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## **SPECIAL CLIMATE STATEMENT 21**

**A very dry year so far in southwest Western Australia**

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*Western Australia Climate Services Centre  
Bureau of Meteorology*

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## Overview

Very much below average rainfall has occurred in western parts of Western Australia (WA) during 2010, with particularly dry conditions in the southwest corner and Gascoyne regions (Figure 1).

The dry conditions are a result of a very poor wet season (January to April) in much of the Pilbara and Gascoyne, combined with persistent and anomalously high pressure over southern WA for most of 2010. Both the winter and autumn of 2010 have been characterised by an unusual absence of westerly winds and a very low number of significant cold fronts passing over southern WA. This has deprived the region of its main rain producing mechanism. The extremely dry conditions continue and exacerbate the long-term drying trend, which the southwest of WA has experienced since the mid-1970s (Figure 2).

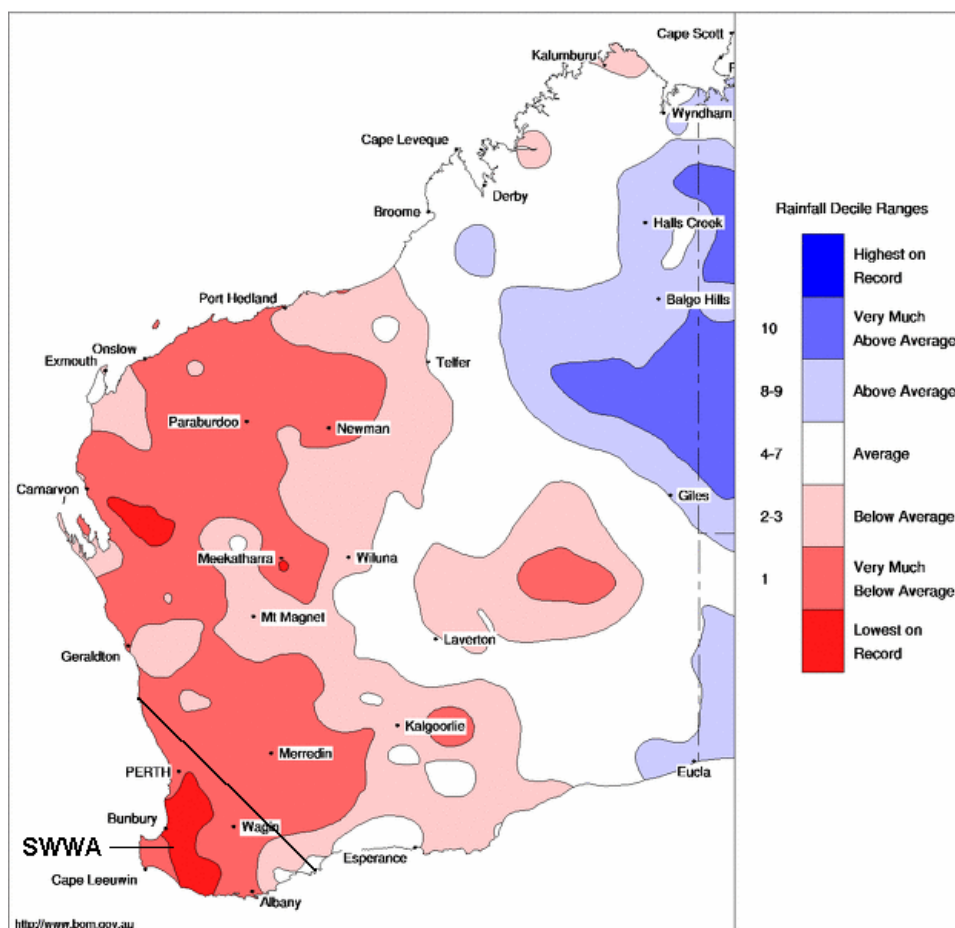
## Southwest WA

In southwest Western Australia (SWWA) (defined as the region southwest of a line from Jurien Bay to Bremer Bay – see Figure 1), below average rainfall in the months of April, May, June (third driest on record), July, and August (sixth driest on record), has resulted in record or near record low rainfall across a range of periods. SWWA in 2010 has seen the second driest January to August on record, the third driest autumn and winter period (March to August), the driest April to August, the driest May to August, and the driest winter (June to August). These records are based on comparable data beginning in 1900. Table 1 lists the lowest five rainfall totals for the SWWA region for selected periods.

