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More Record Highs and Far Fewer Lows

By [ANDREW C. REVKIN](#)

Scientists sifting for trends in record high and low temperatures across the United States have found [more evidence of long-term warming of the climate](#), with the biggest shift coming through a reduction in record low nighttime temperatures. That is a pattern long predicted by climate scientists using computer simulations. The researchers said they sifted data carefully to avoid possible distortion of trends related to changes in instruments or conditions at and around weather stations. The changing ratio of cold and hot records is shown below (copyright U.C.A.R., graphic by Mike Shibao):

The findings are being reported in the peer-reviewed journal [Geophysical Research Letters](#) (the paper is available by subscription only) and were produced by a novel partnership including researchers at two federal laboratories, the Weather Channel and [Climate Central](#), a nonprofit group focused on communicating climate science. Here is a description of the work by Gerald Meehl of the National Center for Atmospheric Research:

The research team, using computer simulations, projects that warm records will increasingly dominate should emissions of greenhouse gases continue unabated. According to a news release from the National Center for Atmospheric Research:

If nations continue to increase their emissions of greenhouse gases in a “business-as-usual” scenario, the U.S. ratio of daily record high to record low temperatures would increase to about 20 to 1 by midcentury and 50 to 1 by 2100. The midcentury ratio could be much higher if emissions rose at an even greater pace, or it could be about 8 to 1 if emissions were reduced significantly, the model showed.

I’m canvassing other scientists for the implications of such trends.

[**UPDATE, Noon:**] Pat Michaels at the Cato Institute noted in an e-mail message that the new work largely replicated and built on 2001 findings that he, Chip Knappenberger and others reported in the journal *Climate Research*. (If scientists with such a range of views agree that this work is valid, that seems to cut against [arguments over the reliability and utility of temperature records](#) gathered by weather stations — or am I missing something?) Here is a link to [a PDF of the paper](#) and the abstract:

The annual temperature history of the United States during the 20th century shows three

distinct periods of change: warming from 1900 until about 1940, cooling from 1940 to 1969, and warming from 1970 to the present. The characteristics of daily temperature change during these three periods are very different. The first two periods are marked by a tendency toward more temperature extremes — higher extreme maxima during the first period, and lower extreme minima during the second. In contrast, the warming during the most recent period, often used as evidence of human induced climate change, is characterized by temperature moderation — the pattern of temperature rise exhibits a strong, preferential warming of the coldest days of the year.