 °C at Mount Lofty

Coldest day 12.6 °C at Mount Lofty on 13 Dec 2018
Coldest night 6.1 °C at Mount Lofty on 2 Dec 2018

Coolest nights on average 13.3 °C at Mount Barker

Warmest nights on average 17.8 °C at Adelaide (Kent Town)

Warmest night 31.1 °C at Parafield Airport on 24 Jan 2019

Warmest on average overall 24.6 °C at Adelaide (Kent Town)

Coolest on average overall

Wettest overall

Driest overall

19.6 °C at Mount Lofty
90.0 mm at Ashton
10.4 mm at Regency Park

Wettest day 31.0 mm at Ashton on 9 Feb 2019

Strongest wind gust 100 km/h at Outer Harbour (Black Pole) on 16 Jan

2019

#### Some notable statistics for Summer were:

Record highes	t summer temperat	ture		
	New record (°C)	Old record	Duration	Average
West Terrace	46.6 on 24 Jan 2019	46.1 on 12 Jan 1939	95 years	28.0
Adelaide Airport	45.8 on 24 Jan 2019	44.1 on 4 Jan 2013	65 years	27.4
Mount Barker	44.5 on 24 Jan 2019	= 44.5 on 28 Jan 2009	63 years	26.4
Parafield Airport	47.7 on 24 Jan 2019	46.4 on 25 Jan 2003	63 years	29.0
Rosedale	47.2 on 24 Jan 2019	46.4 on 31 Jan 1968	58 years	29.8
Edinburgh RAAF	47.5 on 24 Jan 2019	46.2 on 23 Jan 1982	47 years	29.3
Kent Town	47.7 on 24 Jan 2019	45.7 on 28 Jan 2009	43 years	28.8
Mount Crawford	43.7 on 24 Jan 2019	43.3 on 28 Jan 2009	25 years	26.6
Kuitpo Forest	44.0 on 24 Jan 2019	42.7 on 28 Jan 2009	21 years	25.3
Mount Lofty	41.1 on 24 Jan 2019	37.9 on 28 Jan 2018	20 years	21.2

Record highest summer mean daily maximum temperature

	New record (°C)	Old record	Years Held	Average
Kent Town	31.5	31.2 in 2000	41	28.8
Kuitpo Forest	t 27.2	26.8 in 2000	20	25.3

Record highest summer mean temperature

No	ew record (°C)	Old record	Years Held	Average
Kuitpo Forest	20.9	20.8 in 2000	20	19.5

For more information on Summer's temperatures and rainfall plus a summary of statistics please see:

http://www.bom.gov.au/climate/current/season/sa/archive/201902.adelaide.shtml

#### South Australia in summer 2018-19: record warm days and drier than average

Rainfall in summer was below average to very much below average in most central and northeastern districts, making it South Australia's driest summer since 1985–86. Heatwaves in December and January resulted in numerous sites setting new high temperature records during summer 2018–19. For mean maximum temperature, it was South Australia's hottest summer on record and third-warmest for mean minimum temperature.

#### Drier than average

- Rainfall in summer was 64% below average for South Australia, the State's driest summer since 1985–86
- Summer was drier than average across most of South Australia, with areas of near-average rainfall in the west, South East districts, and on Kangaroo Island
- In the Lower South East agricultural district, despite a drier than average January and February, a wetter than average start to the season in December lifted summer rainfall totals close to average
- Many sites had either their lowest total summer rainfall on record or their lowest total summer rainfall for at least 20 years