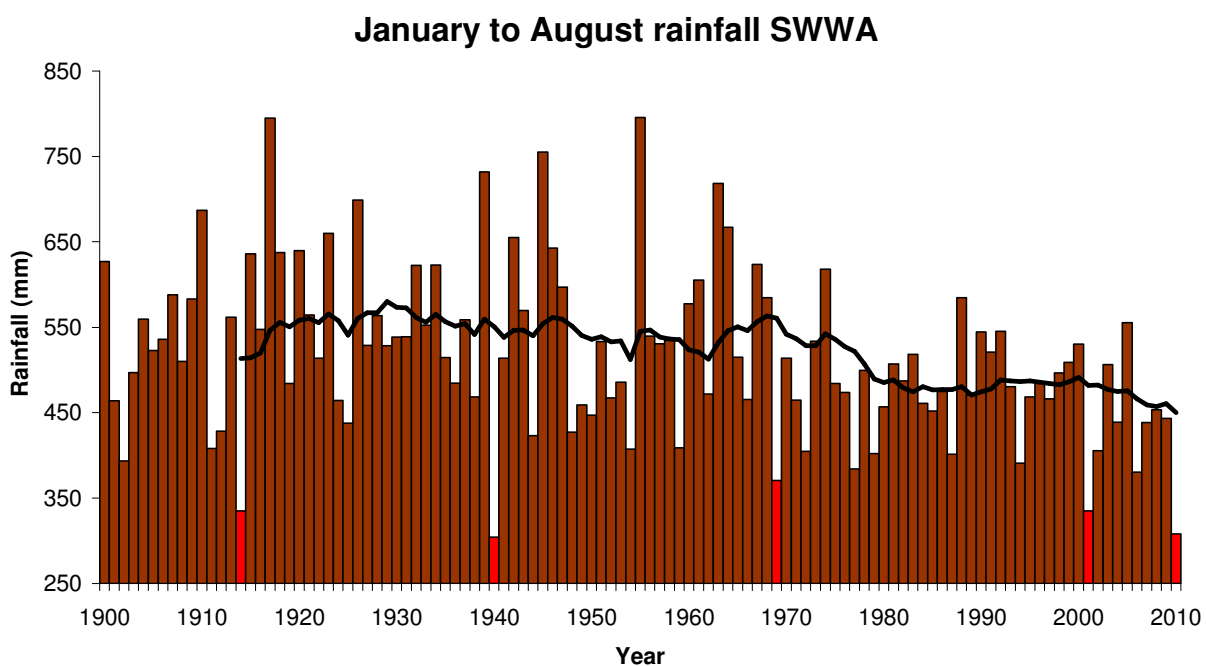
Year	Jan-Aug (mm)	Year	Mar-Aug (mm)	Year	Apr-Aug (mm)	Year	May-Aug (mm)	Year	Jun-Aug (mm)
1940	304.2	1940	283.8	2010	261.6	2010	236.9	2010	179.3
2010	308.1	1914	296.4	1940	281.0	1914	258.0	1914	214.5
2001	335.0	2010	297.4	1914	283.2	2006	259.2	1940	215.1
1914	335.0	2006	308.3	2006	296.0	1940	264.5	1971	217.4
1969	370.4	2001	324.3	2001	316.4	1969	290.0	2001	218.7

