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GLOBAL WARMING

How Climate Change Fueled Europe's Bizarre Wildfire Summer

Atmospheric blocking was once a rare, weird weather phenomenon. Now it's become increasingly common.

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Valerie Gache/Getty

July 23 was hot and dry like any other summer day in Athens, Greece—if for a stronger than usual breeze. Most residents in neighborhoods outside Athens that afternoon were taking siestas. Shutters were closed and the air-conditioning cranked up.

In Neos Voutzas, 20 miles east of Athens, Chris Diasitis, who is asthmatic, could smell the encroaching wildfire before he saw it. Breathing through a wet towel over his nose, Diasitis stood on his balcony overlooking the forest. "I saw nothing. But my senses said, 'Get the fuck out of here,'" he told The Daily Beast.

"It's what saved me and my family."

Just 20 minutes later, the wildfire had reached his neighborhood with hurricane-force wind gusts hitting 74 miles an hour, according to the National Observatory of Athens (NOA). The wildfire quickly moved eastward toward the coast, engulfing the resort

town of Mati, killing 99 people and injuring more than 200. It's gone down as Greece's deadliest wildfire to date.

What made the Greek wildfire so catastrophic?

There were the strong winds, the highest recorded in the eight years since the weather stations were installed. This helped turn the inferno into a raging crown fire, spreading from treetop to treetop in a region notorious for highly flammable and combustible Aleppo pines. All this was further complicated by the wildfire's microweather, and fire-enhancing katabatic downslope winds.

Those bizarrely strong winds may have something to do with how climate change is impacting jet streams and what is known in meteorology as atmospheric blocking, where weather systems stagnate over a region. Countries that do not normally see wildfire activity, like Sweden and Latvia, saw unusual wildfire upticks this summer due to prolonged heat waves.

Dr. Gavriil Xanthopoulos, a wildfire expert at the Institute of Mediterranean Forest Ecosystems, explained that Mati residents never expected a wildfire.

"The westerly wind that burned Mati was really exceptional for the season," he wrote in an email. "The people in Mati believed that 'Mati doesn't burn, it is Neos Voutzas that burns!' I heard this from a person who was standing in front of his burned house, unable to comprehend what just happened."

Prevailing summer winds in the region usually come from the north called "meltemi" winds—strong and dry northerly winds from the Aegean Sea. But even then, wildfires are uncommon to their north because of the well-groomed government-run camping grounds. They also believed they were protected from the west by a major highway separating them from vast forests.

But the fire did something residents had never seen before: It jumped the firebreak. "Extreme winds are getting stronger," Costas Synolakis, a natural disaster expert, told The Daily Beast.

And it didn't help that there was a lack of forestry management and emergency preparedness, or that Greek fire departments were understaffed and insufficiently equipped.

As if that wasn't enough, unexpected rainfalls in the region added to the fuel load, according to Kostas Lagouvardos, the research director at the National Observatory of Athens/Institute for Environmental Research. Rainfall in June for the past five years has steadily increased, with this year being the highest it's ever been.

European Commission president Jean-Claude Juncker called for stronger measures to prevent wildfires on the continent in September after the latest Commission report on forest fires showed the need to tackle climate change "to leave a healthier planet for those that follow," he said.

“Climate change is real. It’s happening. It’s not fake news,” wrote Christos Stylianides, EU Commissioner for Humanitarian Aid and Crisis Management, in an email. “We need to do more.”

Johann Georg Goldammer is the newly minted head of the Greek commission investigating the underlying causes of this summer’s wildfire. He said the “abandonment of the countryside” is partially to blame for the tragedy.

“We need to start learning to live in more hostile environments.”

— Christos Zerefos, Research Centre for Atmospheric Physics and Climatology at the Academy of Athens

“Everyone, not just the Greeks, should adjust to the changes that climate change brings,” he stated in a press release. We must “generally make the environment resistant to such extreme weather situations.”

According to Christos Zerefos, head of the Research Centre for Atmospheric Physics and Climatology at the Academy of Athens, Greece and other Mediterranean countries will see an additional 40 days of wildfires in coming years due to more frequent heat waves.

“We need to start learning to live in more hostile environments,” he said.

If atmospheric blocking acts to create high temperatures, high wind, and dryness, all favorable to wildfires, wildfires will persist, Dr. Noboru Nakamura, a professor of geophysical sciences at the University of Chicago wrote in an email.

In Sweden, for example, high temperatures caused widespread wildfires. “The jet is blocked by a high pressure over Scandinavia and meanders north, creating a strong southerly—and warm—wind over Sweden. Therefore this blocking pattern was a prime suspect for setting up a favorable condition for the wildfires,” he wrote.

Atmospheric blocking patterns are often associated with hot, dry conditions that favor wildfires. High-pressure systems carrying hot, muggy weather and pushing winds north along the coast are colliding with a low-pressure system resulting in higher winds.

In the Mati fire, the jet stream and topography play a role. “In the mid-latitudes, downslope winds are largely driven by the jet stream aloft,” he said.

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Dr. Nakamura likens the stagnation to traffic.

“Just as the highway has traffic capacity, and when the capacity is exceeded, blocking manifests as congestion,” he and Clare S. Y. Huang wrote in an article published in *Science* in May.

Despite the fact that scientists have known about blocking and jet streams for decades, few can explain what kickstarts the process and why.

“Climate change likely affects blocking frequency by modifying the jet stream’s proximity to capacity,” Dr. Nakamura and Huang wrote.

Nakamura said the future trend of blocking in the warming world has the climate science community debating right now. “Some people believe that the rapidly disappearing Arctic sea ice will increase the frequency of blocking, while many computer models predict an opposite trend,” he said.

But the change in the frequency of blocking “will no doubt affect the impact of weather extremes in the heavily populated midlatitudes, so it is an important research topic.”

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