Australian Government
Bureau of Meteorology

NORTHERN TERRITORY CLIMATE SERVICES CENTRE
Level 2, 13 Scaturchio Street, Casuarina, NT Australia
PO Box 40050, Casuarina NT 0810 Australia
Tel: (08) 8920 3800 Fax: (08) 8920 3832
Email climate.nt@bom.gov.au

SPECIAL CLIMATE STATEMENT 23

An exceptionally wet Dry Season 2010 in northern and central Australia.

Issued 25th November 2010

Northern Territory Climate Services Centre
Bureau of Meteorology

Cite: National Climate Centre, 2010. An exceptionally wet Dry Season 2010 in northern and central Australia. Special Climate Statement 23.

- The May to October period of 2010 will go down as the wettest on record for northern Australia.
- A relative absence of dry, southeast trade winds and the prevalence of northwest cloudbands contributed to the unusual "Dry Season".
- The major cause of this unseasonal weather was the development of La Niña in the Pacific Ocean.

Overview

The 2010 Northern Territory Dry Season (May-September) has been exceptionally wet throughout northern and central Australia with widespread heavy rainfall. Moreover, the northern Australia (north of 26° S) dry period of May through October, 2010, has been the wettest on record. Several stations in the Kimberley, Alice Springs, and Channel Country districts measured their highest Dry Season rainfall on record (Figure 1). When October rainfall was also considered the number of locations that recorded highest on record rainfall nearly doubled (Figure 2). Sites in the Darwin-Daly, Arnhem, Victoria, and Interior Districts, as well as locations on the Cape York Peninsula measured their highest May-October rainfall on record. Widespread rainfall in May and unseasonal rainfall throughout the region during July through October contributed to the above average total rainfall for the season. The rainfall was mostly generated by cloudband activity associated with the upper air circulation in the tropics and the passage of several frontal systems through the southern parts of the region.

