

# It's hot, but not really THAT hot

Monday, August 9, 2010 07:51 PM

By [Randy Ludlow](#)

## The Columbus Dispatch

Yes, it's been a hot summer in the city.

But Columbus aside, the summer of 2010 is shaping up to fall short of sweltering-hot across all of central Ohio.

In Columbus, the average temperature in June and July was a toasty 75.6 degrees - a not-insignificant 2.5 degrees above normal - which tied for the seventh hottest on record in the city.

But lower temperatures across the rest of the climate area (Delaware, Fairfield, Fayette, Licking, Madison, Marion, Morrow, Pickaway and Union counties) lowered the area average for June and July to 74 degrees.

That reading ranks as only the 14th-warmest June-July since 1895 - well off the record 77.6 degree average in 1934, said Jeffrey C. Rogers, state climatologist and an Ohio State University professor.

With highs of 90 or more on nine days in Columbus, the average high in July was 86.7 degrees (1.4 degrees above normal) and the average low was 67.2 degrees (2.3 degrees above normal).

While daytime highs have been above normal, Rogers said he has been struck by the other side of the equation. Overnight lows have been unusually high, too, averaging 2.3 degrees above normal in July and 4.2 degrees higher in June.

Through Sunday, August also has been warmer than usual in Columbus, with an average high of 86.4 degrees and an average low of 66.8.

Nationally, talk that July could be the hottest month ever in the United States proved all wet.

Though the Northeast and Southeast basked in record and near-record warmth, cooler-than-usual weather across Texas and the Northwest chilled the overall national reading.

The average national temperature for July was 75.5 degrees, or 1.3 degrees above average, making it the 17th-warmest July on record, according to figures released yesterday by the National Climatic Data Center.

Nationally, last month fell far behind the record 77.4 degree average for July 1936.

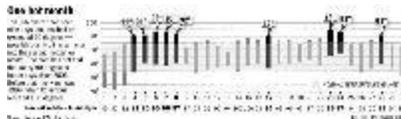
# Too humid? You prefer Dust Bowl?

**This may be hottest summer since 1934, but it could be worse**

Saturday, July 31, 2010 02:52 AM

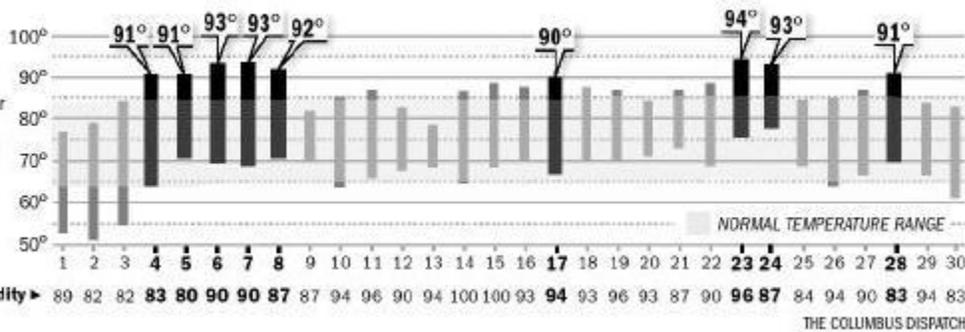
By [Caitlin McGlade](#)

## THE COLUMBUS DISPATCH



### One hot month

This July, there have been nine days that reached or exceeded 90 degrees — possibly pushing this summer into the second hottest on record. The area has not had that many 90-degree or hotter days since 2006. Before that, the worst was 1999, when Columbus reached 100 degrees.



If August behaves like June and July, central Ohio is on track to have its warmest summer since 1934, in the Dust Bowl era.

This summer's high humidity - which, granted, feels like a drag - and rainy weather might be the only things keeping temperatures from reaching Dust Bowl levels, when they well exceeded 100 degrees.

The second hottest summer on record for now was 1936, after the worst of the dust storms and heat.

"Those have been the standards of hot summers," state climatologist Jeffrey Rogers said. "The interesting thing is, what if it had been dry, or it dries out? If we ever go into a really bad drought, who knows what will happen to the temperature records?"

