



**Australian Government**  
**Bureau of Meteorology**

# Special Climate Statement 46 – Australia’s warmest September on record

Updated 2 October 2013



© Commonwealth of Australia 2013

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced without prior written permission from the Bureau of Meteorology. Requests and inquiries concerning reproduction and rights should be addressed to the Publishing Unit, Bureau of Meteorology, GPO Box 1289, Melbourne 3001. Requests for reproduction of material from the Bureau website should be addressed to AMDISS, Bureau of Meteorology, at the same address.

---

## Contents

- 1 Introduction – unusual hot days and nights in early spring..... 1
- 2 September 2013 – the warmest on record for Australia and in many regions..... 3
- 3 The broader context for the unusual warmth..... 5
  - 3.1 Summary of key records..... 6
- 4 Notes and contacts..... 26

## List of Tables

Table 1. ACORN-SAT and other long-term stations which have had their highest September maximum or minimum temperature on record. ....	9
Table 2. Early-season records for maximum and minimum temperature for ACORN-SAT stations.....	11
Table 3. Records for greatest number of consecutive days with temperatures at or above given thresholds on or before 30 September at ACORN-SAT stations.....	13
Table 4. National and State/Territory area-averaged temperature anomalies (from 1961–1990 averages) for September 2013.....	15
Table 5. ACORN-SAT and other long-term stations which have had their highest September mean maximum or minimum temperature on record. ....	16
Table 6. ACORN-SAT stations which have set records for the greatest number of September days over specified thresholds. ....	22
Table 7. National and State/Territory area-averaged temperature anomalies (from 1961–1990 averages) for 2013 to date (January to September) .....	25

## List of Figures

Figure 1. Area which had its highest September maximum temperature on record on 26 September 2013 (dark red). ....	7
Figure 2. Australian temperature anomalies above or below average for September 2013. ....	8
Figure 3. Australian temperature deciles for September 2013.....	8
Figure 4. Australian temperature deciles for the 12 months October 2012 to September 2013	8

## 1 Introduction – unusual hot days and nights in early spring

September 2013 has been Australia’s warmest on record. Monthly mean temperatures<sup>1</sup>, averaged nationally, were 2.75 °C above the 1961–1990 average, more than a full degree ahead of the previous September record, set in 1983. September 2013 has also been Australia’s most anomalous month on record in terms of how far mean temperatures have been above average, surpassing the previous record of +2.66 °C, set in April 2005. September’s warmth was exceptional both by day and by night, with both monthly maximum and minimum temperatures being the highest on record for September.

While conditions had been warm through much of winter, the most unusual heat began from the last week of August 2013 and continued into the first half of September. Many record-high daily temperatures were set for this time of year, across large parts of Australia. On the last day of winter, Australia recorded an average maximum temperature of 29.92 °C. This set a new daily record for winter, exceeding the previous record high by 0.19 °C (29.73 °C set on 23 August 1995). The very warm conditions continued with an Australia-wide averaged maximum temperature of 31.45 °C on 1 September, setting a new record for the earliest 31 °C day by 15 days (previously 31.68 °C on 16 September 1981).

From 10 September onwards, conditions cooled across southeastern Australia while the focus of the heat shifted to Queensland, where numerous records were set between 12 and 16 September. Temperatures then moderated for a few days before extreme heat returned to northern and eastern Australia in the final week of the month, with many records set on 25 and 26 September, particularly in Queensland.

During the warm end to winter and warm start to spring, many station records have also been broken. Numerous September records for individual days or nights were set in the last week of September, mostly in Queensland (Table 1), with 29 per cent of the State having its hottest September day on record on 26 September (Figure 1). Some sites in southern inland Queensland broke their September records by more than 3 °C. Not only did the 41.4 °C observed at Taroom on 26 September, Queensland’s highest temperature for the month, break the site’s September record, it was also higher than its October record.

Another significant aspect of the event was the high temperatures which occurred in the first half of September. Over most of Australia, average daily temperatures rise by between 2 °C and 5 °C between the start and end of September. This makes it extremely difficult to set high daily temperature records in the first half of the month, as evidenced by almost all existing September records having been set in the last 10 days of the month. However many sites had daily temperatures early in the month which were warmer than any previously observed so early in spring.

---

<sup>1</sup> The monthly mean temperature is average of the monthly maximum and minimum temperature; i.e.  $(\text{mean monthly maximum} + \text{mean monthly minimum})/2$ , where the mean monthly maximum/minimum is the average of the 28–31 daily maxima/minima.

A new Australian early-season<sup>2</sup> record of 41.1 °C was observed at Fitzroy Crossing in Western Australia on 2 September. The earliest 41 °C previously observed anywhere in Australia was on 8 September 1992 at Wyndham (also in Western Australia). State/Territory based early-season records were also set;

- on 4 September for South Australia (37.7 °C at Tarcoola) and Victoria (32.8 °C at Mildura),
- on 12 and 14 September for Queensland (40.0 °C and 40.4 °C, both at Julia Creek),
- and on 17 September for the Northern Territory (41.1 °C at Bradshaw).

The Queensland observation also marked the earliest date in spring on which 40 °C has been reached in Queensland (previously 13 September 2010 at Century Mine). Queensland also experienced an early-season record high for overnight minimum temperatures with 28.6 °C at Trepell Airport on 16 September.

A total of 37 maximum and 23 minimum early-season temperature records, including stations in all States and Territories, have been broken or equalled at the 112 stations in the Australian Climate Observation Reference Network – Surface Air Temperature (ACORN-SAT), as shown in Table 2. Amongst these were Sydney’s earliest night of 20 °C or above on 10 September (previously 13 September 1946), and Canberra’s earliest spring day of 25 °C or above on 2 September (previously 13 September 2008). A number of other locations set or equalled records for the earliest day above 35 °C or other significant thresholds (Table 2).

The high temperatures were prolonged in many areas, especially away from the coast. Alice Springs experienced 20 consecutive days above 30 °C from 27 August to 15 September. The previous earliest occurrence of such a sequence was 16 October to 4 November 1967. Equivalent September records have also been broken at numerous other locations (Table 3), including a record of 20 consecutive days of 20 °C or above at Sydney ending on 12 September (previously 19 days in 2001). While these temperatures may seem relatively mild by mid-summer standards, their occurrence during late winter or early spring is highly significant, with a range of impacts likely on agriculture and natural systems, especially through accelerated or premature development of plants and crops. There were also numerous bushfires, particularly in eastern New South Wales.

---

<sup>2</sup> An early-season record is defined as a temperature which is higher than any temperature previously observed between 1 July and the date in question – e.g. the previous highest temperature observed in Australia between 1 July and 2 September was 40.0 °C at Kalumburu on 27 August 1970.

## 2 September 2013 – the warmest on record for Australia and in many regions

Averaged over Australia, monthly maximum temperatures were 3.41 °C above average for September and monthly minimum temperatures 2.09 °C above average, combining to a monthly mean temperature 2.75 °C above average.

All of these have set new September records for Australia, with the monthly mean temperature more than a degree above the previous record. The monthly maximum and mean temperatures have also set Australian records for the largest positive temperature anomaly observed in any month. (The previous records are respectively, 3.16 °C above average in August 2009, and 2.66 °C above average in April 2005).

