



Australian Government
Bureau of Meteorology

WESTERN AUSTRALIA CLIMATE SERVICES CENTRE
Level 5 1100 Hay Street West Perth WA Australia
PO Box 1370 West Perth WA 6872 Australia
Tel: (08) 9263 2222 Fax: (08) 9263 2233
Email climate.wa@bom.gov.au

SPECIAL CLIMATE STATEMENT 21

A very dry year so far in southwest Western Australia

Issued 3rd September 2010
Updated 4th November 2010

Western Australia Climate Services Centre
Bureau of Meteorology

Cite: Western Australia Climate Services Centre, 2010. A very dry year so far in southwest Western Australia, Bureau of Meteorology, Special Climate Statement 21.

Overview

Very much below average rainfall has continued in western parts of Western Australia (WA) during 2010, with particularly dry conditions in the southwest corner and Gascoyne regions. Rainfall deciles across WA for the January to October and April to October periods are displayed in Figure 1 and Figure 2 respectively.

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 autumn and winter of 2010 were 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 rainfall 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 3).

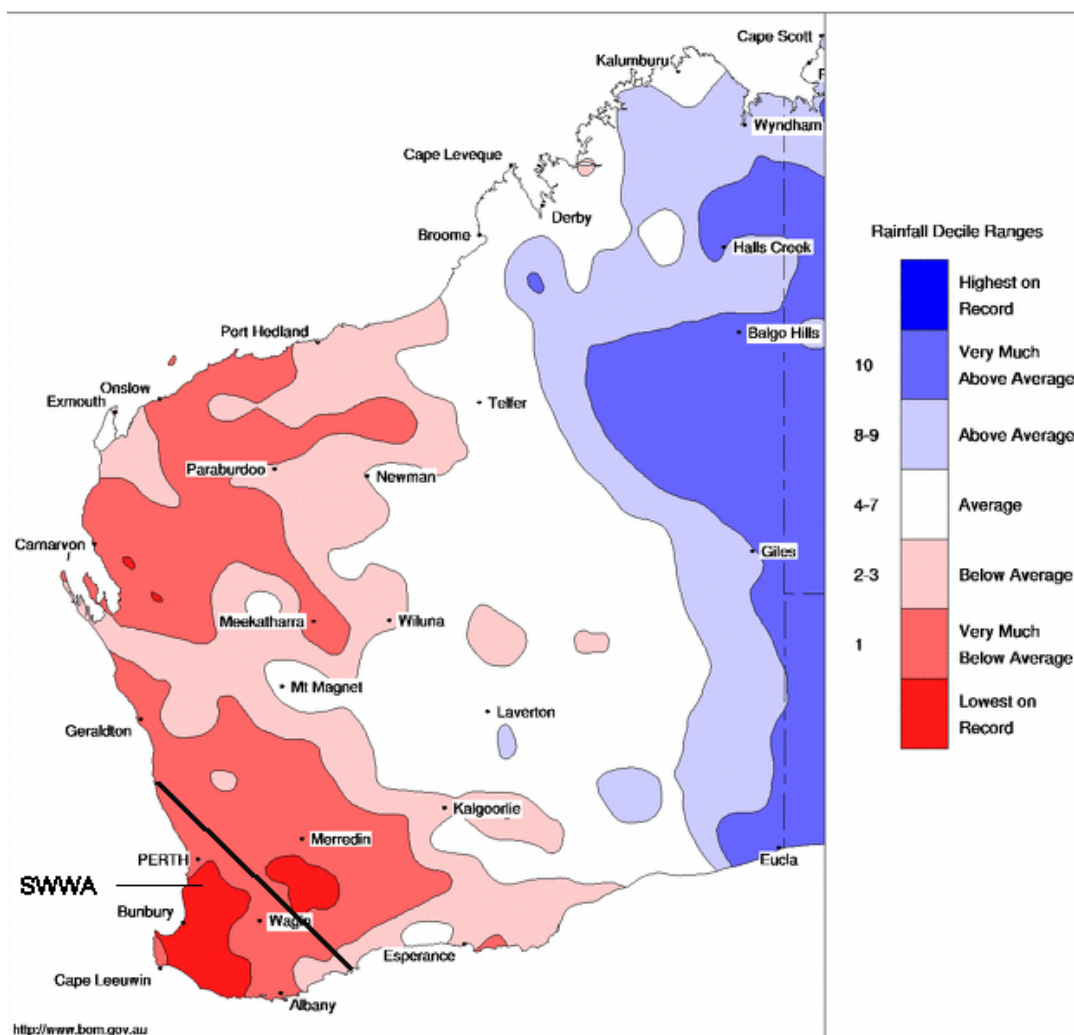


Figure 1: Rainfall deciles for the period January to October 2010 for WA. The line in the southwest defines the southwest WA (SWWA) region referred to in this document.

