

Answers archive: Weather extremes

Link: <http://www.usatoday.com/weather/resources/askjack/archives-weather-extremes.htm>

Q: What's the hottest city in the country?

A: When measured by average year-round temperature, the hottest city is Key West, where the temperature averages 78°F. A better measurement is a city's average high temperature in July, taken during the hottest of the hot weather. Using this method, the hottest U.S. city is Lake Havasu City, Ariz., which has an average July daily high temperature of about 111°F. As for large cities, the hottest is Phoenix, where the typical July day has a high of 106°F.

This information is from Christopher Burt's book *Extreme Weather*.

(Answered by Doyle Rice, USA TODAY's weather editor, July 23, 2007)

Q: How much do Hawaii's temperatures vary throughout the year?

A: Thanks to the moderating influence of the Pacific Ocean, Hawaii has a mild, tropical climate, where the temperatures don't change all that much on a day-to-day basis, in comparison to much of the USA. To illustrate this, compare Hawaii and the continental climate of Fargo, N.D. The average high temperature in Honolulu in January is about 80°F. In August, it's about 89°F. Compare that to Fargo's high of 16°F in January and 81°F in August. Where Hawaii's high temperature only varied 9°F from summer to winter, Fargo's varied 65°F.

This USA TODAY state snapshot has more about the weather and climate of Hawaii, as does this report from the National Weather Service in Honolulu.

(Answered by Elizabeth Caldwell of USA TODAY's weather staff, July 16, 2007)

Q: Which parts of the USA have the highest annual average temperature?

A: According to the National Climatic Data Center, the warmest parts of the USA are the Florida Keys, where the annual average temperature is about 77.7°. Southeast Florida, including Miami, is also warm at 75.4°. Those spots are even warmer than Oahu in Hawaii, where the temperature averages 74.4°. Compare that to the coldest spot, far northern Alaska, where the average temperature is a frigid 14.5°.

This NCDC map shows the average annual air temperatures across the USA, while this NCDC document (pdf) lists the average temperatures for all climatic regions across the country, along with other climate information.

(Answered by Doyle Rice, USA TODAY's weather editor, October 18, 2006)

Q: What's the lowest temperature ever recorded in the USA?

A: It was -79.8°F (rounded off to -80°F) that was observed at Prospect Creek Camp in northern Alaska on Jan. 23, 1971. The Prospect Creek Camp is located along the Alaska Pipeline, about 20 miles north of the Arctic Circle. The lowest temperature ever recorded in the lower 48 States was -69.7°F (rounded off to -70°F) at Rogers Pass, Mont., on Jan. 20, 1954.

You can check out each state's low temperature record on this [USA TODAY resource page](#).

(Answered by Doyle Rice, USA TODAY's weather editor, October 9, 2006)

Q: Which U.S. cities have the highest heat indexes each summer?

A: The heat index, sometimes referred to as "apparent temperature," is a measure of how hot it feels when relative humidity is combined with the actual air temperature. Although the National Climatic Data Center does not archive heat index values, past studies that looked at differences in apparent temperature across the USA can help answer this question. In one study, Phoenix came out tops on the list, because of its extremely hot temperatures, not because of high humidity.

In some cases, cities with lower temperatures but higher humidity — such as Waco, Texas, and Key West — top other places that have higher temperatures.

This [NCDC page](#) has more information about the apparent temperature and the U.S. Heat Stress Index.

(Answered by Jay Lawrimore, chief of the Climate Monitoring Branch at the National Oceanic and Atmospheric Administration, September 7, 2006)

Q: What's the coldest and driest place in the USA?

A: Barrow, Alaska, which averages less than 5 inches of precipitation and an annual average temperature of about 10°F, is the coldest and driest place in the USA. In the lower 48 states, one of the coldest and driest places is Gunnison, Colo., which averages less than a foot of precipitation each year and has an annual average temperature of about 37°F.

At the other end of the spectrum, the warmest and wettest place in the country is Hawaii, which averages over 100 inches of precipitation and temperatures greater than 65°F annually. In the lower 48 states, the Gulf Coast and parts of Florida average between 70 and 100 inches of precipitation and temperatures greater than 65°F annually.

For more information on average annual precipitation and temperatures, including maps of the USA, go to this [NOAA resource page](#).

(Answered by Greg Seroka of USA TODAY's weather staff, September 5, 2006)

Q: Is this the hottest summer in U.S. history?

A: Climatologists define summer as June, July and August, so this year's official summer temperature has yet to be determined. Final data should be available by mid-September.

The National Climatic Data Center has reported that July was the second-warmest month on record, and June the second-warmest June. The warmest summers in U.S. history were during the Dust Bowl years of the mid-30s: 1936 was the hottest, with an average of 74.7°F, and 1934 the second-hottest at 74.3°F.

The average U.S. summer temperature is 72.1°F. The coolest summer on record was in 1915, when the nation's temperature for June, July and August measured 69.7°F, the only sub-70°F summer since records began in 1895.

(Answered by Doyle Rice, USA TODAY's weather editor, August 6, 2006)

Q: What states usually have the coolest weather in the summer?

A: With average temperatures that range from the upper 40s to upper 50s, Alaska is the coolest U.S. state in July, according to the National Climatic Data Center. (July is typically the USA's hottest summer month.) Other cool states in July are in the Northwest, such as Washington, Oregon, Idaho, Montana, Wyoming and Idaho. The coldest parts of the Northwest are in western Wyoming and the Cascade Mountains of Washington, where average July temperatures are in the upper 50s.

This page from the Western Regional Climate Center lists the average temperatures by month for many locations in the western USA.