It has also been the warmest September on record for monthly mean temperatures for all States and Territories except Western Australia and Tasmania. New South Wales, Queensland, South Australia and the Northern Territory have set new records for September maximum temperatures, while Victoria and South Australia have set new records for September minimum temperatures. South Australia and the Northern Territory have set records for their largest monthly maximum temperature anomaly for any month, and South Australia and Queensland have also done likewise for mean temperatures. South Australia’s monthly maximum temperature anomaly of +5.39 °C is the largest ever observed for any State or Territory. A full list of State and Territory anomalies and rankings is given in Table 4.

Temperatures were above average throughout almost the entire country (Figure 2), with the only substantial exceptions being for maximum temperatures in some western parts of Western Australia. The largest anomalies occurred in the central and eastern interior. Mean maximum temperatures for September were 6 °C or more above average in parts of northern South Australia, the south of the Northern Territory, southern inland Queensland and far western New South Wales. Alice Springs’ mean monthly maximum of 33.2 °C was 6.6 °C above average, a value more typical of November than September, and broke the previous September record by 2.6 °C, while Oodnadatta was 6.9 °C above average, and Broken Hill broke its previous September record mean maximum temperature by 3.0 °C. Minimum temperatures over the same region, whilst less extreme, were still 4 °C to 5 °C above average in places.

September monthly maximum temperatures were the highest on record for over 57 per cent of Australia (Figure 3), including almost all of South Australia, much of central and western Queensland, large parts of New South Wales, most of the Northern Territory, and parts of western Victoria. Records were set for monthly minimum temperature over 29 per cent of Australia, including most of Victoria and South Australia.

September records were set for mean maximum temperature at 50 of the 112 ACORN-SAT stations, and for mean minimum temperature at 28 stations (Table 5). Of the capital cities, Melbourne, Sydney and Adelaide all had their warmest September on record for both maximum and minimum temperatures, as did Canberra for maximum temperatures, with Melbourne’s September mean maximum exceeding 20 °C for the first time. All four cities also set records for monthly mean temperatures. Many records were also broken for the most

---

days or nights above major thresholds (Table 6), including the first September in which daily minimum temperatures at Sydney failed to fall below 10 °C for the entire month.



### 3 The broader context for the unusual warmth

The recent record-high temperatures come on the back of an exceptionally warm period for Australia, with above-average mean temperatures affecting the entire nation. This warmth has culminated in Australia’s warmest 12-month period on record (Figure 4), with an anomaly of +1.25 °C for the 12 months from October 2012 to September 2013. This is a record-high temperature anomaly for any 12-month period (i.e., all January to December, February to January, etc.), exceeding the pre-2013 record of +1.08 °C set in 2005–06. Along with the new national mean temperature records, similar new records have been set for South Australia, with a value of +1.83 °C, exceeding the value of +1.44 °C set in 2005–06, and for the Northern Territory, where the anomaly of +1.37 °C surpasses the 1997–98 record of +1.28 °C.

In addition, a new record year-to-date mean temperature (January to September) has been observed, with the anomaly of +1.30 °C breaking the previous record of +1.07 °C set in 2005. Along with the national year-to-date (January to September) record mean temperature anomaly, South Australia, Queensland, New South Wales, the Northern Territory, and Victoria also set year-to-date State/Territory records with +1.79 °C, +1.27 °C, +1.36 °C, +1.61 °C and +1.27 °C respectively, with South Australia running more than 0.6 °C ahead of its previous record (Table 7).

The record September temperatures follow Australia’s second-warmest winter on record for maximum temperatures (anomaly of +1.42 °C). High pressure systems during winter were positioned further south than usual, limiting the intrusion of cold fronts and low pressure systems across the mainland. As a result, winter was characterised by warm and dry conditions, with higher-than-average pressure recorded across most of Australia.

### 3.1 Summary of key records

In the past 12-month period a large number of mean temperature records have fallen across Australia, including:

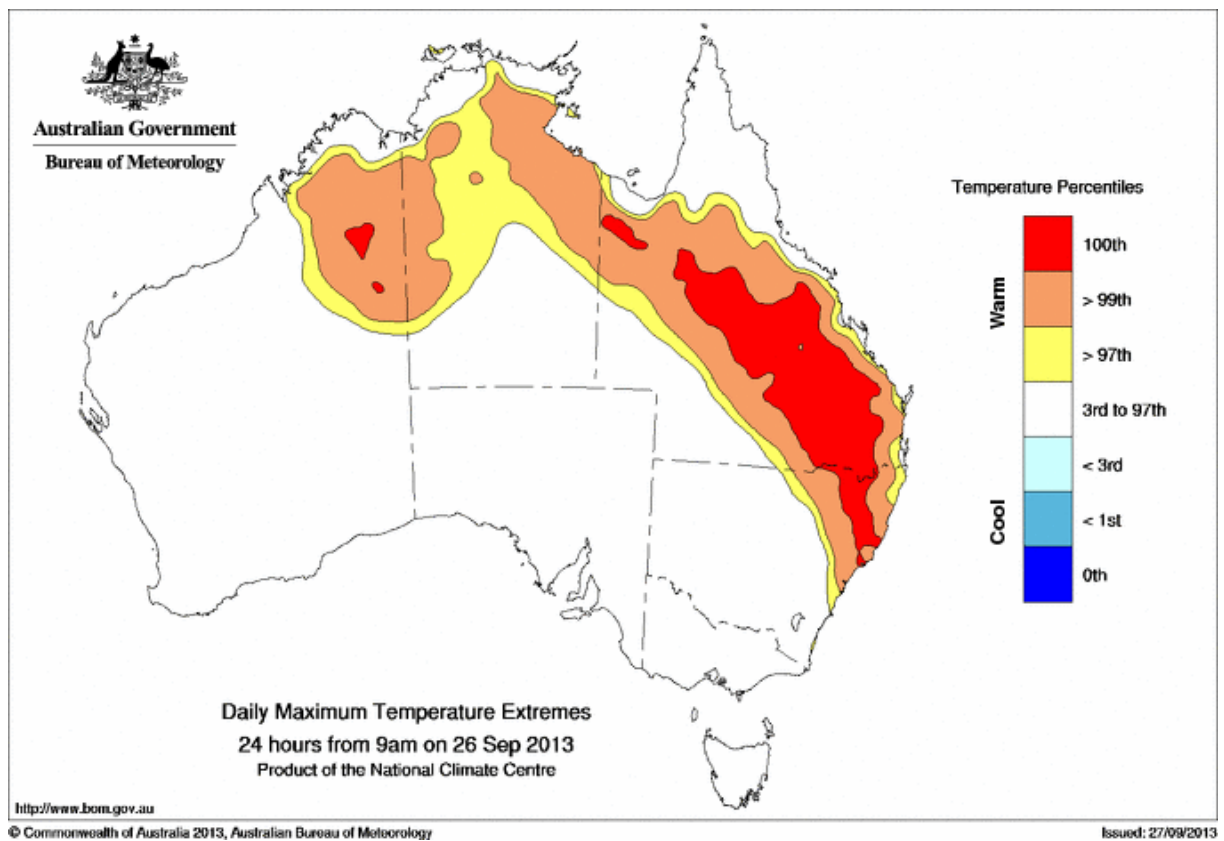
- Australia’s warmest month on record (January)
- Australia’s warmest September on record
- Australia’s largest positive monthly anomaly on record (September)
- Australia’s warmest summer on record (December 2012 to February 2013)
- Australia’s warmest January to September period on record
- Australia’s warmest 12-month period on record (broken twice, for the periods ending August and September)
- Indeed, Australia’s warmest period on record for all periods 1 to 18 months long ending September 2013

Two significant daily maximum temperature records were also set this year:

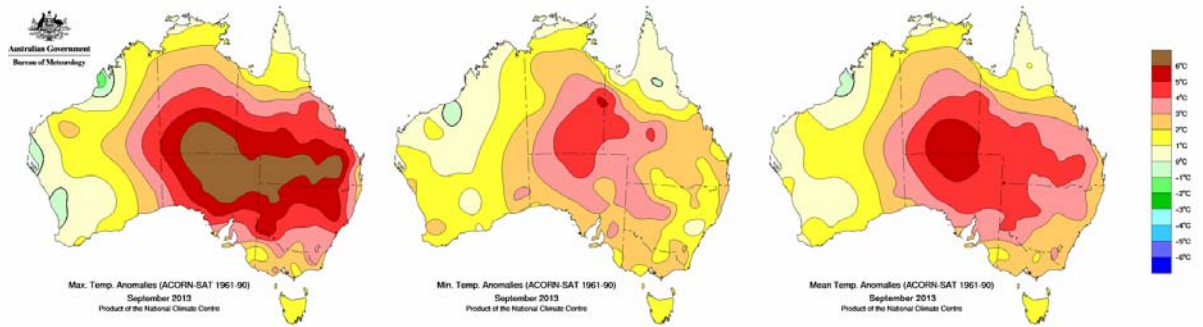
- Australia’s hottest summer day on record (7 January)
- Australia’s warmest winter day on record (31 August)

The periods up to September 2013 have also resulted in numerous State and Territory mean temperature records including:

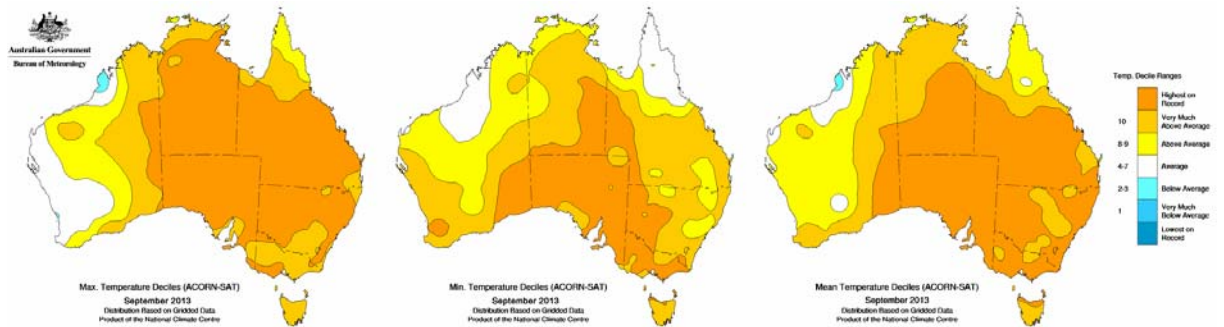
- The warmest January to September period on record for all States and Territories except Tasmania and Western Australia
- The warmest winter on record for Victoria
- Largest positive monthly anomaly on record for South Australia and Queensland (September)
- The warmest January to September period on record for South Australia, Victoria, New South Wales and the Northern Territory, and also for Melbourne, Sydney and Adelaide
- The warmest 12-month period on record for South Australia, the Northern Territory and southern Australia
- The warmest winter day on record for the Northern Territory, both on an area-averaged basis and for the highest individual temperature observed



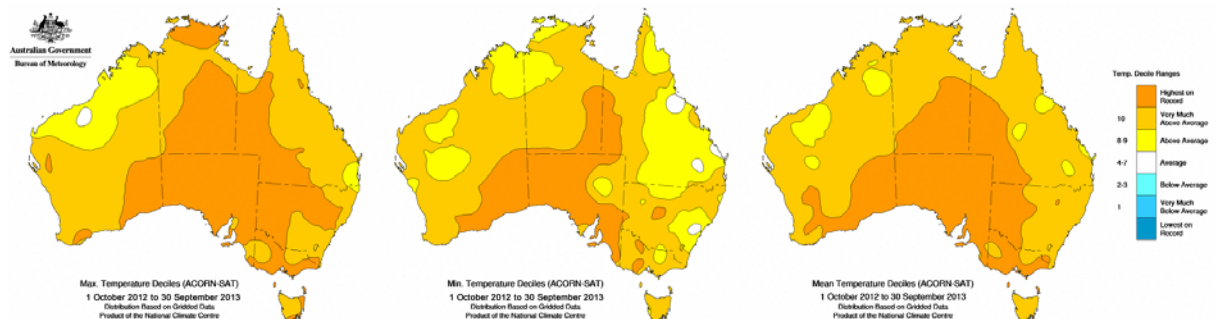
**Figure 1.** Area which had its highest September maximum temperature on record on 26 September 2013 (dark red).



**Figure 2.** Australian temperature anomalies above or below average for September 2013. Maximum (left), minimum (centre) and mean (right) temperatures.



**Figure 3.** Australian temperature deciles for September 2013. Maximum (left), minimum (centre) and mean (right) temperatures. Areas which are warmest on record are shown in dark orange.



**Figure 4.** Australian temperature deciles for the 12 months October 2012 to September 2013. Maximum (left), minimum (centre) and mean (right) temperatures. Areas which are warmest on record are shown in dark orange.

**Table 1.** ACORN-SAT and other long-term stations which have had their highest September maximum or minimum temperature on record.

Location	State	Value (°C)	Date	Previous record
<u>Maximum temperature</u>				
Halls Creek	WA	40.2	27 Sep	39.9 (30/9/1998)
Warruwi	NT	37.0	22 Sep	35.7 (23/9/1986)
Victoria River Downs	NT	40.7	27 Sep	40.4 (17/9/1971)
Brunette Downs	NT	40.4	29 Sep	40.3 (26/9/1997)
Tennant Creek	NT	39.0	24 Sep	38.9 (27/9/1997)
<i>Burketown</i>	QLD	39.5	21 Sep	39.0 (26/9/1973, 30/9/1997)
Mount Isa	QLD	39.8 (=)	25 Sep	39.8 (23/9/2012)
Richmond	QLD	40.2	26 Sep	40.1 (30/9/1988)
Springsure	QLD	39.0	26 Sep	37.7 (27/9/1997)
Tambo	QLD	39.0 (=)	26 Sep	39.0 (30/9/1988)
Taroom	QLD	41.4	26 Sep	38.7 (30/9/1988)
Barcaldine	QLD	40.1	26 Sep	39.0 (30/9/1988)
Isisford	QLD	40.7	26 Sep	39.8 (29/9/1988)
Longreach	QLD	40.8	26 Sep	40.6 (30/9/1988)
Windorah	QLD	40.7	24 Sep	40.2 (29/9/2000)
Rockhampton	QLD	37.2	26, 27 Sep	37.1 (22/9/1943)
Monto	QLD	38.0	26 Sep	37.3 (30/9/1988)
Gladstone	QLD	33.8	11 Sep	33.8 (20/9/1989)
Stanthorpe	QLD	32.2	26 Sep	30.2 (30/9/1977)
Texas	QLD	36.7	26 Sep	35.8 (29/9/2000)
Applethorpe	QLD	31.4	26 Sep	30.0 (23/9/2003)
Oakey	QLD	37.4	26 Sep	34.8 (29/9/2000)
<i>Miles</i>	QLD	39.9	26 Sep	36.7 (22/9/1943)
Injune	QLD	39.3	26 Sep	36.7 (21/9/2009)
Mitchell	QLD	39.3	26 Sep	38.0 (30/9/1988)
Surat	QLD	39.3	26 Sep	37.4 (25/9/2002)
<i>St. George</i>	QLD	39.2	26 Sep	38.6 (29/9/2000)
Charleville	QLD	39.0	25 Sep	38.5 (30/9/1988)
Cunnamulla	QLD	38.2	25 Sep	37.7 (24/9/2002)
Pindari Dam	NSW	34.4	26 Sep	33.1 (25/9/2002)
Barraba	NSW	33.5	26 Sep	33.4 (29/9/2000)
Woolbrook	NSW	29.0	26 Sep	28.5 (23/9/2003)
Inverell Research	NSW	32.1	26 Sep	31.2 (25/9/2002)
Tenterfield	NSW	31.2 (=)	26 Sep	31.2 (30/9/1977)