But the difference is that dew points have been much higher than usual this month. Dew points - a measure of atmospheric moisture - in the upper 50s and mid-60s are normal. But in July, those in the mid-70s have been common, said Andy Hatzos, a meteorologist with the National Weather Service.

That makes those nine 90-degree or hotter days this month feel sticky. But Rogers said humidity also blocks out intense sunlight and can lower daytime temperatures.

At the same time, daytime humidity traps warm air near the ground, which can make nights feel hotter.

Overnight low temperatures in Columbus hovered around the 70s for 12 nights this month. That's unusually warm for central Ohio.

These hot July days follow the warmest June ever recorded for the entire globe, said Deke Arndt, chief of the climate monitoring branch at the National Climatic Data Center.

Temperatures in June averaged 1.22 degrees higher than usual.

"While that doesn't seem like a lot, when you spread that out globally, that's a lot of energy and a lot of warmth," Arndt said.

In central Ohio, August will start out with highs around 90, the Weather Service said.

Rogers said he's prepared to see central Ohio's average temperature for the summer increase by a half-degree. The figure is calculated for 30-year spans by averaging highs and lows for each month.

Evidence of the change includes the summers of 2002 and 2005, which were the third and fourth warmest on record.

"It represents the fact that the climate is steadily warming," Rogers said.

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# Ohio's like a lightning rod lately

Saturday, June 19, 2010 11:01 AM

(Source: The Columbus Dispatch, Ohio)By Caitlin Mcglade, The Columbus Dispatch, Ohio

Jun. 19--The Ohio sky is raging.

Lightning-charged storms have tormented the region for longer periods of time this year than in the past few years, according to meteorologists.

"It's almost like someone throwing a bowling ball from Iowa to [New York](#), and we are in the path of that ball," said Ken Haydu, the meteorologist in charge at the National Weather Service in Wilmington.

Spring and summer severe storms usually last for two or three days and take a break for four or five days, Haydu said. This year, the pattern has switched.

This has to do with increasing dew points, which are a measure of atmospheric moisture. Dew points, Haydu said, are high for this time of year.

"That's something we normally don't see until the farm fields are fully in bloom in July," he said.

That moisture leads to storm clouds and lightning bolts that are hotter than the sun, said Jeffrey Rogers, professor of geography and atmospheric science at Ohio State University.

According to the National Weather Service, there are 1,800 thunderstorms at any given time on Earth. That translates into 16 million storms a year and 25 million flashes of lightning from cloud to ground.

Next week is Lightning Safety Awareness Week, and John Jensenius, warning coordination meteorologist with the National Weather Service, said this is the peak time of year to watch the skies.

People should go indoors the second they hear thunder because that rumble means lightning is within fatal striking distance, he said.

An average of 57 people die each year from lightning strikes in the United States. So far this year, eight people have died, including one man in Ohio.

Lightning typically strikes the tallest object in an area, such as a sky scraper, but people can also get hit if lightning strikes an object or the ground and jumps, Jensenius said.

Though national storm averages are on par with last year, Midwest storms have been particularly bad because of increased moisture from the Pacific that builds up in places such as Iowa and heads east.

The more moisture, the greater chance for storms. The more storms, the greater chance for lightning, said Ohio State's Rogers.

Rogers' rain gauge this year is running about 3 inches higher than last year.

"One of the signs of climate change that may occur here is that we'll get a lot of heavy rain events and they'll be followed by periods without any rain at all," he said. "We've been seeing that pattern in recent summers."

Haydu said there is reason to suspect that the region is about to enter a drying period with fewer storms.

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## Cleveland-area nighttime temperatures indicate warming trend

By [Michael Scott](#)

February 08, 2009, 6:45PM



Joshua Gunter/The Plain

Dealer A recent study shows that nighttime clouds are contributing to global warming, acting as a bedtime blanket and holding the day's heat in.

Is global warming sneaking into Ohio under cover of darkness?

That's what atmospheric scientists like Jeffrey Rogers, professor and researcher at the Ohio State University, want to know -- because nights have been slowly getting warmer here for more than a half-century.