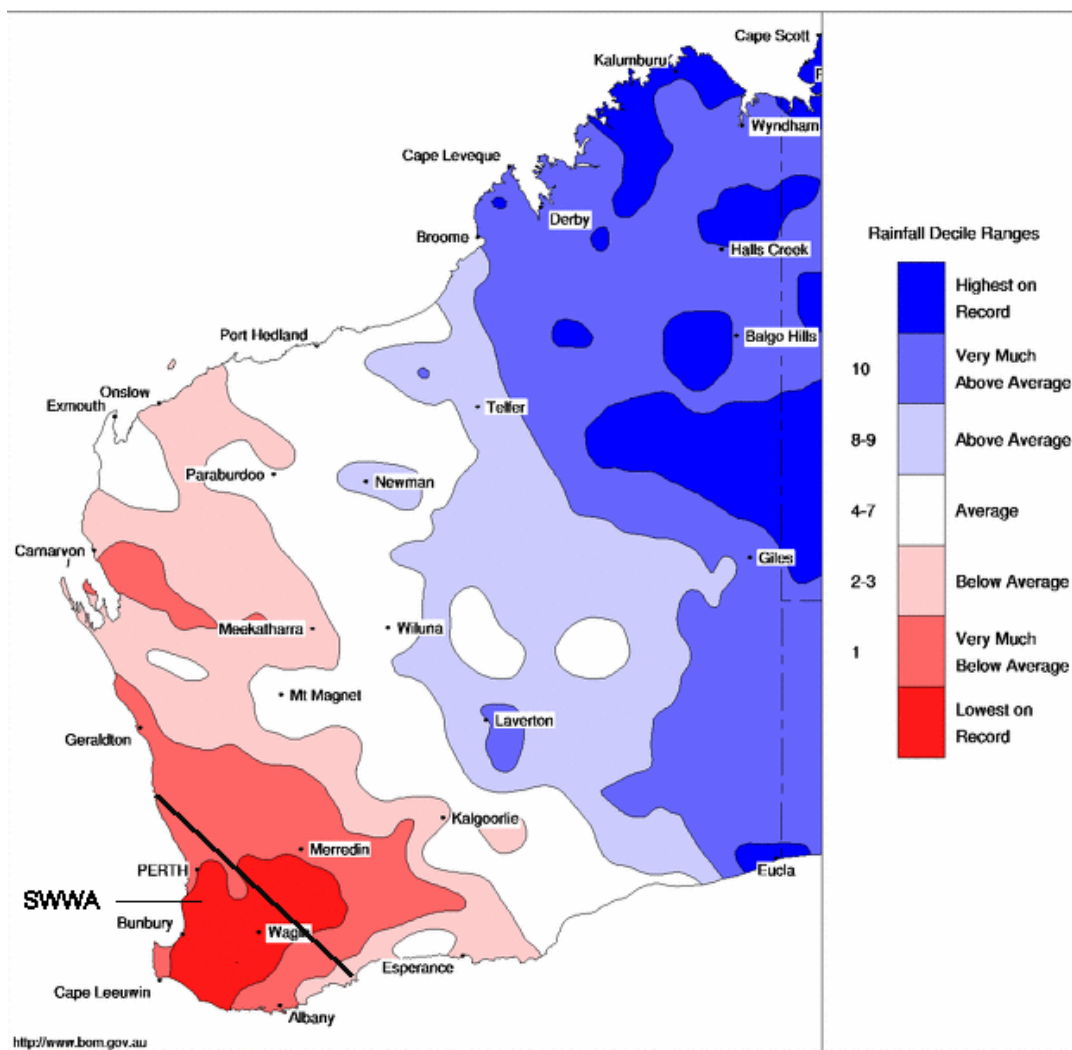


Figure 2: Rainfall deciles for the period April to October 2010 for WA. The line in the southwest defines the southwest WA (SWWA) region referred to in this document.