**Table 1:** The lowest five rainfall totals (mm) for the SWWA region for various periods.

It is apparent from this table that three of the most significant dry years have occurred in the past decade (2001, 2006 and 2010). The earlier years of 1914, 1940 and 1969 also feature, for various combinations of months. A time series of January to August (eight month) rainfall in SWWA (Figure 2) highlights the significance of the low rainfall so far in 2010, as well as the substantial reduction in average rainfall since the mid-1970s for this period of the year. Further, the current 15 year running mean is the lowest on record. The 2010 dry conditions are particularly unusual as they coincide with a significant La Niña event in the Pacific Ocean.



**Figure 1:** Rainfall deciles for the period January to August 2010 for WA. The line in the southwest defines the southwest WA (SWWA) region referred to in this document.



**Figure 2:** January to August rainfall in SWWA with 15 year moving average. Years shown in red are the five lowest on record.

## Wheat and sheep regions of the Southwest Land Division

Wheat and sheep farming regions of the Southwest Land Division (SWLD) of WA have also experienced very dry conditions in 2010. These regions cover the majority of the SWLD, apart from the higher rainfall and forested regions of southwest WA in the Lower West, Southwest and South Coastal districts. Winter rainfall in the wheat and sheep regions has been the third lowest since comparable records commenced in 1900, the two drier periods being 2006 and 1914. Thus, two of the three driest winters in the past 110 years in the wheat and sheep farming regions of WA have occurred in the past five years. Low rainfall in the autumn and winter period (March to August) in these regions was notable, but not so severe in comparison with southwest WA.

## Rainfall at individual locations

The dry start to the year in western parts of WA has seen a number of stations achieve record low rainfall totals for the year to date (January to August) and for the winter period (June to August). Table 2 provides a selected list of sites with record low January to August rainfall, whilst table 3 shows sites with record low winter rainfall.

Station	Station Number	Jan-Aug 2010 Rainfall (mm)	Previous Lowest		Years of Record	Jan-Aug Average (mm)	Percentage of Jan-Aug Average
Pearce RAAF	9053	277.8	325.0	in 1940	46	526.2	53%
Gidgegannup	9066	367.0	438.2	in 2001	45	712.1	52%
Karnet	9111	509.6	527.2	in 1994	43	904.8	56%
Lancelin	9114	300.0	321.4	in 1977	43	491.8	61%
Bridgetown Comparison	9510	291.3	341.0	in 2001	122	621.9	47%
Dwellingup	9538	501.7	505.2	in 2001	72	968.8	52%
Greenbushes	9552	341.5	394.6	in 2001	117	707.1	48%
Manjimup	9573	400.4	466.6	in 2001	93	747.6	54%
Marradong	9575	266.4	286.8	in 2001	112	570.3	47%
Northcliffe	9590	597.7	652.0	in 1987	80	993.1	60%
Pemberton	9592	485.2	577.2	in 2001	68	875.0	55%
Walpole	9611	631.4	668.3	in 1987	58	968.2	65%
Westbourne	9616	278.3	295.8	in 1940	108	517.5	54%
Roelands	9657	362.2	413.2	in 2001	68	705.9	51%
Gordon River	9740	234.5	272.2	in 2001	51	382.0	61%
Chapman Hill	9803	406.0	477.8	in 1969	45	669.7	61%
Gabbin	10055	104.1	124.9	in 1940	66	268.1	39%
Wialki	10135	111.2	120.0	in 1940	71	257.4	43%
Hines Hill	10151	112.6	122.8	in 1952	76	229.6	49%
Graham Rock	10560	114.2	125.2	in 1940	74	260.6	44%
Hyden	10568	115.9	131.6	in 1940	79	260.2	45%
Karlgarin	10576	68.9	124.2	in 2002	68	257.7	27%
Tambellup	10643	148.8	164.5	in 1940	100	325.1	46%
Woodanilling	10659	211.3	224.1	in 1987	69	354.0	60%
Amrista Park	10696	118.0	162.8	in 1972	55	269.6	44%
Mount Walker	10702	126.7	143.6	in 1983	49	248.4	51%
Swanara	10904	133.6	146.0	in 1977	46	272.3	49%