(Answered by Doyle Rice, USA TODAY's weather editor, August 6, 2006)

Q: Has Arizona ever been home to the coldest spot in the 48 contiguous states?

A: According to our records of daily national temperature extremes that date back to 1995, it's not an unusual occurrence. The low temperatures have typically occurred in the months of May, June and July, in northern locations such as Flagstaff, Bellemont, and the Grand Canyon. There have also been several occasions when both the daily national high and low temperatures have occurred in Arizona.

Check out our complete list of national highs and lows since April 1995 on this USA TODAY resource page.

(Answered by Emily Yahr of USA TODAY's weather staff, May 1, 2006)

Q: What's the highest temperature ever recorded in the Southern Hemisphere?

A: According to the National Climatic Data Center, Cloncurry, Queensland, in Australia, holds the high-temperature record in the Southern Hemisphere. The mercury there topped out at 128°F on Jan. 16, 1889. Remember that January is the middle of summer and typically one of the hottest months in the Southern Hemisphere.

Because the method of measuring temperature at that time was not consistent with modern methods, the Australian record using standard equipment is 123°F, recorded at Oodnadatta in 1960.

Learn more about global extreme weather from this National Climatic Data Center website.

(Answered by meteorologist Bob Swanson, USA TODAY's assistant weather editor, March 5, 2006)

Q: What are the coldest cities in the USA?

A: The coldest major city in the USA is Minneapolis, which has an annual average temperature of 45.2 F. However, several other smaller cities are much colder, including Fairbanks, Alaska (26.7 F), Anchorage (36.2 F), International Falls, Minn. (37.4 F), Duluth, Minn., (39.1 F), and

Caribou, Maine (39.2 F). In Fairbanks, for example, the average daily high temperature in January is -0.3°F.

This data was taken from *Extreme Weather*, a weather guide and record book by Christopher C. Burt.

(Answered by Doyle Rice, USA TODAY's weather editor, February 20, 2006)

Q: Which counties in the USA receive the most storm warnings issued by the National Weather Service?

A: A tally of all flash flood, severe thunderstorm and tornado warnings between 2001 and 2005 show that Pima County, Ariz., (which includes Tucson) had the most warnings with a total of 404. San Bernardino County, Calif., (east of Los Angeles) was second with 320, followed by Harris County, Texas, (which includes Houston) with 281.

This USA TODAY resource page has more about severe storms.

(Answered by meteorologist Brent MacAloney of the National Weather Service in Silver Spring, Md., January 18, 2006)

Q: Which state has the least amount of precipitation? The most? How is this figured?

A: Nevada is the driest state with an average of 9.5 inches of precipitation each year. Hawaii is the wettest state with an annual average of 63.7 inches, followed by Louisiana with 60.1 inches. These amounts are based on averages of station measurements available in each state during the period 1971-2000.

Check out the National Climatic Data Center for more historic climate data.

(Answered by Anne Waple, research climatologist with NOAA's National Climatic Data Center in Asheville, N.C., January 10, 2006.)

Q: What was the coldest temperature recorded in the USA in 2005?

A: So far this year, the coldest temperature was -62°, which was recorded in Chandalar Lake, Alaska, on Jan. 11. Chandalar Lake is near the Arctic National Wildlife Refuge in northeastern Alaska. In the contiguous USA, the coldest temperature was -54°, recorded in the small northeastern Minnesota town of Embarrass on Jan. 17.

Check out our archive of daily national high and low temperatures back to 1995.

(Answered by Doyle Rice, USA TODAY's weather editor, December 28, 2005)

Q: How cold can water in a stream get without freezing into ice?

A: While there are too many variables to give an exact answer to this question, it is true that water in a moving stream can drop below 32°F without freezing. This is partly due to the fact that fresh water in a stream can contain small amounts of salts and minerals that decrease the freezing point. These impurities prevent the water from easily forming molecular bonds with other water molecules. Note also that ice is a crystal and the kinetic energy of moving water makes it harder to form crystals.

Learn more about the phases of water on this USA TODAY resource page.

(Answered by meteorologist Bob Swanson, USA TODAY's assistant weather editor, December 19, 2005)

Q: What was the world's all-time record highest temperature? When did it occur?

A: The world's highest recorded temperature -- 136°F -- occurred in Al Aziziyah, Libya, on September 13, 1922. Al Aziziyah is located 20 miles south of Tripoli. Many of the world's highest temperatures have been recorded in north Africa, although Death Valley, California, recorded the world's second-highest temperature of 134°F on July 10, 1913.

The National Climatic Data Center has pages on U.S. and global temperature extremes.

(Answered by Doyle Rice, USA TODAY's weather editor, September 29, 2005)

Q: Which states receive the most sunshine each year?

A: While Florida proclaims itself "the Sunshine State," it might be more appropriately named the "partly cloudy" state. Five other states, Arizona, California, Nevada, New Mexico and Texas, catch more rays than Florida, according to the National Weather Service.

It should be kept in mind that, despite the cloud cover that results from Florida's proximity to water, Florida's sunshine is very strong because the state is in the subtropics. Rays from the sun arrive at a steep angle, bringing a high degree of ultraviolet radiation. That could be a factor in Florida's high rate of skin cancer. It ranks in the top five nationally, according to the Centers for Disease Control and Prevention.

(Answered by Bob Swanson, USA TODAY's assistant weather editor, September 1, 2005)

Q: What's the highest dew point ever recorded?

A: The dew point temperature, which is based on how much water vapor is in the air, is a good measure of how humid it feels. A dew point above 70°F is quite humid. Very high dew points are often found near shallow, subtropical seas. Dhahran, Saudi Arabia, on the Persian Gulf, recorded a dew point of 95°F on July 8, 2003. In the USA, the highest dew points (above 80°F) occur near the Gulf of Mexico and in parts of the upper Mississippi Valley.