Tabulam	NSW	33.4	26 Sep	33.3 (30/9/2000)
Mount Seaview	NSW	36.2 (=)	26 Sep	36.2 (25/9/2002)
Williamtown	NSW	36.4	26 Sep	36.0 (26/9/1965)
<u>Minimum temperature</u>				
Woomera	SA	23.2	30 Sep	22.8 (30/9/2001)
Cleve	SA	22.5	4 Sep	21.4 (17/9/1981)
Elliston	SA	20.5	4 Sep	19.7 (28/9/1999)
Tambo	QLD	25.5	30 Sep	23.3 (12/9/1996)
Taroom	QLD	21.0	28 Sep	20.5 (22/9/2009)
Barcaldine	QLD	24.8	28 Sep	23.4 (25/9/2003)
Double Island Point	QLD	21.1 (=)	30 Sep	21.1 (26/9/1958)

Where a station name is shown in italics, data from two or more sites have been combined.

**Table 2.** Early-season records for maximum and minimum temperature for ACORN-SAT stations.

Location	State	Value (°C)	Date	Previous record (°C)	Notes
<u>Maximum temperature</u>					
Halls Creek	WA	40.2	27 Sep	39.7 (23/9/2012)	Earliest 40°C
Port Hedland	WA	39.2	4 Sep	37.0 (1/9/1962)	
<i>Marble Bar</i>	WA	39.2	3 Sep	38.8 (3/9/1944)	
Wittenoom	WA	37.2	3 Sep	34.9 (3/9/1980)	Earliest 35°C
<i>Forrest</i>	WA	35.5	3 Sep	34.8 (3/9/2012)	Earliest 35°C
Giles	WA	34.4	3 Sep	33.2 (24/8/1995)	
Victoria River Downs	NT	40.7	27 Sep	40.4 (17/9/1971)	
Tennant Creek	NT	39.0	24 Sep	38.7 (23/9/2012)	
Alice Springs	NT	36.5	1 Sep	35.2 (23/8/2009)	
Woomera	SA	35.6	4 Sep	33.8 (2/9/2002)	Earliest 35°C
<i>Tarcoola</i>	SA	37.7	4 Sep	35.0 (3/9/1999)	
Marree	SA	35.8	4 Sep	35.5 (2/9/2002)	
Ceduna	SA	35.8	3 Sep	35.6 (3/9/1999)	
Kyancutta	SA	35.5	4 Sep	33.8 (3/9/1999)	Earliest 35°C
<i>Cape Borda</i>	SA	22.7	3 Sep	22.0 (25/8/1977)	
<i>Burketown</i>	QLD	39.5	21 Sep	38.5 (3/9/1975)	
Richmond	QLD	40.2	26 Sep	40.1 (24/9/1915)	
Barcaldine	QLD	40.1	26 Sep	37.8 (2/9/1975)	Earliest 40°C
Longreach	QLD	40.8	26 Sep	40.1 (25/9/2002)	Earliest 40°C (15 Sep)
Camooeal	QLD	38.5	12 Sep	38.4 (9/9/1992)	
Boulia	QLD	38.8	12 Sep	38.2 (11/9/1930)	
<i>Gayndah</i>	QLD	36.1	12 Sep	36.0 (24/8/2009)	
Rockhampton	QLD	37.2	26 Sep	37.1 (22/9/1943)	
<i>Miles</i>	QLD	39.9	26 Sep	36.7 (24/9/1943)	
<i>St. George</i>	QLD	39.2	26 Sep	38.3 (23/9/1928)	
Charleville	QLD	39.0	25 Sep	37.0 (24/9/2000)	
Wilcannia	NSW	32.8	29 Aug	32.4 (24/8/1995)	
<i>Moree</i>	NSW	36.3	26 Sep	36.1 (24/8/2009)	
Williamtown	NSW	36.4	26 Sep	36.0 (26/9/1965)	
<i>Scone</i>	NSW	30.3	7 Sep	29.8 (23/8/2009)	Earliest 30°C
Sydney	NSW	31.6	10 Sep	31.3 (26/8/1995)	
<i>Canberra</i>	ACT	25.2	2 Sep	24.3 (2/9/1982)	Earliest 25°C
<i>Cabramurra</i>	NSW	16.7	3 Sep	15.5 (28/8/2005)	
Mildura	VIC	32.8	4 Sep	31.4 (1/9/1982)	
Kerang	VIC	29.3	4 Sep	28.4 (2/9/2006)	

Larapuna (Eddystone Point)	TAS	19.4 (=)	2 Sep	19.4 (26/8/1977)	
Cape Bruny	TAS	22.9	1 Sep	22.4 (25/8/1977)	
<u>Minimum temperature</u>					
Wittenoom	WA	25.0	4 Sep	22.0 (29/8/1982)	Earliest 25°C
Geraldton	WA	18.1 (=)	24 Sep	18.1 (27/7/2001)	
Tennant Creek	NT	25.8	14 Sep	25.6 (11/9/1988)	
Woomera	SA	23.2	30 Sep	22.8 (30/9/2001)	
<i>Tarcoola</i>	SA	20.0 (=)	4 Sep	20.0 (3/9/1964)	
Oodnadatta	SA	24.2	23 Sep	23.7 (22/9/2008)	
<i>Port Lincoln</i>	SA	16.1 (=)	4 Sep	16.1 (3/9/1962)	
<i>Cape Borda</i>	SA	17.7	4 Sep	16.0 (4/9/1972)	
<i>Adelaide</i>	SA	19.2	9 Sep	18.9 (3/9/1964)	
Mount Gambier	SA	15.3	4 Sep	14.2 (29/8/2005)	Earliest 15°C
<i>Weipa</i>	QLD	25.6	15 Sep	25.2 (25/7/2010)	
Barcardine	QLD	24.8	28 Sep	23.4 (25/9/2003)	
Longreach	QLD	24.3	16 Sep	22.1 (5/9/2006)	
<i>Gayndah</i>	QLD	20.8	16 Sep	20.0 (15/9/1944)	
Sydney	NSW	20.1	10 Sep	19.5 (27/8/1995)	Earliest 20°C
<i>Cabramurra</i>	NSW	8.8	3 Sep	8.6 (7/8/1973)	
<i>Deniliquin</i>	NSW	16.6	5 Sep	16.2 (4/9/1999)	
Mildura	VIC	19.4	5 Sep	18.8 (30/8/2005)	
<i>Nhill</i>	VIC	14.4	5 Sep	13.6 (5/9/2012)	
Rutherglen	VIC	15.1	5 Sep	14.0 (1/9/1993)	Earliest 15°C
Melbourne	VIC	19.7	5 Sep	17.9 (4/9/1999)	
Laverton	VIC	17.6	5 Sep	17.0 (4/9/1999)	
<i>Low Head</i>	TAS	13.1	5 Sep	13.0 (3/7/1985)	

Where a station name is shown in italics, data from two or more sites have been combined.