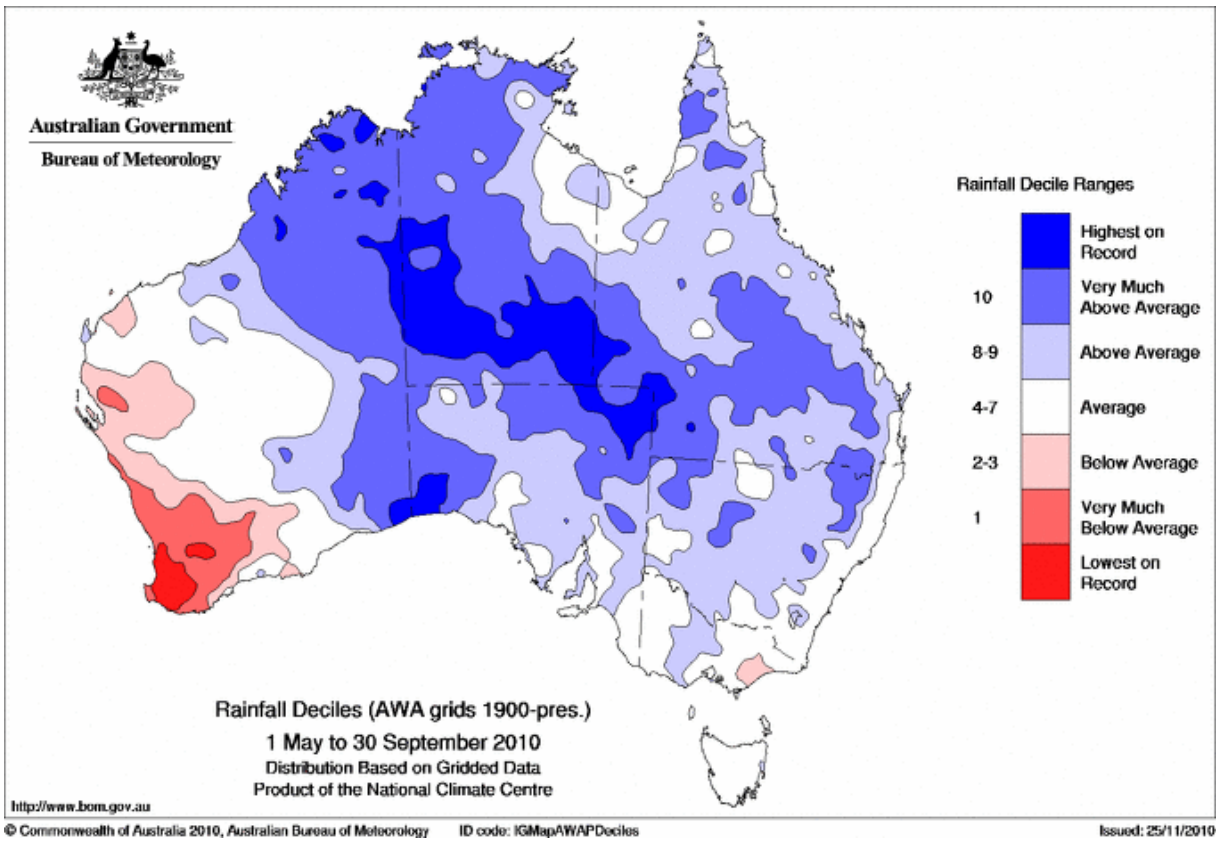

Figure 1 Australian Rainfall Deciles for 1 May to 30 September 2010.