See our page on Understanding humidity for more about the dew point temperature.

(Answered by meteorologist Bob Henson, a writer at the University Corporation for Atmospheric Research and the author of The Rough Guide to Weather, June 9, 2005.)

Q: I know the world's all-time coldest temperature reading was -129°F in Vostok, Antarctica. What's the highest temperature recorded there?

A: The Russian station at Vostok recorded its world-record low temperature on July 21, 1983. This is the middle of winter in Antarctica.

Unfortunately, the kind of detailed records that would give the highest single-day temperature at Vostok are not available. But January 2003, with a monthly average temperature of -26°F, was the warmest on record there. Vostok is on the Antarctic Ice Sheet, 11,220 feet above sea level.

The official highest temperature for anywhere in Antarctica is 59°F on Jan. 5, 1974, at the now-closed New Zealand Vanda Station in the Dry Valleys near the coast.

The U.S. South Pole Station, which is 9,450 feet above sea level, has been as cold as -117°F. The warmest temperature ever recorded there was 7°F.

We could see Vostok's world cold record fall soon, perhaps this year, says Matthew Lazzara of the Antarctic Meteorological Research Center at the University of Wisconsin.

China is planning to build a research station at an area of the Antarctic Ice Sheet known as Dome A, which is 13,779 feet above sea level. When the station opens it will be the highest in Antarctica, which means it should be the coldest. The Chinese have set up an automated weather atop Dome A.

Lazzara says his group expects to begin receiving data from Dome A later this year. "Do they have a chance of breaking the world record cold there?" Lazzara asks. "Sure - but will an automated weather station recording be considered official?"

That question will have to be resolved if the Dome A automated station records a temperature lower than -129°F.

(Answered by Jack Williams, public outreach coordinator for the American Meteorological Society and author of *The Complete Idiot's Guide to the Arctic and Antarctic*, June 5, 2005)

Q: What is the greatest wind speed ever measured in a hurricane?

A: During the New England hurricane of September 21, 1938, winds gusted to 186 mph at Blue Hill Observatory in Massachusetts. Many instruments break at these speeds, so higher winds in other hurricanes may have gone unreported. About 4,500 feet above sea level, a parachute-borne instrument recorded winds of 234 mph in 2003's Hurricane Isabel, according to the National Oceanographic and Atmospheric Administration's Tropical Prediction Center.

Surface wind reports can't be easily gathered at sea or on land during hurricanes, so many wind estimates for intense hurricanes are extrapolated to sea level from winds recorded at flight levels of around 10,000 feet. At this height, hurricane winds are typically 5% to 10% stronger than they are on the ground, where friction slows them down.

See our page on hurricane history for more records and information.

(Answered by meteorologist Bob Henson, a writer at the University Corporation for Atmospheric Research and the author of *The Rough Guide to Weather*, June 2, 2005.)

Q: What are the coldest and warmest temperatures ever recorded in California?

A: Like so many other categories, the weather extremes in California are quite diverse. The record high temperature is a sizzling 134°F, recorded on July 10, 1913, in Death Valley (elevation: 178 feet below sea level). This is the North American record and is just shy of the world record of 136°F in Libya.

On the cool side, the mercury plunged to -45°F in Boca on January 20, 1937. Boca is located at an elevation of 5,532 feet, a few miles north of I-80 on the east slopes of the Sierra Nevada.

The difference between these extremes is a noteworthy 179°F and is mostly a function of both locations being distant from the moderating influences of the Pacific Ocean.

However, this is not the biggest difference between a state's extreme high and low temperature readings. That honor goes to Montana, with a range of 187°F. The state's record minimum of -70°F is the lowest in the continental 48 states and its record high is 117°F.

The narrowest extreme temperature range in the continental 48 is 111°F in Florida, based on a record high of 109°F and a record low of -2°F. However if Hawaii is included, the range is just 88°F, due to the moderating influence of the tropical water that surround the islands.

I've created a map and table of each state's temperature extreme record.

(Answered by meteorologist Jan Null, Golden Gate Weather Services, June 1, 2005)

Q: Has there ever been a day in the contiguous USA when the low was at least 32°F and the high under 100°F?

A: This rare setup is most likely to occur in early fall, when summer's heat is fading but before northern and high-altitude stations regularly freeze. I found that on September 26, 1997, the nation's high was 96°F (Coolidge, Ariz.) and the lower-48 states low was 33°F (Pellston, Mich.). It's highly unlikely this would happen in spring, when the USA's temperature contrasts tend to be greater.

Even though the official low for the 48 states may be just above freezing on a given day in September, it's likely that the highest parts of the western US mountains will have areas beyond the reach of weather stations that dip below freezing.

On our site, you can look at the current month's national high and low temperatures as well as our archive of national high and low temperatures from past years, going back to April 1995.

(Answered by meteorologist Bob Henson, a writer at the University Corporation for Atmospheric Research and the author of *The Rough Guide to Weather*.)

Q: Why is Saranac Lake, N.Y., consistently one of the coldest spots in the contiguous USA ?

A: To be one of the coldest locations in the contiguous USA requires several physical attributes, each of which Saranac Lake possesses. Temperatures decrease with both latitude and elevation, so cold locations such as Saranac Lake tend to be located in mountainous regions of the northern USA. Saranac Lake's inland location, away from the moderating effects of the Atlantic Ocean, also contributes to its coldness.

