

Global temperature for 2011 ranked 12th on record

The annual anomaly of the global average surface temperature for the year 2011 (i.e., the combined average of the near-surface air temperature over land and the sea surface temperature) is estimated at $+0.07^{\circ}\text{C}$ above the 1981-2010 average, ranked as the 12th warmest year on record since 1891 (Figure 1).

Warm temperature deviations are noticeable especially around the high-latitude northern hemisphere, while cool sea surface temperatures are seen in the central to eastern part of the equatorial Pacific Ocean (Figure 2).

On a longer time scale, the annual global average surface temperature has been rising at a rate of about 0.68°C per century.

The average temperature over land alone is $+0.20^{\circ}\text{C}$ above the 1981-2010 average, the 9th warmest on record.

The 13 warmest years on record have all occurred in the past 15 years. The recent high temperatures are thought to be explained by the combined effect of the global warming trend due to increase in anthropogenic greenhouse gas concentrations including carbon dioxide, and decadal natural fluctuations. On a shorter time scale, the La Niña conditions in the equatorial Pacific have very likely contributed to the cooling down of the 2011 global temperature as compared with that of the previous year.

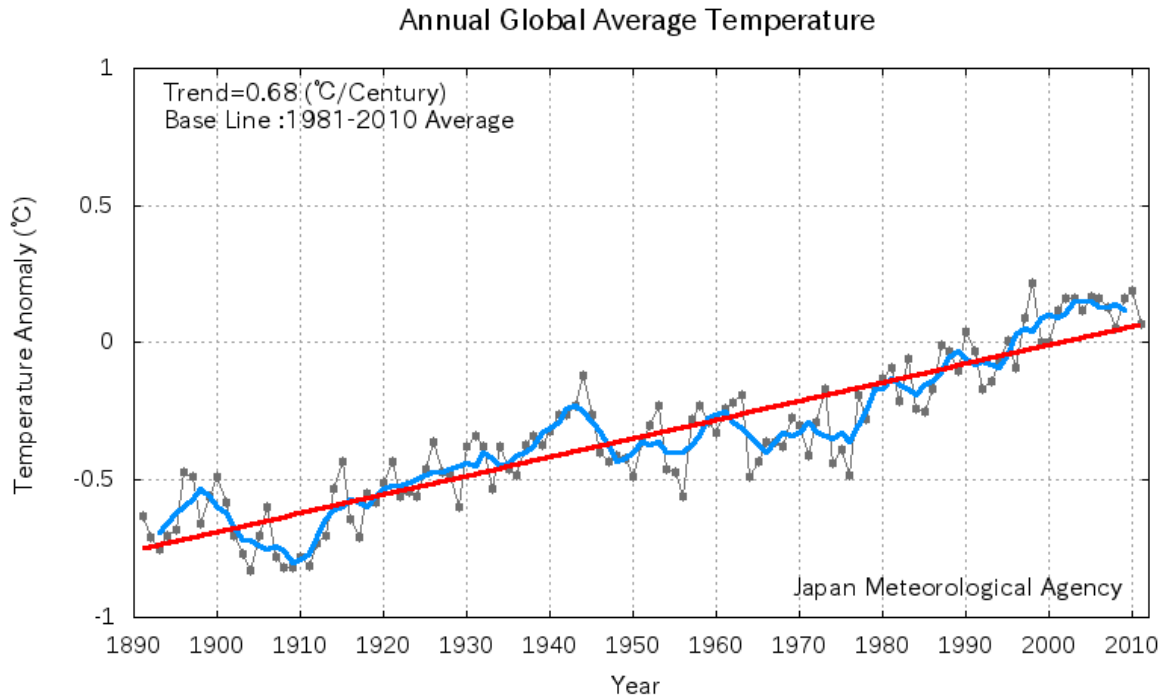


Figure 1 Long-term change in annual mean surface temperature anomalies over the globe
 The black line with filled circles indicates anomalies of surface temperature in each year. The blue line indicates five-year running mean, and the red line indicates a long-term linear trend. Anomalies are represented as deviations from the 1981-2010 average.

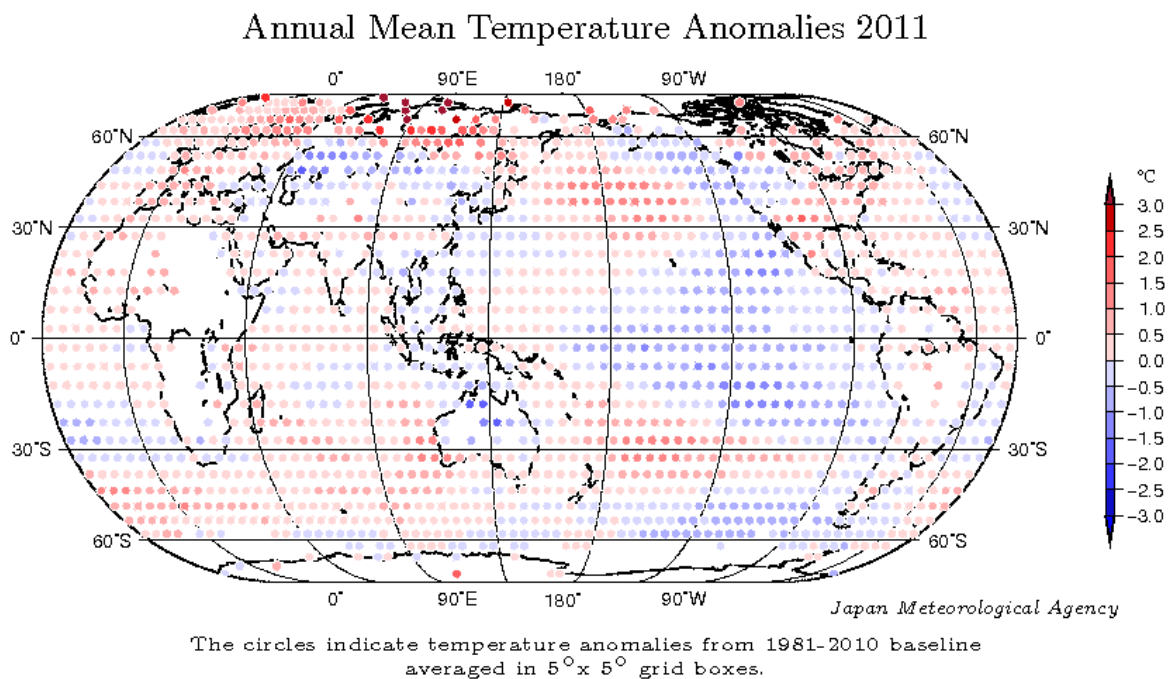


Figure 2 Annual mean temperature anomalies in 2011
 The circles indicate anomalies of surface temperature averaged in 5° x 5° grid boxes. Anomalies are deviations from the 1981-2010 average.

Ranking of annual global mean temperatures

(Shown relative to the 1981-2010 average)

Rank	Year	Temperature Anomaly
1	1998	+0.22
2	2010	+0.19
3	2005	+0.17
4	2009	+0.16
	2006	+0.16
	2003	+0.16
	2002	+0.16
8	2007	+0.13
9	2004	+0.12
10	2001	+0.12
11	1997	+0.09
12	2011	+0.07
13	2008	+0.05
14	1990	+0.04
15	1995	+0.01