



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

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## **SPECIAL CLIMATE STATEMENT 19**

**A prolonged spring heatwave in central and south-eastern Australia**

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*National Climate Centre*

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## Introduction

An exceptionally prolonged heatwave has affected large parts of central and south-eastern Australia during November 2009. Temperatures well above average began to influence much of the region on the weekend of 7-8 November. The hot spell continued largely unbroken, except in some southern and coastal areas, until 15 November. Slightly cooler conditions then prevailed on 16-17 November, particularly in Victoria and southern South Australia, before the heat returned from the 18<sup>th</sup>, with the highest temperatures of the whole event between November 18 and 20.

The first stage of the event, broadly from 7-15 November, was more exceptional for its duration than its intensity. Few records were set for individual high temperatures, but many were set, especially in South Australia, for the number of consecutive days above high temperature thresholds such as 35 or 40°C. Prolonged hot spells are rare in November, compared with summer and early autumn, in southern Australia for a number of reasons; most significantly, that the subtropical high pressure belt is normally much further north in November than it is between December and March, allowing frontal systems to influence the southern continent on a regular basis instead of passing to the south as can occur later in the year.

Individual November record high temperatures became much more widespread in the second stage of the event, in central Australia from the 17<sup>th</sup> and further south and east from the 18<sup>th</sup> onwards. During this phase of the event NSW state records for November were broken for both maximum and minimum temperatures. Tibooburra's 46.4°C on the 18<sup>th</sup> broke the previous record of 46.1°C set at Coonamble on 19 November 1944, before Wanaaring lifted the record further by reaching 46.8°C on the 20<sup>th</sup>. White Cliffs Airport fell to only 33.3°C overnight on the 19<sup>th</sup>, well above the previous record of 31.7°C at Cobar on 18 November 1944. November record high maximum temperatures have been set during the event over 10.2% of Australia, including 41% of New South Wales and 29% of South Australia, with 68 long-term stations setting records for highest November maximum temperature during the event, and 39 for minimum temperature.

The most intense heat of the event broke down across Victoria and South Australia from the 20<sup>th</sup> onwards as a trough crossed the region, bringing widespread substantial rain on the 21<sup>st</sup> and 22<sup>nd</sup>. However, very hot conditions persisted in much of New South Wales, and southern Queensland, through the weekend of 21-22 November.

## An extended period of extreme heat

The duration of this event was exceptional, especially in South Australia and parts of western Victoria. In Adelaide, there were eight consecutive days above 35°C. This run of high temperatures is far in excess of the previous November record of four (see Table 1)<sup>1</sup>. This is now the third exceptional prolonged heatwave that has occurred in Adelaide in the last 20 months; the two longest runs of consecutive days above 35°C have been fifteen in March 2008 and nine in January-February 2009 (see Special Climate Statements 15 and 17 respectively). The November 2009 event equals the pre-2008 record for any time of year. Adelaide also experienced persistently high overnight temperatures during the event, easily breaking the November record for consecutive nights above 20°C. Conditions were even more extreme close to Adelaide, with six consecutive days above 40°C at Murray Bridge, a record for any time of year. Murray Bridge had never had even two consecutive days above 40°C in any previous November.

Records for consecutive days above thresholds were also widespread through most of the rest of the southern half of South Australia, particularly the south-east and the Eyre Peninsula. Ceduna had six

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<sup>1</sup> A heatwave is locally defined in Adelaide as five consecutive days of 35°C or above or three consecutive days above 38°C. This was the first time such an event has occurred in spring.

consecutive days above 40°C (equalling their all-time record for any month) and Kyancutta eight, while Cape Borda (Kangaroo Island) broke its November record high temperature on four successive days. Port Lincoln set an all-time record for any time of year with a run of eight consecutive days of 30°C or above and Mount Gambier's nine consecutive days above 30°C was second only to a run of eleven days in January-February 1956. Other areas to set similar records included northern and western Victoria (e.g. Nhill, Bendigo, Kerang) and southern inland New South Wales (e.g. Hay and Deniliquin). Melbourne missed out on equalling its November record of six consecutive days above 30°C when the temperature peaked at 29.8°C on the 12<sup>th</sup>.

During the second stage of the event, as the heat intensified in inland Australia, records were set at some locations for consecutive days above 40°C, especially in northern South Australia, northern New South Wales and southern inland Queensland, with locations such as St. George and Walgett more than doubling their existing records for consecutive November days above 40°C. Some of these runs, especially in Queensland, are ongoing at the time of writing and further records of this type may be set over the coming days. There have also been a number of records for consecutive nights above thresholds, most notably at Gunnedah where the four consecutive nights above 25°C from 20-23 November was a record for any time of year.

### Large numbers of days above thresholds

The prolonged hot spell has seen numerous records broken for the total number of November days above thresholds (Table 2), with some set before the month was half over. Before 2009 Adelaide had never had more than six days of 35°C or above in any November; this year eight days in succession have been recorded, with twelve for the month as of 23 November. Numerous other locations, principally in South Australia (especially in the south-east and on the Eyre Peninsula) and northern Victoria, have already broken similar records. A number of stations have also experienced a record number of nights above 20°C or 25°C. Cape Borda has equalled its record for the greatest number of nights of 20°C or above for any month of the year.

### Very high average monthly temperatures

With abnormally hot conditions having prevailed for so long, average temperatures for November are running well above the long-term normals<sup>2</sup>, especially during the day (Figure 1). Maximum temperatures have been at least 6°C above normal for the month to date over most of the southern half of South Australia, Victoria away from the southern coastal fringe, and most of inland New South Wales. They have been 8°C or more above normal in parts of southern inland New South Wales and in the Wimmera district in Victoria. Overnight minimum temperatures have been slightly less extreme, but are still running 4-7°C above normal over much of the region.