"Nighttime temperatures are coming up, and no one has really been paying attention to them," Rogers said by telephone from his Columbus office, where he has also served in the unpaid position of state climatologist since 1986.

"Many people think that they will notice a warmer climate by noticing hotter summers or warmer winters," Rogers said. "Instead, it is nighttime temperatures that could be a first indicator."

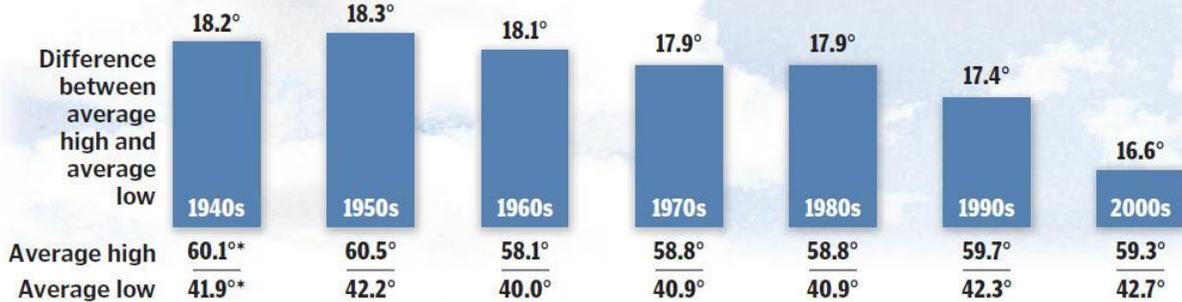
Rogers, a 30-year teaching veteran at OSU, has produced a study that showed a clear trend over at least the last 60 years of Columbus weather records: Nighttime lows have been slowly, but certainly, gaining on daytime temperature high temperature averages.

Atmospheric scientists call that the Diurnal Temperature Range or DTR-- the difference between the daytime high and nighttime low. It's one of the markers that seem to indicate a warming climate, according to some scientists.

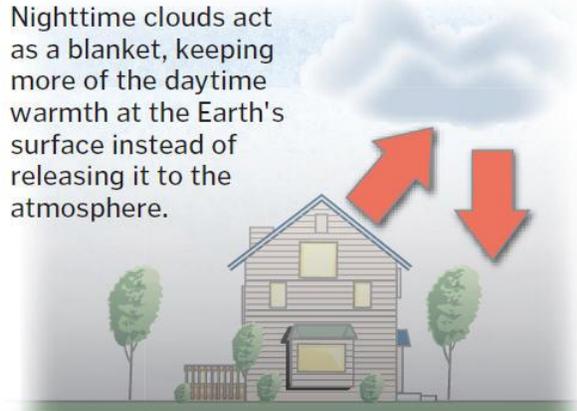
In any case, increasing nighttime lows are a virtually uncontested fact among meteorologists, climatologists and other scientists. What remains debatable is why it has been happening.

## Warmer nights indicate climate change?

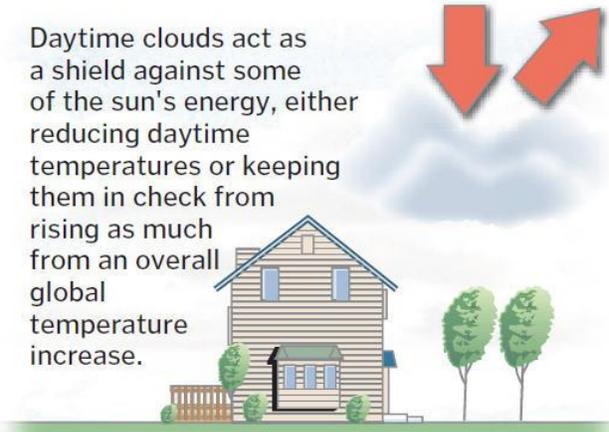
Atmospheric scientists are studying why nighttime low temperatures in Ohio have been climbing steadily for half a century, threatening crop growth and potentially increasing nighttime energy use. The problem is seen in the decreasing difference between daytime high temperatures and overnight lows in both Cleveland, below, and more so in Columbus.