January to October rainfall SWWA

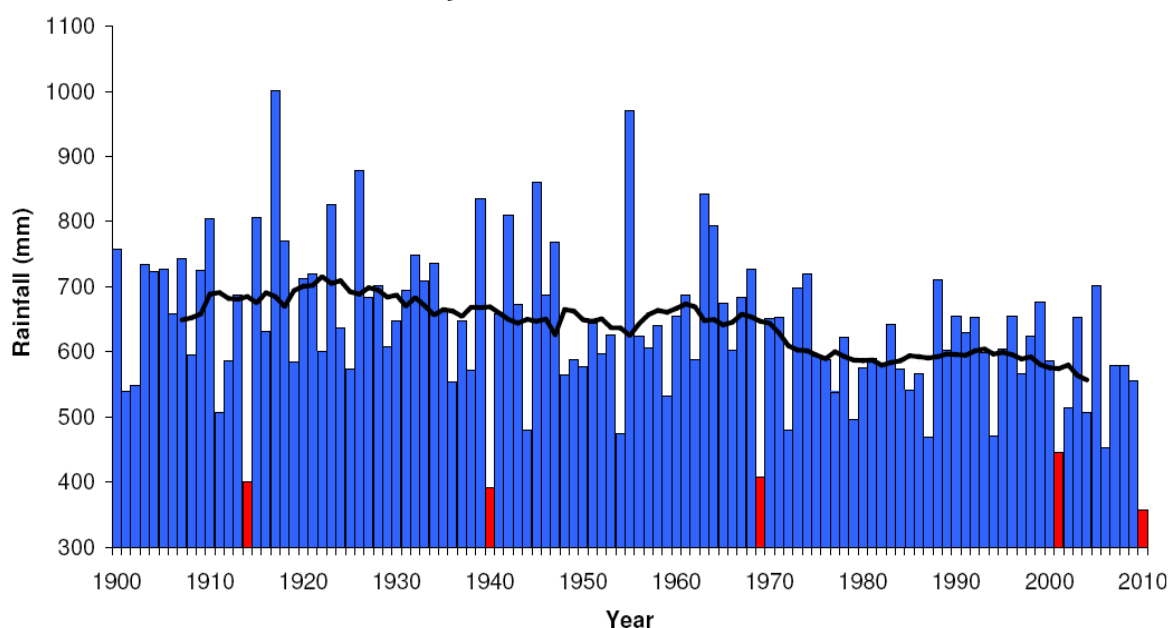


Figure 3: January to October rainfall in SWWA with centred 15 year moving average. Years shown in red are the five lowest on record.

Southwest WA

In the southwest WA (SWWA) region (defined as the region southwest of a line from Jurien Bay to Bremer Bay – see Figure 1 or Figure 2), below average rainfall has been recorded in all months between April to October in 2010. In particular, June was third driest, August was eighth driest, September was fourth driest, and October was seventh driest, since comparable records commenced in 1900. This has resulted in record or near record low rainfall for a range of periods. SWWA in 2010 has seen the driest January to October on record by a significant margin, the driest southern wet season (April to October), the driest winter (June to August), and second driest start to spring (September to October) on record. Table 1 lists the lowest five rainfall totals for the SWWA region for selected periods.

Year	Jan-Oct (mm)	Year	Apr-Oct (mm)	Year	Jun-Aug (mm)	Year	Sep-Oct (mm)
2010	356.5	2010	310.0	2010	184.6	1969	37.3
1940	390.4	1914	347.7	1914	214.5	2010	43.0
1914	399.4	1940	367.2	1940	215.1	1946	45.3
1969	407.7	2006	368.4	1971	217.4	2000	55.7
2001	445.9	1969	381.9	2001	218.7	1944	57.2

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

It is apparent from this table that some of the most significant dry years for SWWA have occurred in the past decade (2001, 2006 and 2010). Earlier dry years of 1914, 1940 and 1969 also feature prominently for various combinations of months. A time series of January to October rainfall in SWWA (Figure 3) 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. Furthermore, 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, and historically very dry years in SW WA are rare during La Niña events.

Wheat and sheep regions of the Southwest Land Division

Wheat and sheep farming regions in the Southwest Land Division (SWLD) 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. January to October rainfall in the wheat and sheep regions in 2010 ranked fifth lowest, while the 2010 southern wet season (April to October) rainfall in this region was second lowest on record, the lowest being in 1914. Winter rainfall in the wheat and sheep regions was the fourth lowest since comparable records commenced in 1900, with the driest winter being 2006. Thus, two of the four driest winters in the past 110 years in the wheat and sheep farming regions of WA have occurred in the past five years.

Metropolitan Perth

Metropolitan Perth has also recorded significantly below average rainfall in 2010. Total rainfall for the ten months from January to October 2010 at the Perth Metro site was 474.8 mm recorded on 57 rain days, which is the third driest January to October period behind 2006 (445.4 mm) and 1914 (458.5 mm). Perth Metro has also experienced its least number of rain days for the ten months (January to October) on record with 57, easily breaking the

previous record of 80 rain days in 1969. The January to October long-term average for Perth Metro is 817.6 mm on 101.4 rain days from records commencing in 1876.

