

# ‘Code red’: UN scientists warn of worsening global warming

By SETH BORENSTEIN  
yesterday



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FILE - In this file photo dated Friday, Aug. 6, 2021, a man watches as wildfires approach Kochyli beach near Limni village on the island of Evia, about 160 kilometers (100 miles) north of Athens, Greece. A new massive United Nations science report is scheduled for release Monday Aug. 9, 2021, reporting on the impact of global warming due to humans. (AP Photo/Thodoris Nikolaou)

Earth is getting so hot that temperatures in about a decade will probably blow past a level of warming that world leaders have sought to prevent, according to a report released Monday that the United Nations called a “code red for humanity.”

“It’s just guaranteed that it’s going to get worse,” said report co-author Linda Mearns, a senior climate scientist at the U.S. National Center for Atmospheric Research. “Nowhere to run, nowhere to hide.”

But scientists also eased back a bit on the likelihood of the absolute worst climate catastrophes.

The [authoritative Intergovernmental Panel on Climate Change \(IPCC\) report](#), which calls climate change clearly human-caused and “unequivocal” and “[an established fact](#),” makes more precise and warmer forecasts for the 21st century than it did last time it was issued [in 2013](#).

Each of five scenarios for the future, based on how much carbon emissions are cut, passes the more stringent of two thresholds set in the [2015 Paris climate agreement](#). World leaders agreed then to try to limit warming to 1.5 degrees Celsius (2.7 degrees Fahrenheit) above levels in the late 19th century because problems mount quickly after that. The world has already warmed nearly 1.1 degrees Celsius (2 degrees Fahrenheit) since then.

Under each scenario, the report said, the world will cross the 1.5-degree-Celsius warming mark in the 2030s, earlier than some past predictions. Warming [has ramped up](#) in recent years, data shows.

“Our report shows that we need to be prepared for going into that level of warming in the coming decades. But we can avoid further levels of warming by acting on greenhouse gas emissions,” said report co-chair Valerie Masson-Delmotte, a climate scientist at France’s Laboratory of Climate and Environment Sciences at the University of Paris-Saclay.

In three scenarios, the world will also likely exceed 2 degrees Celsius (3.6 degrees Fahrenheit) over pre-industrial times — the less stringent Paris goal — with far worse heat waves, droughts and flood-inducing downpours unless there are deep emissions cuts, the report said.

“This report tells us that recent changes in the climate are widespread, rapid and intensifying, unprecedented in thousands of years,” said IPCC Vice Chair Ko Barrett, senior climate adviser for the U.S. National Oceanic and Atmospheric Administration.

With crucial [international climate negotiations](#) coming up in Scotland in November, world leaders said the report is causing them to try harder to

cut carbon pollution. U.S. Secretary of State Anthony Blinken called it “a stark reminder.”

## CLIMATE CHANGE

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'Code red': UN scientists warn of worsening global warming

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The 3,000-plus-page report [from 234 scientists](#) said warming is already accelerating sea level rise and worsening extremes such as heat waves, droughts, floods and storms. Tropical cyclones are getting stronger and wetter, while Arctic sea ice is dwindling in the summer and permafrost is thawing. All of these trends will get worse, the report said.

For example, the kind of heat wave that used to happen only once every 50 years now happens once a decade, and if the world warms another degree Celsius (1.8 degrees Fahrenheit), it will happen twice every seven years, the report said.

As the planet warms, places will get hit more not just by extreme weather but by multiple climate disasters at once, the report said. That's like what's now happening in the [Western U.S.](#), where heat waves, drought and wildfires compound the damage, Mearns said. Extreme heat is also [driving massive fires](#) in Greece and Turkey.

Some harm from climate change — dwindling ice sheets, rising sea levels and changes in the oceans as they lose oxygen and become more acidic — is “irreversible for centuries to millennia,” the report said.

The world is “locked in” to 15 to 30 centimeters (6 to 12 inches) of sea level rise by mid-century, said report co-author Bob Kopp of Rutgers University.

Scientists have issued this message for more than three decades, but the world hasn't listened, said United Nations Environment Program Executive Director Inger Andersen.

For the first time, the report [offers an interactive atlas](#) for people to see what has happened and may happen to where they live.

Nearly all of the warming that has happened on Earth can be blamed on emissions of heat-trapping gases such as carbon dioxide and methane. At most, natural forces or simple randomness can explain one- or two-tenths of a degree of warming, the report said.

The report described five different future scenarios based on how much the world reduces carbon emissions. They are: a future with incredibly large and quick pollution cuts; another with intense pollution cuts but not quite as massive; a scenario with moderate emission cuts; a fourth scenario where current plans to make small pollution reductions continue; and a fifth possible future involving continued increases in carbon pollution.