\*Average temperatures at Cleveland Hopkins Airport



Nighttime clouds act as a blanket, keeping more of the daytime warmth at the Earth's surface instead of releasing it to the atmosphere.



Daytime clouds act as a shield against some of the sun's energy, either reducing daytime temperatures or keeping them in check from rising as much from an overall global temperature increase.

SOURCE: National Climatic Data Center

MICHAEL SCOTT, JAMES OWENS | THE PLAIN DEALER

### Columbus, Cleveland both warmer

Rogers' figures indicate that the average summer nighttime low temperatures in Columbus have increased by about 3 degrees Fahrenheit since the 1960s -- while daytime temperatures have largely remained constant.

The study was drawn from a combined 120 years of data from the National Climatic Data Center and local Columbus readings.

Cleveland's change in the diurnal temperature range was about half that of Columbus, according to figures gathered by The Plain Dealer from the federal climate agency.

National Weather Service records here -- taken at Cleveland Hopkins International Airport -- show that the difference between the average high and average low has compressed from 18.2 degrees in the early 1940s to 16.7 degrees so far this decade.

Rogers said Cleveland's more northern location -- and possibly the moderating effect of Lake Erie on daytime high temperatures -- may account for a lessening of the gap. Still, even a 1.5-degree slide -- an 8.2 percent shift -- is significant enough for investigation, Rogers said.

"The trend appears to be the same, even if the gap hasn't closed as much in Cleveland," Rogers said. "There may be a number of reasons for that, but I've not looked into that."

But Rogers and two colleagues did develop a more detailed theory as to why Columbus area nighttime temperatures had increased more than 10 percent over the last 50 years.

### **Night clouds hold heat**

In short, it's not so much the heat, it's the humidity -- or the way they work together, more accurately.

Rogers and his team -- Sheng-Hung Wang, a research associate at the Byrd Polar Research Center at OSU, and Jill Coleman, an assistant professor of geography at Ball State University in Indiana -- concluded that an increase of clouds and humidity overnight was making the heat retention more likely.

Their data for central Ohio showed an increasing number of cloudy nights since the 1940s. Further, the records also showed increasing "specific humidity" -- the ratio of water vapor to air -- each year.

"The cloud cover acts like a blanket and traps heat that would otherwise escape into the atmosphere," Rogers said, adding that the extra humidity also helps the air act like a greenhouse.

That theory tracks with other global studies, said Aiguo Dai, a scientist at the National Center for Atmospheric Research in Boulder, Colo.

"For at least the last four or five decades there has been increasing cloudiness over many continental areas," Dai said by telephone. "Satellite surface observations confirm this in many parts of Eurasia and the U.S. and Canada.

"The effect in daytime is to keep temperatures from increasing even more, but the effect overnight is to hold more heat in -- that's what leads to the DTR getting closer."

In a way, explaining the phenomenon is nothing harder than fourth-grade science.

But finding out why it's happening is confounding Rogers, Dai and dozens of other scientific minds. Rogers is still trying to understand why the humidity levels and the cloud cover have been increasing in Ohio.

"We don't know," he admitted. "There are theories that it could be from an increase in moisture because of more irrigation in the countryside, where the water itself and the vegetation might be adding moisture to the air."

If that's so, does it mean that increasing night temperatures are not a product of global warming - climate change?

Not necessarily.

"It's likely that the DTR trend is also related to greenhouse gas forcing the climate," said Dai, referring to how the buildup of carbon, methane, water vapor and other gases force, or cause, a heating effect on Earth. "That's not to say that we don't have to be cautious with making the link too strong because climate models have difficulty so far in simulating clouds and their effect on temperature and the hydrological cycle."

Rogers agreed.

"There are many factors in these situations," Rogers said. "And certainly the irrigation theory wouldn't explain your nighttime temperatures increasing at the Cleveland airport."

"Basically, it's something we need to keep looking at."

### **Danger to crops, energy use**

It has been looked for at least two critical reasons -- effect on crop growth and nighttime energy use.