Rainfall at individual locations

The dry year in western parts of WA has caused a significant number of stations to achieve record low rainfall totals for the year to date (January to October) and for the southern wet season (April to October). Table 2 provides a selected list of sites with record low January to October rainfall, whilst Table 3 lists sites with record low April to October rainfall.

Station	Station Number	Jan-Oct 2010 rainfall (mm)	Previous Jan-Oct record (mm)		Years of record	Jan-Oct average	Percentage of normal
Wongan Hills Res. Station	8138	182.2	194.3	in 1977	71	335.1	54
Karragullen North	9015	535.2	662.2	in 1969	31	967.9	55
Pearce RAAF	9053	320.6	429.1	in 1969	45	633.0	51
Gidgegannup	9066	436.8	548.5	in 1969	43	863.5	51
Gosnells City	9106	475.4	520.8	in 2006	40	797.0	60
Karnet	9111	576.2	614.8	in 1994	41	1119.9	51
Lancelin	9114	320.0	413.0	in 2006	42	582.2	55
Bickley	9240	542.4	637.1	in 1969	39	1042.4	52
Boyanup	9503	389.0	591.5	in 1979	103	914.6	43
Boyup Brook	9504	300.7	340.4	in 1940	90	617.5	49
Bannister	9507	308.6	312.6	in 1914	125	617.3	50
Bridgetown Comparison	9510	343.0	465.6	in 1969	121	775.7	44
Donnybrook	9534	456.2	514.0	in 2001	107	931.1	49
Dwellingup	9538	570.8	690.0	in 2001	71	1188.1	48
Greenbushes	9552	401.9	553.2	in 2001	116	880.6	46
Manjimup	9573	483.8	593.3	in 1940	91	937.8	52
Marradong	9575	293.7	362.6	in 2001	111	692.0	42
Northcliffe	9590	703.5	750.1	in 1969	77	1239.3	57
Pemberton	9592	587.6	725.3	in 1969	66	1101.6	53
Rosa Brook	9600	640.0	715.6	in 2001	30	1144.7	56
Walpole	9611	755.2	816.7	in 1987	57	1214.4	62
Waroona	9614	469.8	532.2	in 2006	67	952.2	49

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

Station	Station Number	Jan-Oct 2010 rainfall (mm)	Previous Jan-Oct record (mm)		Years of record	Jan-Oct average	Percentage of normal
Roelands	9657	419.4	521.6	in 2001	67	849.0	49
Gordon River	9740	264.7	334.9	in 1969	49	482.7	55
Denbarker	9752	489.7	522.2	in 1994	33	683.6	72
Culford	9769	373.8	396.0	in 2001	34	626.8	60
Jarrahwood	9842	470.2	574.6	in 2001	33	880.2	53
Ferguson Valley	9912	457.8	531.6	in 2001	33	851.7	54
Bencubbin	10007	97.8	113.9	in 1914	95	291.0	34
Bungulla	10044	126.5	154.0	in 1980	78	291.8	43
Gabbin	10055	109.9	153.4	in 1969	65	307.8	36
Happy Valley	10061	164.8	185.1	in 1969	73	320.3	51
Hines Hill	10151	121.0	132.3	in 1969	75	266.3	45
Boscabel	10520	235.0	252.5	in 1940	80	487.4	48
Cherry Tree	10531	229.8	236.9	in 1940	81	425.4	54
Corrigin	10536	140.1	160.1	in 1914	100	346.0	40
Rushy Pool	10561	202.8	205.8	in 1914	95	373.6	54
Hyden	10568	121.8	157.3	in 1972	78	310.1	39
Karlgarin	10576	81.6	151.1	in 1980	65	305.6	27
Kulin	10584	179.6	193.7	in 1954	85	333.8	54
Quairading	10628	134.3	162.1	in 1914	98	345.3	39
Woodanilling	10659	232.3	254.7	in 1987	67	430.9	54
Kukerin	10665	164.8	199.7	in 1914	91	368.2	45
Amrista Park	10696	128.9	205.5	in 1980	52	324.7	40

Table 2 (cont.): Selected stations with record low January to October rainfall in SWWA for 2010 based on preliminary data.

