SPECIAL CLIMATE STATEMENT 43

Extreme January heat

Last update 7 January, 2013

Climate Information Services
Bureau of Meteorology

Note: This statement is based on data available as of 7 January 2013 which may be subject to change as a result of standard quality control procedures.

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Introduction

Large parts of central and southern Australia are currently under the influence of a persistent and widespread heatwave event. This event is ongoing with further significant records likely to be set. Further updates of this statement and associated significant observations will be made as they occur, and a full and comprehensive report on this significant climatic event will be made when the current event ends.

The last four months of 2012 were abnormally hot across Australia, and particularly so for maximum (day-time) temperatures. For September to December (i.e. the last four months of 2012) the average Australian maximum temperature was the highest on record with a national anomaly of +1.61 °C, slightly ahead of the previous record of 1.60 °C set in 2002 (national records go back to 1910). In this context the current heatwave event extends a four month spell of record hot conditions affecting Australia. These hot conditions have been exacerbated by very dry conditions affecting much of Australia since mid 2012 and a delayed start to a weak Australian monsoon.

The start of the current heatwave event traces back to late December 2012, and all states and territories have seen unusually hot temperatures with many site records approached or exceeded across southern and central Australia. A full list of records broken at stations with long records (>30 years) is given below.

The current heatwave event commenced with a build up of extreme heat in the southwest of Western Australia from 25-30 December 2012 as a high in the Bight and a trough near the west coast directed hot easterly winds over the area. Particularly hot conditions were observed on the 30th, with Cape Naturaliste observing 37.7 °C, its hottest December day in 56 years of record.

From 31 December the high pressure system began to shift eastward, bringing well above average temperatures across southern WA between the 30 December and 2 January. Temperatures reached 47.7 °C at Eyre on the 2nd its hottest day in 24 years of record, while Eucla recorded 48.2 °C on the 3rd, its hottest day since records began in 1957.

By the 4 January the high pressure system had moved off eastern Australia, with northerly winds directing very hot air into southeast Australia, while southerly winds eased temperatures in WA. Hobart experienced a minimum temperature of 23.4 °C on the 4th (its hottest January night on record), followed by a maximum of 41.8 °C (its hottest maximum temperature on record for any month in 130 years of records) and the highest temperature observed anywhere in southern Tasmania.

The area of intense heat moved northeast on the 5th as the high pressure system, now centred over the Tasman Sea, and a low pressure trough directed hot northerly winds into the Riverina and western NSW. Areas affected recorded temperatures well in excess of 40 °C, with Marree in SA

recording 48.4 °C, Yarrawonga in VIC recording 45.7 °C and Hay in NSW recording 47.7 °C, breaking its annual daytime temperature record.

Record-breaking daily temperatures

Tables 1 to 3 below give a list of all significant daily maximum and minimum temperature records broken during the course of this heatwave event to date. Many stations have also approached but not exceeded historical records including Adelaide (45.0 °C, its fourth warmest day on record). Many stations with shorter periods of observation (i.e., less than 30 years) have also broken records.

Maximum temperatures recorded in each state during the course of the events

Tables 4 and 5 below give a list of the highest maximum and minimum temperatures recorded in each state over the course of the heatwave event.

Contacts for further information

The following climatologist may be contact for further information about this event:

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General notes

Values in this statement are values as of 7 January 2013, and subject to the Bureau's normal quality control processes.

Table 1: New daily maximum temperature records set during the event (stations with 30 or more years of historical records).

