

### Third Highest Global Surface Temperature in 2009 (preliminary, from January to November)

The annual anomaly of the global average surface temperature in 2009 (i.e., the average of the near-surface air temperature over land and the sea surface temperature) was  $+0.31^{\circ}\text{C}^*$  above normal (based on the 1971 – 2000 average), which tied with 2006, 2003 and 2002 as the third highest record since 1891 (Figure 1).

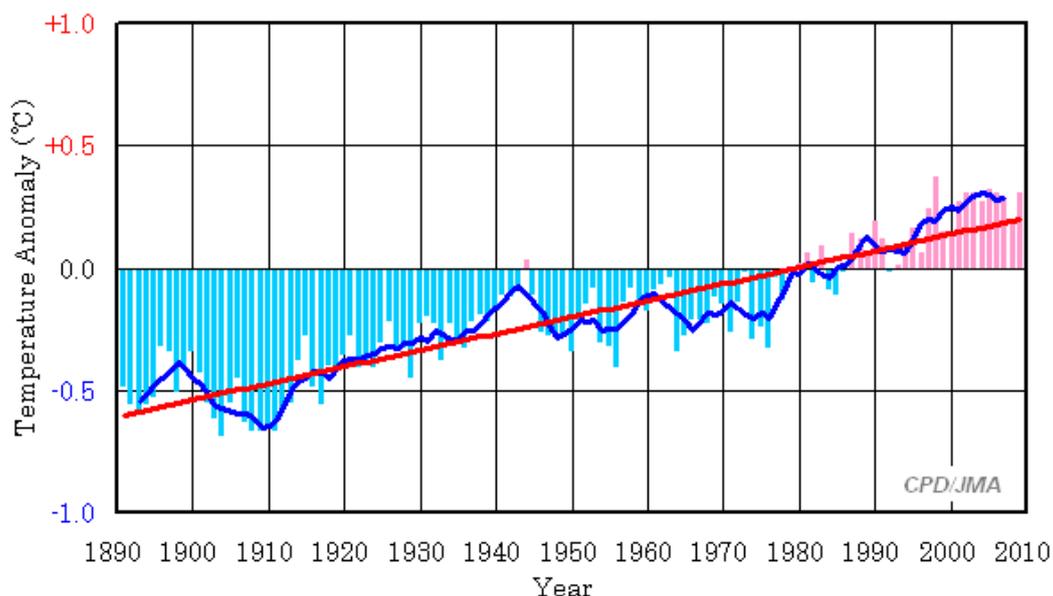
\*The record is preliminary and on the basis of data obtained from January to November. The value and rank may change when the complete data are obtained.

The annual mean temperatures were above normal in most land areas of the world except in North America and central Siberia (Figure 2).

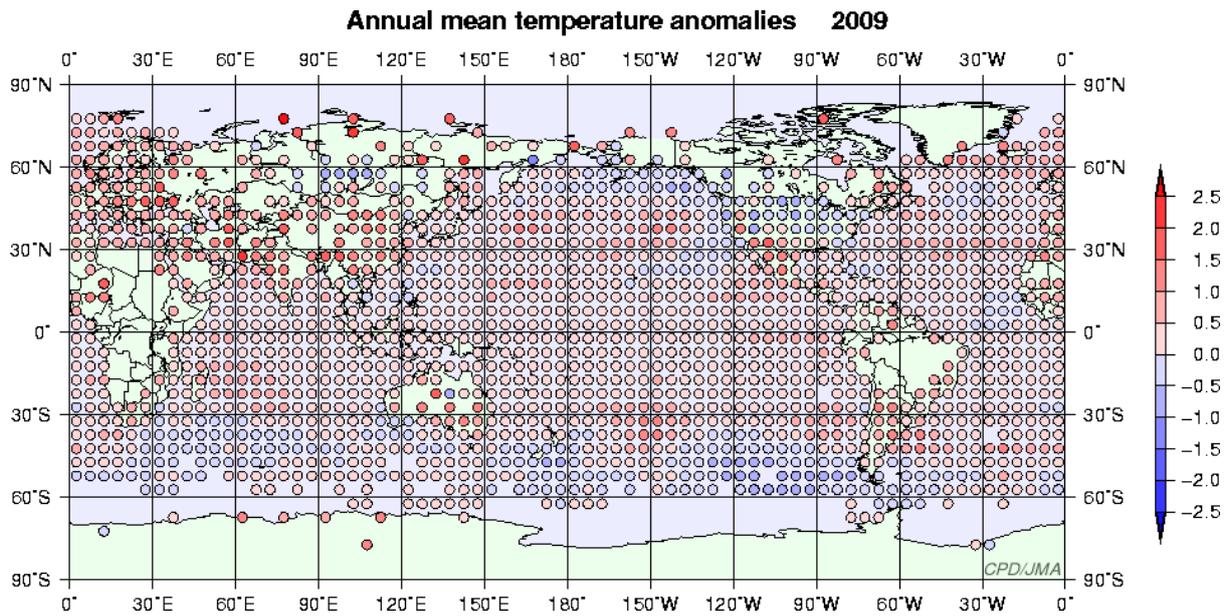
On a longer time scale, the annual global average surface temperatures have been rising at a rate of about  $0.68^{\circ}\text{C}$  per century.

The high temperatures in recent years have been influenced by fluctuations over different time scales ranging from several years to several decades, as well as by global warming caused by an increase in greenhouse gases such as  $\text{CO}_2$ . In particular, the high temperature for 2009 can be attributed to the El Niño phenomenon which has developed since summer in 2009.

Final updates and figures for 2009 will be published in early February 2010.



**Figure 1 Long-term change in annual mean surface temperature anomalies over the globe**  
The bars indicate 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 deviations from the normal (1971-2000 average).



**Figure 2 Annual mean temperature anomalies in 2009**

The circles indicate temperature anomalies from the climatological normal (i.e. the 1971-2000 average) averaged in 5° x 5° grid boxes.

**Standings of annual global mean temperature**

Rank	Year	Temperature Anomaly
1	1998	+0.37
2	2005	+0.32
3	2009	+0.31 (Preliminary value)
	2006	+0.31
	2003	+0.31
	2002	+0.31
7	2007	+0.28
8	2004	+0.27
	2001	+0.27
10	1997	+0.24