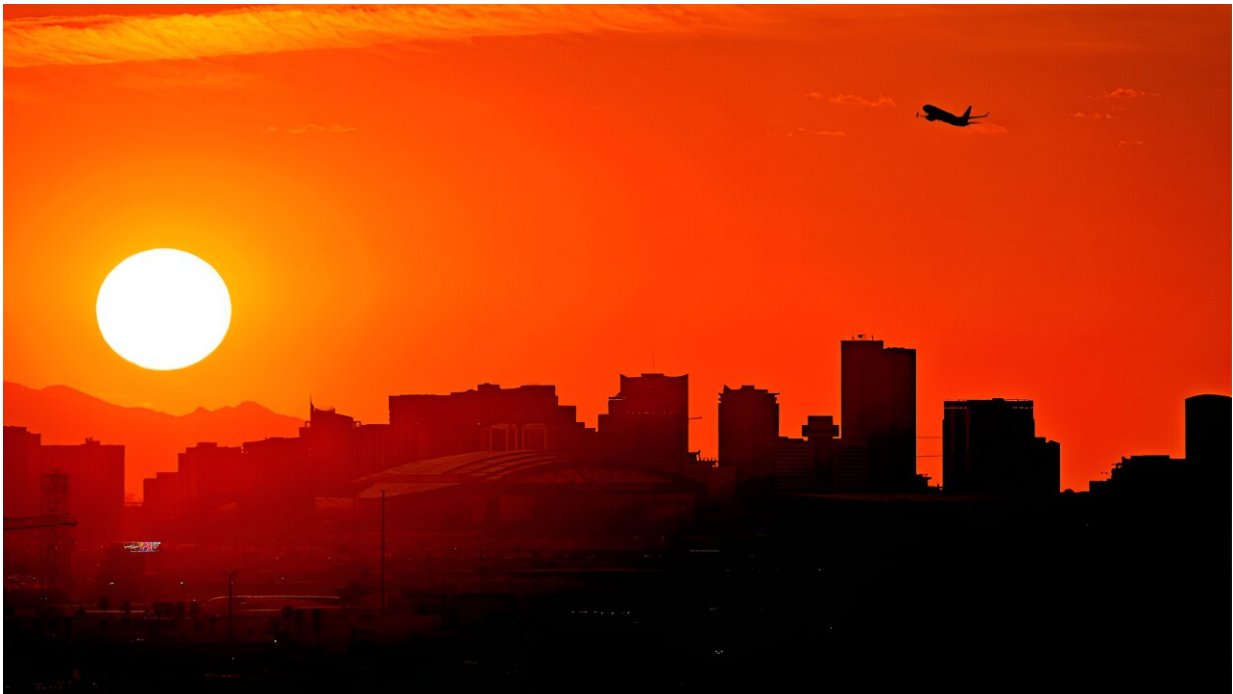


Are rising global temperatures the new normal?

September 6 2024, by Robert C. Jones Jr.



A jet takes off from Sky Harbor International Airport in Phoenix, Arizona, in July 2023. Credit: Associated Press

During meteorological summer, defined as June through August, several U.S. cities from the East Coast to California either tied or set records for the hottest temperatures on any day in the past seven decades of record-keeping.

Last summer was incredibly hot as well, with everything from the El Niño global climate pattern to the massive eruption of an undersea volcano in the South Pacific, which spewed millions of tons of water vapor high into the atmosphere, being blamed for the [extreme temperatures](#).

"But what we should be focusing on is the natural variability of the climate system," said Ben Kirtman, a professor of atmospheric sciences at the University of Miami Rosenstiel School of Marine, Atmospheric, and Earth Science. "During the early to mid-2000s, there was a slowdown in [global warming](#), and people tried to make the argument that climate change was over, that CO₂ was not the problem.

"But then, it started to warm again," Kirtman continued.

"The fact is, Mother Nature doesn't draw straight lines. There's natural variability. We're going to go through periods where the warming seems flat, and temperatures are not ratcheting up. And we're going to go through periods where it really ratchets up, and that's what we're seeing now.

"This is a ratcheting up of the climate change signal. There's a possibility that we'll go through a period where it is going to slow down a bit, but it's not going to reverse. This is going to be the new baseline."

The evidence bears out Kirtman's assertion. Last year was the [Earth's warmest on record](#), with the average global temperature for 2023 exceeding the preindustrial (1850–1900) average by 2.43 degrees Fahrenheit, according to scientists at the National Oceanic and Atmospheric Administration's National Centers for Environmental Information.

And those same researchers, as well as others, say there is a one-in-three

chance that 2024 will be warmer than 2023, and a 99% chance that next year will rank among the top five warmest years ever.

Hot cities on the rise

The world's biggest metropolises are bearing much of the brunt. Over the past three decades, rising temperatures in the 20 most populous capital cities experienced a 52% increase in the number of days reaching 95 degrees Fahrenheit, according to the London-based International Institute for Environment and Development.

But it's not solely rising temperatures that are causing unbearable conditions.

"In the South, what's turning out to be interesting scientifically but unpleasant for people is the humidity," said Kirtman, who is also the William R. Middelthon III Endowed Chair of Earth Sciences at the Rosenstiel School.

"We didn't anticipate that the humidity would go up quite as much as it has. There's a lot more moisture in the atmosphere, and that's making things unpleasant. And we understand why that is, especially in Florida. The oceans all around this peninsula are much warmer, and the warmer temperatures are putting more moisture into the atmosphere."

The hotter temperatures are causing negative health impacts. More than hurricanes, tornadoes, or lightning, heat kills more people than any other weather event, Kirtman pointed out. The Centers for Disease Control and Prevention, for example, reported that about 2,300 [heat-related deaths](#) occurred last year, up from approximately 1,700 in 2022 and about 1,600 in 2021.

Outdoor workers, children, [older adults](#), and overweight individuals are

particularly at risk for heat-related illnesses, according to Naresh Kumar, a professor of environmental health at the University of Miami Miller School of Medicine. "Outdoor workers bear the dual burden of dissipating heat due to their direct exposure to the sun and the internal heat generated by their working muscles," he said.

"Children and the elderly have weakened thermoregulatory mechanisms, so their bodies cannot effectively dissipate heat. And for overweight individuals, their excess body fat works like an insulator, impairing the body's ability to dissipate heat."

The heat is also contributing to [financial losses](#) incurred by outside workers. "I'm making about \$600 less each month during [summer months](#) because I just can't cut as many yards," Thomas said.

Building smarter

But are cities around the world doing enough to deal with a climate that's getting increasingly warmer?

"Probably not," Kirtman said.

"We haven't done enough to prepare for extended periods of excessive warming. We need to build smarter," he explained.

"Do we have enough cooling centers for our seniors? Are we doing enough for those folks who are living life on the edges and don't have the financial resources to deal with the extreme heat? These are today problems, and we need to do more to make sure that people are safe."

Building smarter means planting more trees, which remove Earth-warming carbon from the atmosphere; laying cooler pavement; and installing cooler bus stops and green roofs.

"It's basically shade everywhere you can possibly put shade," said Joanna Lombard, a professor in the School of Architecture and a founding member of the University's Built Environment Behavior and Health Research Group.

Lombard, who investigates the impacts of greenness and greening initiatives, also noted passive cooling strategies such as cooling a building without mechanical systems. "You bring in cooler air from the ground and then ventilate it through the ceiling. But that strategy works most effectively in northern regions," she explained.

"How do we do mechanical intervention in a way that is not contributing to carbon emissions and is not killing people on their electric bills?" Lombard said. "That's the challenge that confronts us."

Provided by University of Miami

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