Station number	Location	State	Temperature (°C)	Date	Previous Record	Date	Years of record
9519	Cape Naturaliste	WA	37.7	30-Dec	37.6	26/12/2007	56
9842	Jarrahwood	WA	40.5	30-Dec	40.5	26/12/2007	38
11003	Eucla	WA	48.2	3-Jan	47.9	3/01/1979	53
94029	Hobart	TAS	41.8	4-Jan	40.8	4/01/1976	120
94008	Hobart Airport	TAS	40.3	4-Jan	40.1	3/01/1991	55
95003	Bushy Park	TAS	40.3	4-Jan	39.5	20/01/1973	53
92027	Orford	TAS	38.8	4-Jan	38.7	21/01/1997	45
92045	Larapuna	TAS	36.5	4-Jan	36.1	16/01/1960	56
97053	Strathgordon Village	TAS	34.8	4-Jan	34.5	4/01/1976	32
91223	Marrawah	TAS	33.2	4-Jan	33	29/01/2009	42
94087	Mount Wellington	TAS	29.5	4-Jan	29.2	22/01/2006	34
90171	Portland	VIC	42.1	4-Jan	41.6	26/01/2006	31
23034	Adelaide Airport	SA	44.1	4-Jan	44	28/01/2009	58
18040	Kimba	SA	46	4-Jan	45.6	31/01/1968	46
15511	Curtin Springs	SA	45.6	4-Jan	45.5	28/01/2011	49
17110	Leigh Creek Airport	SA	46.2	5-Jan	46.1	25/01/2011	31
75031	Hay	NSW	47.7	5-Jan	46	23/01/2001	56
72043	Tumbarumba	NSW	40	5-Jan	39.8	30/01/2009	46
17110	Leigh Creek Airport	SA	46.3	6-Jan	46.2	5/01/2013	31
72043	Tumbarumba	NSW	40	6-Jan	39.8	30/01/2009	46

*Highlighted records indicate the monthly record is also an annual record.

Table 2: New daily minimum temperature records set during the event (stations with 30 or more years of historical records).

Station number	Location	State	Temperature (°C)	Date	Previous Record	Date	Years of record
9021	Perth Airport	WA	27.5	29-Dec	26.9	24/12/1960	69
9111	Karnet	WA	23.5	29-Dec	22.6	29/12/2009	47
9519	Cape Naturaliste	WA	24.3	30-Dec	24.3	26/12/2007	56
9518	Cape Leeuwin	WA	23.8	1-Jan	23.5	26/01/2012	107
94029	Hobart	TAS	23.4	4-Jan	22.9	10/01/1887	120
94008	Hobart Airport	TAS	21.8	4-Jan	21.2	3/01/2012	55
94010	Cape Bruny Lighthouse	TAS	20.4	4-Jan	20	16/01/1960	57
71032	Thredbo AWS	NSW	17.1	5-Jan	17	26/01/2003	33
84070	Point Hicks	VIC	25	5-Jan	23.8	3/01/2012	47

*Highlighted records indicate the monthly record is also an annual record.

A particular feature of this heatwave event has been the exceptional spatial extent of high temperatures. The table below gives the national and state/territory average maximum temperature for each day of the heatwave event. To date (data up to the 6 January 2013) the national area-average for each of the first 6 days of 2013 has been in the top 20 hottest days on record, with 6 January the fifth hottest on record and the first time 5 consecutive days over 39 °C has ever been recorded for Australia.

Table 3: Daily area average maximum temperatures to date.

Area-averaged maximum temperature each day of the event (°C)

	Record	Date	29-Dec-12	30-Dec-12	31-Dec-12	1-Jan-13	2-Jan-13	3-Jan-13
Aust	40.2	21/12/1972	36.8	37.1	37.6	38.6	39.2	39.6
QLD	41.6	14/11/1915	37.4	37.3	35.6	36.0	38.8	39.3
NSW	44.1	14/01/1939	32.9	32.9	35.2	37.0	35.6	36.1
VIC	44.5	7/02/2009	26.0	27.1	29.6	29.7	28.1	36.8
TAS	33.3	30/01/2009	18.1	18.3	19.2	17.7	19.0	26.7
SA	45.3	2/01/1960	35.5	37.3	39.0	40.3	41.3	43.6
WA	43.0	31/12/1972	38.3	38.5	39.6	41.2	41.1	39.3
NT	42.9	27/12/1990	39.1	39.3	39.4	39.2	39.8	40.6

Table 3: continued

Area-averaged maximum temperature each day of the event (°C)

	Record	Date	4-Jan-13	5-Jan-13	6-Jan-13
Aust	40.2	21/12/1972	39.3	39.3	39.7
QLD	41.6	14/11/1915	38.4	38.1	37.9
NSW	44.1	14/01/1939	39.4	41.1	40.1
VIC	44.5	7/02/2009	41.2	35.4	33.3
TAS	33.3	30/01/2009	33.0	24.5	24.5
SA	45.3	2/01/1960	43.8	40.5	41.8
WA	43.0	31/12/1972	37.4	39.2	40.9
NT	42.9	27/12/1990	40.9	40.4	39.8

Table 4: State high maximum temperatures recorded each day of the event.

