

Global temperature for 2012 ranks 8th on record

The annual anomaly of the global average surface temperature for the year 2012 (i.e., the combined average of the near-surface air temperature over land and the sea surface temperature) is estimated at $+0.14^{\circ}\text{C}$ above the 1981-2010 average, ranked as the 8th warmest record since 1891 (Figure 1).

Warm temperature deviations are noticeable around North America, western Russia through to the Mediterranean, the Indian Ocean, and the central part of the North 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 $+0.28^{\circ}\text{C}$ above the 1981-2010 average, the 6th warmest record since 1891.

The 14 warmest years on record have all occurred in the past 16 years (Table 1). The recent high temperatures are best explained as a consequence of disturbed energy balance between the incoming solar radiation and the outgoing infrared radiation caused by an increase in anthropogenic greenhouse gas concentrations. Imposed on the long-term warming trend, natural variability inherent in the earth's climate system is considered to contribute to annual to decadal temperature fluctuations.

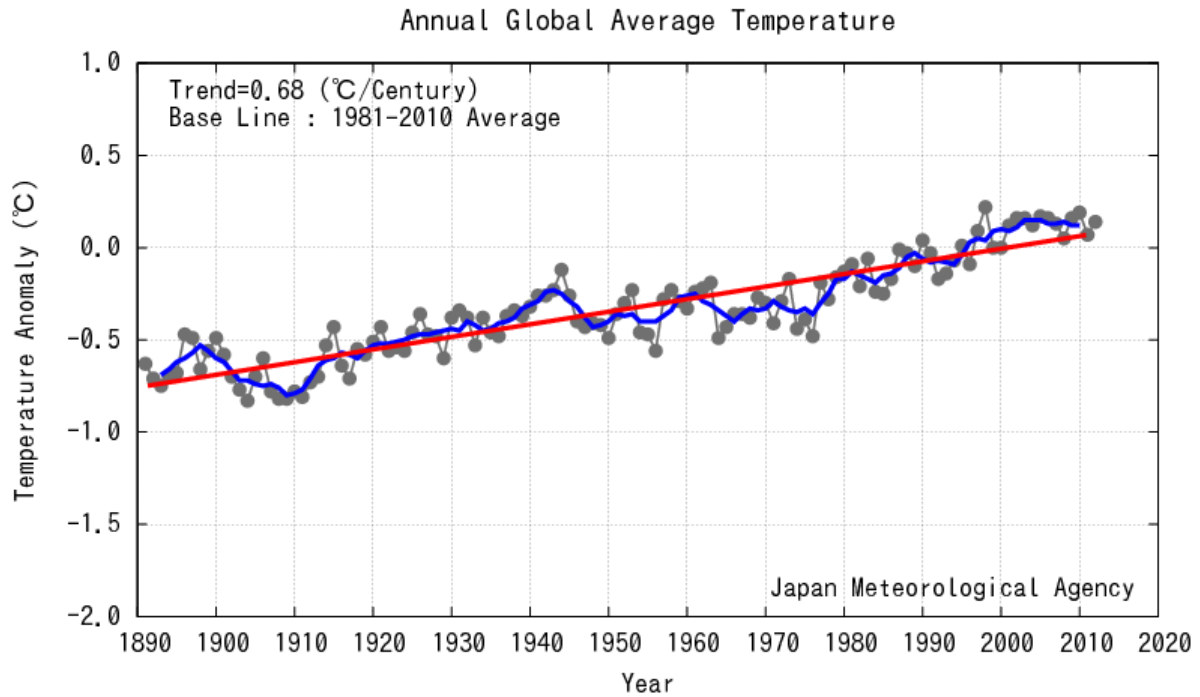


Figure 1 Long-term change in annual mean surface temperature anomalies over the globe
 The black line with filled circles indicates anomalies of surface temperature in each year. The blue line indicates five-year running mean, and the red line indicates a long-term linear trend. Anomalies are represented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

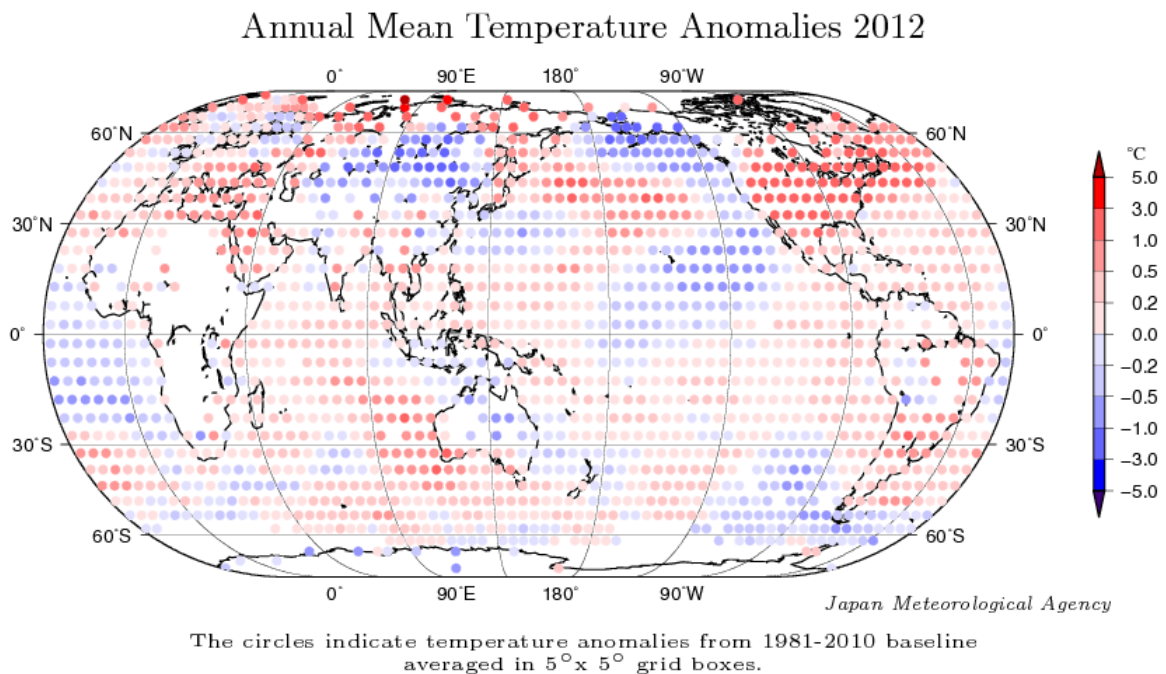


Figure 2 Annual mean temperature anomalies in 2012
 The circles indicate anomalies of surface temperature averaged in 5° x 5° grid boxes. Anomalies are deviations from the 1981-2010 average.

Table 1 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	2012	+0.14
9	2007	+0.13
10	2004	+0.12
	2001	+0.12
12	1997	+0.09
13	2011	+0.07
14	2008	+0.05
15	1990	+0.04