Two other features make Saranac Lake stand out from any number of northern inland mountainous locations. The first is meteorological. The town lies in a high-elevation valley. Thus cold air, which is more dense, flows down the surrounding mountain slopes and accumulates over Saranac Lake. The second is serendipitous. There happens to be an airport weather station that reports daily temperatures at Saranac Lake. Relatively few airports are located in this type of topography.

Look for Saranac Lake in our archive of national temperature extremes, which includes daily highs and lows back to 1995.

(Answered by Art DeGaetano, Cornell University associate professor of atmospheric sciences, May 10, 2005.)

Q: What's the average temperature in Orlando in May?

A: Orlando's average high and low are 88°F and 66°F in May and the humidity isn't as high as it is during the summer. Even more important if you are on vacation, it doesn't rain as much in May, with an average of 3.8 inches in May compared with 7.4 inches in June and July.

You'll find more by going to the [USATODAY.com Florida weather page](#), where you'll find links to current conditions and forecasts to cities all around Florida, links to guides to month-to-month climate (at the bottom of the page) and more. Anyone planning a trip anywhere in the world should go to [How to find travel weather information](#).

(Answered by Jack Williams, American Meteorological Society, April 12, 2005)

Q: What are the sunniest and cloudiest cities in the USA?

One way to measure this is by the percentage of the possible sunshine that a city receives each year. The sunniest city in the United States is Yuma, Arizona, which receives 90% of possible sunshine.

The next 4 sunny cities are: Redding, Calif.; Flagstaff; Phoenix; and Las Vegas.

The cloudiest city is Juneau, Alaska, which receives only 30% of the annual possible sunshine. Other cloudy cities are Quillayute, Washington; Elkins, West Virginia; Hilo, Hawaii; and Anchorage.

This comes from a list of the average percentage of possible sunshine from the National Climatic Data Center.

(Answered by Doyle Rice, USATODAY.com assistant weather editor, March 30, 2005)

Q: What was the coldest day in Wisconsin's history?

A: The coldest temperature ever officially recorded in Wisconsin was -55° F at Couderay on Feb. 4, 1996. There is no practical way to tell whether this was the coldest day on record in all of Wisconsin, but it was a cold day across the northern Midwest.

On Feb. 2, 1996, as the cold air was moving in, Minnesota recorded its coldest day on record, -60°F at Tower.

Couderay is in northwestern Wisconsin, about 70 miles north of Eau Claire. Feb. 4, 1996, was not the coldest day on record in Eau Claire. While Wisconsin isn't as large as Alaska, Texas or some other western states, it is large enough to have widely different weather across the state on any one day.

I found the information about Wisconsin's coldest day in our listing of each state's lowest temperature. To see what it's like in Couderay now, go to our [current conditions, forecasts for Couderay](#).

By the way, when I Googled Couderay to see where it is, I found it has a tourist attraction: [Al Capone's hideout](#).

You can find a lot of information about Wisconsin's climate by first going to our Wisconsin weather and climate page, which has links to the current weather, forecasts and weather averages, for places all around the state. Links to daily and monthly averages are at the bottom of each of our current weather and forecasts pages.

For more detailed information, you can go to the Wisconsin State Climatology Office at the University of Wisconsin-Madison.

(Answered by Jack Williams, USATODAY.com weather editor, Feb. 22, 2005)

Q: Which cities in the contiguous 48 U.S. states receive the most rain?

A: The top five wettest inhabited locations, based on annual averages from 1971 to 2000, are: Quillayute, Wash. (101.72 inches per year); Astoria, Ore. (67.13); Mobile, Ala. (66.29); Pensacola, Fla. (64.28); and New Orleans (64.16). This information is from the data tables of the National Climatic Data Center.

If Alaska and Hawaii are included, Yakutat, Alaska, would be the rainiest location with an annual average of 160.38 inches. Hilo, Hawaii, averages 126.27 inches per year.

In addition, although uninhabited except for a group of hardy weather observers, the top of Mount Washington, New Hampshire, receives 101.91 inches of precipitation per year.

By contrast, the driest inhabited location in the United States is Yuma, Ariz., which annually averages a mere 3.01 inches.

(Answered by Doyle Rice, USATODAY.com assistant weather editor, Feb. 14, 2005)

Q: Tuesday's weather map in the USA TODAY newspaper has the high temperature in the contiguous fifty states as being in south Texas just west of Brownsville. However, your color-coded temperature map that day shows the area listed as being only in the high 50s to low 60s. How, then, can the high temperature of 83 have occurred there? Is this an error?

A: It's not an error, but a good illustration of how the weather can change this time of the year.

First, the daily high and low temperatures we show on the newspaper's weather map are from two days before the date of publication in the paper. This means that the highs and lows in the Tuesday newspaper were from Sunday. The day is noted on the listing of highs and lows next to the right side of the map.

We have to do this because the National Weather Service does not produce its list of the day's highs and lows until 7:30 or 8 p.m. ET. This is too late to get onto the paper's weather page. (We can make changes in the weather page later for big weather events.)

Last Sunday this high in the contiguous 48 states was 83 in Harlingen, Texas. (The national high was 84 at Hilo, Hawaii.) The low that morning in Harlingen was 67 degrees. That night a major shot of cold air blasted into southern Texas and the Monday morning low in Harlingen was 47 and that day's high was only 70. Tuesday was even colder there was a low of 46 and a high of only 49. The map had shown Harlingen in the green area - 50 to 59 degrees, which means it turned out to be a degree colder than shown.

In case you're wondering where I found this information: For the weather of the past few days, I went to our Harlingen current conditions and forecasts page. I then followed the link at the bottom of that page to "Past weather" under the "More details" heading. Our online listing of Highs and lows, takes you not only to the list we update each day, but to the USA's highs and

lows each day back to April 1995 when we started USATODAY.com - follow the link to our extremes archive at the bottom of the page.

