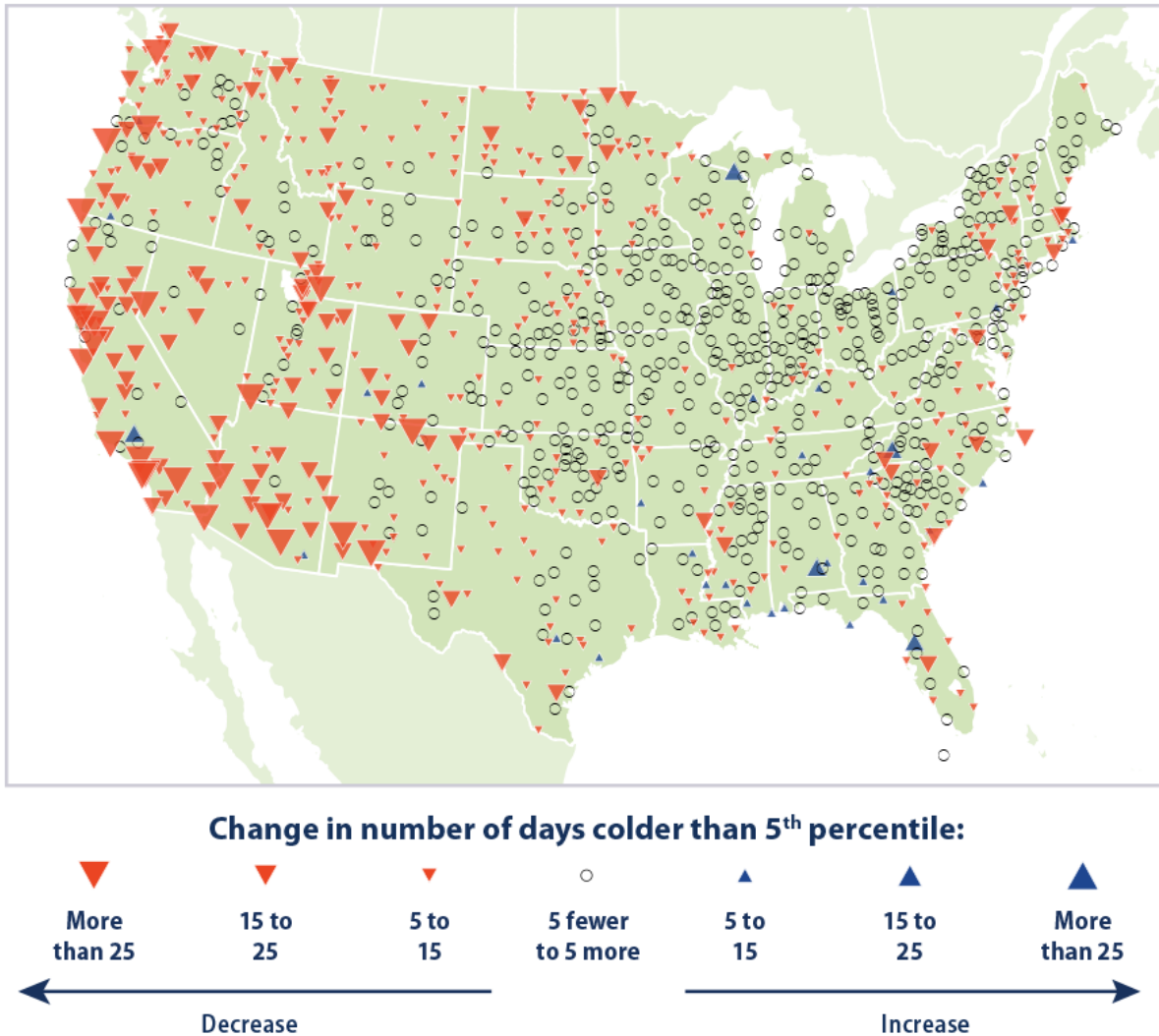


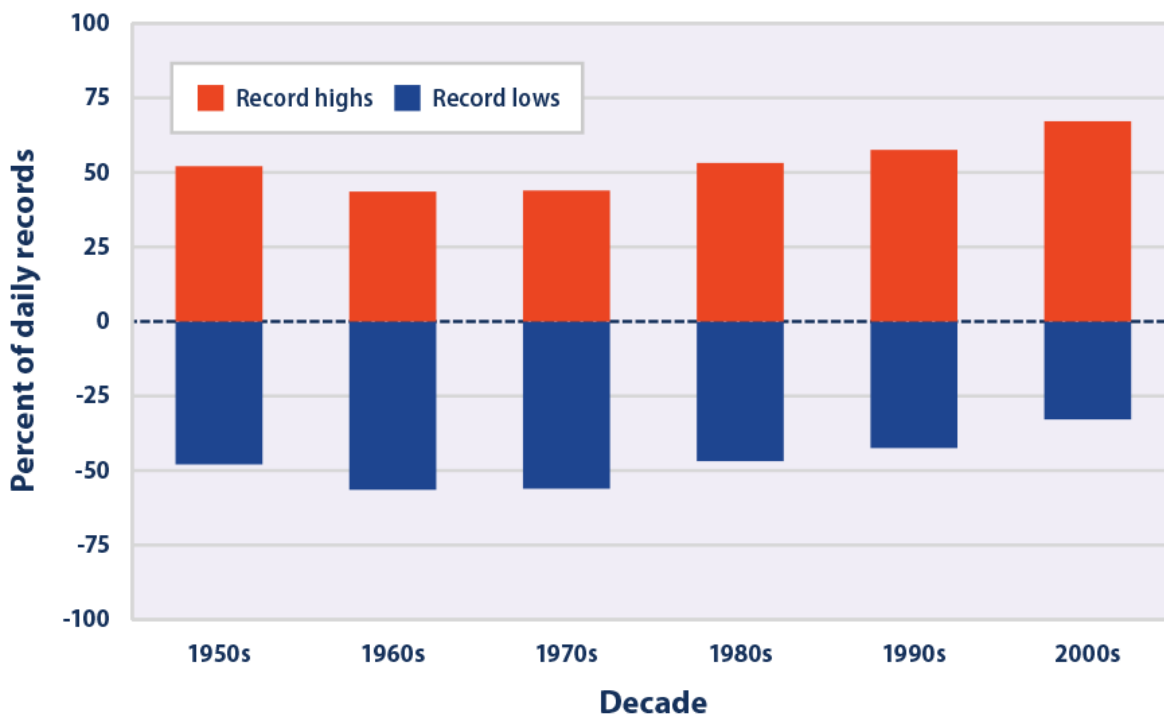
Figure 5. Change in Unusually Cold Temperatures in the Contiguous 48 States, 1948–2015



This map shows trends in unusually cold temperatures at individual weather stations that have operated consistently since 1948. In this case, the term “unusually cold” refers to a daily minimum temperature that is colder than the 5th percentile temperature during the 1948–2015 period. Thus, the minimum temperature on a particular day at a particular station would be considered “unusually cold” if it falls within the coldest 5 percent of measurements at that station during the 1948–2015 period. The map shows changes in the total number of days per year that were colder than the 5th percentile. Blue upward-pointing symbols show where these unusually cold days are becoming more common. Red downward-pointing symbols show where unusually cold days are becoming less common.

Data source: NOAA, 2016¹⁰

Figure 6. Record Daily High and Low Temperatures in the Contiguous 48 States, 1950–2009



This figure shows the percentage of daily temperature records set at weather stations across the contiguous 48 states by decade. Record highs (red) are compared with record lows (blue).

