

## **Global Temperature in 2010 Most Likely Second Warmest (preliminary)**

The annual anomaly of the global average surface temperature in 2010 (i.e., the average of the near-surface air temperature over land and the sea surface temperature) is estimated at 0.36°C\* above normal (based on the 1971 – 2000 average), most likely to become the second warmest record since 1891 (Figure 1, Table 1).

\* Note: This value (hence its rank in the record, either) is subject to change, because at the moment of this announcement it is only a preliminary result that was calculated based on temperature observations for the period of January to November in 2010.

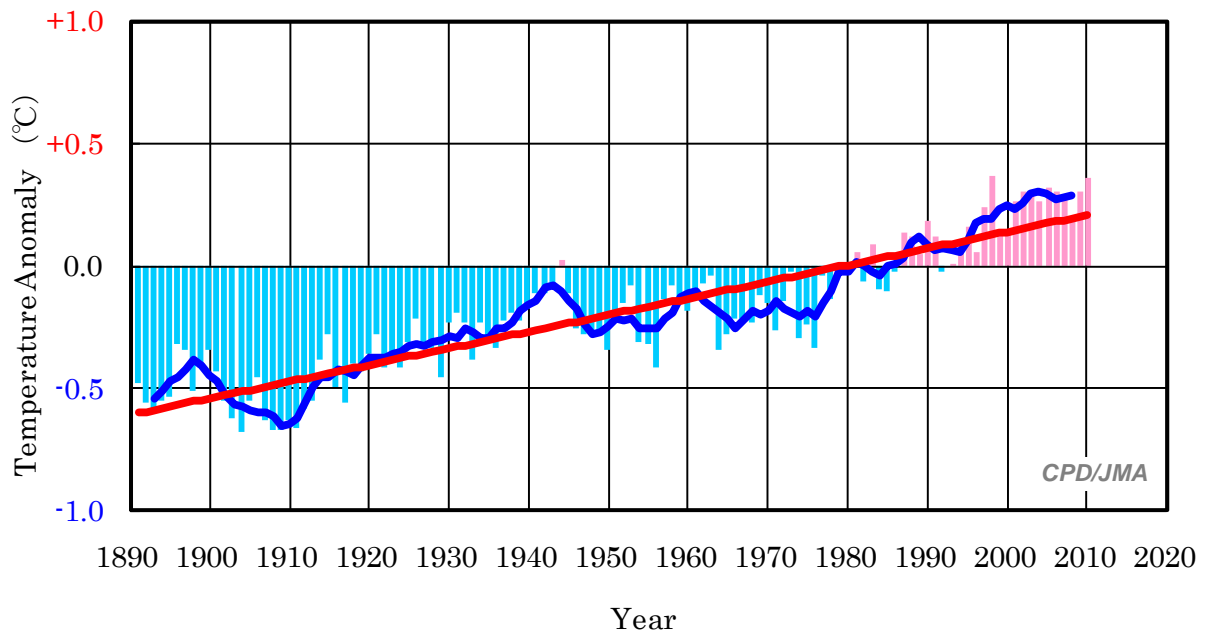
High temperature deviations were noticeable especially in the Indian Ocean and the Atlantic Ocean, in addition to most of the land surface over the world except in Central Asia (Figure 2).

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

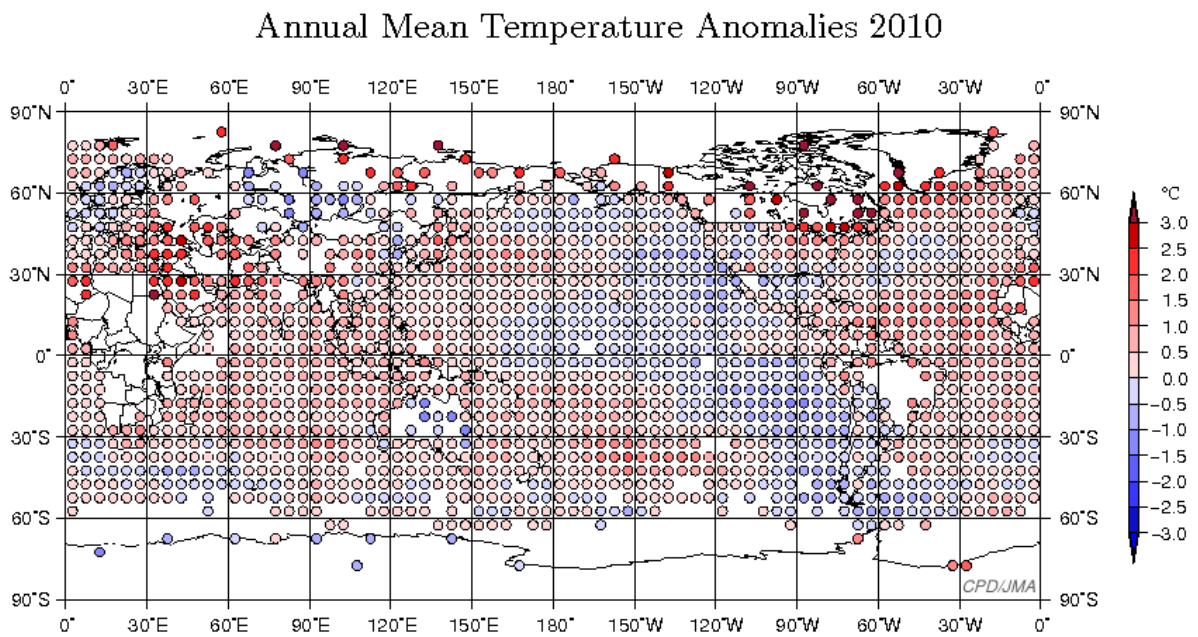
The average temperature over land is expected to hit the warmest record.

It can be presumed that the high temperatures in recent years have been influenced by natural climate fluctuations with the periods ranging from several years to several decades, as well as by global warming due to an increase in anthropogenic greenhouse gases including CO<sub>2</sub>. In addition to these contributions, this year's warming can also be attributable to an El Niño event which lasted from summer 2009 to spring 2010.

The final report on the global temperature for 2010 is scheduled to be released in early February 2011.



**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).



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

**Figure 2 Annual mean temperature anomalies in 2010**  
 The circles indicate temperature anomalies from the climatological normal (i.e., the 1971-2000 average) averaged in 5° x 5° grid boxes.

**Table 1 Standings of annual global mean temperature**

Rank	Year	Temperature Anomaly
1	1998	+0.37
2	<b>2010</b>	<b>+0.36 (Preliminary value)</b>
3	2005	+0.32
4	2009	+0.31
	2006	+0.31
	2003	+0.31
	2002	+0.31
8	2007	+0.28
9	2004	+0.27
	2001	+0.27