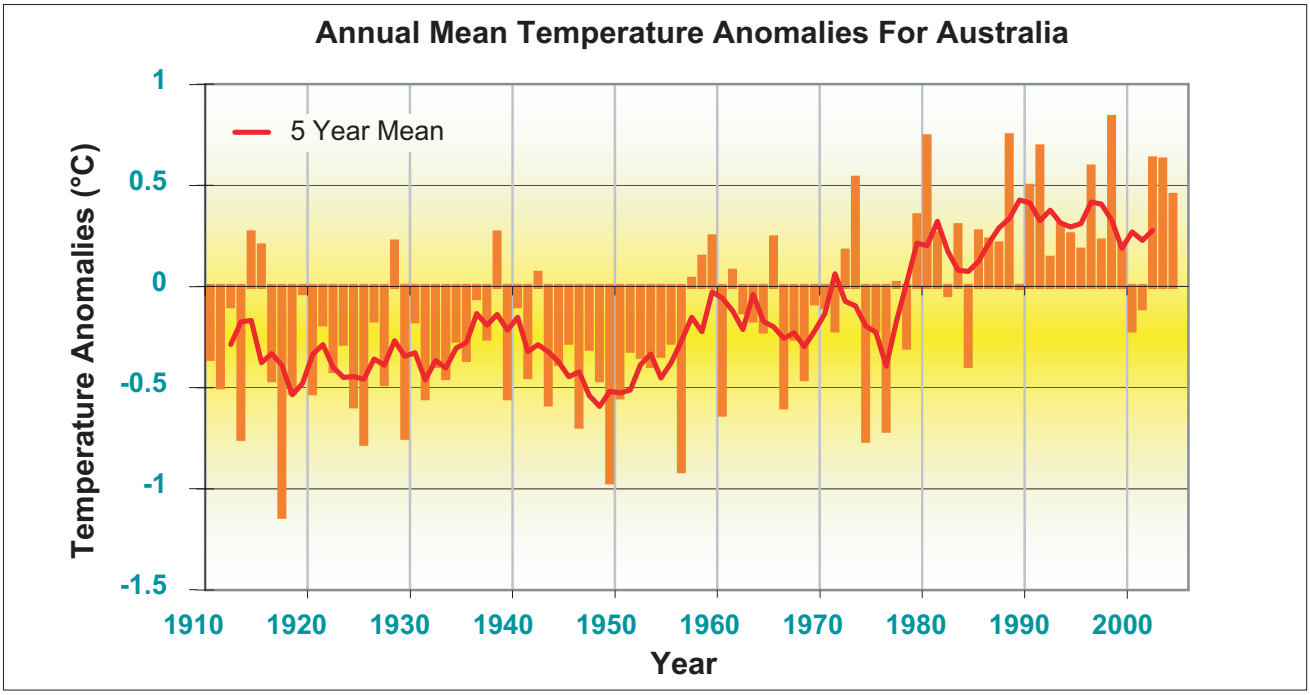
1. Overview

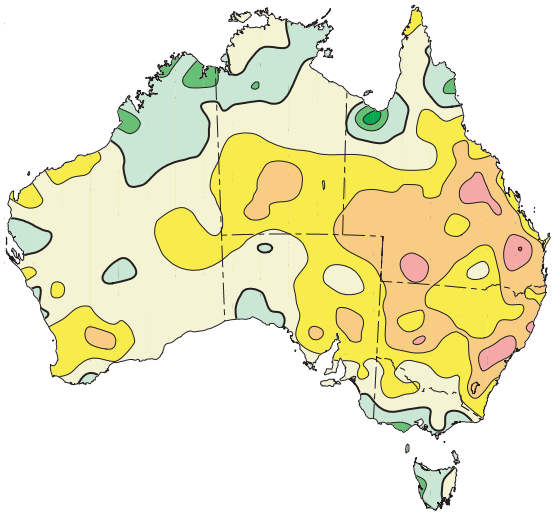
Australia in 2004 again experienced warmer than normal conditions across most of the country. Preliminary data indicate that the all-Australian annual mean temperature for 2004 was 0.45°C above the 1961-90 long-term average, making it the tenth warmest year since 1910, when reliable Australia-wide climate records became available. Daytime temperatures contributed more of the anomalous warmth than overnight temperatures: the annual mean maximum temperature was 0.51°C above normal (tenth highest), and the mean minimum temperature 0.39°C above normal (eleventh highest). The annual values were boosted by several extensive warm spells, including an exceptional two-week heat-wave during February, which affected a large proportion of the continent and resulted in many new temperature records, and warm periods in eastern Australia during September and October.