Data source: Meehl et al., 2009¹¹

Indicator Notes

Temperature data are less certain for the early part of the 20th century because fewer stations were operating at that time. In addition, measuring devices and methods have changed over time, and some stations have moved. The data have been adjusted to the extent possible to account for some of these influences and biases, however, and these uncertainties are not sufficient to change the fundamental trends shown in the figures.

Data Sources

The data for this indicator are based on measurements from weather stations managed by the National Oceanic and Atmospheric Administration. Figure 1 uses data from the National Weather Service Cooperative Observer Network. Figures 2 and 3 come from the U.S. Climate Extremes Index, which is based on a smaller group of long-term weather stations that are tracked by the National Centers for Environmental Information and referred to as the U.S. Historical Climatology Network. Figures 4 and 5 use data from a somewhat larger set of stations tracked by the National Centers for Environmental

Information, known as the Global Historical Climatology Network. Figure 6 uses National Weather Service data processed by Meehl et al. (2009).¹² All of these weather station records are available online at: www.ncdc.noaa.gov, and information about the Climate Extremes Index can be found at: www.ncdc.noaa.gov/extremes/cei.

-
- ¹ Sarofim, M.C., S. Saha, M.D. Hawkins, D.M. Mills, J. Hess, R. Horton, P. Kinney, J. Schwartz, and A. St. Juliana. 2016. Chapter 2: Temperature-related death and illness. The impacts of climate change on human health in the United States: A scientific assessment. U.S. Global Change Research Program. <https://health2016.globalchange.gov>.
 - ² Melillo, J.M., T.C. Richmond, and G.W. Yohe (eds.). 2014. Climate change impacts in the United States: The third National Climate Assessment. U.S. Global Change Research Program. <http://nca2014.globalchange.gov>.
 - ³ National Research Council. 2011. Climate stabilization targets: Emissions, concentrations, and impacts over decades to millennia. Washington, DC: National Academies Press.
 - ⁴ IPCC (Intergovernmental Panel on Climate Change). 2013. Climate change 2013: The physical science basis. Working Group I contribution to the IPCC Fifth Assessment Report. Cambridge, United Kingdom: Cambridge University Press. www.ipcc.ch/report/ar5/wg1.
 - ⁵ CCSP (U.S. Climate Change Science Program). 2008. Synthesis and Assessment Product 3.3: Weather and climate extremes in a changing climate. www.globalchange.gov/browse/reports/sap-33-weather-and-climate-extremes-changing-climate.
 - ⁶ Kunkel, K. 2016. Updated version of Figure 2.3 in: CCSP (U.S. Climate Change Science Program). 2008. Synthesis and Assessment Product 3.3: Weather and climate extremes in a changing climate. www.globalchange.gov/browse/reports/sap-33-weather-and-climate-extremes-changing-climate.
 - ⁷ NOAA (National Oceanic and Atmospheric Administration). 2015. U.S. Climate Extremes Index. Accessed December 2015. www.ncdc.noaa.gov/extremes/cei.
 - ⁸ NOAA (National Oceanic and Atmospheric Administration). 2016. U.S. Climate Extremes Index. Accessed May 2016. www.ncdc.noaa.gov/extremes/cei.
 - ⁹ NOAA (National Oceanic and Atmospheric Administration). 2016. National Centers for Environmental Information. Accessed May 2016. www.ncdc.noaa.gov.
 - ¹⁰ NOAA (National Oceanic and Atmospheric Administration). 2016. National Centers for Environmental Information. Accessed May 2016. www.ncdc.noaa.gov.
 - ¹¹ Meehl, G. A., C. Tebaldi, G. Walton, D. Easterling, and L. McDaniel. 2009. Relative increase of record high maximum temperatures compared to record low minimum temperatures in the U.S. Geophys. Res. Lett. 36:L23701.
 - ¹² Meehl, G. A., C. Tebaldi, G. Walton, D. Easterling, and L. McDaniel. 2009. Relative increase of record high maximum temperatures compared to record low minimum temperatures in the U.S. Geophys. Res. Lett. 36:L23701.