(Answered by Jack Williams, USATODAY.com weather editor, Feb. 2, 2005)

Q: I have noticed that the low temperature for the United States is mostly in the eastern half of Alaska. Why is it so cold in this area of Alaska and not that cold in a place such as Barrow?

A: In brief, Barrow, the northernmost U.S. city, which is on Alaska's Arctic Ocean Coast, receives enough warmth from the frozen ocean to stay warmer than inland places. A story I did from Barrow in 2002 has more on this.

In fact, inland places in Alaska are often warmer than the North Pole itself, which I explained in a story last month about North Pole, Alaska being colder than the real North Pole. For the coldest Northern Hemisphere weather, you have to go to Siberia, which I discussed in the answer to a question in 2003.

Each day we report the USA's coldest and warmest temperatures. At the bottom of the current list, you'll find a link to our archives of these reports going back to April 1996, when USATODAY.com began.

(Answered by Jack Williams, USATODAY.com weather editor, Jan. 23, 2005)

Q: Where can I find the highest air pressure that ever occurred in the world?

A: Right here.

The highest official, sea-level pressure was 32.01 inches of mercury in Agata, Russia on Dec. 31, 1968 on a very cold day. The highest in North America was 31.85 inches of mercury at Northway, Alaska on Jan. 31, 1989, also on a cold day.

Higher pressures have been recorded in places below sea level, but these don't count as official weather records. These places include the Dead Sea between Israel and Jordan. Even higher pressures would be recorded deep in mines. For more on air pressure and its measurements, see the USATODAY.com Understanding air pressure page.

I found the data about pressure extremes in a booklet, "Weather and Climate Extremes," published by the Army Topographic Engineering Center and available through the U.S. government's National Technical Information Service.

(Answered by Jack Williams, USATODAY.com weather editor, Nov. 17, 2004)

Q: Stanley, Idaho, is frequently listed as the coldest place in the contiguous 48 states. It's not in my big fat Rand McNally Atlas. Where is this place? Thanks.

A: Stanley is on the edge of the Sawtooth National Recreation Area in southern Idaho, about 130 winding miles north of Boise on Route 21 at the junction with Route 75. It's in the Stanley Basin and surrounded by high mountains. Cool air draining down from the mountains account for the low temperatures.

Like you, I looked in my Rand McNally Road Atlas and didn't find Stanley listed in the index, but I knew more or less where it is and it is shown on the map even though it's not in the index.

USATODAY.com includes Stanley among the places for which we have current conditions and forecasts. To look for it among the USA's coldest places, you can check our listing of each day's U.S. highs and lows, which has Stanley as the coldest place in the Lower 48 at least five times this month.

(Answered by Jack Williams, USATODAY.com weather editor, Oct. 3, 2004)

Q: On any given day of the year is there always somewhere in the world where the temperature reaches 100 degrees ?

A: Probably, but there is no way to really know because many parts of the world where it gets this hot do not keep or report high temperature records.

However, during the Northern Hemisphere last fall, winter and early spring when no part of the USA, including even Death Valley, Calif., tops 100, places in Africa, Australia and South America are baking under spring, summer, or early fall sun. (Related: USA temperature extremes archive)

For instance, the U.S. Army Corps of Engineers booklet, Weather and Climate extremes, notes that Marble Bar in Western Australia experienced 100 plus temperatures on 162 consecutive days from October 30, 1923 to April 7, 1924. Also, the highest official temperature recorded in South America was 120 degrees on Dec. 11, 1905 at Rivadavia, Argentina.

The booklet doesn't have any high temperature records from Africa, which straddles the tropics and extends into the Southern Hemisphere. But, I'd sure a desert in some part of Africa tops 100 regularly when even Death Valley is cool.

In other words, I suspect that at least one of these places is going to be above 100 degrees on any day when no place in the Northern Hemisphere gets this warm.

(Answered by Jack Williams, USATODAY.com weather editor, July 1, 2004)

Q: Is it true that the world record for most snowfall in a year is in the mountains of Washington state?

A: Yes, but really, reliable snowfall records for other parts of the world are simply not available, so the U.S. record is also the world record by default, the National Oceanic and Atmospheric Administration (NOAA), which confirms and houses such records at its National Climatic Data Center, says.

In the USA, the Mt. Baker Ski Area in western Washington state measured 1,140 inches of snow for the 1998-99 season, which ran from July 1 - June 30. The previous record was 1,122 inches measured at Paradise Ranger Station on Mt. Rainier, which is south of Mt. Baker, in 1971-72. A story posted at USATODAY.com, NOAA: Mt. Baker snowfall record sticks, has more details on the record snow, including how difficult it can be to measure snowfall accurately.

By the way, if you happened to view the National Climatic Data Center's U.S. Snowfall Climatology project Web page, which has snowfall records posted online, you'll find that the heaviest annual snowfall on record that it lists is only 1,069.8 inches at Paradise Ranger Station on the slopes of Mt. Rainier in Washington, in 1974 – not the 1971-72 record at the same location nor the Mt. Baker snowfall record.

I spoke with Richard Heim, a meteorologist with NCDC who worked on the snowfall climatology project, about this and he states two possibilities for the discrepancy in the record:

1) It's likely that the Mt. Baker snowfall data has not yet been digitized, which means it would not be part of the current snowfall database and therefore would be excluded from analysis and inclusion in NCDC's online National Snow Extremes table.