Australian mean temperatures are calculated from a country-wide network of about 100 high-quality, mostly rural, observing stations that have been corrected for any artificial discontinuities caused by changes in instrumentation and location. Many of these sites are included in Australia's contribution to the Global Climate Observing System - a comprehensive, world-wide network of meteorological stations for monitoring long-term climate trends and variability.

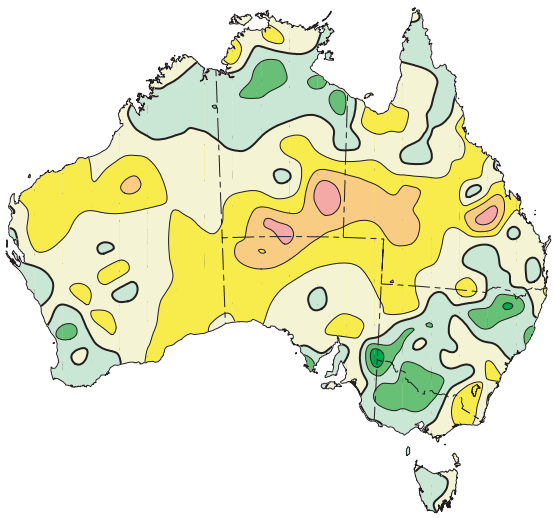
The general rise in Australian temperatures during the second half of the 20th century is in line with global warming trends. According to a preliminary estimate released by the World Meteorological Organization (WMO) on 15th December 2004, the global mean temperature for 2004 was about 0.44°C above normal, making it the fourth warmest year since records commenced in 1861.



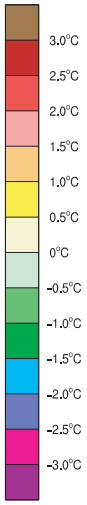
Australian annual mean temperature anomalies (based on 1961-90 normal) since 1910



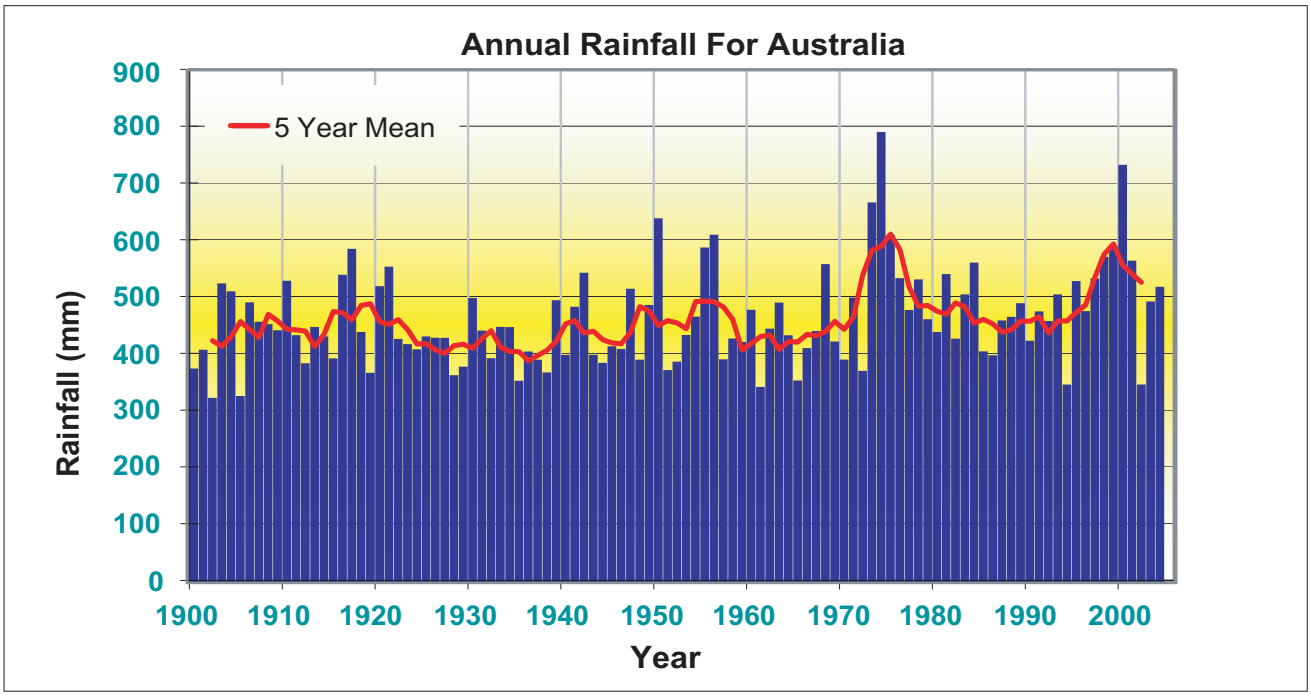
2004 Maximum Temperature Anomaly (°C)