#### Warmest summer on record for maximum temperature

- South Australia's mean maximum temperature for summer was 3.09 °C warmer than average, making it the highest on record (previous highest was +2.87 °C in summer 2000–01)
- Very much above average mean maximum temperatures were observed throughout the State, while record high mean maxima were experienced in the far southwest, north, and northeast
- For mean maximum temperature, January was SAs hottest month on record
- Heatwave events in December and January saw daytime temperatures reach the high-40s and numerous sites had their highest summer temperature on record, including 46.6 °C at the Bureau's official Adelaide city site at West Terrace
- The national highest temperature of the summer, 49.5 °C at Port Augusta, occurred on 24 January
- On 23 and 24 January, South Australia as a whole had its two hottest areaaveraged days on record, with maximum temperatures of 45.67 °C and 45.69 °C respectively (the previous hottest day was 45.25 °C on 2 January 1960)
- In contrast, earlier in the season on 13 or 14 December, daytime temperatures were more than 12 °C cooler than average in areas around the Riverland and across the northern Eyre Peninsula, with several sites having their coldest summer day on record
- Night-time temperatures were warmer than average, though not as extreme as the daytime temperatures
- The State's mean minimum temperature for summer was 1.58 °C above average, the third-highest on record and highest since summer 2005–06
- Numerous sites had their highest summer mean daily maximum temperature on record
- In January, Oodnadatta Airport and Moomba Airport had their warmest summer night on record
- Moomba had its highest summer mean daily minimum temperature on record
- Several sites had their highest summer mean temperature on record

Extremes in summer 2018-19

Hottest day 49.5 °C at Port Augusta Aero on 24 Jan 2019 40.0 °C at Marree Aero and Moomba Airport

Warmest days on average Coolest days on average

22.7 °C at Cape Willoughby 12.6 °C at Mount Lofty on 13 Dec 2018 Coldest day 3.5 °C at Coonawarra on 10 Jan 2019 Coldest night 3.5 °C at Cummins Aero on 14 Feb 2019

11.5 °C at Coonawarra Coolest nights on average Warmest nights on average 25.7 °C at Moomba Airport

36.1 °C at Moomba Airport on 26 Jan 2019 Warmest night

Warmest on average overall 32.9 °C at Moomba Airport Coolest on average overall 18.7 °C at Robe Airfield

Wettest overall 120.0 mm at Lucindale Post Office

Driest overall 0 mm at Moomba Airport

40.2 mm at Parawa on 14 Dec 2018 Wettest day Strongest wind gust 156 km/h at Snowtown on 1 Dec 2018

#### Some notable statistics for Summer were:

Record lowest	summer tota	l rainfall		
	New record	Old record	Years Held	Average
Port Parham	9.4	11.3 in 1991	46	57.0
Leigh Creek	7.2	8.9 in 1985	33	70.1
Moomba	0.0	3.4 in 2017	24	54.1
Nuriootpa	23.8	26.8 in 2007	23	74.9
Minnipa	9.4	12.4 in 1998	22	43.4
Tarcoola	5.6	7.8 in 2013	22	56.0
Gammon Ranges	9.0	15.2 in 2017	21	76.9
Roxby Downs	3.6	9.4 in 2007	21	46.4

Record lov	vest summer daily	maximum temperatı	ıre	
	New record (°C)	Old record	Years Held	Average
Whyalla	17.7 on 14 Dec 2018	18.7 on 14 Dec 2016	35	29.4
Cleve	15.6 on 14 Dec 2018	16.0 on 1 Dec 2017	23	28.3
Minnipa	15.7 on 14 Dec 2018	15.9 on 1 Dec 2005	23	32.0
Roseworthy	17.3 on 13 Dec 2018	18.1 on 29 Feb 2012	22	30.9
Gluepot	18.5 on 13 Dec 2018	18.8 on 10 Jan 2015	20	32.7
Wudinna	17.2 on 14 Dec 2018	= 17.2 on 1 Dec 2005	20	32.5

Record highest summer daily minimum temperature				
_	New record (°C)	Old record	Years Held	Average
Oodnadatta	34.3 on 25 Jan 2019	34.2 on 28 Jan 2011	71	22.3
Moomba	36.1 on 26 Jan 2019	35.0 on 17 Feb 2004	. 24	23.6

Record highest summer mean daily minimum temperature				
	New record (°C)	Old record	Years Held	Average
Moomba	25.7	25 4 in 2005	23	23