In five previous reports, the world was on that final hottest path, often nicknamed “business as usual.” But this time, the world is somewhere between the moderate path and the small pollution reductions scenario because of progress to curb climate change, said report co-author Claudia Tebaldi, a scientist at the U.S. Pacific Northwest National Lab.

While calling the report “a code red for humanity,” U.N. Secretary-General Antonio Guterres kept a sliver of hope that world leaders could still somehow prevent 1.5 degrees of warming, which he said is “perilously close.”

Alok Sharma, the president of the upcoming climate negotiations in Scotland, urged leaders to do more so they can “credibly say that we have kept 1.5 degrees alive.”

“Anything we can do to limit, to slow down, is going to pay off,” Tebaldi said. “And if we cannot get to 1.5, it’s probably going to be painful, but it’s better not to give up.”

In the report’s worst-case scenario, the world could be around 3.3 degrees Celsius (5.9 degrees Fahrenheit) hotter than now by the end of the century. But that scenario looks increasingly unlikely, said report co-author and

climate scientist Zeke Hausfather, climate change director of the Breakthrough Institute.

“We are a lot less likely to get lucky and end up with less warming than we thought,” Hausfather said. “At the same time, the odds of ending up in a much worse place than we expected if we do reduce our emissions are notably lower.”

The report also said ultra-catastrophic disasters — commonly called “tipping points,” like ice sheet collapses and the abrupt slowdown of ocean currents — are “low likelihood” but cannot be ruled out. The much talked-about shutdown of Atlantic ocean currents, which would trigger massive weather shifts, is something that’s unlikely to happen in this century, Kopp said.

A “major advance” in the understanding of how fast the world warms with each ton of carbon dioxide emitted allowed scientists to be far more precise in the scenarios in this report, Mason-Delmotte said.

In a new move, scientists emphasized how cutting airborne levels of methane — a powerful but short-lived gas that has soared to record levels — could help curb short-term warming. Lots of methane the atmosphere comes from leaks of natural gas, a major power source. Livestock also produces large amounts of the gas, a good chunk of it in cattle burps.

More [than 100 countries](#) have made informal pledges to achieve “net zero” human-caused carbon dioxide emissions sometime around mid-century, which will be a key part of the negotiations in Scotland. The report said those commitments are essential.

“It is still possible to forestall many of the most dire impacts,” Barrett said.

**World’s climate scientists to issue stark warning over global heating threat**  
**IPCC’s landmark report will be most comprehensive assessment yet as governments prepare for pivotal UN talks in November**



Emergency services try to extinguish a wildfire last week in northern Athens, Greece. Photograph: Eurokinissi/Rex/Shutterstock

### **Fiona Harvey** *Environment correspondent*

Sun 8 Aug 2021 18.00 BST

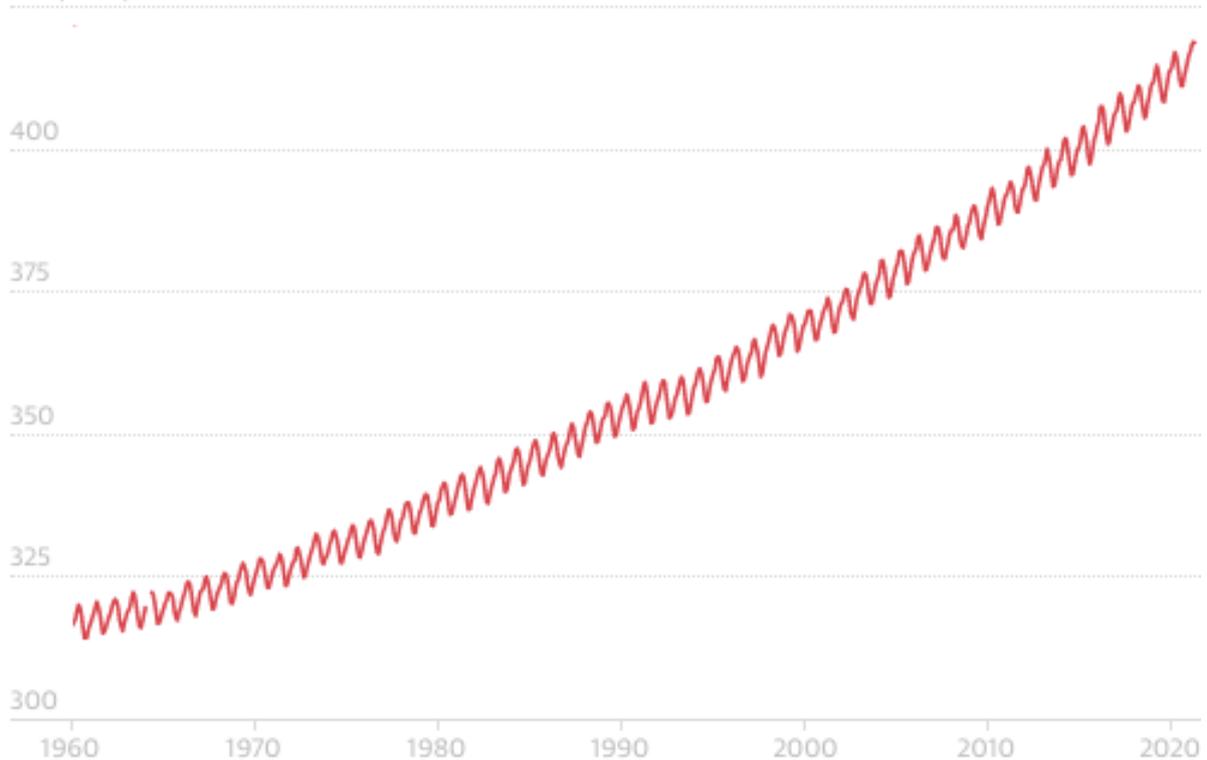
The fires, floods and extreme weather seen around the world in recent months are just a foretaste of what can be expected if global heating takes hold, scientists say, as the world's leading authority on climate change prepares to warn of an **imminent and dire risk** to the global climate system.