"Frankly, minimum temperature may be more critical than maximum temperature," Dai said. He said some studies also suggest that higher overnight lows might allow insects to increase, while hurting crops.

Dan Herms at the Ohio Agricultural Research and Development Center in Wooster said that's exactly the problem -- warming nighttime temperatures have been catching farmers, nursery owners and others unaware.

"When you start closing the gap between daytime max temperatures and overnight lows, things can really speed up when it comes to insect development, for example," Herms said. "And in some cases, insects may emerge earlier in the year than in the past, devastating a crop before a farmer even sprays pesticide to stop them."

Rogers said other studies show that some vegetation has trouble shedding water overnight in warmer, moister conditions, which can lead to the growth of diseases and molds.

In other words, while warm, moist conditions are just fine for rainforest plants, the same won't likely be true for the wheat or corn grown throughout the Midwest.

Secondly, warmer nights could mean a greater demand for air conditioning and use of more electricity. Most climate change scientists agree that leads to more carbon in the atmosphere, more warming and more need for air-conditioning, a vicious modern cycle.

Which makes the study of why nighttime temperatures are rising an imperative aspect of the climate change studies.

Rogers said he hasn't studied any new data since 2005, but has heard from other researchers that the closing of the DTR gap may be slowing down.

He said he and an OSU graduate student will likely tackle updated numbers sometime this year to see if that's true in Columbus.

But that's not necessarily good news for the climate.

"Remember, the gap was closing because nighttime temperatures were going up, while daytime temps were staying constant," he said. "If the gap is leveling off or widening, it may also turn out to be that the daytime temperatures are starting to climb.

#### **WEATHER DEBATE**

## **Global warming? Well, it's sizzling here**

Does October's heat portend a mild winter?

*Tuesday, October 9, 2007 3:43 AM*

**BY DAVID CONRAD**

*THE COLUMBUS DISPATCH*

After three days of record temperatures (including yesterday's 90 degrees), it's only natural for us to wonder why it's so hot and what it's going to mean for our winter.

And everyone from caterpillar keepers to weather watchers has an opinion.

Jeffrey Rogers, an Ohio State University climatologist, blames global warming.

He recently completed a study that shows nightly low temperatures during Ohio summers have risen 3 degrees Fahrenheit over the past 40 years.

"It's not definite, but evidence of global warming is certainly starting to be a little more suggestive," said Rogers, also the state climatologist.

He said that an increase in humidity and nightly cloud cover likely caused the spike. (Although he's not sure what's causing the increase.)

Mark Taylor, a meteorologist for the Ohio News Network, said ongoing drought caused a blistering start to October.

"The energy of the sun goes into heating the air, as opposed to the water content in the ground," he said.

Taylor said unless precipitation picks up, we will have a warmer-than-normal winter.

Andy Monaghan, a senior research associate at the OSU Byrd Polar Research Center, agreed, but he cited the La Nina effect. La Nina is an irregular cooling of surface temperatures in the Pacific Ocean near the equator.

The Old Farmer's Almanac is predicting a slightly warmer, snowier winter across the Ohio Valley.

The 215-year-old almanac claims an 80 to 85 percent accuracy rate.

Then there's the woolly bear caterpillar. According to folklore, the longer the middle brown band on the bug, the milder and shorter the coming winter. Barbara Bloetscher, an OSU insect diagnostician, said she saw six of them in late August, and all of them sported long bands.

"I don't believe in all this global warming business," Bloetscher said. "But I don't believe those caterpillars either. They hibernate all winter, so why would they care what the weather's like?"

The beekeeper instead looks at bees for signs. She said they started collecting nectar and pollen early this year. And that, she said, bodes a harsh winter.

"They were certainly off last winter, though, and most of them died," she acknowledged.

"But listen, insects don't really know what's going on and neither do the weather forecasters. Everyone's just guessing, in my opinion."

DORAL CHENOWETH III | DISPATCH

**As October's record-high temperatures continue, Cora Wall plays with her aunt, Patricia Maloney, in the waters at Alum Creek State Park. Cora and her family live in Mount Gilead, and her aunt lives in New Albany.**



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