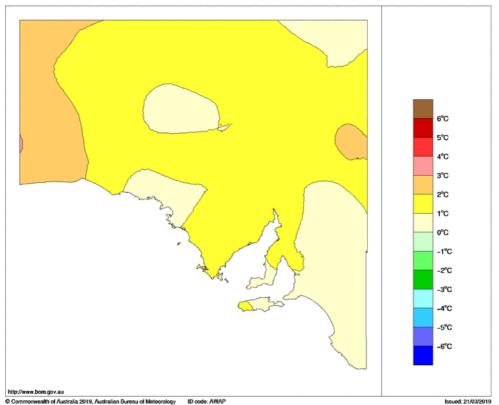
	New record (°C)	Old record	Years Held	Average
West Terrace	46.6 on 24 Jan 2019	46.1 on 12 Jan 1939	95	28.0
Ceduna	48.6 on 24 Jan 2019	47.9 on 2 Jan 1990	79	28.1
Adelaide Airport	45.8 on 24 Jan 2019	44.1 on 4 Jan 2013	65	27.4
Cleve	46.0 on 24 Jan 2019	45.2 on 31 Jan 1968	63	27.6
Mount Barker	44.5 on 24 Jan 2019	= 44.5 on 28 Jan 2009	63	26.4
Parafield Airport	47.7 on 24 Jan 2019	46.4 on 25 Jan 2003	63	29.0
Elliston	44.3 on 23 Jan 2019	43.5 on 17 Feb 2007	58	25.4
Rosedale	47.2 on 24 Jan 2019	46.4 on 31 Jan 1968	58	29.8
Eudunda	45.0 on 24 Jan 2019	43.9 on 7 Feb 2009	55	28.5
Meningie	46.1 on 24 Jan 2019	45.1 on 28 Jan 2009	53	25.7
Kimba	47.0 on 24 Jan 2019	46.0 on 4 Jan 2013	52	30.7
Andamooka	48.1 on 24 Jan 2019	47.8 on 25 Jan 2011	50	35.6
Edinburgh RAAF	47.5 on 24 Jan 2019	46.2 on 23 Jan 1982	47	29.3
Hawker	46.0 on 24 Jan 2019	= 46.0 on 19 Jan 2003	47	33.3
Kent Town	47.7 on 24 Jan 2019	45.7 on 28 Jan 2009	43	28.8
Maitland	46.3 on 24 Jan 2019	45.0 on 28 Jan 2009	38	28.3
Leigh Creek	46.9 on 24 Jan 2019	46.3 on 6 Jan 2013	36	34.6
Whyalla	48.5 on 24 Jan 2019	48.0 on 7 Feb 2009	35	29.4
Cape Jaffa	41.8 on 24 Jan 2019	41.6 on 14 Jan 1996	28	24.0
Edithburgh	47.9 on 24 Jan 2019	44.9 on 29 Jan 2009	27	24.9
North Shields	48.3 on 24 Jan 2019	46.1 on 21 Jan 2006	27	25.6
Clare	44.9 on 24 Jan 2019	43.7 on 28 Jan 2009	25	29.2
Coober Pedy	47.8 on 16 Jan 2019	47.4 on 1 Jan 2014	25	35.6
Kingscote Aero	45.4 on 24 Jan 2019	43.8 on 2 Feb 2014	25	26.1
Mount Crawford	43.7 on 24 Jan 2019	43.3 on 28 Jan 2009	25	26.6
Parawa	43.5 on 24 Jan 2019	42.5 on 28 Jan 2009	25	22.9
Stenhouse Bay	46.7 on 24 Jan 2019	44.0 on 2 Feb 2014	24	24.4
Cleve	47.0 on 24 Jan 2019	46.1 on 4 Jan 2013	23	28.3
Minnipa	48.0 on 24 Jan 2019	46.9 on 4 Jan 2013	23	32.0
Nuriootpa	46.0 on 24 Jan 2019	44.1 on 28 Jan 2009	23	29.0
Strathalbyn	46.7 on 24 Jan 2019	46.3 on 28 Jan 2009	23	27.2
Ernabella	44.5 on 15 Jan 2019	43.8 on 11 Jan 2013	22	34.4
Roseworthy	48.3 on 24 Jan 2019	46.7 on 28 Jan 2009	22	30.9
Tarcoola	49.1 on 24 Jan 2019	48.9 on 1 Jan 2014	22	35.5
Kuitpo Forest	44.0 on 24 Jan 2019	42.7 on 28 Jan 2009	21	25.3
Snowtown	47.3 on 24 Jan 2019	46.0 on 7 Feb 2009	21	31.7
Yunta	46.0 on 15 Jan 2019	45.5 on 10 Feb 2017	21	32.5
Mount Lofty	41.1 on 24 Jan 2019	37.9 on 28 Jan 2018	20	21.2