2004 Minimum Temperature Anomaly (°C)

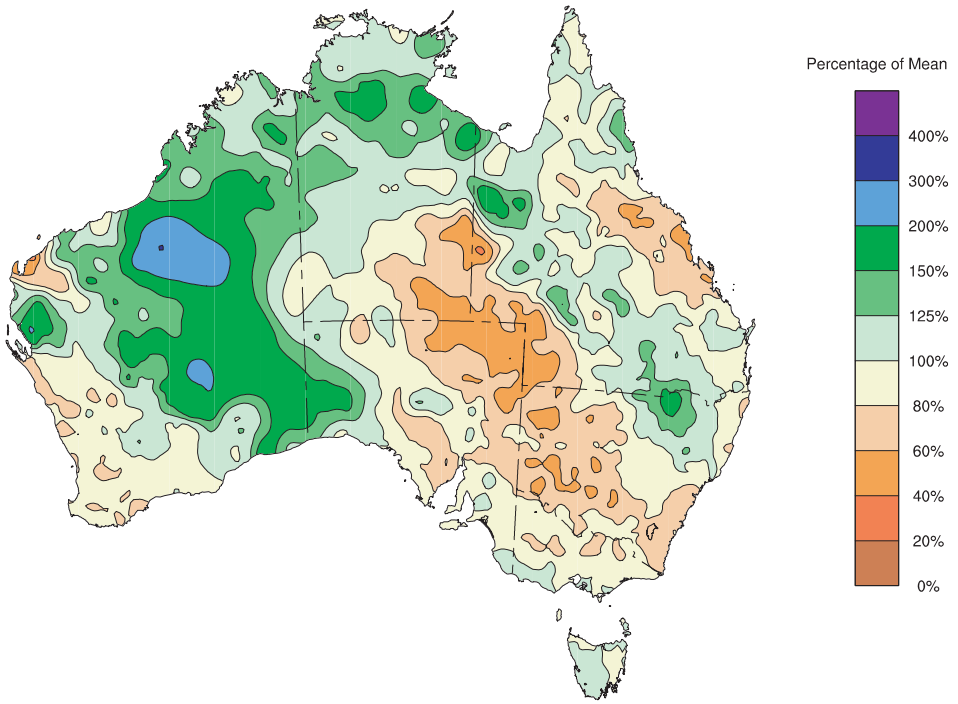


Preliminary data indicate that the average rainfall throughout Australia for 2004 was 513 mm, which is higher than the long-term average of 472 mm, and above the 2003 value of 487 mm. Rainfall patterns were far from uniform, however, with much of the western half of the country (apart from southwest WA) receiving above average rainfall for the year. Some parts of the interior of WA recorded more than twice their long-term average, while at the other extreme several patches in Queensland, NSW, SA, the NT and western WA registered annual totals between 40 and 60% of average. The northern wet season was particularly active during January to March, with heavy rains occasionally associated with flooding, particularly in inland Queensland and northern New South Wales around mid-January, and in the Northern Territory in February and March.



Australian annual mean rainfall (mm) since 1900

Despite good rainfall throughout southeast Australia in November and December, the annual totals across this region were mostly below normal. Consequently, 2004 rainfall has failed to alleviate the long-term deficiencies characterising rainfall patterns over much of southeast Australia in recent years. Some recording stations have now experienced an unprecedented eight consecutive years of below average rainfall.



2004 rainfall compared with the 1961-1990 annual average.