The ‘previous record’ is the highest temperature observed at that location on any date between 1 July and the date of the 2013 observation listed (see footnote in section 1).

Where the temperature observed is the earliest date on which a significant threshold has been exceeded, this is shown under ‘Notes’. If this threshold was reached more than once during the month, the date of the earliest occurrence is shown in brackets.



**Table 3.** Records for greatest number of consecutive days with temperatures at or above given thresholds on or before 30 September at ACORN-SAT stations.

Location	State	Threshold (°C)	Number of days	Date	Previous record
<u>Maximum temperature</u>					
Giles	WA	25	37	25 Aug – 30 Sep	26 (5-30 Sep 1981)
Victoria River Downs	NT	40	5	23 – 27 Sep	2 (23-24 Sep 2012)
Tennant Creek	NT	30	36	26 Aug – 30 Sep	30 (1-30 Sep 1983)
Alice Springs	NT	30	20	27 Aug – 15 Sep	12 (19-30 Sep 2000)
		25	36	26 Aug – 30 Sep	21 (27 Aug – 16 Sep 2002)
Woomera	SA	25	11	30 Aug – 9 Sep	10 (19-28 Sep 2000)
		20	24	25 Aug – 17 Sep	21 (25 Aug – 14 Sep 1959)
<i>Tarcoola</i>	SA	20	38	24 Aug – 30 Sep	31 (31 Aug – 30 Sep 2012)
Marree	SA	30	10	31 Aug – 9 Sep	8 (15-22 Sep 1981)
Oodnadatta	SA	25	24	25 Aug – 17 Sep	19 (12-30 Sep 2006)
<i>Burketown</i>	QLD	35	8	16 – 23 Sep	7 (14-20 Sep 2003)
Richmond	QLD	30	37	25 Aug – 30 Sep	36 (26 Aug – 30 Sep 2000)
Mackay	QLD	30	3	18 – 20 Sep 27 – 29 Sep	2 (22-23 Sep 2009)
Barcaldine	QLD	35	6	24 – 29 Sep	4 (24-27 Sep 2003)
Longreach	QLD	40	2	25 – 26 Sep	1 (numerous)
		35	8	23 – 30 Sep	7 (24-30 Sep 2004)
Camooweal	QLD	35	19	10 – 28 Sep	14 (17-30 Sep 2003)
		30	37	25 Aug – 30 Sep	33 (29 Aug – 30 Sep 1980)
<i>Birdsville</i>	QLD	30	21	26 Aug – 15 Sep	24 (5-28 Sep 2007)
		25	37	25 Aug – 30 Sep	17 (14-30 Sep 2000)
<i>Bundaberg</i>	QLD	30	4	26 – 29 Sep	3 (28-30 Sep 1991)
<i>Gayndah</i>	QLD	35	3	25 – 27 Sep	2 (23-24 Aug 2009)
		25	35	24 Aug – 27 Sep	33 (29 Aug – 30 Sep 1980)
Rockhampton	QLD	35	3	25 – 27 Sep	2 (26-27 Sep 1992)
		30	12	10 – 21 Sep	11 (17-27 Sep 2003)
<i>Miles</i>	QLD	35	4	24 – 27 Sep	2 (23-24 Aug 2009)
		25	37	25 Aug – 30 Sep	18 (13-30 Sep 2000)
<i>St. George</i>	QLD	25	21	26 Aug – 15 Sep	18 (13-30 Sep 2000)
Charleville	QLD	35	5	24 – 28 Sep	3 (20-22 Sep 2009)
		25	37	25 Aug – 30 Sep	22 (9-30 Sep 2007)
<i>Thargomindah</i>	QLD	25	37	25 Aug – 30 Sep	21 (6-26 Sep 1981)
Tibooburra	NSW	25	24	26 Aug – 18 Sep	17 (14-30 Sep 2000)
<i>Walgett</i>	NSW	25	21	26 Aug – 15 Sep	17 (14-30 Sep 2000)
Yamba	NSW	20	39	23 Aug – 30 Sep	30 (22 Aug – 20 Sep 1996)
Coffs Harbour	NSW	20	39	23 Aug – 30 Sep	30 (1-30 Sep 2009)
<i>Scone</i>	NSW	20	23	24 Aug – 15 Sep	20 (6-25 Sep 1981)
Gunnedah	NSW	20	24	23 Aug – 15 Sep	20 (18 Aug – 6 Sep 1982)
Williamtown	NSW	20	21	23 Aug – 12 Sep	18 (8-25 Sep 2001)
Sydney	NSW	20	20	24 Aug – 12 Sep	19 (7-25 Sep 2001)

<i>Nowra</i>	NSW	20	15	24 Aug – 7 Sep	11 (14-24 Sep 2006)
Mildura	VIC	20	19	25 Aug – 12 Sep	16 (18 Aug – 2 Sep 1982)
Kerang	VIC	20	14	27 Aug – 9 Sep	12 (12-23 Sep 2006)
<u>Minimum temperature</u>					
Oodnadatta	SA	10	21	27 Aug – 16 Sep	21 (27 Aug – 16 Sep 1959)
<i>Cape Borda</i>	SA	15	2	3 – 4 Sep	1 (numerous)
<i>Nuriootpa</i>	SA	10	5	2 – 6 Sep	4 (20-23 Sep 2001)
Barcaldine	QLD	20	6	25 – 30 Sep	3 (25-27 Sep 2003)
Camooeal	QLD	15	23	8 – 30 Sep	22 (7-28 Sep 1981)
Cape Moreton	QLD	20	3	25 – 27 Sep	2 (4-5 Sep 2010)
		15	37	25 Aug – 30 Sep	27 (4-30 Sep 2000)
Wilcannia	NSW	10	11	31 Aug – 10 Sep	9 (22-30 Sep 1999)
Cobar	NSW	10	14	28 Aug – 10 Sep	13 (25 Aug – 6 Sep 1969)
Sydney	NSW	10	36	26 Aug – 30 Sep	30 (30 Aug – 28 Sep 1899)
Gabo Island	VIC	10	16	24 Aug – 8 Sep	15 (25 Aug – 8 Sep 1965)
Wilson's Promontory	VIC	10	16	24 Aug – 8 Sep	15 (1-15 Jul 2001)

Where a station name is shown in italics, data from two or more sites have been combined.

Where the previous record was set on more than one occasion, only the most recent instance is shown.

**Table 4.** National and State/Territory area-averaged temperature anomalies (from 1961–1990 averages) for September 2013.

Element	Region	Anomaly (°C)	Rank	Previous record (°C)
Maximum temperature	Australia	+3.41	<b>1</b>	+2.50 (1980) (September) +3.16 (August 2009) (all months)
	Queensland	+4.12	<b>1</b>	+2.79 (1928) (September) +4.13 (August 2009) (all months)
	NSW	+4.68	1	+3.39 (1928)
	Victoria	+2.74	2	+2.94 (1944)
	Tasmania	+1.45	4	+2.21 (2001)
	SA	+5.39	<b>1</b>	+3.49 (1980) (September) +4.38 (August 1982) (all months)
	WA	+1.53	10	+2.31 (1980)
	NT	+3.94	<b>1</b>	+2.51 (1997) (September) +3.70 (August 2009) (all months)
	Minimum temperature	Australia	+2.09	1
Queensland		+2.12	6	+3.47 (1998)
NSW		+2.17	3	+2.64 (1998)
Victoria		+2.21	1	+1.72 (2001)
Tasmania		+1.54	3	+1.94 (1980)
SA		+3.18	1	+2.22 (1999)
WA		+1.21	4	+1.89 (1981)
NT		+2.89	5	+2.99 (2005)
Mean temperature	Australia	+2.75	<b>1</b>	+1.66 (1983) (September) +2.66 (April 2005) (all months)
	Queensland	+3.12	1	+2.56 (1915)
	NSW	+3.42	1	+2.52 (1965)
	Victoria	+2.47	1	+1.94 (2001)
	Tasmania	+1.50	3	+1.75 (2001)
	SA	+4.28	<b>1</b>	+2.47 (2000) (September) +3.96 (January 2001) (all months)
	WA	+1.37	4	+1.98 (1981)
	NT	+3.41	1	+2.72 (2005)

Where the rank is in bold the anomaly is a record for any month.