**Table 2:** Selected stations with record low January to August rainfall in SWWA for 2010 based on preliminary data.

Name	Station Number	Jun-Aug 2010 Rainfall (mm)	Previous Lowest		Years of Record	Jun-Aug Average (mm)	Percentage of winter average
Dandaragan West	9014	178.8	190.0	in 1989	54	335.4	53%
Gingin	9018	154.0	203.4	in 1914	116	408.8	38%
Jarrahdale	9023	312.4	343.4	in 1976	125	641.0	49%
Pearce RAAF	9053	190.8	233.1	in 1971	55	377.2	51%
Gidgegannup	9066	239.6	313.6	in 1989	47	507.5	47%
Gosnells City	9106	251.2	288.8	in 2006	47	462.3	54%
Karnet	9111	308.0	332.6	in 1994	44	625.1	49%
Roleystone	9113	252.2	344.7	in 1976	43	539.1	47%
Lancelin	9114	140.0	230.6	in 2006	44	340.3	41%
Boyanup	9503	228.4	311.4	in 1902	106	515.8	44%
Bannister	9507	171.6	174.4	in 1971	126	348.0	49%
Bridgetown Comparison	9510	177.2	212.6	in 2001	123	412.9	43%
Dwellingup	9538	339.9	349.4	in 2001	75	677.8	50%
Greenbushes	9552	209.0	235.4	in 2001	118	473.5	44%
Manjimup	9573	246.2	282.6	in 2001	93	487.6	50%
Marradong	9575	193.8	204.0	in 2001	113	389.3	50%
Nannup	9585	261.4	306.1	in 1976	108	483.3	54%
Newbicum	9587	134.2	147.6	in 2001	87	297.3	45%
Pemberton	9592	307.4	340.1	in 2001	69	571.2	54%
Waroona	9614	275.0	313.9	in 1940	71	550.3	50%
Westbourne	9616	128.8	192.8	in 2001	108	326.3	39%
Wokalup	9642	284.6	311.1	in 1976	53	510.2	56%
Roelands	9657	255.0	271.0	in 2001	69	492.1	52%
Gordon River	9740	137.3	151.6	in 1987	52	232.9	59%
Beverley	10515	98.4	104.3	in 1914	125	216.0	46%
Brookton	10524	103.8	115.7	in 1914	102	235.7	44%
Bulyee	10527	76.6	89.1	in 1995	71	185.6	41%
Corrigin	10536	63.2	87.9	in 1971	101	168.5	38%
Graham Rock	10560	66.2	76.0	in 2006	75	139.2	48%
Kondinin	10583	58.1	73.5	in 1980	93	147.6	39%
Kulin	10584	63.4	71.2	in 1980	87	155.5	41%
Lake Grace Comparison	10592	65.0	65.2	in 2002	98	139.0	47%
Narembeen	10612	65.4	70.8	in 2006	84	144.0	45%
Narrogin	10614	118.4	131.3	in 1925	119	242.9	49%
Quairading	10628	65.2	80.4	in 1969	100	173.7	38%
Tambellup	10643	71.9	110.6	in 1940	98	185.9	39%
Wickepin	10654	94.0	96.4	in 1914	99	195.7	48%
Woodanilling	10659	120.8	127.2	in 1984	76	213.4	57%
Amrista Park	10696	65.2	81.2	in 1971	55	147.3	44%

**Table 3:** Selected stations with record low winter rainfall in SWWA for 2010 based on preliminary data.

For further details of records individual stations, please see the WA winter summary at: <http://www.bom.gov.au/climate/current/index.shtml> .

#### Contacts for further information

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