

BEATING THE HEAT

As record-high temperatures become the norm, people worldwide are searching for solutions. Here's how five cities around the globe are adapting to extreme heat. **BY MARY KATE FRANK**



How is each city handling extreme heat? Which approach might work for where you live?

Boiling. Sizzling. Sweltering. If those words describe your summer, you're not alone. Unusually high temperatures have affected billions of people around the world in recent years—even in Alaska!

Last year was the hottest year on record since 1850, when scientists started tracking the global temperature. And it may not hold that title for long. There's an 80 percent chance that the world will set another annual temperature record in the next five years, according to the World Meteorological Organization.

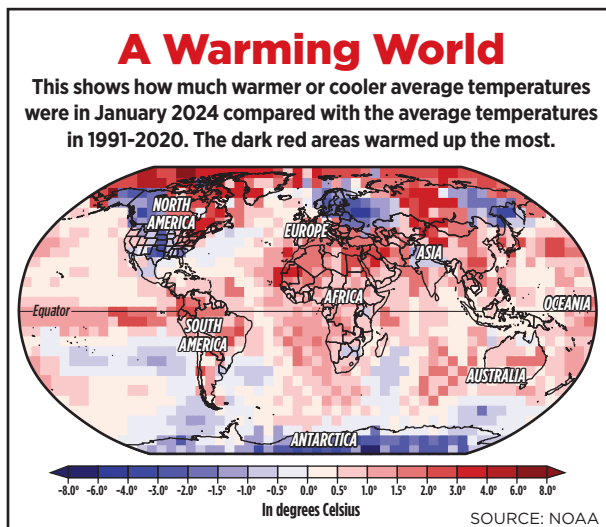
Many scientists say this extreme heat is connected to human-induced climate change. While some shifts in Earth's typical weather conditions occur naturally over time, many experts say human actions are

speeding up the process. Burning fossil fuels such as oil to power factories, homes, and cars releases greenhouse gases. Those gases collect in the atmosphere and trap the sun's heat close to Earth's surface. The more fossil fuels people burn, the more heat gets trapped.

Rising temperatures aren't just uncomfortable, they are dangerous. Spending too much time in high temperatures can cause health problems ranging from dehydration to deadly heat stroke. The heat can also worsen natural disasters such as droughts and wildfires.

Big cities are particularly at risk for extreme heat. Why? Roads, sidewalks, and buildings tend to soak up heat and warm the air around them. And cities usually have fewer trees to cool things down than rural areas do.

With temperatures set to climb even higher, urban areas are testing potential solutions. Read on to learn how five cities around the world are cooling down.



Tokyo, Japan

TOP 2024 TEMP: 99°F*

COOL TOOL: Chill Clothes

Facing a sticky day in Japan's capital? You don't need to head inside to cool off. Just slip into an air-conditioned outfit! It may sound like sci-fi, but many people in Tokyo already dress in clothing designed to keep them cool. The garments feature small battery-powered fans that draw air inside the fabric. The circulating air evaporates sweat, which helps lower body temperature.

Tokyo experiences serious heat waves during the summer months. A local engineer pioneered the wearable tech in



2004 to provide relief for outdoor workers. Today delivery drivers and construction crews in the city often sport air-cooled uniforms in light, breathable fabrics.

The trend has breezed beyond workwear too. Japanese fashion designers are incorporating fans into jackets, shirts, and vests. At a recent runway show in Paris, France, models strutted in giant cloudlike dresses inflated by hidden fans.

Japan's air-conditioned clothing industry is worth more than \$100 million domestically—and growing. For now, though, the pieces can be expensive and hard to find outside Asia. Still, the designs hint at fashion's future: dressed to chill.

HISTORY CONNECTION

How the Ancients Chilled



Covered Walkways

Ancient Greeks crafted covered walkways called stoas near markets, temples, and other busy places. Stoas were ideal places to walk, cool off, and even learn—some were favorite hangouts for teachers and students.



Stepwells

People in ancient India built stone wells to collect rainwater for drinking, bathing, and storing. A series of steps led down to the water. Shaded platforms on the lower levels offered a place to relax and escape the heat.



Wind Towers

In ancient Persia (modern-day Iran), many buildings had tall, chimneylike wind towers called *badgirs* to funnel breezes indoors. Early versions of the towers existed across the Middle East and in Pakistan and India.

PAGES 6-7: YOSHIKAZU TSUNO/AFP VIA GETTY IMAGES (BUILT-IN FAN); JIM MCKAY/ONYX MAPMAN* (GLOBE); PLARIN JANGSAWANG/ALAMY STOCK PHOTO (STEPWELL); LEONID SEREBRENNIKOV/ALAMY STOCK PHOTO (WIND TOWER); SHUTTERSTOCK.COM (ALL OTHER IMAGES)

*highest-recorded single-day temperature in 2024, rounded to the nearest degree Fahrenheit

HOT SPOT **Paris, France**
TOP 2024 TEMP: 98°F
COOL TOOL: Smart Schoolyards

Imagine if your schoolyard went from paved to paradise. That's the idea behind a growing effort in Paris, where experts predict up to 25 days of extreme heat a year will be the norm by the end of the century.