For the month to date, maximum temperatures are averaging 6.26°C above normal in Victoria, 6.20°C above normal in New South Wales and 5.52°C above normal over South Australia. These values are all far in excess of the current record for the largest state monthly anomaly ever observed, +4.38°C in South Australia in August 1982. While the month is far from being over, even slightly above-normal temperatures in NSW and Victoria through the remainder of the month will see the previous monthly record broken.

Current anomalies and existing November monthly mean records at selected stations are shown in Table 3. Many stations are currently running several degrees ahead of their current November monthly mean records, with Murray Bridge 4.7°C and Roseworthy 4.6°C above their previous November *records*. If there is a warm finish to the month it is possible that one or more locations

<sup>2</sup> The standard reference period for calculation of long-term normals is 1961-90, unless otherwise stated. State area-averaged temperature anomalies commence in 1950.

may exceed the largest monthly maximum temperature anomaly ever recorded at an Australia station, +8.1°C at Rutherglen Viticulture College (Victoria) in October 1914.

While overnight minimum temperatures have been less extreme, monthly averages are still running above record levels in many locations.

#### Scattered individual records in the first week, becoming more widespread in the second, especially in NSW

During the first part of the event, the length of the event was more notable than individual extreme high temperatures. Nevertheless, a few records were still set (Table 4), especially at some of the more exposed coastal stations on the Great Australian Bight and Kangaroo Island. At Cape Borda, the previous November record was exceeded on four successive days from the 11<sup>th</sup>, peaking at 36.2°C on the 14<sup>th</sup>. During the early part of this period records were also set locally in northern Tasmania.

More extensive record high temperatures then developed over inland areas from the 16<sup>th</sup>, including central Australia, north-eastern South Australia and western New South Wales. A few November records were also set near the coasts of northern New South Wales and southern Queensland on the 17<sup>th</sup> as winds turned temporarily offshore. More extensive record-setting occurred on the 18<sup>th</sup>, with record high maximum temperatures set over 16% of South Australia and 14% of New South Wales. Marree reached 47.4°C, the highest temperature of the event and the second-highest November temperature ever recorded in South Australia. Further records were set on the 19<sup>th</sup>, including a November record of 43.0°C at Adelaide and an all-time record of 44.0°C at Elliston on the Eyre Peninsula.

The most extensive record-breaking, however, occurred on the 20<sup>th</sup> as the extreme heat spread to much of New South Wales. Records were broken across many inland parts of the state away from the far south and west, including a new state record for November (46.8°C) at Wanaaring, and 46.6°C at Bourke. The area of record-breaking covered 31% of the state in total. Canberra also equalled its November record (38.9°C) on this day.

Overnight minimum temperatures also set records during the later part of the event, especially over inland New South Wales where numerous stations failed to drop below 30°C on one or more occasions between the 19<sup>th</sup> and the 22<sup>nd</sup>. On the 20<sup>th</sup> Katoomba (24.7°C) fell only 0.3°C short of its all-time record high temperature for any month.

#### Contacts for further information

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General notes

Values in this statement are current as of 22 November 2009 (maximum temperature) or 23 November 2009 (minimum temperature)

This statement is expected to be updated on Tuesday 1 or Wednesday 2 December.

Maximum temperatures prior to 1910 have not been considered for inclusion unless they are known to have been measured in a standard Stevenson screen or similar.

