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## Atmosphere

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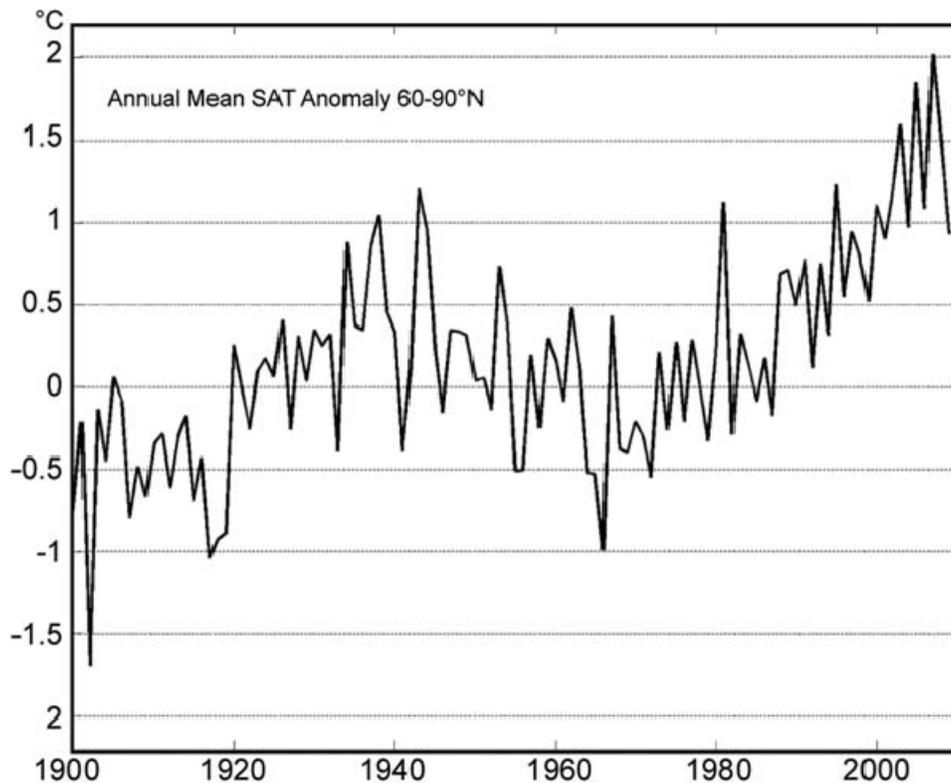
March 7, 2011

See [Warm Arctic-Cold Continents](#) website

### Summary

While 2009 showed a slowdown in the rate of annual air temperature increases in the Arctic, the first half of 2010 shows a near record pace with monthly anomalies of over 4°C in northern Canada. There continues to be significant excess heat storage in the Arctic Ocean at the end of summer due to continued near-record sea ice loss. There is evidence that the effect of higher air temperatures in the lower Arctic atmosphere in fall is contributing to changes in the atmospheric circulation in both the Arctic and northern mid-latitudes. Winter 2009-2010 showed a new connectivity between mid-latitude extreme cold and snowy weather events and changes in the wind patterns of the Arctic; the so-called Warm Arctic-Cold Continents pattern.

The annual mean air temperature for 2009 over Arctic land areas was cooler than in recent years, although the average temperature for the last decade remained the warmest in the record beginning in 1900 (Fig. A.1). The 2009 average was dominated by very cold temperatures in Eurasia in February (the coldest of the decade) and December, while the remainder of the Arctic remained warm (Fig. A.2). The spatial distribution of annual temperature anomalies for 2009 has a pattern with values greater than 2.0°C throughout the Arctic, relative to a 1968–96 reference period (Fig. A.3). These anomalies show the major feature of current Arctic conditions, where there is a factor of two (or more) amplification of air temperature relative to lower latitudes.



**Figure A.1.** Arctic-wide annual average surface air temperature anomalies relative to the 1961–90 mean, based on land stations north of 60°N from the CRUTEM 3v dataset, available online at [www.cru.uea.ac.uk/cru/data/temperature/](http://www.cru.uea.ac.uk/cru/data/temperature/). Note this curve does not include marine observations.