2) The higher annual snowfall amount of 1,122 inches at Paradise Ranger Station might have been eliminated from the database analysis simply because as little as a single day of snowfall data was missing during the 1971-72 season. Heim says that's all it would take for the analysis program to reject the entire year's worth of data as too incomplete to tally an annual total.

The snowfall climatology page cautions users about such discrepancies that might show up when querying its database.

(Answered by Chris Cappella, USATODAY.com Weather Team, Feb. 5, 2004)

Q: Why is Death Valley is the warmest place on mainland North America in summer but not in winter?

A: There are several reasons.

First, Death Valley is a desert in eastern California that has the hottest and driest climate in North America. While it holds the record as the hottest place in the USA and second hottest on Earth, it also can be quite chilly on winter nights. In fact, Death Valley's lowest temperature is 15°F, recorded on Jan. 8, 1913 – the same year, coincidentally, that it reached its summertime record of 134°.

Ordinary summer heat makes much of the Southwest, including Death Valley, sizzle from June through August. But, Death Valley's unique geography turns this hot weather into extreme heat.

Winds off the higher surrounding land, known as the Great Basin, often blow hot, dry air thousands of feet down into the long, narrow valley, which is 282 feet below sea level. As the air moves downhill it encounters increasing atmospheric pressure, which squeezes the air, warming it at a rate of 5.5 degrees for every 1,000-foot drop in elevation. Some of the mountain ranges around Death Valley are 7,000 - 9,000 feet high, and the surrounding land between the ranges is 4,000 - 5,000 feet above sea level, which means the air can warm at least 20 -25 degrees by the time it reaches the bottom of the valley. In addition, the steep walls of the valley heat up and radiate that heat back into the valley, causing the already hot air to grow even hotter. July's average high in Death Valley is 115 degrees, but nearly every year the temperature reaches 125, or higher. USATODAY.com has been reporting each day's high and low temperature in the USA since we began in April 1995. Our extremes archive will let you follow the ups and downs of each season's highs and lows. (Related item: Temperature extremes archive)

Such extreme heat made history on July 10, 1913, when Greenland Ranch in Death Valley measured a temperature of 134 degrees – the highest on Earth at the time. But, the record lasted less than a decade, and was eclipsed when the temperature of the Sahara Desert at Al Azizia, Libya, soared to 136 degrees on Sept. 13, 1922.

In winter, the air flowing into Death Valley from all sides is much cooler than in summer. So, even with the same warming by compression, the air flowing downhill starts out too cold to arrive on the valley floor with much warmth. January's average high there is 65 degrees.

One of the bigger reasons that the air is so cool in winter compared with summer is because the angle of the midday sun is less than half as high in January as it is in July, which means there's a big difference in incoming solar radiation to warm the land. Another reason is the shorter day in winter versus summer. For example, at the time of the summer solstice in June, the sun rises 77 degrees above the southern horizon at local noon and there are 14 hours, 39 minutes between sunrise and sunset. On the winter solstice in December, it rises only 30.1 degrees

above the southern horizon at local noon and there are only 9 hours, 40 minutes between sunrise and sunset.

The longer nights, cooler incoming air and dry conditions contribute to nearly ideal radiational cooling where almost all of the daytime warming is lost to the atmosphere at night. That's how a desert known for its extreme heat sees the temperature plunge below freezing on winter nights. Learn more about how radiational cooling affects nighttime temperatures by reading [USATODAY.com's Why cloudy nights tend to be warmer](#).

If you're thinking about experiencing this extreme heat, check first with [USATODAY.com's guide to the month-to-month climate of Death Valley](#) to find out when to go. The National Park Service also maintains a [Web page](#) with more information on Death Valley, including how to visit the park safely – even in the summer heat.

The Death Valley Web site has essentially the same information as the National Park Service, but it offers locator and topographical maps to give you a better idea of where Death Valley is situated.

(Answered by Chris Cappella, [USATODAY.com Weather Team](#), Feb. 4, 2004)

Q: Where is the hottest place on Earth? I'm guessing it's somewhere like the Sahara. What, if any, humans live there and how do they eke out a living?

A: April Holladay, who answers science questions for [USATODAY.com](#) answered this question. [Click here to go to her answer](#).

Q: On average, in what area would the least windiest conditions be found in the USA?

Q: It is widely reported that Mt. Washington in New Hampshire is the windiest place in the United States. Can you tell me where the wind consistently blows the least in the USA?

A: There is no large area of calm winds. The places with the lowest average annual wind speeds are away from the coasts, and tend to be sheltered by mountains. The two weather stations with the lowest annual wind speeds are Talkeetna, Alaska, and Medford, Ore., both with annual winds of 4.8 mph. You could drive to both – Talkeetna is about halfway between Anchorage and the entrance to Denali National Park, and is a jumping-off place for people who want to climb Mt. McKinley, the USA's highest mountain.

McGrath, Alaska, is third with a 5.1 mph average, followed by Walla Walla, Wash., at 5.3 mph and Bristol, Tenn., at 5.5 mph. These are annual averages; you might find some months at these or other places with lower speeds. I found the wind data on the [National Climatic Data Center's Average wind speed page on the Web](#).

It's interesting. The USA's two lowest annual wind speeds are in Alaska, which also has the three highest – if you don't include Mount Washington, N.H.

With an average annual wind speed of 35.3 mph, Mount Washington's winds are the highest. But many people don't think it should be considered in the same way as St. Paul Island, Alaska, with its annual average speed of 17.6 mph, because the only people who live on Mount Washington's summit are those at the Weather Station. The Observatory's [Web site <http://www.mountwashington.org/>](#) has more on what's on top of the mountain.