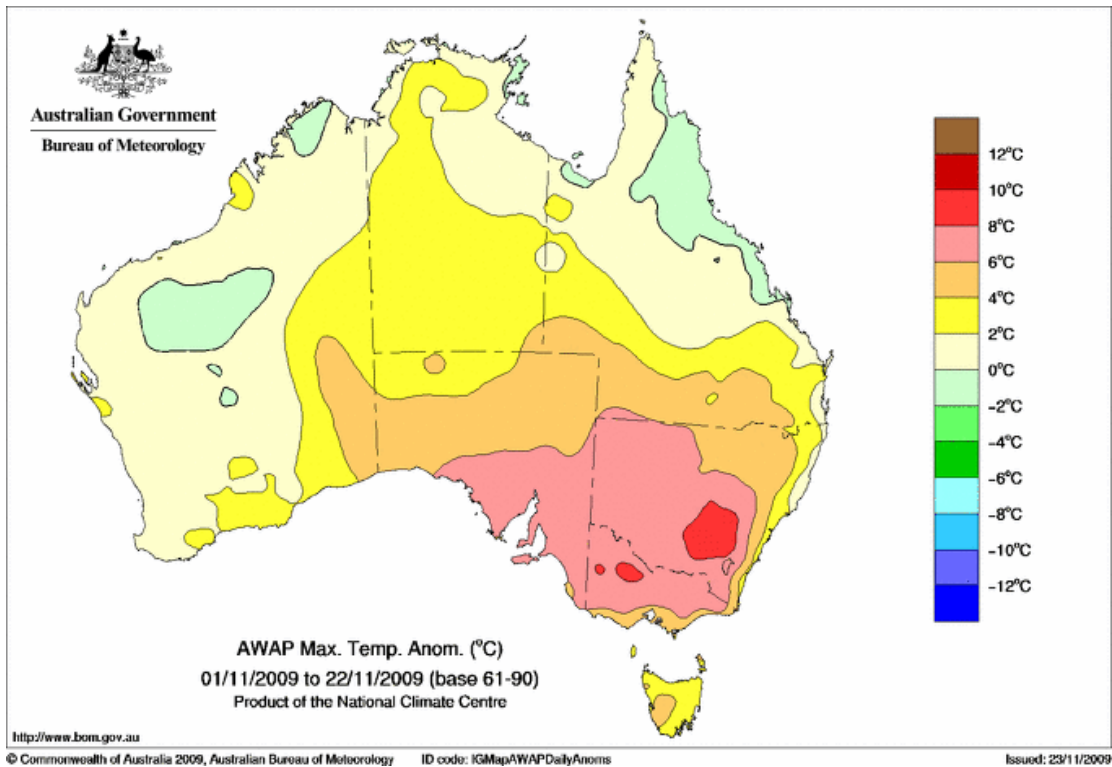
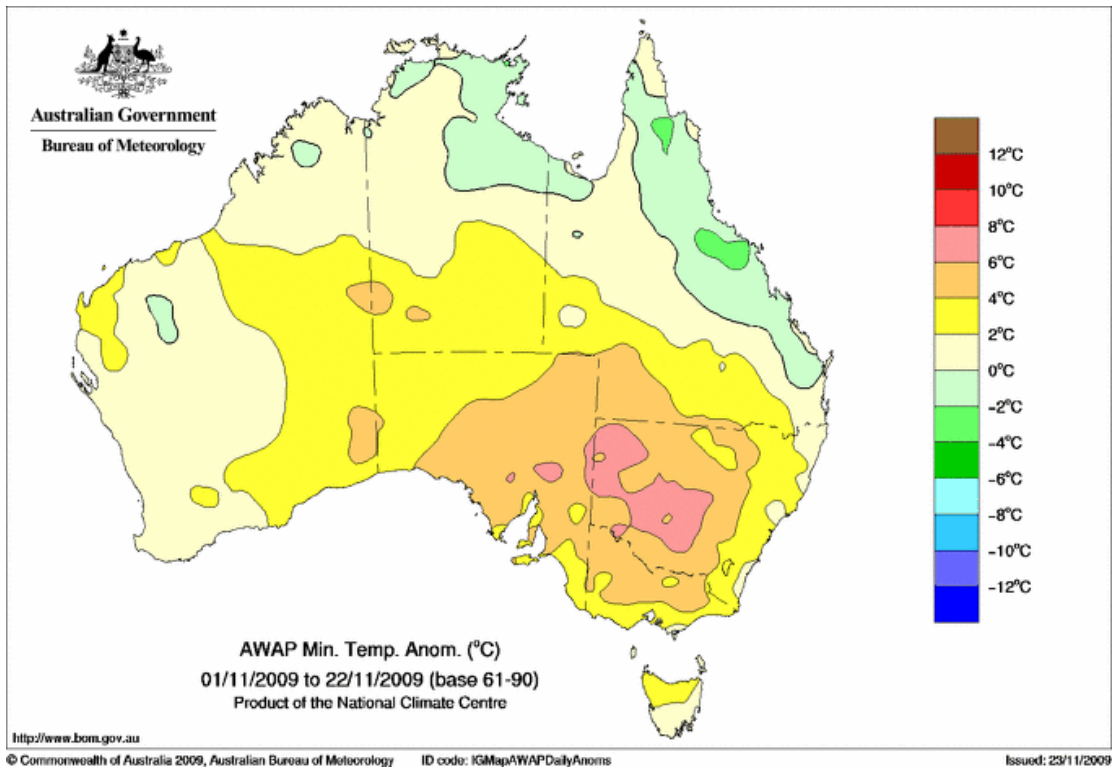


Figure 1. Minimum (top) and maximum (bottom) temperature anomalies for the month to date.