Date	State	Daily Maximum Temperature (°C)	Location
29-Dec-12	WA	42.5	Gosnells City (9106)
30-Dec-12	WA	42.8	Telfer Aero (13030)
31-Dec-12	WA	43.9	Geraldton Airport (8315)
1-Jan-13	WA	46.1	Munglinup West (12044)
2-Jan-13	WA	47.7	Eyre (11019)
3-Jan-13	WA	48.6	Red Rocks Point
4-Jan-13	WA	42.5	Marble Bar (4106)
5-Jan-13	WA	43	Mullewa (8095)
6-Jan-13	WA	44.8	Warburton (13011)
30-Dec-12	SA	40.8	Moomba Airport (17123)
31-Dec-12	SA	43.4	Marree Comparison (17031)
1-Jan-13	SA	44	Marree Comparison (17031)
2-Jan-13	SA	45.3	Oodnadatta airport (17043)
3-Jan-13	SA	46.8	Nullarbor (18106)
4-Jan-13	SA	48.2	Wudinna (18083)
5-Jan-13	SA	48.4	Marree comparison (17031)
6-Jan-13	SA	48.2	Marree comparison (17031) - preliminary – max 1:00 pm AEDST
31-Dec-12	VIC	35.5	Mildura Airport (76031)

1-Jan-13	VIC	36.4	Mildura Airport (76031)
2-Jan-13	VIC	34.1	Mildura Airport (76031)
3-Jan-13	VIC	40	Mildura Airport (76031), Hopetoun (71010)
4-Jan-13	VIC	45.2	Hopetoun Airport (71010)
5-Jan-13	VIC	45.7	Yarrawonga (81124)
6-Jan-13	VIC	42.4	Yarrawonga (81124) - PRELIMINARY – MAX 1:00 PM AEDST
31-Dec-12	NSW	40.9	Wanaaring Post Office (48079)
1-Jan-13	NSW	43.3	Wanaaring Post Office (48079)
2-Jan-13	NSW	42.3	Mungindi Post Office (52020)
3-Jan-13	NSW	42.5	Lightning Ridge Visitors Information Centre (48243)
4-Jan-13	NSW	47.6	Pooncarie Mail Agency (46012)
5-Jan-13	NSW	47.9	Hay Airport (75019)
6-Jan-13	NSW	47.6	Wilcannia Aerodrome(46012) - PRELIMINARY – MAX 1:00 PM AEDST
3-Jan-13	TAS	35.4	Friendly Beaches (92114)
4-Jan-13	TAS	41.8	Hobart (94029)
5-Jan-13	TAS	34	Cressy Research Station (91306)
6-Jan-13	TAS	31	Cressy Research Station (91306) - PRELIMINARY – MAX 1:00 PM AEDST
3-Jan-13	QLD	45.5	Birdsville Airport (38026)
4-Jan-13	QLD	47.3	Birdsville Airport (38026)
5-Jan-13	QLD	46.7	Birdsville Airport (38026)
6-Jan-13	QLD	46.3	Birdsville Airport (38026) - PRELIMINARY – MAX 1:00 PM AEDST
2-Jan-13	NT	43.2	Walungurru (15664)
3-Jan-13	NT	44	Watarrka (15652)
4-Jan-13	NT	45.6	Curtain Springs (15511)
5-Jan-13	NT	45.2	Yulara Aerodrome (15635) & Watarrka (15652)
6-Jan-13	NT	45.2	Yulara Aerodrome (15635) - PRELIMINARY – 1:00 PM

Table 5: State high minimum temperatures recorded each day of the event.

Date	State	Daily Minimum Temperature (°C)	Location
29-Dec-12	WA	30.5	Telfer Aero (13030)
30-Dec-12	WA	30.3	Mount Magnet Aero (7600)
31-Dec-12	WA	31.8	Telfer Aero (13030)
1-Jan-13	WA	29.6	Karratha Aero (4083)
2-Jan-13	WA	29	Bedout Island (4100)
3-Jan-13	WA	29	Troughton Island (1007)
4-Jan-13	WA	32	Wiluna (13012)
5-Jan-13	WA	30.2	Emu Creek Station (6072)
6-Jan-13	WA	30.1	Roebourne (4035)
7-Jan-13	WA	31.4	Telfer Aero (13030) - PRELIMINARY – MIN to 1:00PM AEDST
3-Jan-13	SA	26.5	Cooberpedy Airport (16090)
4-Jan-13	SA	28	Elliston (18069)
5-Jan-13	SA	25.8	Andamooka (16065)
6-Jan-13	SA	29	Arkaroola (17099)
7-Jan-13	SA	30.9	Moomba (17123) - PRELIMINARY – MIN to 1:00PM AEDST