If you're interested in the USA's highest wind speeds, look at the [USATODAY.com Answers archive: Windy cities](#) where, among other things, you'll see that Chicago isn't particularly windy, especially when compared with some places in Alaska.

(Answered by Jack Williams, USATODAY.com weather editor, Aug. 20, 2003)

Q: What is the Earth's average temperature range on a typical day?

A: This is an interesting question, which I've never received before, or even thought much about. I couldn't find a direct answer in one of the best sources for information on climate extremes, the "Weather and Climate Extremes" booklet from the U.S. Army Topographic Engineering Center.

To find the cold end of the most extreme case, I looked up the average August low temperature at the Russian Vostok Station in Antarctica, which holds the record for the coldest official temperature on Earth, -129 F, recorded on July 21, 1983. The average low for August there is -103 F. The Antarctic Plateau, in the center of the continent where Vostok and the US South Pole station are located, has a "coreless" winter with the average high and low staying about the same from July into September. At this same time of the year, the average high temperature at Death Valley, Calif., is 116 degrees, giving a difference of 219 degrees. Some deserts near the equator in Africa, for which good weather records are not available, are surely hotter than Death Valley. Therefore, something like "220 Fahrenheit degrees" difference between the coldest and warmest parts of the Earth in August, seems reasonable.

In January, when Antarctica is at its warmest under 24 hours of sunlight each day, and the Northern Hemisphere deserts are coolest, the difference between the warmest and coldest parts of the Earth is probably in the neighborhood of 140 or 150 Fahrenheit degrees.

The Arctic is not nearly as cold as the Antarctic Plateau, because the Arctic Ocean covers the northern Arctic and even though it's covered by ice, some heat makes it to the surface. No long term weather records are available, but the January average at the North Pole is maybe around -40. Other parts of the Arctic, with long weather records, such as the US Air Force Base at Thule, Greenland, are much warmer than summer on the Antarctic plateau. Thule, for instance, has an average January low of -17, and Barrow, Alaska, on the Arctic Ocean Coast, an average January low of -19. Vostok in Antarctica averages -34 in January, during the middle of its summer. The coldest part of the Arctic is farther inland in Alaska, northern Canada, and Siberia.

I couldn't find any average temperatures for what are likely to be the world's warmest and coldest places in January. But, I think it's safe to assume that some Southern Hemisphere deserts average close to 100, and some inland Arctic place, maybe atop Greenland's Ice Sheet or in Siberia, averages 50 below. In other words, a global difference of 150 degrees at this time of the year is certainly likely. And, on some January days, the difference could be close to 200 degrees.

To see why the Arctic is warmer than the Antarctic, go to our Understanding polar weather page. That page also has a link to a British Antarctic Survey (BAS) Web site with "Station temperatures and records" for Antarctica, which is where I found the Vostok average.

(Answered by Jack Williams, USATODAY.com weather editor, April 29, 2003)

Q: What is the largest amount of snow ever documented in a year?

A: During the Western snowfall season that began July 1, 1998, and ended June 30, 1999, Mt. Baker Ski Area in northwestern Washington set the US record for most snow in a year with 1,140 inches. The ski area is at 4,200 feet in Washington's Cascade mountain range. The previous record of 1,122 inches was set at nearby Mt. Rainier during the 1971-1972 snowfall season. Read the story: Mt. Baker snowfall record sticks.

The Mt. Baker Ski Area snowfall total also is the highest amount ever recorded in a single year anywhere. That qualifies it as a world record as well, but only in theory since there are no formal records of seasonal snowfall kept outside the USA to compare it to.

(Answered by Chris Cappella, USATODAY.com Weather Team, Feb. 12, 2003)

Q: Has it ever reached 100 degrees in Alaska?

A: The highest official temperature in Alaska was 100 degrees at Fort Yukon on June 27, 1915. An interesting fact, Alaska and Hawaii are the two states with a highest official temperature of exactly 100 degrees. Tropical breezes keep searing heat away from Hawaii. All of the 48 contiguous states have recorded temperatures of 105 degrees or higher. A USATODAY.com list of highest temperatures has the figures for every state.

We also list each day's highest and lowest temperatures for the USA. This page has several links to more information about extreme temperatures and precipitation around the world.

(Answered by Jack Williams, USATODAY.com weather editor, Feb. 10, 2003)

Q: What is the town with the coldest yearly average temperature in the continental 48 states? Is Truckee, Calif., this place?

A: Questions like this are harder to answer than you might think. A lot of data on weather averages is available, but in most cases, no one has gone to the trouble of ranking the coldest, warmest, and so forth. And, in the few cases where such data has been ranked, only the 350 or so "first order weather stations" were used. These are stations, mostly operated by the National Weather Service with meteorologists or meteorological technicians to collect the data and worry about quality control.

The USA also has a network of about 11,000 voluntary climate reporting stations, which supply valuable data. But, this data isn't as easy to access. To really see which place in the USA is the coldest, you would have to go through the 11,000 or so climate stations. The only practical way to do this would be with a computer. But, I don't know whether the data are all available in the same format. Even if it were, the only reason for such a ranking would be idle curiosity, not any real research purpose.

That said, a few years back someone at the National Climatic Data Center, which keeps the nation's and world-wide weather records put together lists such as the USA's coldest cities, using averages from the first order stations.

The list for coldest places puts International Falls, Minn., at the top with a yearly average temperature of 36.4 degrees. All 10 places on this list except for Caribou, Maine, and Alamosa, Colo., are in Minnesota, Michigan, and North Dakota. Your mention of Truckee made me curious, so I looked its averages up by going to the Northern California Climate Summaries page of the Western Regional Climate Center. Truckee's yearly average of 43.25 degrees would not put it in the top 10 of the NCDC's list. (Number 10 on that list is St. Cloud, Minn., with 41.4 degrees.)