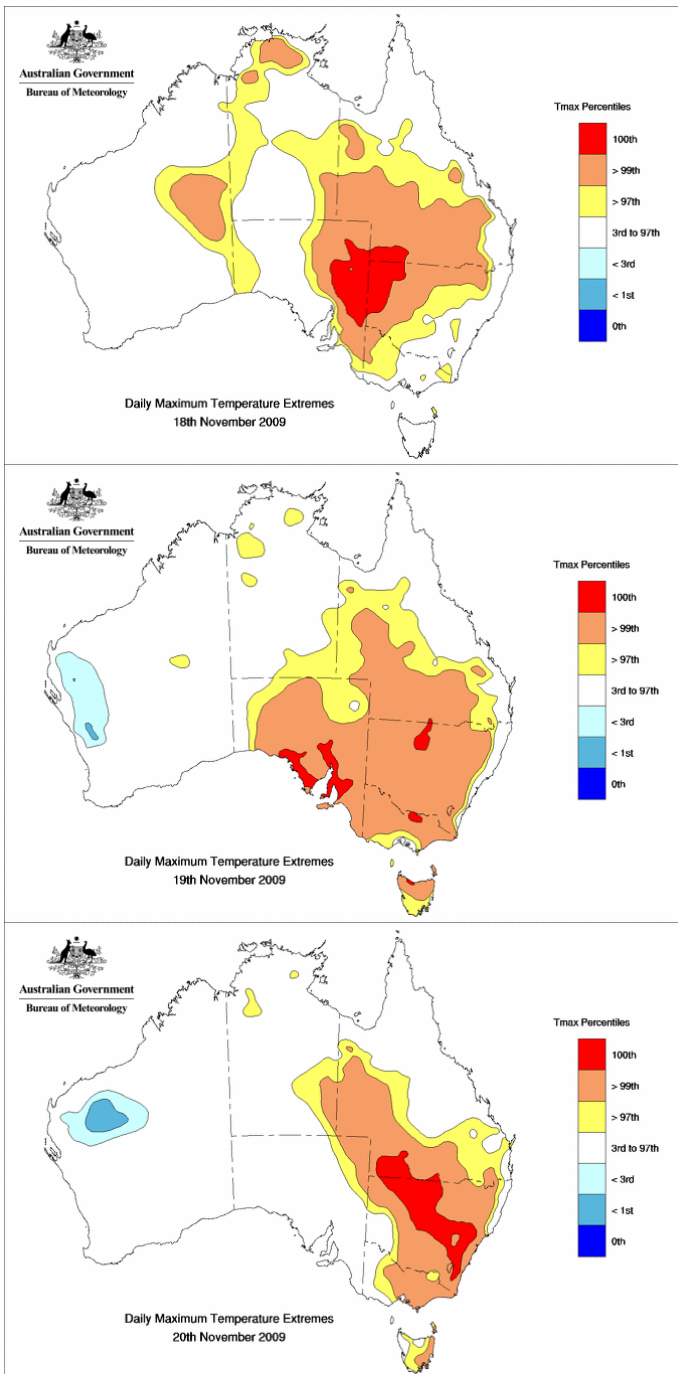


Figure 2. Area of record high November maximum temperatures (darkest red) on 18 (top), 19 (middle) and 20 (bottom) November.

Station number	Location	Threshold (°C)	Number of days	Previous record <sup>3</sup>
<b>Maximum temperature</b>				
11004/11052	Forrest	40	5 (10-14/11)	3 (3 occasions, most recent 24-26/11/1997) (Nov)
		35	10 (6-15/11)	6 (3 occasions, most recent 10-15/11/2007) (Nov)
15590	Alice Springs	35	15 (7-21/11)	13 (2-14/11/1979, 18-30/11/2006) (Nov)
16001	Woomera	35	13 (7-19/11)	10 (10-19/11/2003) (Nov)
17031	Marree	40	10 (11-20/11)	7 (12-18/11/1980, 22-28/11/1997) (Nov)
		45	4 (15-18/11)	2 (17-18/11/1944, 29-30/11/2004) (Nov)
17043/17114	Oodnadatta	40	8 (12-19/11)	7 (3 occasions, most recent 24-30/11/2006) (Nov)
18012	Ceduna	<b>40</b>	6 (10-15/11)	3 (22-24/11/1982, 30/10-1/11/1987) (Nov)
				6 (18-23/11/1982, 17-22/2/1997) (all months)
18044	Kyancutta	40	8 (8-15/11)	5 (16-20/11/1938) (Nov)
18070/18192	Port Lincoln	<b>30</b>	8 (8-15/11)	4 (25-28/11/2004) (Nov)
				7 (3 occasions, most recent 27/1-2/2/2009) (all months)
18103/18120	Whyalla	35	9 (7-15/11)	4 (20-23/11/1966, 21-24/11/1982) (Nov)
19036/19066/ 16092/18201	Port Augusta	40	7 (9-15/11)	4 (26-29/11/2004) (Nov)
		35	9 (7-15/11)	8 (6-13/3/2008) (all months)
		30	15 (6-20/11)	7 (24-30/11/2004, 24-30/11/2006) (Nov)
21043	Port Pirie	40	5 (11-15/11)	12 (9-20/11/2007) (Nov)
		35	9 (7-15/11)	3 (22-24/11/1982, 24-26/11/1997) (Nov)
		30	15 (6-20/11)	7 (11-17/11/1980) (Nov)
23000/23090	Adelaide	35	8 (8-15/11)	12 (9-20/11/2007) (Nov)
		30	10 (7-16/11)	4 (23-26/11/1894) (Nov)
23321/23373	Nuriootpa	35	7 (9-15/11)	7 (31/10-6/11/1902) (Nov)
		30	13 (7-19/11)	4 (20-23/11/1966, 27-30/11/1990) (Nov)
24016/24048	Renmark	35	9 (7-15/11)	8 (13-20/11/2007) (Nov)
24521	Murray Bridge	<b>40</b>	6 (10-15/11)	8 (13-20/11/2007) (Nov)
				1 (14 occasions) (Nov)
26021	Mount Gambier	30	9 (7-15/11)	5 (18-22/2/1997) (all months)
				4 (20-23/11/1959, 18-21/11/2000) (Nov)
				11 (31/1-10/2/1956) (all months)
26026	Robe	30	4 (8-11/11)	2 (8 occasions, most recent 31/10-1/11/1987) (Nov)
		25	9 (7-15/11)	5 (23-27/11/1894) (Nov)
43034/43109	St. George	40	7 (16-22/11)	3 (3 occasions, most recent 27-29/11/1997) (Nov)
44021	Charleville	40	6 (17-22/11)	4 (31/10-3/11/1995, 17-20/11/2003) (Nov)
47007	Broken Hill	35	11 (9-20/11)	6 (3 occasions, most recent 25-30/11/2004) (Nov)

<sup>3</sup> All-months records only shown where these have been approached or broken. November records include all spells that ended in November, including those which started in October.

<sup>4</sup> No maximum temperature was reported on 11 November due to an instrument fault but the temperature had already reached 20°C before the fault occurred.