4-Jan-13	VIC	25.1	Nhill Aerodrome (78015)
5-Jan-13	VIC	29	Echuca Aerodrome (80015)
6-Jan-13	VIC	22.6	Hunters Hill (82139)
7-Jan-13	VIC	21.6	Yarrawonga (81124) - PRELIMINARY – MIN to 1:00PM AEDST
4-Jan-13	NSW	27.6	Bourke Airport AWS (48245)
5-Jan-13	NSW	29.9	Hay Airport (75019)
6-Jan-13	NSW	32	White Cliffs (46129)
7-Jan-13	NSW	30.1	Tibooburra (46037) - PRELIMINARY – MIN to 1:00PM AEDST
4-Jan-13	TAS	23.4	Hobart (94029)
5-Jan-13	TAS	20.3	Flinders Island (99005)
6-Jan-13	TAS	14.8	Swan Island (92123)
7-Jan-13	TAS	14.3	Hobart (94029) - PRELIMINARY – MIN to 1:00PM AEDST
3-Jan-13	QLD	28.5	Boulia Airport (38003)
4-Jan-13	QLD	29.5	Boulia Airport (38003)
5-Jan-13	QLD	30.5	Birdsville Airport (38026)
6-Jan-13	QLD	31.1	Birdsville Airport (38026)
7-Jan-13	QLD	31.2	Ballera Gas Field (45009) - PRELIMINARY – MIN to 1:00PM AEDST
3-Jan-13	NT	28.4	Warruwi (14401)
4-Jan-13	NT	31.6	Kulgera (15603)
5-Jan-13	NT	29.1	Tennant Creek Airport (15135)
6-Jan-13	NT	28.5	Kulgera (15603)
7-Jan-13	NT	29.0	Walungurru (15664) - PRELIMINARY – MIN to 1:00PM AEDST