The Intergovernmental Panel on Climate Change (IPCC) will on Monday publish a **landmark report**, the most comprehensive assessment yet, less than three months before vital UN talks that will determine the future course of life on Earth.

Policymakers have already previewed the findings, finalised on Saturday night, which have been the subject of an intense two weeks of online discussion by experts around the world, and represent eight years of work by leading scientists.

## Atmospheric CO<sub>2</sub> is up a third on 1960s levels

425 parts per million



Guardian graphic | Source: Scripps Institution of Oceanography, NOAA

Doug Parr, policy director at Greenpeace UK, said governments must take heed of the warnings. “Practical, funded and deliverable plans [by governments] to keep us below the supposedly safe limits [of heating] are **almost non-existent**. Urgent climate action was needed decades ago – now we’re almost out of time. The UK government has a huge responsibility as host of the UN climate talks to ensure world leaders sign up to policies that not just put the brakes on the climate crisis, but slam it into reverse.”

The IPCC, made up of hundreds of the world’s foremost climate scientists, publishes **comprehensive assessments about every seven years**, with this report the sixth since 1988. This one will be different, however: previous work has shown that the 2020s are a crucial decade, in which greenhouse gas emissions must be halved in order to limit heating to 1.5C above pre-industrial levels, **established by previous IPCC reports as the threshold of safety**, and the lower of two goals in the **2015 Paris agreement**.

Michael Mann, distinguished professor of atmospheric science at Pennsylvania State University, said this would be the last IPCC assessment that can make a

real difference in policy terms, before we exceed 1.5C and the ambitions of the Paris agreement.

“Climate change is now causing amplified weather extremes of the sort we’ve been witnessing this summer – droughts, heatwaves, wildfires, floods, superstorms,” he said. “The impacts of climate change are no longer subtle. We see them playing out in real time in the form of these unprecedented extreme weather disasters.”

In recent months there have been fires in the US, heatwaves in northern latitudes, and devastating floods in China and Europe. Scientists warn that this may become the norm unless climate breakdown can be stopped.

## The past six years are the hottest on record

Average annual global temperature relative to 1850-1900



Guardian graphic. Source: ERA5 / Copernicus Climate Change Service

Simon Lewis, professor of global change science at University College London, said: “The observations this summer show that some impacts [predicted in previous IPCC assessments of the climate] seem to be underestimated, but we can’t know if the devastation of summer 2021 is the new normal without a few more years’ data. But what we do know is if emissions continue to rise, then increasingly severe climate impacts will occur.”

He warned that the consequences would be severe. “What we need to keep in mind is that we all live in places that have built up over decades and centuries to cope well with a given climate. The really, really scary thing about the climate crisis is that every single achievement of every human society on Earth occurred under a climate that no longer exists,” he said. “The pressure is on for world leaders to agree both detailed and achievable plans to cut emissions now, and plans to adapt to climate impacts, when they meet in Glasgow in November.”

