

Global temperature for 2014 to be the highest since 1891 (Preliminary)

The annual anomaly of the global average surface temperature for the year 2014 (i.e. the combined average of the near-surface air temperature over land and the sea surface temperature) is estimated at $+0.27^{\circ}\text{C}$ * above the 1981-2010 average, likely to become the warmest record for the 124-year period since 1891 (Figure 1).

* Note that this figure (hence its rank in the record, either) is still 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 2014.

In 2014, the monthly average air temperatures for April, May, June, August, September and October, and the seasonal average air temperatures for the boreal spring, summer and autumn were also the highest recorded since 1891.

Warm temperature deviations are seen not only across much of Asia and Europe but also over a wide area of oceans particularly the North Pacific (Figure 2).

On a longer time scale, the annual global average surface temperature has been rising at a rate of about 0.70°C per century.

All years in this century rank in the warmest 16 years since 1891. The recent high temperatures are thought to be affected by the global warming trend due to increase in anthropogenic greenhouse gas concentrations including carbon dioxide. Moreover global temperature is affected by inter-annual to decadal natural fluctuations intrinsic to the earth's climate, and the highest temperature for 2014 is thought to be due to El Niño phenomena which began in summer 2014.

The final report on the global temperature for 2014 is scheduled to be published early in February 2015.

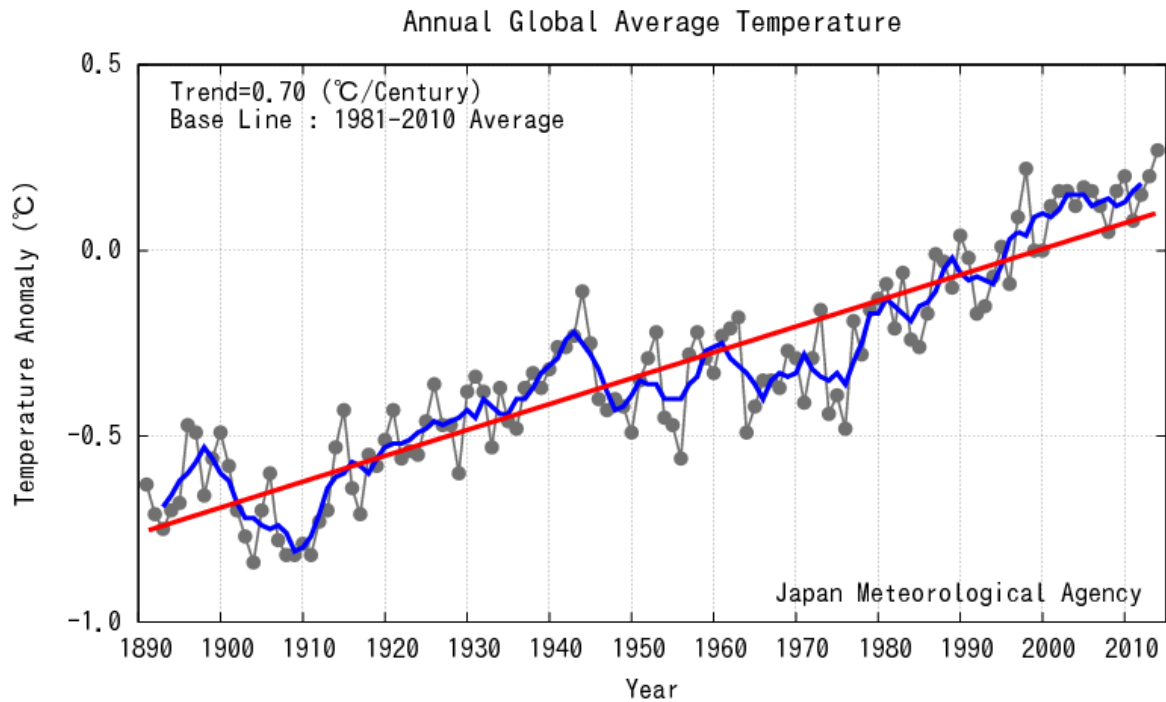


Figure 1 Long-term change in annual mean surface temperature anomalies over the globe
 The black line with filled circles indicates anomalies of surface temperature in each year. The blue line indicates five-year running mean, and the red line indicates a long-term linear trend. Anomalies are represented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