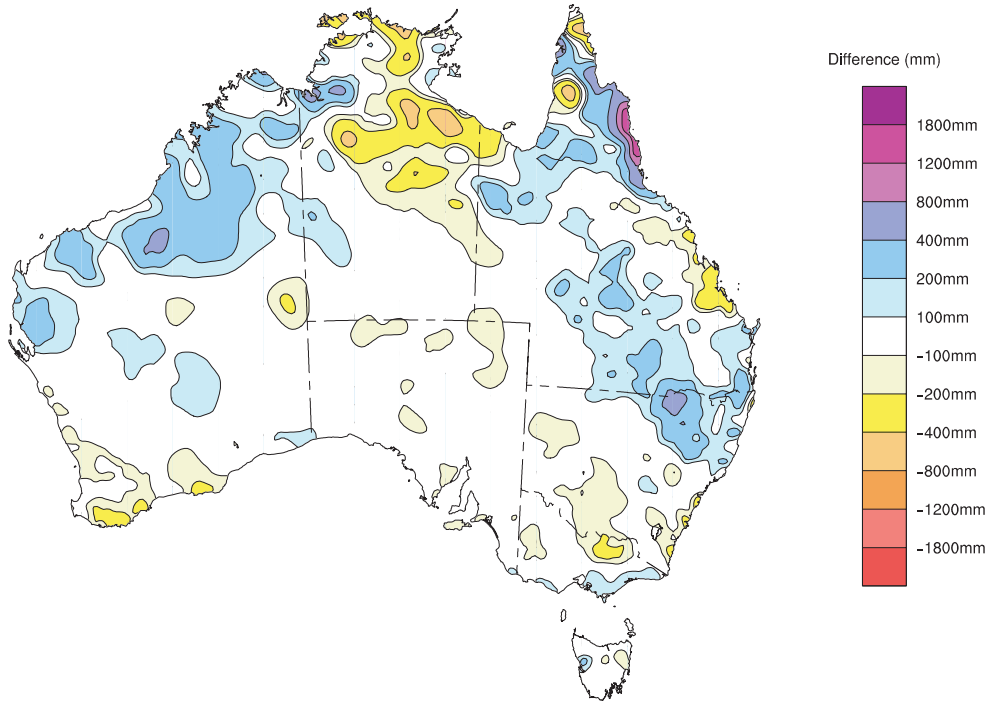
In comparison with 2003, the main differences were situated in the north of the country with much of Queensland and northern WA having a wetter year in 2004, while large parts of the northern NT received less rain than the very wet year of 2003. Australia's area-averaged rainfall is calculated from a network of around 5000 rainfall stations, most of which are staffed by volunteer observers.

Observations averaged over the total area of each State reveal that, when compared to normal, Western Australia was the wettest State, while Victoria was the driest. New South Wales had the highest departures from normal daytime temperatures and South Australia had the highest departures from normal overnight temperatures in 2004.

Capital city statistics (inside back cover) show that, with the exception of Hobart and Perth, all recorded maximum temperatures above the long term average. Sydney had its warmest year on record, although the greatest departure from average occurred in Brisbane. The driest capital was Canberra where only 435 mm of rain fell on 84 days, whereas in Darwin nearly 1800 mm fell on 112 days. Hobart registered the highest number of rain days with 146.

	Rainfall (mm)			Maximum Temperature (°C)			Minimum Temperature (°C)		
	2004 total	Normal	Rank (of 105)	2004 anomaly	Normal	Rank (of 95)	2004 anomaly	Normal	Rank (of 95)
Australia	513	472	25th	+0.51	28.55	10th	+0.39	15.07	11th
New South Wales/A.C.T.	499	566	56th	+1.07	23.91	7th	+0.17	10.75	19th
Northern Territory	644	548	16th	+0.43	31.88	21st	+0.52	18.45	15th
Queensland	624	630	48th	+0.68	29.86	8th	+0.47	16.57	12th
South Australia	216	236	50th	+0.78	26.71	6th	+0.57	12.20	8th
Tasmania	1226	1168	32nd	–0.35	14.71	70th	–0.17	5.99	35th
Victoria	582	654	74th	+0.24	19.86	25th	–0.09	8.34	33rd
Western Australia	464	352	12th	+0.20	29.27	22nd	+0.33	15.66	10th

Summary of 2004 mean rainfall and temperatures for Australia and States/Territories. Normal values are calculated using 1961-90 averages. Ranks are from highest to lowest.



This map shows the difference between the 2004 and 2003 annual rainfall totals. The areas shaded blue and purple were wetter in 2004, while those shaded in yellow and orange were drier.