**Table 5.** ACORN-SAT and other long-term stations which have had their highest September mean maximum or minimum temperature on record.

Location	State	Value (°C)	Anomaly (°C)	Previous record (°C)
<u>Maximum temperature</u>				
Eucla	WA	24.8	3.3	24.0 (2012)
Eyre	WA	24.2	3.1	24.1 (2012)
Giles	WA	31.7	4.7	31.5 (1980)
Daly Waters	NT	37.1	2.5	37.0 (2005)
Brunette Downs	NT	36.9	4.1	36.5 (1997)
Tennant Creek	NT	35.2	4.4	34.4 (1997)
Curtin Springs	NT	33.0	6.2	31.5 (2000)
<i>Rabbit Flat</i>	NT	36.9 (=)	4.4	36.9 (1995)
Alice Springs	NT	33.2	6.6	30.7 (1980)
Woomera	SA	28.4	6.2	26.1 (1980)
Andamooka	SA	30.1	6.1	27.8 (1980)
<i>Tarcoola</i>	SA	29.8	6.1	27.8 (1980)
Marree	SA	31.9	6.5	29.3 (1980)
Oodnadatta	SA	32.9	6.9	30.5 (2000)
Ceduna	SA	26.5	5.2	25.1 (1981)
Kyancutta	SA	26.0	4.5	24.8 (1944)
Elliston	SA	22.1	3.4	22.0 (2007)
Streaky Bay	SA	24.1	3.9	23.9 (1961)
Neptune Island	SA	17.9	1.9	17.6 (2006)
Yongala	SA	22.2	4.6	21.4 (2006)
Warooka	SA	20.2	2.6	19.6 (2007)
Cape Willoughby	SA	18.3	2.8	18.0 (1980)
<i>Cape Borda</i>	SA	17.6	2.6	17.0 (2006, 2007)
Edinburgh	SA	21.9	3.4	21.8 (2006)
Adelaide Airport	SA	21.3	3.2	20.8 (2007)
Parafield	SA	22.3	3.8	22.0 (1999)
<i>Adelaide</i>	SA	22.3	3.6	21.5 (1944)
Mount Barker	SA	19.8	3.5	19.2 (2006)
<i>Nuriootpa</i>	SA	20.5	3.5	20.2 (2006)
Eudunda	SA	20.7	4.1	20.4 (2006)
Meningie	SA	21.0	3.2	20.3 (1981)
Murray Bridge	SA	24.0	4.6	22.5 (2007)
Keith	SA	21.0	2.6	20.9 (2006)
Mount Gambier	SA	18.1	2.3	18.0 (1961)
Robe	SA	17.8	1.8	17.6 (2001)

<i>Burketown</i>	QLD	34.7	2.1	34.5 (2010)
Mount Isa	QLD	35.3	4.9	33.8 (1983)
Ayr	QLD	29.9	1.3	29.8 (2003)
Collinsville	QLD	32.4	3.0	31.7 (2009)
Mackay	QLD	27.9	3.0	27.4 (2009)
<i>Charters Towers</i>	QLD	33.0	3.6	32.8 (1928, 1992)
Springsure	QLD	31.7	4.4	30.9 (1980)
Tambo	QLD	32.2	5.2	30.6 (2000)
Taroom	QLD	32.9	6.6	30.7 (1980)
Barcaldine	QLD	33.2	4.5	31.9 (1915)
Isisford	QLD	33.8	4.5	32.8 (1928)
Longreach	QLD	34.4	4.7	32.9 (2003)
Camooweal	QLD	36.3	5.9	35.3 (2000)
<i>Birdsville</i>	QLD	33.8	5.9	32.8 (2000)
Windorah	QLD	33.7	5.5	32.4 (2000)
Lady Elliot Island	QLD	25.6	2.0	25.4 (1995)
<i>Bundaberg</i>	QLD	28.5	3.3	27.9 (1915)
Rockhampton	QLD	31.3	4.2	30.4 (2009)
Gladstone	QLD	29.3	3.1	29.1 (2009)
Texas	QLD	28.6	4.9	28.2 (1980)
Applethorpe	QLD	22.9 (=)	4.8	22.9 (2000)
Oakey	QLD	28.0	5.1	27.6 (2000)
<i>Miles</i>	QLD	31.0	6.4	29.6 (2000)
Injune	QLD	31.6	6.1	30.5 (1980)
Mitchell	QLD	31.6	6.2	30.4 (2000)
Surat	QLD	30.9	5.7	30.1 (2000)
<i>St. George</i>	QLD	30.5	5.6	30.0 (2000)
Bollon	QLD	31.0	5.7	30.3 (2000)
Charleville	QLD	31.9	6.2	30.1 (2000)
Cunnamulla	QLD	31.2	5.9	30.0 (2000)
Quilpie	QLD	32.2	5.6	31.1 (2000)
<i>Thargomindah</i>	QLD	32.0	5.4	31.0 (2000)
Tibooburra	NSW	30.0	5.9	29.4 (2000)
Wilcannia	NSW	28.9	5.5	27.0 (1980)
Broken Hill	NSW	27.1	6.6	24.1 (2001)
Lake Victoria	NSW	24.9	4.9	23.6 (1928)
Cobar	NSW	26.4	5.1	25.5 (2000)
<i>Bourke</i>	NSW	29.7	5.8	28.2 (1928)
Balranald	NSW	24.9 (=)	4.6	24.9 (1929)
Mungindi	NSW	30.9	6.4	29.8 (2000)