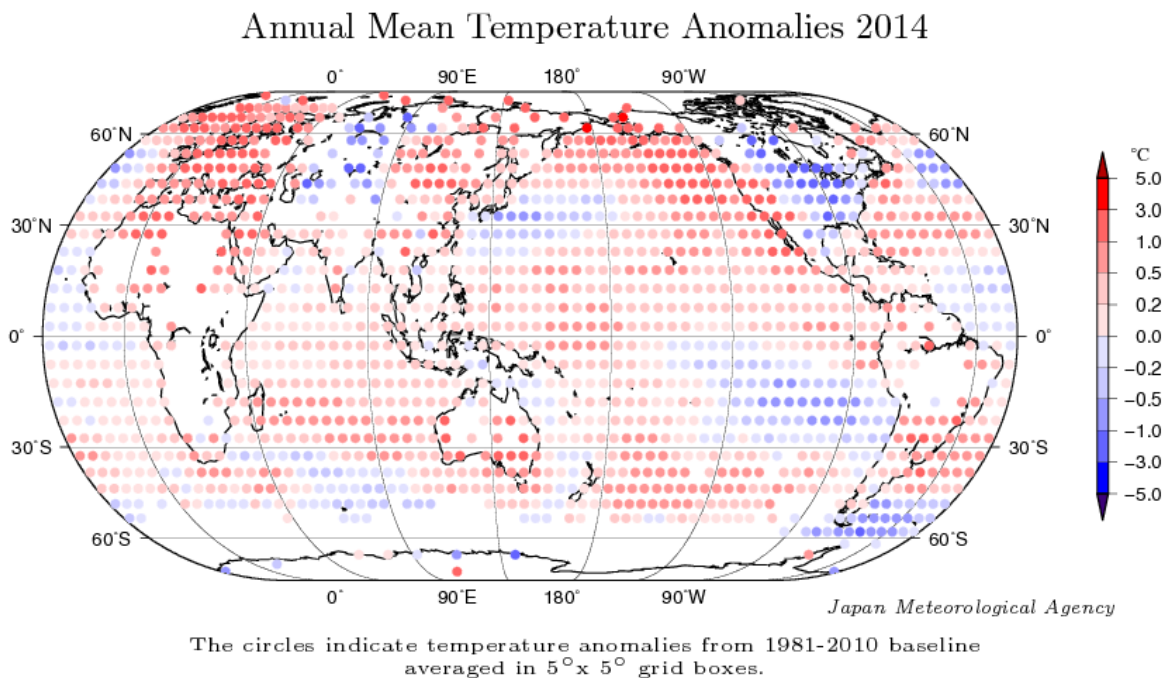


Figure 2 Annual mean temperature anomalies in 2014
 The circles indicate anomalies of surface temperature averaged in 5° x 5° grid boxes. Anomalies are deviations from the 1981-2010 average.

Ranking of annual global average temperatures

| Rank | Year | Temperature Anomaly w.r.t. 1981-2010 average |
|------|-------------|---|
| 1 | 2014 | +0.27 (Preliminary value) |
| 2 | 1998 | +0.22 |
| 3 | 2013 | +0.20 |
| | 2010 | +0.20 |
| 5 | 2005 | +0.17 |
| 6 | 2009 | +0.16 |
| | 2006 | +0.16 |
| | 2003 | +0.16 |
| | 2002 | +0.16 |
| 10 | 2012 | +0.15 |
| 11 | 2007 | +0.12 |
| | 2004 | +0.12 |
| | 2001 | +0.12 |
| 14 | 1997 | +0.09 |
| 15 | 2011 | +0.08 |
| 16 | 2008 | +0.05 |