Many school playgrounds in the city are covered in asphalt or dark concrete. Those materials make the surrounding space feel even hotter. That increases the risks of heat-related illness for kids and teens playing there.



A concrete-free space makes for cooler play.

So, in 2017, Paris launched a project to transform its schoolyards into cooler, greener spaces. Light-colored gravel replaced pavement. Trees, gardens, and fountains were added. Many of the redesigned play areas open

to the public after school and during heat waves so more people can benefit from them. So far, 165 schoolyards have been renovated. Paris aims to redo 360 more by 2030. Meanwhile, the U.S. and other countries are also reimagining schoolyards to help fight extreme heat and preserve play.

HOT SPOT **Freetown, Sierra Leone**
TOP 2024 TEMP: 93°F
COOL TOOL: Heat-Smart Markets

People buy food and other goods at busy outdoor markets in Freetown. But the merchants selling those items also pay a price. The workers, mostly women and girls,



spend long hours on their feet in the scorching sun. The heat can make them ill. It also hurts their business: The meat, fruits, and vegetables they sell spoil quickly.

Freetown's solution was to block the sun. In 2022, the city received funding from a nonprofit to build canopies that help shade three outdoor markets. After testing several designs, the city is now installing shade covers made from fabric that reflects sunlight and helps keep things underneath it cooler. The tough material is also waterproof to withstand the area's heavy rains.

When the project is completed in 2026, more than 2,300 merchants in Freetown will be under cover. And the program may end up benefiting people far beyond the outdoor markets, notes scientist Cassie Sutherland of C40 Cities, a global environmental group. Other places can learn from Freetown's example, she says. "It's great for other cities to be able to implement solutions faster."



This canopy keeps a busy market out of the sun.



Local students helped create this shady retreat.

HOT SPOT **Phoenix, U.S.**
TOP 2024 TEMP: 118°F
COOL TOOL: Artful Shade

Heat has long been a part of life in Arizona's capital, but it's getting worse. In 2024, Phoenix hit a record: 70 days at or above 110°F.

The blazing sun makes the city's public parks nearly unusable. Keili Lopez Pastor, 17, lives across from one of them. "For the past couple of years,



Keili Lopez Pastor paints a shade structure, shown above.

it's been too hot to be outside," she says. "Sometimes it even feels too hot to be inside!"

This past April, the city began testing a creative solution: colorful shade structures that double as public art. The large-scale sculptures now offer relief in nine parks across the city. At one park, people can relax under a fabric tunnel made from recycled clothing and bedding. At another, a model of a giant desert tortoise casts a welcome shadow.

Thermal imaging shows the shaded spots under the sculptures are up to 25°F cooler than the areas outside them. Keili is already feeling more comfortable at her neighborhood park. There, painted panels inspired by



Mexican folk art are paired with a solar-powered misting system. Keili and other students from nearby Alhambra High School helped paint the colorful panels.

"Thanks to this structure, I'm able to go outside and not just see the park but actually use it," Keili says.

The temporary installations are set to come down this fall, but Phoenix officials hope to eventually build more permanent structures at the parks, says Carrie Brown. She's part of the city's Arts and Culture department.

"This project is about trying new things and sparking dialogue," Brown says. "And I think that's really valuable when you're tackling a big issue like heat."



Plant power!
Gardens lower the local temperature.



Medellín, Colombia

TOP 2024 TEMP: 97°F

COOL TOOL: Green Streets

Medellín's location high in the Andes Mountains once provided weather in the mid-70s all year long.

But starting in the early 2010s, Medellín began experiencing unusual temperature spikes. Some experts blamed rapid development. Over the years, roads and buildings had



squeezed out trees and parks in some neighborhoods.

In 2016, Medellín's leaders took bold action.

They launched a \$16 million project to plant trees and other vegetation along roads, sidewalks, and riverbanks. The idea was to connect existing parks and other green spaces across the city by growing plants along the hot, paved areas in between. Vertical gardens were even added to the sides of buildings, bridges, and other surfaces.

The newly planted areas became part of what the city calls "cool corridors." Today 30 of these shaded routes crisscross Medellín, bursting with more than 2.5 million plants. Local workers tend to the gardens.



A vertical garden in Medellín, Colombia

Keep Your Cool

Here's what to do if extreme heat affects your area.

STAY HYDRATED

Drink water throughout the day. You can mix it with a sports drink to replenish the salt you lose when you sweat, but avoid sugary or caffeinated drinks.

COOL OFF

Try to spend at least a few hours each day in air-conditioning. If you don't have AC, find a public place to cool off, such as at a rec center, library, or mall. Taking a cool bath or shower can also help.

WATCH THE CLOCK

Stay indoors during the hottest time of day, usually between 10:30 a.m. and 2 p.m. When you do go out, opt for loose-fitting clothing in light colors, which absorb less heat.

Even though the city still experiences some hot days, its average temperature has dropped by about 3.6°F and local air quality has improved. And to top it off, Medellín's green movement is spreading. Similar programs are taking root in other Colombian cities.

YOUR TURN → Dream Up a Solution

How else can people adapt to extreme heat? Come up with a strategy or invention to help, incorporating ideas from the article and from your own experience. Then create a poster or slideshow to explain your concept.