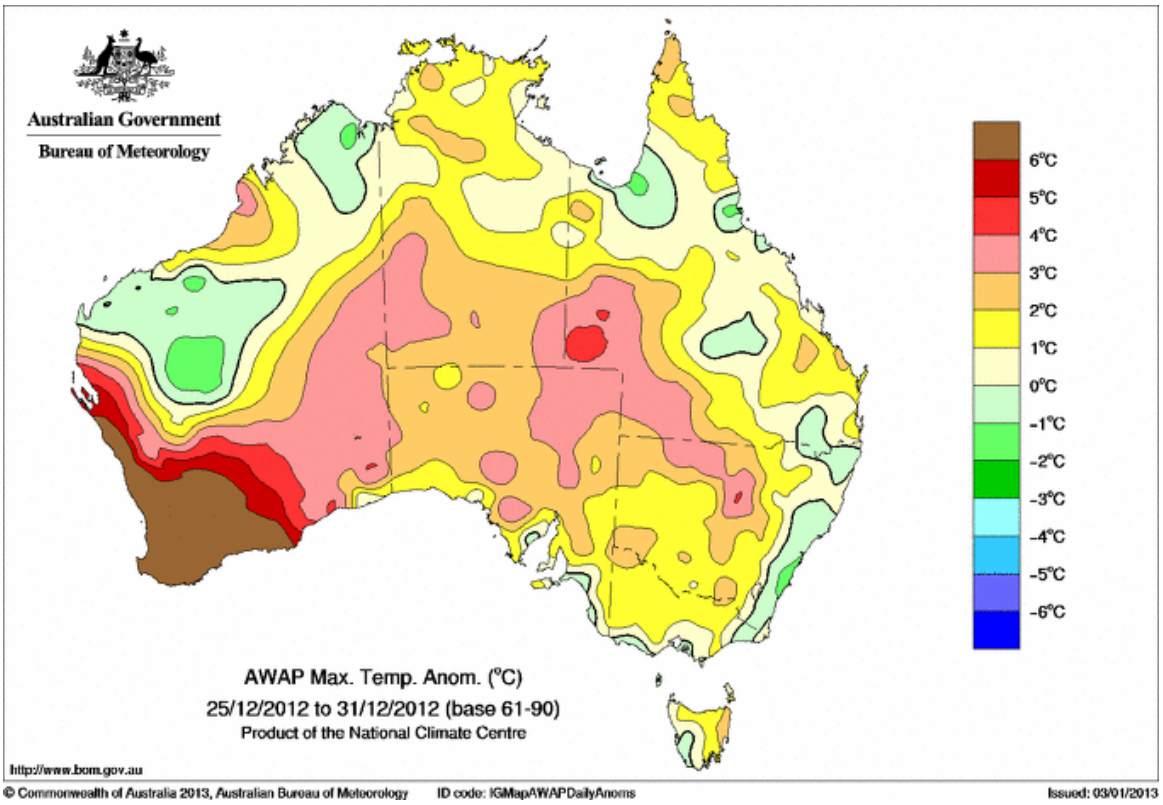

Figure 1: The maximum temperature anomaly from the 1961-1990 average for the last week of December (the start of the heatwave event in Western Australia). Units are °C.

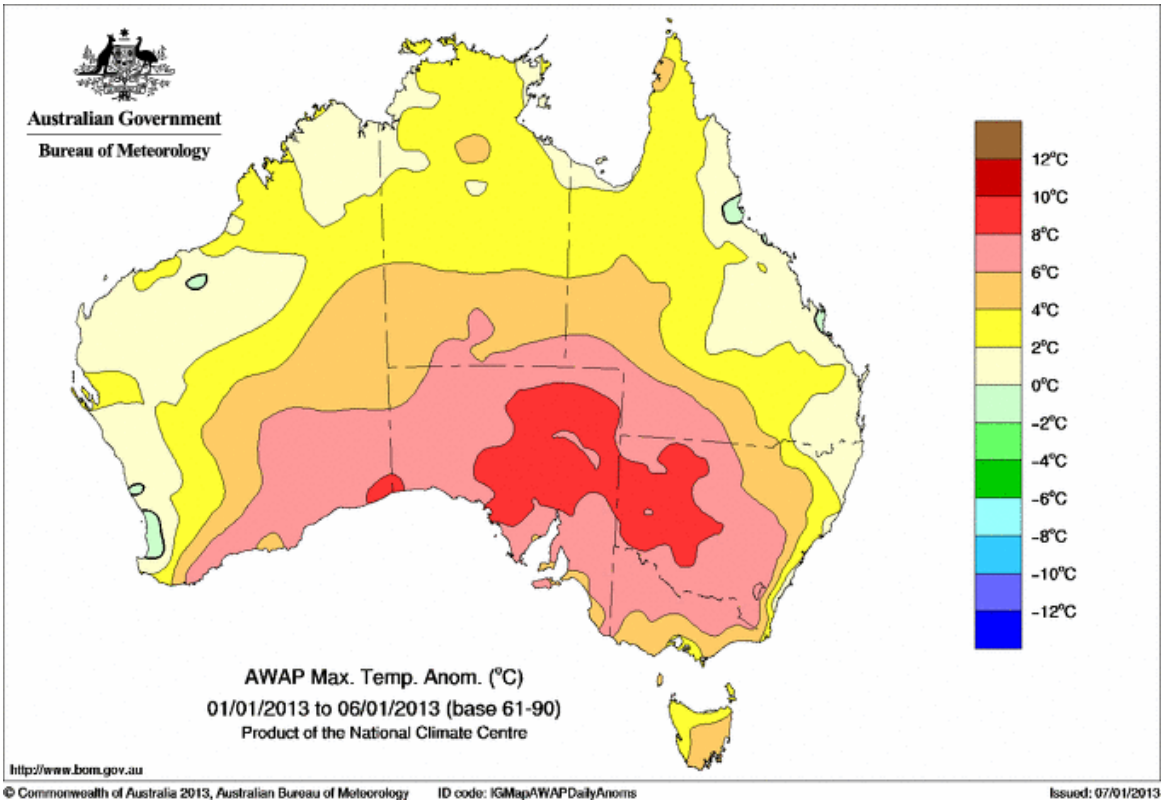

Figure 2: The maximum temperature anomaly from the1961-1990 average for January 1 to 6. Units are °C.