48013/48239/ 48245	Bourke	40	7 (15-21/11)	6 (25-30/11/1919) (Nov)
52026/52088	Walgett	40	8 (15-22/11)	5 (25-29/11/1997, 25- 29/11/2006) (Nov)
53027/53048/ 53115	Moree	40	7 (16-22/11)	3 (3 occasions, most recent 27-29/11/1997) (Nov)
56017/56242	Inverell	35	7 (16-22/11)	5 (16-20/11/1944) (Nov)
65012/65070	Dubbo	35	8 (15-22/11)	6 (3 occasions, most recent 24-29/11/1997) (Nov)
72091/72161	Cabramurra	20	13 (8-20/11) <sup>4</sup>	9 (13-21/11/2007) (Nov)
72150	Wagga Wagga	30	16 (7-22/11)	10 (12-21/11/2007) (Nov)
74128/74258	Deniliquin	35	8 (9-16/11)	6 (22-27/11/1997) (Nov)
		30	15 (6-20/11)	11 (19-29/11/1959) (Nov)
75031	Hay	35	8 (9-16/11)	6 (3 occasions, most recent 25-30/11/2004) (Nov)
76031	Mildura	30	15 (6-20/11)	13 (17-29/11/2000) (Nov)
78031/78015	Nhill	35	7 (9-15/11)	4 (3 occasions, most recent 25-28/11/2000) (Nov)
79023	Horsham	35	9 (7-15/11)	4 (20-23/11/1966) (Nov)
80023	Kerang	35	7 (9-15/11)	6 (22-27/11/1997) (Nov)
		30	12 (6-17/11)	11 (10-20/11/2007) (Nov)
81003/81123	Bendigo	30	9 (7-15/11)	6 (22-27/11/1997) (Nov)
82039	Rutherglen	30	11 (7-17/11)	10 (7-16/11/1914) (Nov)
86071	Melbourne	25	10 (6-15/11)	7 (4 occasions, most recent 14-20/11/2000) (Nov)
89002	Ballarat	25	9 (7-15/11)	7 (21-27/11/1997) (Nov)
<b>Minimum temperature</b>				
16001	Woomera	20	13 (8-20/11)	8 (13-20/11/2007) (Nov)
		25	5 (12-16/11)	2 (3 occasions, most recent 19-20/11/2007) (Nov)
19036/19066/ 16092/18201	Port Augusta	25	3 (13-15/11)	2 (26-27/11/1980, 1- 2/11/1987) (Nov)
21043	Port Pirie	20	9 (8-16/11)	4 (6 occasions, most recent 26-29/11/2003)
22801/22823	Cape Borda	<b>20</b>	8 (8-15/11)	3 (31/10-2/11/1987) (Nov)
				8 (23-30/3/1994) (all months)
23000/23090	Adelaide	20	9 (8-16/11)	5 (26-30/11/2004) (Nov)
55024	Gunnedah Res Ctr	<b>25</b>	4 (20-23/11)	2 (19-20/11/1968) (Nov)
				3 (3 occasions, most recent 2- 4/2/2006) (all months)
86071	Melbourne	15	9 (7-15/11)	7 (14-20/11/1975, 16- 22/11/2000) (Nov)

Table 1. Selected locations with a record number of consecutive days/nights at or above given thresholds for November. Where a threshold is shown in bold this indicates that a record for any month has been broken or equalled.

Station number	Location	Threshold (°C)	Number of days	Previous record <sup>5</sup>
<b>Maximum temperature</b>				
11003	Eucla	40	4	3 (4 occasions, most recent 1997)
16001	Woomera	35	15	13 (5 occasions, most recent 2007)
		40	9	5 (3 occasions, most recent 2006)
17031	Marree	40	13	9 (1975, 1980, 2006)
18012	Ceduna	35	11	8 (1962, 1980)
		40	8	5 (1944)
18044	Kyancutta	35	13	11 (4 occasions, most recent 2007)
		40	9	5 (1938, 1990)
18070/18192	Port Lincoln	30	10	7 (1922, 1962)
18103/18120	Whyalla	35	11	8 (1982)
19036/19066/	Port Augusta	35	14	12 (2006)
16092/18201		40	10	4 (4 occasions, most recent 2006)
21043	Port Pirie	35	14	9 (1980, 1982, 2003)
		40	6	3 (1982, 1997, 2006)
21046/21133	Snowtown <sup>6</sup>	40	8	4 (1922)
22801/22823	Cape Borda	30	10	4 (2000, 2004)
23000/23090	Adelaide	35	11	6 (1897, 1919)
23321/23373	Nuriootpa	30	15	13 (1982)
		35	10	5 (1966)
24016/24048	Renmark	35	13	12 (1982)
		40	7	4 (1959, 1982)
26021	Mount Gambier	30	12	8 (1959)
26026	Robe	30	6	3 (1892)
47007	Broken Hill	35	14	10 (1959, 1975)
52026/52088	Walgett	40	8	7 (2006)
53027/53048/	Moree	40	7	5 (1957)
53115				
55024	Gunnedah Res Ctr	40	3	2 (1968)
56017/56242	Inverell	35	7	6 (1936, 1944, 1957)
63005	Bathurst	30	16	15 (1982)
65012/65070	Dubbo	35	12	11 (1922)
72150	Wagga Wagga	35	11	7 (1959, 1982)
		40	3	2 (1980, 1997)
73054	Wyalong	35	13	11 (1982)
74128/74258	Deniliquin	35	13	10 (1919)
75031	Hay	35	13	10 (1959, 1982)
		40	7	4 (4 occasions, most recent 1997)
76031	Mildura	35	14	11 (1982)
		40	7	4 (1980)
78031/78015	Nhill	35	10	6 (1911, 1982, 2006)
79023	Horsham	35	13	6 (2006)
		40	3	1 (5 occasions, most recent 1982)
80023	Kerang	35	12	9 (1982)
81003/81123	Bendigo	30	14	12 (2007)
		35	7	4 (2006)
87031	Laverton	30	9	7 (1980, 2003)

<sup>5</sup> All-months records only shown where these have been approached or broken. November records include all spells that ended in November, including those which started in October.

<sup>6</sup> Two days missing (7-8 November), although these probably did not reach 40°C.