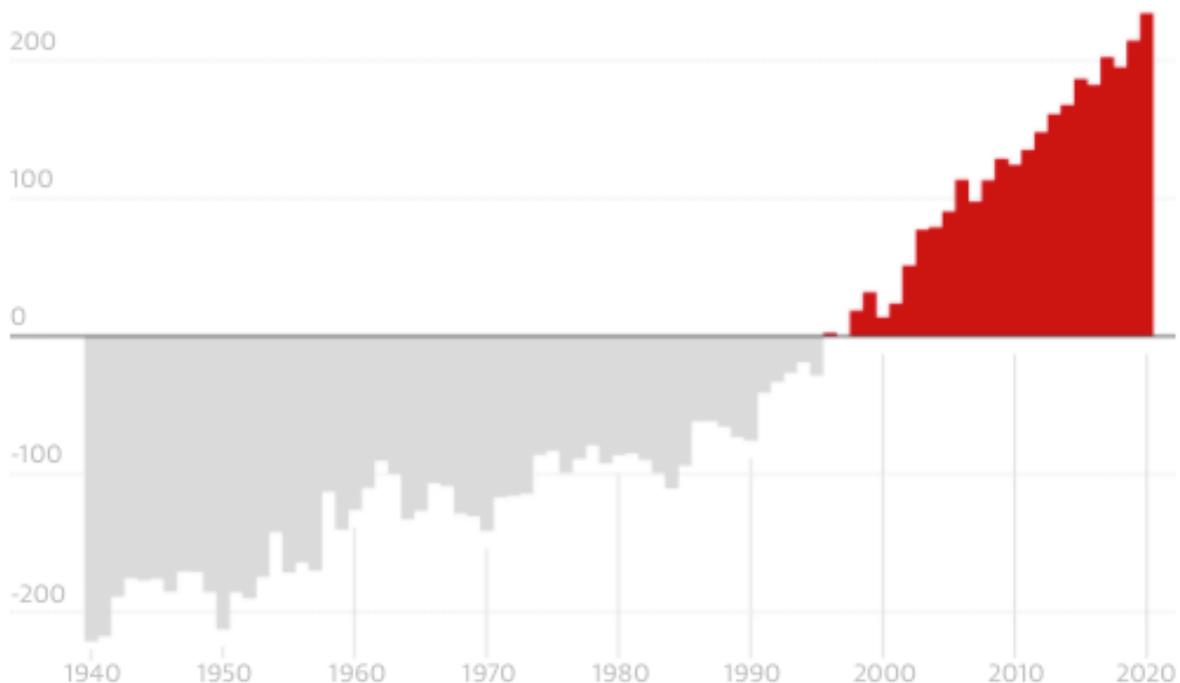
This year’s weather observations are not included in the IPCC report, which draws on science published in peer-review journals before this year, and since its last **comprehensive report in 2013**. Mann said: “This is also a limitation. The IPCC reports always seem to be playing catch-up with what we’re witnessing on the ground. Our own work suggests that the models upon which [most IPCC projections] are made still aren’t quite capturing some of the mechanisms that are important here.”

Extreme weather this year has also shown how vital it is that countries and communities around the world take steps to cope with the impacts, said Richard Betts, professor of climate impacts at Exeter University, and head of climate impacts research at the Met Office. “We now need to live with the consequences of what we have already done to the climate. We are hopelessly unprepared to deal with increasingly severe extreme weather events, even though these have been predicted by science for decades.”

Alongside this effort, we should be cutting emissions much faster, he added. “We need to take urgent action on reducing emissions if we want to stop this getting much worse,” said Betts. “The longer it takes to bring this increase [in the buildup of CO<sub>2</sub> in the atmosphere], the greater the severity of climate change we will be stuck with.”

## The world's oceans were the hottest ever recorded in 2020

Heat absorbed by oceans compared with 1981-2010 average (zettajoules)



Guardian graphic. Source: Cheng et al, Advances in Atmospheric Sciences 2020

Alok Sharma, the UK minister who will preside over the UN's Cop26 climate talks, to be held in Glasgow this November, **said on Saturday**: "This is going to be the starkest warning yet that human behaviour is alarmingly accelerating global warming and this is why Cop26 has to be the moment we get this right. We can't afford to wait two years, five years, 10 years – this is the moment. [The consequences of failure would be] catastrophic – I don't think there's any other word for it."

Rachel Kennerley, international climate campaigner at Friends of the Earth, said: "The world's climate scientists are set to issue a stark warning that cannot be ignored. The international community must rapidly deliver the speed and scale of the action required to avoid catastrophic climate change. It's time to end our reliance on dirty gas, coal and oil, and invest in green jobs and building the zero-carbon future we so urgently need."