<i>Walgett</i>	NSW	29.1	4.1	28.9 (2000)
Barraba	NSW	26.6	5.9	25.2 (1980)
Gunnedah	NSW	26.7	5.8	25.4 (2000)
Woolbrook	NSW	21.8	4.6	21.2 (1980)
Inverell Research	NSW	24.5	5.2	23.7 (2000)
<i>Inverell</i>	NSW	25.3	4.5	25.1 (1965)
Smoky Cape	NSW	25.1 (=)	3.6	25.1 (2009)
Coffs Harbour	NSW	24.8	3.3	24.6 (2003)
Mount Seaview	NSW	27.1	4.4	26.5 (2000)
<i>Port Macquarie</i>	NSW	25.3	4.9	24.7 (2003)
Williamstown	NSW	25.7	4.6	25.1 (1980)
<i>Scone</i>	NSW	26.4	5.3	25.0 (1980)
Tocal	NSW	26.8	5.1	26.0 (1980)
Gulgong	NSW	23.4	4.4	23.0 (2006)
Dunedoo	NSW	25.0	4.6	24.3 (1972)
Katoomba	NSW	19.0	5.2	17.3 (2006)
Coonabarabran	NSW	24.3	4.0	24.2 (1972)
<i>Dubbo</i>	NSW	24.2	4.1	24.1 (1965, 1972)
Sydney Airport	NSW	25.2	4.8	24.0 (1980)
Sydney	NSW	24.4	4.0	23.3 (1980)
Riverview	NSW	24.1	3.4	23.7 (2009)
Parramatta	NSW	25.2 (=)	4.1	25.2 (1980)
Bankstown	NSW	25.4	4.3	24.8 (1980)
Prospect Reservoir	NSW	25.6	5.1	24.9 (1980)
<i>Richmond</i>	NSW	26.0	4.2	25.9 (1980)
<i>Point Perpendicular</i>	NSW	21.2 (=)	3.3	21.2 (1980)
<i>Nowra</i>	NSW	23.2	3.8	22.8 (1980)
Bowral	NSW	19.6	3.7	19.4 (1972)
Bombala	NSW	18.9	3.9	18.8 (2002)
Taralga	NSW	18.7	4.1	18.1 (1972)
<i>Canberra</i>	ACT	19.9	4.0	19.5 (1972)
Thredbo (Top Station)	NSW	5.9	3.1	5.4 (2006)
Hay	NSW	24.5	4.3	23.6 (1928)
Mildura	VIC	25.5	5.3	22.9 (2006)
Ouyen	VIC	24.5	4.6	22.7 (2006)
Walpeup	VIC	24.2	4.9	22.2 (2006)
Essendon	VIC	19.2	3.1	19.0 (2008)
Melbourne	VIC	20.1	2.9	19.7 (2006)
Moorabbin	VIC	19.1	2.2	18.8 (1972)
Scoresby	VIC	19.1	3.0	18.7 (2001)

Wonthaggi	VIC	18.0 (=)	2.2	18.0 (2001)
Melbourne Airport	VIC	19.1	2.8	19.0 (1972)
Cape Otway	VIC	17.0	2.3	16.8 (2001)
Launceston Airport	TAS	15.8 (=)	1.8	15.8 (1987)
Cape Sorell	TAS	15.2	2.1	14.6 (1971)
<u>Minimum temperature</u>				
Geraldton	WA	11.4	2.2	11.3 (1963)
Dwellingup	WA	9.0	2.4	8.4 (1963)
<i>Bridgetown</i>	WA	8.3	2.5	8.2 (1913)
Esperance	WA	10.4 (=)	0.9	10.4 (1995)
Beverley	WA	8.3	2.7	7.6 (1983)
Corrigin	WA	7.7	2.0	7.5 (1963)
Pingelly	WA	7.8	1.4	7.7 (1981)
Hyden	WA	7.7	2.0	6.9 (2001)
Narembeen	WA	8.3	2.4	7.7 (1996)
<i>Wandering</i>	WA	7.2	2.5	7.1 (1963, 1996)
Eucla	WA	11.3	2.2	11.1 (1961)
<i>Forrest</i>	WA	10.4	3.3	9.5 (1997)
Jervois	NT	15.1	4.9	14.4 (2009)
Woomera	SA	12.7	3.4	11.5 (1999)
Andamooka	SA	13.5	3.5	12.4 (1999)
<i>Tarcoola</i>	SA	11.1	2.6	11.0 (1997)
Oodnadatta	SA	15.4	4.2	13.9 (1944)
Cleve	SA	12.0	3.6	10.5 (1988)
Kimba	SA	9.8	3.2	9.1 (2001)
Elliston	SA	12.0	2.7	11.5 (2000)
Streaky Bay	SA	12.8	3.1	11.7 (1988)
Neptune Island	SA	13.9	2.6	12.8 (2001)
Warooka	SA	11.2	2.6	9.9 (2001)
Cape Willoughby	SA	12.4	2.3	11.8 (2001)
<i>Cape Borda</i>	SA	11.8	2.7	10.9 (2000)
Edinburgh	SA	10.9	3.0	9.5 (1979)
Adelaide Airport	SA	11.7	2.9	10.4 (2001)
Parafield	SA	11.1	2.9	10.4 (1944)
<i>Adelaide</i>	SA	12.7	3.2	11.1 (1973)
Mount Barker	SA	9.6	3.6	7.9 (2001)
Turretfield	SA	9.3	2.8	8.5 (1979)
<i>Nuriootpa</i>	SA	9.0	3.1	8.0 (2001)
Eudunda	SA	9.2	3.0	7.9 (2001)
Meningie	SA	10.9	2.8	9.9 (2000)

Murray Bridge	SA	9.6	2.5	8.5 (2000)
Keith	SA	9.4	2.4	8.7 (2001)
Lameroo	SA	8.9	2.8	7.8 (1981)
Mount Gambier	SA	8.5	2.1	8.4 (1980)
Robe	SA	11.2 (=)	1.8	11.2 (2000)
<i>Birdsville</i>	QLD	15.4	3.5	15.3 (2000)
Boulia	QLD	18.2	4.5	17.2 (1998)
Windorah	QLD	15.7	3.8	15.5 (1998)
Gladstone	QLD	18.5	2.2	18.3 (2010)
Cape Moreton	QLD	18.4	2.7	18.0 (1947)
Double Island Point	QLD	18.9	2.5	18.2 (2010)
Tibooburra	NSW	13.9	3.8	13.1 (1999)
Broken Hill	NSW	13.0	3.9	11.9 (1999)
Menindee	NSW	11.5	3.1	11.1 (1998)
Lake Victoria	NSW	11.0	2.6	10.7 (1931)
Tabulam	NSW	12.7	2.8	12.4 (2000)
Smoky Cape	NSW	16.0	2.7	15.2 (2000)
Nobbys Head	NSW	14.2	2.8	13.9 (1998)
Sydney Airport	NSW	13.8	3.8	13.2 (2006)
Sydney	NSW	13.8	2.3	13.5 (2009)
Parramatta	NSW	11.2	2.0	10.7 (2009)
Bowral	NSW	8.2	3.9	7.9 (2001)
Thredbo (Top Station)	NSW	-0.2	3.2	-0.8 (2001)
Tumbarumba	NSW	5.3 (=)	2.5	5.3 (1998)
<i>Cabramurra</i>	NSW	3.6	3.0	3.5 (2001)
Mildura	VIC	10.1	2.7	9.6 (1975)
Ouyen	VIC	9.4	2.7	8.9 (2001)
Walpeup	VIC	9.6	2.8	8.7 (1981)
<i>Nhill</i>	VIC	8.1	2.6	7.6 (2006)
Warracknabeal	VIC	7.6 (=)	1.7	7.6 (1981)
<i>Orbost</i>	VIC	9.1	2.5	8.7 (2001)
Point Hicks	VIC	11.3	1.9	11.1 (1998)
East Sale	VIC	7.9	2.1	7.4 (1993)
Wilson's Promontory	VIC	11.3	2.1	10.9 (2001)
Essendon	VIC	9.4	2.8	8.2 (2009)
Melbourne	VIC	11.2	2.5	10.7 (2001)
Wonthaggi	VIC	9.8	2.3	9.0 (2001)
Melbourne Airport	VIC	9.1	2.2	8.4 (1999)
Laverton	VIC	9.1	2.4	8.6 (1980)
Lake Eildon	VIC	8.2	2.7	7.2 (1999)



Maryborough	VIC	7.2	1.7	7.1 (1975)
Castlemaine	VIC	7.4	2.6	6.8 (1999)
Ararat	VIC	6.9	1.8	6.8 (2001)
<i>Low Head</i>	TAS	9.7	2.1	9.5 (1988, 2009)

Where a station name is shown in italics, data from two or more sites have been combined.