<b>Minimum temperature</b>				
11003	Eucla	20	4	3 (1980, 2004)
16001	Woomera	20	15	11 (2006, 2007)
		25	6	3 (1987, 2006)
17031	Marree	25	8	5 (1959, 2006)
21043	Port Pirie	20	13	10 (1980)
		25	5	4 (2003)
22801/22823	Cape Borda	20	8	3 (1982)
				All-months record 8 (Feb 1997)
23000/23090	Adelaide	20	10	8 (1902, 1959)
46043	Wilcannia	20	13	10 (1958, 1959, 1982)
47007	Broken Hill	20	15	11 (1959)
		25	9	3 (1959, 1997, 2006)
73054	Wyalong	20	10	5 (2002)
80023	Kerang	20	6	4 (2007)

Table 2. Selected stations where the number of days with temperatures exceeding given thresholds is the highest on record for November.

Station number	Location	2009 average (°C)	Anomaly (°C)	Existing record
<b>Maximum temperature</b>				
11003	Eucla	29.3	+4.4	28.4 (1979)
11004/11052	Forrest	33.9	+4.5	33.4 (2006)
13017	Giles	37.7	+3.4	38.2 (1990)
15590	Alice Springs	37.2	+3.5	37.1 (2006)
16001	Woomera	36.2	+6.5	33.1 (1982)
17031	Marree	38.3	+4.8	37.0 (1982)
17043/17114	Oodnadatta	37.8	+4.0	37.0 (2006)
18012	Ceduna	32.7	+6.5	29.1 (1980)
18044	Kyancutta	35.0	+6.3	31.9 (1982)
18070/18192	Port Lincoln	28.1	+5.9	25.2 (1911, 1922)
18103/18120	Whyalla	32.9	+3.6	29.3 (1982)
19036/19066/ 16092/18201	Port Augusta	36.2	+7.9	31.9 (2003)
21043	Port Pirie	34.7	+7.3	31.3 (1927)
21046/21133	Snowtown	34.4	+7.6	31.4 (1911)
22801/22823	Cape Borda	26.9	+7.6	23.8 (2007)
23000/23090	Adelaide	32.7	+8.4	28.4 (1902, 1911)
23020/23122	Roseworthy	34.4	+8.9	29.8 (1921, 2007)
23321/23373	Nuriootpa	31.3	+7.1	28.6 (1982)
24016/24048	Renmark	35.4	+7.5	32.0 (1982)
24521	Murray Bridge	33.7	+8.5	29.0 (1982)
26021	Mount Gambier	27.2	+6.5	24.2 (1959)
26026	Robe	25.1	+5.2	22.0 (2000)
43034/43109	St. George	36.9	+5.2	36.1 (1946)
44021	Charleville	36.6	+3.9	36.2 (1946)
46037	Tibooburra	38.3	+6.5	36.7 (1914)
46043	Wilcannia	37.3	+6.2	35.2 (1959)
47007	Broken Hill	34.8	+6.9	31.9 (1959)
48013/48237/ 48245	Bourke	38.4	+7.0	37.1 (1919)
48030/48027	Cobar	36.4	+7.2	35.0 (1914)
52026/52088	Walgett	37.6	+6.3	36.7 (2002)
53027/53048/ 53115	Moree	35.5	+5.4	35.9 (1919)
55024	Gunnedah Res Ctr	33.2	+4.9	33.3 (2002)
56017/56242	Inverell	31.9	+4.8	31.4 (1919)
63005	Bathurst	31.5	+8.8	28.5 (1982)
65012/65070	Dubbo	35.0	+7.3	34.3 (1914)
70014	Canberra	30.4	+7.7	28.7 (1982)
72091/72161	Cabramurra	21.1	+6.7	19.0 (1982)
72150	Wagga Wagga	34.4	+8.7	30.8 (1982)
73054	Wyalong	35.4	+8.4	31.8 (1982)
74128/74258	Deniliquin	34.1	+7.5	30.9 (1959)
75031	Hay	34.9	+6.8	32.3 (1982)
76031	Mildura	34.6	+7.1	31.5 (1982)
78031/78015	Nhill	32.7	+8.0	29.1 (1911)
80023	Kerang	33.8	+7.5	31.2 (1914)
81003/81123	Bendigo	31.4	+7.9	28.4 (1982)
82039	Rutherglen	32.1	+6.9	30.1 (1914)
86071	Melbourne	28.0	+6.2	25.5 (1862)
87031	Laverton	26.7	+5.1	25.2 (1982)
89002	Ballarat	26.3	+6.8	24.9 (1982)
91009	Burnie	20.5	+2.4	20.0 (2007)
91104/91311	Launceston Airport	22.3	+3.4	21.8 (2007)

