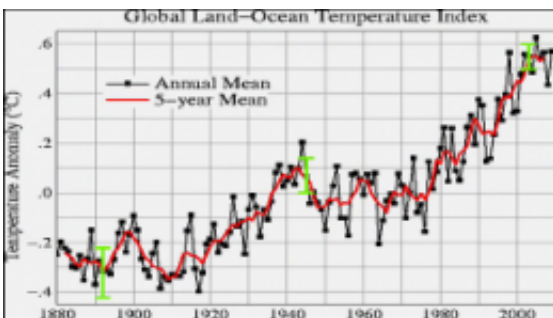


NASA Research Finds Last Decade was Warmest on Record, 2009 One of Warmest Years

January 21 2010



(PhysOrg.com) -- A new analysis of global surface temperatures by NASA scientists finds the past year was tied for the second warmest since 1880. In the Southern Hemisphere, 2009 was the warmest year on record.

Although 2008 was the coolest year of the decade because of a strong La Nina that cooled the tropical [Pacific Ocean](#), 2009 saw a return to a near-record [global temperatures](#) as the La Nina diminished, according to the new analysis by NASA's Goddard Institute for Space Studies (GISS) in New York. The past year was a small fraction of a degree cooler than 2005, the warmest on record, putting 2009 in a virtual tie with a cluster of other years --1998, 2002, 2003, 2006, and 2007 -- for the second

warmest on record.

"There's always interest in the annual temperature numbers and a given year's ranking, but the ranking often misses the point," said James Hansen, GISS director. "There's substantial year-to-year variability of global temperature caused by the tropical El Nino-La Nina cycle. When we average temperature over five or ten years to minimize that variability, we find global warming is continuing unabated."

January 2000 to December 2009 was the warmest decade on record. Looking back to 1880, when modern scientific instrumentation became available to monitor temperatures precisely, a clear [warming trend](#) is present, although there was a leveling off between the 1940s and 1970s.

In the past three decades, the GISS surface temperature record shows an upward trend of about 0.36 degrees F (0.2 degrees C) per decade. In total, average global temperatures have increased by about 1.5 degrees F (0.8 degrees C) since 1880.

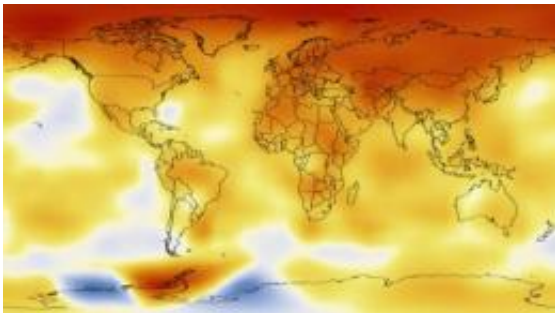
"That's the important number to keep in mind," said GISS climatologist Gavin Schmidt. "The difference between the second and sixth warmest years is trivial because the known uncertainty in the temperature measurement is larger than some of the differences between the warmest years."

The near-record global temperatures of 2009 occurred despite an unseasonably cool December in much of North America. High air pressures from the Arctic decreased the east-west flow of the jet stream, while increasing its tendency to blow from north to south. The result was an unusual effect that caused frigid air from the Arctic to rush into North America and warmer mid-latitude air to shift toward the north. This left North America cooler than normal, while the Arctic was warmer than normal.

"The contiguous 48 states cover only 1.5 percent of the world area, so the United States' temperature does not affect the global temperature much," Hansen said.

GISS uses publicly available data from three sources to conduct its temperature analysis. The sources are weather data from more than a thousand meteorological stations around the world, satellite observations of sea surface temperatures, and Antarctic research station measurements.

Other research groups also track global temperature trends but use different analysis techniques. The Met Office Hadley Centre in the United Kingdom uses similar input measurements as GISS, for example, but it omits large areas of the Arctic and Antarctic where monitoring stations are sparse.



The map shows temperature changes for the last decade -- January 2000 to December 2009 -- relative to the 1951-1980 mean. Warmer areas are in red, cooler areas in blue. The largest temperature increases occurred in the Arctic and a portion of Antarctica. Credit: NASA

Although the two methods produce slightly differing results in the annual rankings, the decadal trends in the two records are essentially identical.

"There's a contradiction between the results shown here and popular perceptions about climate trends," Hansen said. "In the last decade, global warming has not stopped."

Provided by JPL/NASA

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