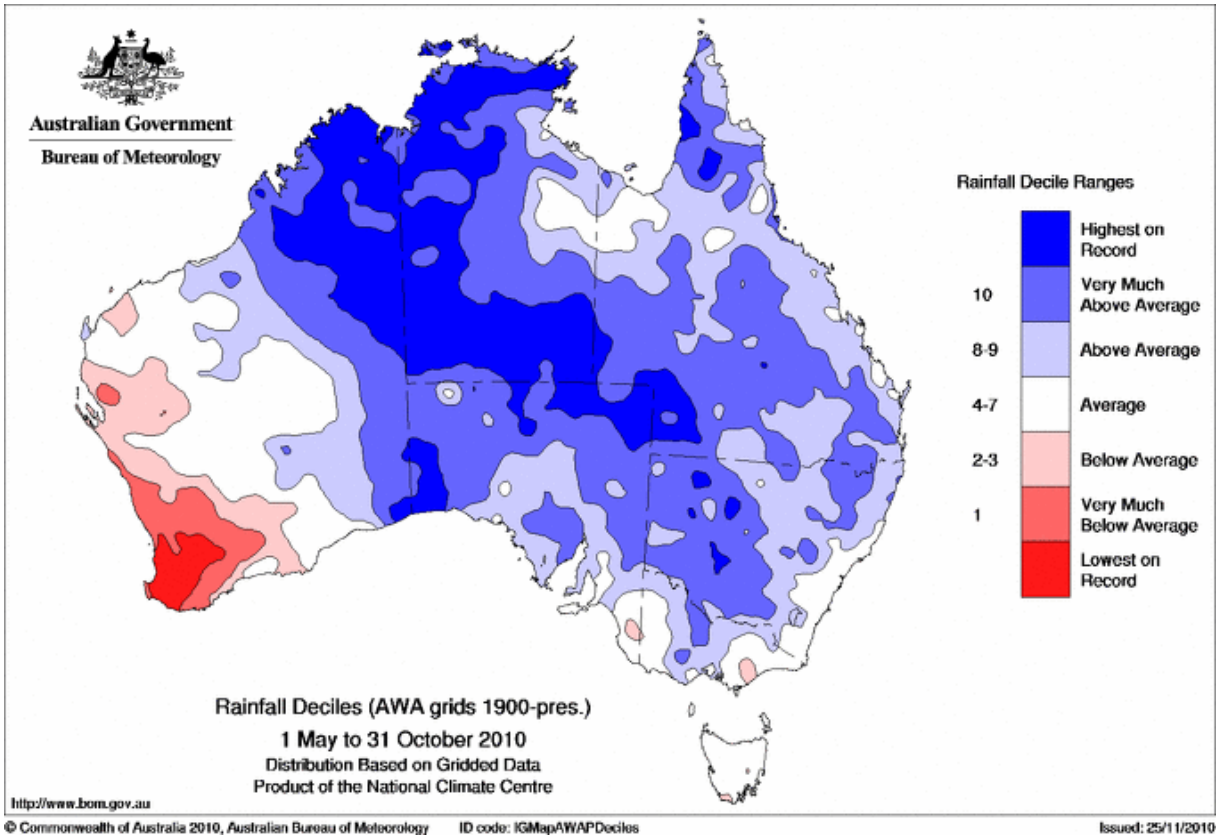

Figure 2 Australian Rainfall Deciles for 1 May to 31 October.

Rainfall

The 2010 Dry Season mean area averaged rainfall for northern Australia was 135.6 mm which is 78.6 mm (238%) above average, making it the 3rd wettest Dry Season on record and the wettest since 1978. The May to October average rainfall total was 189.9 mm, making this the wettest May-October period on record.

The Dry Season began with a prolonged cloudband event during the 3rd week of May, which produced heavy rain across north-western. Most stations in the Kimberley in WA, and in the northwest NT recorded very much above average rainfall for the month, with several stations recording up to ten times their monthly average.

Following the unusually wet May, more typical Dry Season conditions were experienced during June. As with most Dry Seasons, a succession of high pressure systems over southern Australia were the dominant synoptic feature with just a few frontal systems extending into northern Australia. June rainfall was generally average to below average across most of northern Australia with many stations not receiving any rainfall in June.

The remainder of the Dry Season was vastly different from the June rainfall pattern. Warm, moist air from the Indian Ocean was lifted over cold air, thus producing cloudbands and unseasonal rainfall across northern and eastern WA, central NT and western Queensland. This pattern repeated itself several times throughout July, August, September, and October. September was an especially wet month for parts of central WA, southern NT, and Queensland (see Special Climate Statement 22).

Rank	Year	Mean rainfall total May to September	Year	Mean rainfall total May to October
1	1978	154.59	**2010**	189.93
2	1968	141.93	1978	175.75
3	**2010**	135.59	1955	156.56
4	1955	132.74	1968	148.82
5	1956	114.55	1950	146.70

Table 1 Highest five mean rainfall totals (mm) for northern Australia, for the period May to September and May to October.

Rainfall at individual locations

The wet conditions during the 2010 Dry Season has resulted in a number of stations in central and northern Australia registering record high rainfall for the May to September period.

In the NT, nearly all stations in the Alice Springs district recorded very much above average or highest on record rainfall. In the May to September period, Alice Springs Airport recorded 179.6 mm of rain, which ranks as the 7th wettest on record for this period since records began in 1941. This is the wettest May to September period in Alice Springs since 1986. Alice Springs Airport has also recorded its 2nd wettest May to October period on record with 249.8 mm of rain. This comes only one year after the Alice Springs Airport reported only 76.8 mm of rain in 2009, which was its driest year on record.

Across the border, in Queensland's Channel Country, similar rainfall patterns were observed. In the May to September period, Bedourie received 209.7 mm, its wettest Dry Season since records began in 1932. Moreover, with 614.6 mm of rainfall in Bedourie in the ten months from January to October, the site is already 129.5 mm above the previous annual record of 485.1 mm.

In WA, rainfall in the Kimberley and northern Interior was also very much above average with several stations breaking their highest Dry Season rainfall records. Derby Aerodrome recorded 270.8 mm in the May to September period (nearly ten times the average Dry Season rainfall), breaking the previous record of 206.4 mm set in 1978. Although not a record, Broome Airport, with 143.4 mm (260% of the average Dry Season rainfall), experienced its 6th wettest Dry Season since records commenced in 1941, and the wettest since 1997.