Record highest summer mean temperature				
	New record (°C)	Old record	Years Held	Average
Eudunda	23.5	= 23.5 in 2000	53	21.0
Kingscote	20.5	20.4 in 2000	24	19.4
Parawa	19.4	19.3 in 2000	24	18.1
Moomba	32.9	32.4 in 2005	23	30.6
Kuitpo Forest	20.9	20.8 in 2000	20	19.5

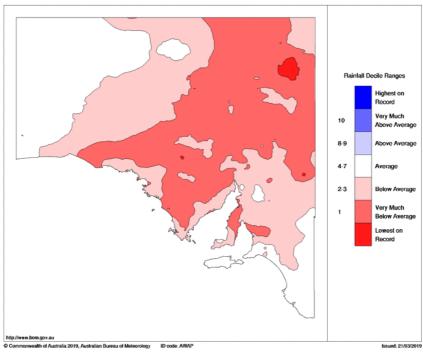
Many other rainfall & temperature records were also set in Summer. For more information plus a summary of statistics please see:

http://www.bom.gov.au/climate/current/season/sa/archive/201902.summary.shtml

Maximum Temperature Anomaly (°C) February 2019 Australian Bureau of Meteorology

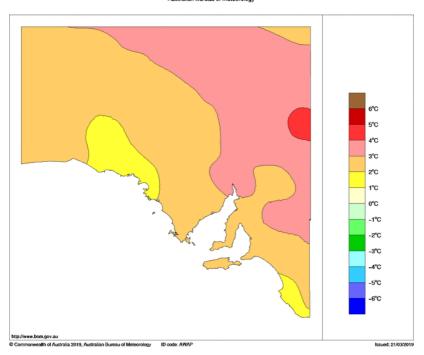


South Australian Rainfall Deciles 1 December 2018 to 28 February 2019
Distribution Based on Gridded Data
Australian Burdau of Metorology



Maximum Temperature Anomaly (°C) 1 December 2018 to 28 February 2019

Australian Bureau of Meteorology





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

#### **NEXT MEETING**

#### 6.00 PM TUESDAY 16 April 2019

Bureau of Meteorology offices, Level 4, Optus Building, NW comer of South Terrace & King William Street, Adelaide

Topic: What's the Weather Tomorrow?

Speaker: Hilary Wilson, Meteorologist State Forecasting Centre, Bureau of Meteorology.

In her presentation, Hilary will describe her pathway into her profession and outline a typical day at the office. She will describe how meteorology is an evolving profession that not only meets the needs of the general public, but also assists a variety of clients working in agriculture, aviation, transport, the emergency services and many other important sectors of our economy.

Her message will interest anyone who wants an insight into the science and art of weather forecasting. It will be of special interest to those contemplating a career in science as Hilary has recently completed the educational steps to enter her chosen profession. To be a meteorologist requires a not only a degree in science, but also requires training in media communications.

#### Please also note that subscriptions for 2018/2019 (\$15) are now due

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

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