**Table 6.** ACORN-SAT stations which have set records for the greatest number of September days over specified thresholds.

Location	State	Threshold (°C)	Number of days	Previous record
<u>Maximum temperature</u>				
<i>Kalumburu</i>	WA	40	4	3 (1970)
Giles	WA	25	30	28 (2007 and earlier years)
Victoria River Downs	NT	40	6	2 (1971, 2012)
Tennant Creek	NT	35	18	13 (1992, 2009)
Alice Springs	NT	30	26	21 (1980)
		25	30	28 (2007)
Woomera	SA	30	14	9 (1981)
		25	22	17 (1980, 2003, 2006)
		20	29	27 (1983)
<i>Tarcoola</i>	SA	35	5	4 (1980, 1981, 1999)
		30	15	10 (1981)
		25	26	20 (1980)
Marree	SA	35	10	6 (2000)
		30	19	14 (1972)
		25	27	24 (2007)
Oodnadatta	SA	35	11	8 (1999, 2000)
		30	21	17 (1980)
		25	29	26 (1980, 1983)
Ceduna	SA	25	16	14 (1981, 1988, 2007)
		20	26	23 (2007)
Kyancutta	SA	25	17	15 (1944, 2006)
<i>Adelaide</i>	SA	25	11	9 (1944)
Mackay	QLD	30	8	3 (1970, 2009)
<i>Charters Towers</i>	QLD	35	12	8 (1943)
Barcaldine	QLD	35	11	6 (2003)
Longreach	QLD	40	3	1 (2002 and earlier years)
Camooweal	QLD	35	22	21 (1999)
<i>Birdsville</i>	QLD	30	26	21 (2000)
		25	30	29 (1983)
<i>Gayndah</i>	QLD	35	7	3 (1915)
Rockhampton	QLD	35	5	3 (1997)
		30	20	18 (2009)
<i>Bundaberg</i>	QLD	30	11	6 (1915)
<i>Miles</i>	QLD	35	4	2 (2003)
		25	30	27 (1980, 2000)
<i>St. George</i>	QLD	35	4	3 (2003)
		30	18	17 (2000)
		25	28	25 (2000)
Charleville	QLD	35	5	3 (2002, 2003, 2009)
		25	30	26 (2007 and earlier years)
<i>Thargomindah</i>	QLD	30	23	19 (2000)
		25	30	26 (1980)

Tibooburra	NSW	30	16	13 (2000)
		25	29	24 (2000)
Wilcannia	NSW	30	13	10 (2000)
		25	21	20 (1972)
Cobar	NSW	25	20	18 (2000)
<i>Bourke</i>	NSW	25	26	25 (1917)
<i>Moree</i>	NSW	25	25	21 (1980)
Gunnedah	NSW	25	20	16 (2000)
		20	29	27 (1980, 2012)
<i>Inverell</i>	NSW	25	17	16 (1928)
Yamba	NSW	20	30	29 (1998, 2000, 2009)
Williamtown	NSW	30	8	5 (1965)
		25	15	12 (1972)
<i>Scone</i>	NSW	25	17	16 (1972)
		20	29	28 (1980)
<i>Dubbo</i>	NSW	20	26	25 (1972)
Sydney	NSW	25	12	10 (2002)
Mildura	VIC	30	7	5 (1987)
		25	14	11 (1959, 2006)
		20	28	23 (1980, 2007)
Melbourne	VIC	20	15	14 (1950)
Hobart	TAS	20	9	7 (1990)
<u>Minimum temperature</u>				
<i>Bridgetown</i>	WA	10	13	11 (1983)
<i>Forrest</i>	WA	10	16	14 (1997)
Kalgoorlie	WA	15	18	17 (2006)
Tennant Creek	NT	25	6	4 (1997, 2003)
Woomera	SA	15	9	5 (2000 and earlier years)
		10	20	18 (1999, 2000)
<i>Tarcoola</i>	SA	15	7	5 (2001 and earlier years)
Oodnadatta	SA	20	6	5 (1944)
		15	15	14 (2009)
		10	27	26 (1983, 1997)
<i>Adelaide</i>	SA	15	7	6 (1944)
		10	25	20 (1975)
<i>Nuriootpa</i>	SA	10	11	9 (2001)
Barcaldine	QLD	20	7	4 (1983, 1995, 1998)
Longreach	QLD	20	5	3 (1971, 1986)
Camooweal	QLD	15	29	27 (1992)
<i>Birdsville</i>	QLD	10	28	27 (1997, 2002)
Cape Moreton	QLD	20	5	3 (2010)
		15	30	29 (1980, 2000)
<i>Thargomindah</i>	QLD	10	27	26 (1983, 1997)
Sydney	NSW	10	30	29 (2006 and earlier years)
<i>Nhill</i>	VIC	10	11	7 (1926, 1944, 2001)

Kerang	VIC	10	12	10 (1978, 1999)
Gabo Island	VIC	10	25	24 (1973)
<i>Orbost</i>	VIC	10	12	10 (1993, 2001)
East Sale	VIC	10	9	7 (1988)
Melbourne	VIC	10	20	19 (2001)
Laverton	VIC	10	13	9 (1975, 1981, 2006)
Hobart	TAS	10	11	10 (1988)

Where a station name is shown in italics, data from two or more sites have been combined.

This table does not include stations which have exceeded a threshold in September for the first time (these are documented in the list of records in Table 1).

**Table 7.** National and State/Territory area-averaged temperature anomalies (from 1961–1990 averages) for 2013 to date (January to September)

Element	Region	Anomaly (°C)	Rank	Previous record (°C)
Maximum temperature	Australia	+1.54	1	+1.25 (2005)
	Queensland	+1.53	2	+1.57 (1915)
	NSW	+1.77	1	+1.31 (2006)
	Victoria	+1.50	1	+1.27 (2001)
	Tasmania	+0.99	3	+1.24 (1988)
	SA	+2.09	1	+1.38 (2005)
	WA	+1.08	2	+1.29 (2005)
	NT	+1.90	1	+1.48 (2005)
Minimum temperature	Australia	+1.07	3	+1.29 (1998)
	Queensland	+1.01	6	+1.64 (1998)
	NSW	+0.95	5	+1.18 (1973, 1998)
	Victoria	+1.04	2	+1.10 (1974)
	Tasmania	+0.71	2 (=)	+0.80 (1981)
	SA	+1.50	1	+1.31 (1973)
	WA	+0.85	4	+1.31 (1998)
	NT	+1.33	3	+1.67 (1998)
Mean temperature	Australia	+1.31	1	+1.07 (2005)
	Queensland	+1.27	1	+1.19 (1998)
	NSW	+1.36	1	+1.15 (2007)
	Victoria	+1.27	1	+1.10 (2001)
	Tasmania	+0.85	3	+0.97 (1988)
	SA	+1.79	1	+1.16 (2009)
	WA	+0.97	3	+1.16 (2005)
	NT	+1.61	1	+1.48 (1998)

## 4 Notes and contacts

Values in this statement are current as of 1 October 2013, and subject to the Bureau’s normal quality control processes.

The data set from which area averages and other spatial analyses are drawn commences in 1910. Station data prior to national introduction of standardised instrument shelters in 1910 are used only if they are known to have been measured using standard equipment comparable with current standards.

Further information is available through <http://www.bom.gov.au/climate/>.

The following climatologists may be contacted for further information:

Dr Rob Smalley (03) 9669 4605  
Dr Blair Trewin (03) 9669 4623  
Dr Karl Braganza (03) 9669 4344  
Dr David Jones (03) 9669 4085