Summary

This exceptionally wet Dry Season comes in a year where there was a sharp transition from El Niño to La Niña in May and early June. During La Niña conditions, sea surface temperatures (SSTs) around northern Australia tend to be warmer than usual. The warmer SSTs influence the temperature and humidity levels in coastal regions allowing for more coastal thunderstorm activity, even during the Dry Season. La Niña periods are generally associated with above normal rainfall during the second half of the year across large parts of Australia, most notably eastern and northern regions. A warmer than normal eastern Indian Ocean also contributed to the enhanced rainfall in northern Australia. The influence of the Indian Ocean was especially evident where northwest cloudbands were a dominant feature for much of the Dry Season.

Contacts for further information

For further information contact: Todd Smith in the NT Climate Services Centre on (08) 8920 3800.

Station Number	Name	Total rainfall May to September	Previous highest for May to September	Years of Record	Average for May to September
1001	Oombulgurri	221.8	127.8 in 1955	54	16.8
2021	Mount Amhurst	168.6	166.6 in 2004	50	35.3
2064	Argyle Aerodrome	111.2	67.6 in 2007	24	15.5
3001	Country Downs	228.8	197.6 in 1978	36	35.0
3032	Derby Aero	270.8	208.0 in 1955	52	33.1
3068	Dampier Downs	225.9	200.2 in 1997	34	34.6
14850	Timber Creek	81.9	77.8 in 1990	26	17.0
14857	Suplejack	176.9	102.4 in 1986	23	19.6
14865	Mount Sanford	91.8	53.5 in 1986	20	10.7
15139	Warramunga	121.0	119.0 in 1973	36	27.2
15521	The Garden	312.0	232.8 in 1978	53	61.9
15524	Idracowra	201.0	199.6 in 1889	82	55.8
15594	Arltunga	267.9	185.4 in 1921	55	55.5
15602	Jervois	291.6	218.3 in 1978	40	58.0
15611	Newhaven	195.6	189.0 in 1978	42	59.3
15618	Tobermorey	144.0	119.1 in 1968	20	33.0
15642	Wallace Rock Hole	201.0	196.9 in 1993	20	75.0
15647	Atula	217.1	157.8 in 1986	26	45.7
15667	Ormiston Gorge	241.6	204.4 in 1993	26	74.3
31131	Almaden	184.4	128.6 in 2006	36	44.0
34059	Warwick Park	258.4	245.7 in 1964	50	110.7
35063	Somerby	372.8	355.2 in 1933	85	130.3
35212	Ronnoc Downs	413.0	330.2 in 1978	44	130.4
35220	Cometside	415.9	391.8 in 1978	35	150.0
35224	Karmoo	410.6	344.4 in 1950	58	111.6
35280	Allambee	327.5	282.0 in 1998	21	119.4
36074	Jochmus	363.6	236.8 in 1978	39	83.9
36084	Banchory	367.0	268.8 in 1978	47	106.8
36139	Surbiton Station	459.0	441.5 in 1912	108	113.0
36147	Dotswood	284.5	276.1 in 1955	80	68.7
38000	Bedourie Police Station	209.7	156.9 in 1978	63	45.8
38017	Mount Leonard Station	169.1	163.0 in 1983	54	39.9
39071	Moura Post Office	361.4	345.2 in 1978	66	139.1
40428	Brian Pastures	373.2	322.8 in 1983	54	158.1

Table 2 Sites in northern Australia which recorded their highest May to September rainfall (mm) in 2010.