<b>Minimum temperature</b>				
11003	Eucla	16.0	+2.8	14.8 (1942, 1982)
11004/11052	Forrest	15.3	+3.3	14.7 (2000)
13017	Giles	23.4	+3.6	23.4 (2006)
15590	Alice Springs	20.3	+2.5	21.7 (1987)
16001	Woomera	20.7	+5.3	18.4 (2000)
17031	Marree	21.8	+5.0	19.5 (2003)
17043/17114	Oodnadatta	21.9	+3.3	21.5 (2000)
18012	Ceduna	16.1	+3.7	14.3 (1963)
18044	Kyancutta	14.2	+3.4	13.7 (2000)
18070/18192	Port Lincoln	13.9	+1.2	15.1 (2000)
18103/18120	Whyalla	16.6	+2.8	17.3 (2000)
19036/19066/ 16092/18201	Port Augusta	19.3	+4.2	18.7 (2000)
21043	Port Pirie	19.7	+5.4	18.3 (2000)
21046/21133	Snowtown	13.7	+2.3	15.2 (1914)
22801/22823	Cape Borda	16.2	+5.0	13.7 (2000)
23000/23090	Adelaide	18.9	+5.2	17.1 (2000)
23020/23122	Roseworthy	15.2	+3.3	14.5 (1914)
23321/23373	Nuriootpa	14.4	+4.3	14.0 (2000)
24016/24048	Renmark	17.1	+3.8	16.1 (2000)
24521	Murray Bridge	14.6	+3.3	14.0 (2000)
26021	Mount Gambier	11.9	+3.4	11.2 (2000)
26026	Robe	14.5	+3.0	13.9 (2000)
43034/43109	St. George	20.8	+3.2	21.3 (2002)
44021	Charleville	20.8	+3.1	21.1 (2002)
46037	Tibooburra	23.7	+6.1	23.4 (1914)
46043	Wilcannia	20.5	+5.3	19.9 (1914)
47007	Broken Hill	21.4	+6.8	19.1 (1914)
48013/48237/ 48245	Bourke	21.1	+4.6	21.4 (1914)
48030/48027	Cobar	21.2	+5.6	21.3 (1914)
52026/52088	Walgett	19.3	+3.0	21.6 (1914)
53027/53048/ 53115	Moree	19.2	+3.7	18.8 (2002)
55024	Gunnedah Res Ctr	19.7	+4.8	18.2 (2002)
56017/56242	Inverell	12.9	+2.0	16.9 (1914)
63005	Bathurst	12.1	+3.8	13.9 (1914)
65012/65070	Dubbo	18.0	+4.8	18.7 (1914)
70014	Canberra	12.6	+3.8	11.8 (2007)
72091/72161	Cabramurra	11.5	+6.0	8.8 (2007)
72150	Wagga Wagga	15.9	+5.5	14.7 (2007)
73054	Wyalong	18.8	+6.8	16.1 (2007)
74128/74258	Deniliquin	16.7	+4.9	16.2 (1914)
75031	Hay	18.4	+5.6	17.6 (1914)
76031	Mildura	17.9	+5.3	15.1 (2000)
78031/78015	Nhill	13.8	+4.4	12.8 (1914)
80023	Kerang	16.3	+5.0	14.7 (1914)
81003/81123	Bendigo	14.0	+3.4	12.6 (1959, 2000)
82039	Rutherglen	12.7	+4.5	14.4 (1914)
86071	Melbourne	16.1	+4.1	15.2 (2000)
87031	Laverton	13.7	+3.5	13.2 (2000)
89002	Ballarat	11.3	+3.3	10.7 (2000)
91009	Burnie	12.5	+2.5	13.4 (2000)
91104/91311	Launceston Airport	9.3	+2.0	9.7 (2000)

Table 3. Mean maximum and minimum temperatures for month to date at selected stations.

Station number	Location	Value (°C)	Date	Previous record
<b>Maximum temperature</b>				
11003	Eucla	44.5	13/11	44.0 (23/11/1982)
11004/11052	Forrest	44.9	14/11	44.8 (29/11/1962)
13017	Giles	43.9	17/11	43.8 (30/11/1996)
15590	Alice Springs	43.0	17/11	42.9 (28/11/1996)
16001	Woomera	44.9	19/11	44.4 (29/11/2006)
16065	Andamooka	45.1	16/11	44.2 (25/11/1991)
17005/17110	Leigh Creek	45.2	18/11	43.7 (18/11/1968, 29/11/2006)
17031	Marree	47.4	18/11	46.1 (30/11/1982)
17099	Arkaroola	44.4	18/11	43.5 (30/11/1982)
18012	Ceduna	46.5	19/11	45.9 (25/11/1997)
18040	Kimba	43.5	19/11	43.2 (25/11/1997)
18069	Elliston	44.0	19/11	43.3 (29/11/2006) (Nov) 43.5 (17/2/2007) (all months)
18079	Streaky Bay	42.9	14/11	42.8 (29/11/1962)
19017	Hawker	44.0	18/11	41.5 (28/11/2006)
19036/19066/ 16092/18201	Port Augusta	46.3	19/11	44.9 (25/11/1997)
19062	Yongala	41.8	18/11	40.8 (30/11/1993)
21043	Port Pirie	44.0	15/11	42.8 (30/11/1962)
21046/21133	Snowtown	44.8	19/11	43.9 (30/11/1962)
22801/22823	Cape Borda	36.2	14/11	34.4 (27/11/2000)
23000/23090	Adelaide	43.0	19/11	42.7 (30/11/1962)
23034	Adelaide Airport	43.1	19/11	41.9 (30/11/1962)
23321/23373	Nuriootpa	41.5	19/11	41.0 (30/11/1993)
23343	Turretfield	44.0	19/11	43.8 (30/11/1993)
24016/24048	Renmark	44.6	18/11	43.9 (24/11/1982)
24511	Eudunda	41.5	19/11	40.6 (24/11/1982)
24518	Meningie	41.1	19/11	40.9 (25/11/1997)
40093	Gympie	40.5	17/11	40.0 (30/11/1996)
41175	Applethorpe	34.2	20/11	34.0 (10/11/2002)
46037	Tibooburra	46.4	18/11	44.8 (27/11/1995)
46042	White Cliffs PO	45.0	18/11	44.8 (30/11/2004)
46043	Wilcannia	45.2	16/11	45.0 (30/11/2004)
47007	Broken Hill	44.0	18/11	42.7 (25/11/1997)
47019	Menindee	45.2	18/11	44.4 (30/11/2004)
48013/48239/ 48245	Bourke	46.6	20/11	45.6 (30/11/1936)
48015	Brewarrina	46.0	20/11	44.0 (29/11/1997)
48030/48027	Cobar	45.4	20/11	45.0 (18/11/1944)
48031	Collarenebri	44.2	20/11	43.8 (30/11/1997)
50031	Peak Hill	43.8	20/11	42.4 (25/11/1982)
51039	Nyngan	45.0	20/11	43.6 (30/11/2004)
51049	Trangie	44.8	20/11	43.7 (25/11/1982)
52020	Mungindi	44.0	19/11	43.9 (29/11/2006)
54104	Pindari Dam	38.9	18/11	38.2 (29/11/1996)
55049	Quirindi	42.2	20/11	41.7 (19/11/1968)
55136	Woolbrook	36.5	19, 20/11	35.1 (25/11/1982)
56011	Glen Innes PO	34.9	20/11	34.4 (19/11/1968)
58130	Murwillumbah	39.6	17/11	38.7 (2/11/1997)
61242	Cessnock (Nulkaba)	44.0	20/11	43.0 (30/11/2004)
62013	Gulgong	41.4	21/11	40.7 (29/11/1997)
63005	Bathurst Ag	39.7	20/11	38.4 (26/11/1997)
63023	Cowra Res Ctr	42.4	20/11	41.5 (26/11/1997)
63254	Orange Ag Inst	35.7	20/11	34.8 (26/11/1997)
64009	Dunedoo	43.0	20/11	42.0 (30/11/2004)
65012/65070	Dubbo	43.4	20/11	43.3 (19/11/1944)
65034	Wellington	43.0	20/11	41.5 (30/11/2004)
65091	Cowra Airport	43.8	20/11	43.1 (26/11/1997)
67019	Prospect Reservoir	42.0	20/11	41.6 (25/11/2002)