Station	Station Number	Apr-Oct 2010 rainfall (mm)	Previous Apr-Oct record (mm)		Years of record	Jan-Oct average	Percentage of normal
Wongan Hills Res. Station	8138	138.0	158.0	in 1971	72	286.8	48
Kondut	8254	134.7	157.8	in 1994	78	273.8	49
Karragullen North	9015	497.2	612.6	in 2006	34	906.4	55
Jarrahdale	9023	534.6	564.7	in 1894	123	1066.6	50
Pearce RAAF	9053	305.4	406.6	in 1969	53	595.0	51
Gidgegannup	9066	414.2	513.4	in 1969	45	804.1	52
Gosnells City	9106	418.1	449.8	in 2006	44	743.7	56
Karnet	9111	514.6	600.8	in 1994	42	1045.7	49
Lancelin	9114	265.0	353.8	in 2006	43	541.7	49
Pickering Brook	9206	470.2	610.8	in 2006	30	902.1	52
Bickley	9240	507.6	609.9	in 1969	42	969.2	52
Boyanup	9503	376.6	568.3	in 1979	104	858.4	44
Boyup Brook	9504	273.4	328.4	in 1940	91	563.1	49
Balingup	9505	374.6	473.1	in 2001	80	763.5	49
Bridgetown Comparison	9510	332.2	426.6	in 1987	123	718.3	46
Donnybrook	9534	434.4	510.4	in 2001	110	876.3	50
Dwellingup	9538	537.0	679.4	in 1940	75	1113.4	48
Greenbushes	9552	386.6	522.2	in 2006	118	818.8	47
Manjimup	9573	466.4	574.4	in 1940	92	865.1	54
Marradong	9575	277.5	328.0	in 1914	112	643.7	43
Mount Barker	9581	322.9	324.5	in 1940	120	576.5	56
Newbicum	9587	271.6	286.1	in 1940	85	517.5	52
Northcliffe	9590	664.0	700.8	in 1969	80	1145.6	58
Pemberton	9592	562.7	679.6	in 1969	68	1018.5	55
Rosa Brook	9600	614.0	697.6	in 2001	32	1091.5	56
Walpole	9611	705.5	750.1	in 1987	58	1106.4	64
Waroona	9614	438.2	466.4	in 2006	69	894.8	49
Westbourne	9616	305.9	348.5	in 1940	107	586.8	52

Table 3: Selected stations with record low April to October rainfall in SWWA for 2010 based on preliminary data.

Station	Station Number	Apr-Oct 2010 rainfall (mm)	Previous Apr-Oct record (mm)		Years of record	Jan-Oct average	Percentage of normal
Wokalup	9642	458.1	555.8	in 1969	51	863.3	53
Roelands	9657	405.8	518.8	in 2001	69	803.9	50
Gordon River	9740	215.9	221.0	in 1982	50	427.7	50
Doodlakine	10040	97.4	107.4	in 1914	91	235.3	41
Bungulla	10044	122.7	123.1	in 2006	80	244.4	50
Gabbin	10055	104.0	121.5	in 1979	66	251.0	41
Happy Valley	10061	133.8	163.2	in 2006	74	273.8	49
Ygnattering	10143	135.9	156.7	in 1940	82	261.2	52
Codg Codgen	10149	113.0	116.6	in 1940	108	245.7	46
Beverley	10515	143.6	151.1	in 1914	125	352.5	41
Boscabel	10520	191.4	233.4	in 1940	82	434.5	44
Bulyee	10527	112.6	143.2	in 1995	70	308.6	36
Cherry Tree	10531	178.2	206.4	in 1982	82	375.1	48
Corrigin	10536	100.2	147.5	in 1914	101	289.8	35
Rushy Pool	10561	157.2	177.2	in 1914	97	325.1	48
Hyden	10568	108.3	144.3	in 1972	80	249.7	43
Karlgarin	10576	72.2	106.1	in 1980	66	246.9	29
Kondinin	10583	87.5	134.2	in 1980	92	261.9	33
Kulin	10584	104.8	129.6	in 1980	87	276.0	38
Narembeen	10612	107.3	138.7	in 1940	83	251.0	43
Narrogin	10614	182.4	202.6	in 1914	118	414.5	44
Nyabing	10619	163.0	170.4	in 1954	92	312.4	52
Quairading	10628	90.9	151.9	in 1914	100	293.1	31
Tambellup	10643	165.8	194.4	in 1940	97	357.0	46
Wickepin	10654	138.4	148.6	in 1914	98	336.6	41
Williams	10655	213.4	235.6	in 1914	122	458.2	47
Woodanilling	10659	187.4	205.2	in 1940	73	376.0	50
Kukerin	10665	124.6	160.1	in 2006	94	309.8	40

Table 3 (cont.): Selected stations with record low April to October rainfall in SWWA for 2010 based on preliminary data.

Contacts for further information

For further information contact: Glenn Cook or Pat Ward in the WA Climate Services Centre on (08) 9263 2222