Station Number	Name	Total rainfall May to October	Previous highest for May to October	Years of Record	Average for May to October
1001	OOMBULGURRI	285.8	171.0 in 1955	55	31.8
1010	THEDA	474.7	332.3 in 1968	43	94.6
1013	WYNDHAM	242.6	181.8 in 1968	43	43.0
2012	HALLS CREEK	244.2	216.8 in 1978	67	49.1
2020	MOOLA BULLA	289.5	250.9 in 1979	95	44.2
2021	MOUNT AMHURST	212.8	190.8 in 1957	51	46.2
2032	WARMUN	376.9	218.2 in 1968	99	51.6
2056	KUNUNURRA	213.8	114.0 in 2007	34	37.8
3001	COUNTRY DOWNS	270.8	216.0 in 1978	36	54.8
3020	NERRIMA	241.2	233.7 in 1949	30	42.3
3022	QUANBUN DOWNS	303.8	156.7 in 1949	104	33.1
3027	FOSSIL DOWNS	254.0	205.5 in 1978	97	34.5
3032	DERBY	275.2	208.6 in 1978	52	41.2
3051	MOUNT BARNETT	254.2	142.6 in 1979	41	50.8
3068	DAMPIER DOWNS	257.3	216.2 in 1977	35	48.0
11008	MUNDRABILLA STATION	258.4	254.9 in 1958	97	134.0
13007	BALGO HILLS	270.3	245.7 in 1978	62	51.7
14183	DARWIN RIVER DAM	315.6	234.2 in 1981	40	112.7
14198	JABIRU AIRPORT	303.8	216.2 in 1998	30	67.5
14626	DALY WATERS	150.4	124.3 in 1968	41	36.4
14815	WATERLOO	269.4	267.8 in 1975	92	40.2
14821	ROSEWOOD	239.0	230.6 in 1968	96	42.0
14824	BULLITA	200.0	177.3 in 2007	36	55.1
14825	VICTORIA RIVER DOWNS	315.8	156.7 in 1955	106	37.9
14829	LAJAMANU	167.4	153.4 in 1968	43	43.5
14847	KIDMAN SPRINGS	210.2	163.1 in 2007	40	43.4
14850	TIMBER CREEK	216.1	141.1 in 2000	30	48.4
14901	DOUGLAS RIVER	272.6	197.1 in 1986	37	62.0
15139	WARRAMUNGA	137.2	135.1 in 2005	40	51.0
15501	YAMBAH	281.8	264.1 in 1986	40	83.4
15521	THE GARDEN	401.8	294.8 in 1978	56	95.1
15552	HENBURY	345.2	259.6 in 1973	110	77.8
15554	VAUGHAN SPRINGS	322.2	257.8 in 1978	49	65.4
15575	CLARAVILLE	405.5	264.8 in 1986	31	82.4
15594	ARLTUNGA	354.9	227.9 in 1916	62	81.7
15601	THE DERWENT	319.0	211.4 in 1978	42	78.5
15602	JERVOIS	333.2	226.0 in 1986	45	78.0
15647	ATULA	297.1	207.9 in 1993	30	67.6
15667	ORMISTON GORGE	322.8	238.9 in 1993	33	98.3
17070	MOUNT DARE	190.8	185.4 in 1975	56	65.1
31104	MT SOPHIA	1142.0	1046.1 in 1981	42	638.9
31131	ALMADEN	227.8	146.0 in 1975	38	66.8
31144	HAPPY VALLEY	2263.2	1980.8 in 1964	55	1151.2
35224	KARMOO	438.6	429.8 in 1950	63	154.9
36084	BANCHORY	381.5	335.4 in 1998	49	148.1
38000	BEDOURIE	260.6	171.4 in 1986	63	63.6
38017	MOUNT LEONARD STATION	215.5	174.0 in 1983	55	52.7
39071	MOURA	408.8	389.8 in 1984	68	203.9
39278	GLENHAVEN	395.2	356.9 in 1978	59	206.7
40428	BRIAN PASTURES	448.3	446.4 in 1983	55	225.8

Table 3 Selected sites in northern Australia which recorded their highest May to October rainfall (mm) in 2010.