68102	Bowral	38.0	20/11	37.1 (26/11/1997)
70080	Taralga	38.5	20/11	37.2 (26/11/1997)
70091	Yass	39.5	20/11	38.9 (26/11/1997)
70278	Cooma	36.5	20/11	34.6 (18/11/1980)
75032	Hillston	43.5	20/11	43.2 (30/11/2004)
75039	Lake Cargelligo	43.9	20/11	43.5 (30/11/2004)
82042	Strathbogie	37.2	19/11	37.0 (24/11/1982)
82053/82138	Wangaratta	41.4	19/11	41.1 (17/11/1980)
88023	Lake Eildon	38.9	19/11	38.6 (24/11/1982)
91112/91107	Wynyard	30.5	19/11	29.4 (23/11/1982)
91223	Marrawah	29.0	9/11	27.6 (13/11/1988)
92003	Bicheno	35.1	20/11	33.9 (15/11/2003)

<b>Minimum temperature</b>				
10536	Corrigin	24.7	12/11	23.7 (23/11/1977)
10568	Hyden	24.8	12/11	23.0 (23/11/1977)
17099	Arkaroola	30.3	20/11	30.0 (28/11/2006)
18079	Streaky Bay	25.9	15/11	25.6 (30/11/1962)
18115	Neptune Island	20.7	14/11	19.5 (27/11/2004)
22803	Cape Willoughby	22.3	10/11	22.0 (1/11/1987)
38024	Windorah	31.7	21/11	31.1 (16/11/1996)
46037	Tibooburra	30.9	19/11	30.7 (30/11/2004)
46042	White Cliffs PO	32.1	19/11	30.6 (30/11/1966)
47007	Broken Hill	30.2	20/11	28.8 (26/11/1997)
47016	Lake Victoria	25.5	20/11	25.4 (30/11/2004)
47019	Menindee	29.6	20/11	28.3 (30/11/1966)
48013/48239/ 48245	Bourke	32.2	22/11	30.6 (6/11/1965)
48015	Brewarrina	30.0	22/11	28.1 (29/11/2006)
48031	Collarenebri	30.6	22/11	29.0 (21/11/1982)
49002	Balranald	26.7	19/11	25.6 (13/11/2008)
49019	Ivanhoe	30.5	20/11	30.0 (28/11/1959)
51010	Coonamble	30.0	22/11	28.3 (6/11/1965)
51039	Nyngan	29.4	22/11	27.2 (6/11/1965)
51049	Trangie	27.3	21/11	26.6 (28/11/1980)
52026/52088	Walgett	30.3	22/11	30.2 (20/11/1944)
55024	Gunnedah Res Ctr	29.3	22/11	28.1 (19/11/1968)
55049	Quirindi	27.2	22/11	23.3 (6/11/1965)
58158	Murwillumbah	24.4	22/11	23.7 (7/11/1994)
61051	Murrurundi	25.1	22/11	23.0 (28/11/1995)
63039	Katoomba	24.7	20/11	22.0 (25/11/1982)
63231	Orange Airport	20.8	20, 22/11	20.2 (26/11/2002)
63254	Orange Ag Inst	22.3	20/11	22.2 (25/11/1982)
65026	Parkes	27.8	20/11	26.7 (18/11/1980)
65034	Wellington	26.2	22/11	23.4 (22/11/2006)
68192	Camden	21.7	21/11	21.0 (4/11/2005)
72091/72161	Cabramurra	20.8	20/11	20.0 (26/11/1997)
73007	Burrinjuck Dam	22.6	21/11	22.0 (22/11/2006)
73014	Grenfell	27.8	20/11	24.7 (26/11/1997)
75032	Hillston	30.0	20/11	28.3 (28/11/1959)
76064	Walpeup	26.1	20/11	25.6 (19/11/1987)
78077	Warracknabeal	25.0	20/11	24.2 (13/11/2008)
80023	Kerang	25.5	20/11	24.7 (27/11/1997)
80091	Kyabram	21.2	20/11	21.1 (3/11/2005)

Table 4. Records set during November 2009 at long-term stations (30 or more years of data)