The big problem with the NCDC's lists of top 10s, as with the National Weather Service's daily listing of warmest and coldest average temperatures, is that they do not include Alaska or Hawaii. Alaska turns out to have 15 weather stations with average annual temperatures colder than International Falls.

The coldest place in the USA is really Barrow, Alaska, with an annual average of 9.0 degrees.

(Answered by Jack Williams, USATODAY.com weather editor, Oct. 24, 2002)

Q: What is the coldest place in the USA?

A: The answer isn't as simple as you might think. We can talk about the coldest, one-time temperature; the coldest, average temperature for the winter season; and the coldest average for the year.

The coldest yearly average is maybe the best way to judge the "coldest place" in a country since people who live there are going to have to spend more on staying warm than people elsewhere. This prize goes to Barrow, Alaska, which is on Alaska's Arctic Ocean coast and is the USA's northernmost city. From 1941 through 1970 it's annual average temperature was 9 degrees (above zero) Fahrenheit. Meteorologists use 30 years of records to come up with the averages, or "normals." The 1971 through 2000 averages for individual locations are not yet all available, but Barrow is likely to remain the coldest.

The coldest average winter (meteorologists consider the months of December, January and February to be winter) was minus 16 at Barter Island, Alaska, from 1941 through 1970.

The coldest, officially-recorded single temperature in the USA was -79.8 F at Prospect Creek, Alaska, on Jan. 23, 1971. Prospect Creek was a camp along the Alaska pipeline in the Endicott Mountains southeast of Bettles, Alaska. The record temperature was recorded at an elevation of 1,100 feet and the U.S. Bureau of Standards checked the thermometer used to record it.

The coldest temperature outside Alaska was -69.7 F at Rogers Pass, Mont., on Jan. 20, 1954. Rogers Pass is in mountainous and heavily forested terrain about one-half mile east of, and 140 feet below, the summit of the Continental Divide.

All of this information comes from the booklet *Weather and Climate Extremes*, which was compiled by the U.S. Army Corps of Engineers, which is sold by the U.S. Department of Commerce National Technical Information Service. You can also find a lot of information about weather extremes by going to the USATODAY.com Extremes page, which has each day's highest and lowest U.S. temperatures by state plus links to a lot more information. Our online weather almanac has links to data on average temperatures and weather history.

(Answered by Jack Williams, USATODAY.com weather editor, June 20, 2002)

Q: What is the hottest temperature the 48 states have experienced? What is the worst heat wave in the USA, again pertaining to the lower 48 states?

A: The highest temperature anywhere in the lower 48 U.S. states remains 134° Fahrenheit, recorded at Death Valley, Calif., on July 10, 1913. This also is the record for all 50 states and is second only to the world record of 136° measured at El Azizia, Libya, on Sept. 13, 1922.

USATODAY.com publishes each day's temperature extremes for the USA online here. Our records go back to April 1995 when USATODAY.com was launched. Links on the page will take you to other extreme temperature as well as weather records.

As for the worst heat wave in the lower 48 states, that probably is going to be tougher to answer. A heat wave is defined by the National Weather Service as a period of at least three consecutive days with temperatures exceeding 90 degrees.

- In 1980, when a significant drought gripped the nation's midsection, Dallas, Texas, recorded 42 consecutive days with temperatures of 100 degrees or higher.
- In 1988, a series of heat waves all summer coupled with severe drought to produce one of the worst fire seasons on record in the West. That's the year that more than a million acres burned in Yellowstone National Park.

- Then, of course, there are the dustbowl years of the 1930s when heat combined with drought, erosion and poor land-use practices to devastate farming in the nation's heartland.

Taking a look at the list of state temperatures records we have on our site reveals of number of them set during the summer of 1936. You can learn more about this and other dust bowl years in a special report [USATODAY.com](#) produced, which looks back on 20th Century weather. The same list also shows several southwestern states set their record highest temperatures during late June 1994, another year with an extreme heat wave.

As recently as this past April, a heat wave set hundreds of high temperature records in the eastern and central USA. An online news story has more.

(Answered by Chris Cappella, [USATODAY.com](#) weather team, June 17, 2002)

Q: Jack, could you please answer this question. Over the last several years, during the winter, which location has been the coldest spot in the lower 48 states the most times: West Yellowstone or Fraser, Colorado? I thank you in advance.

A: This is one of those questions that I don't know the answer to right off, and don't know of any one place to go to look for the answer. But, I can offer some advice on how to find what you are looking for. One place to start is by going to the [USATODAY.com](#) index to daily extreme temperatures. Since [USATODAY.com](#) started on April 11, 1995 we have been posting the daily U.S. highs and lows – unlike most other such listings you see in other newspapers, USA TODAY knows the USA has 50 states and we list temperatures from Alaska and Hawaii when they are the USA's lowest or highest. But, on those days we also list the highs and lows for the 48 contiguous states since we know many readers follow these. We have archived all of our daily listings. Going to our index would require scanning through six years of daily records, but it could be done.

Another possibility is to look in past issues of *Weatherwise* magazine. For several years *Weatherwise* ran an article in the annual almanac issues (the March/April issue) about the nation's highs and lows by David Hickcox, a college professor who kept track. His article each year included a listing of the top places on the high and low lists for the year. If you go to the *Weatherwise* Web site you'll find a link to the magazine's archives. You could search for Hickcox's articles. I took a quick look and at least some of his articles are available. There is a charge for accessing the archives.

(Answered by Jack Williams, [USATODAY.com](#) weather editor, May 2, 2002)