

Pioneering scientist says global warming is accelerating. Some experts call his claims overheated

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The sun rises above a highway in Frankfurt, Germany, Aug. 2, 2022. Former NASA top scientist James Hansen is warning that global warming is accelerating faster than most models are showing, a contention that other scientists think is overblown. He argues that since 2010 there is more sun energy in the atmosphere, and less of the particles that can reflect it back into space thanks to efforts to cut pollution. Credit: AP Photo/Michael Probst, File

One of modern climate science's pioneers is warning that the world isn't just steadily warming but is dangerously accelerating, according to [a study](#) that some other scientists call a bit overheated.

The work from former NASA top scientist James Hansen, who since leaving the [space agency](#) has become a prominent protester against the use of fossil fuels, which [cause climate change](#), illustrates a recently surfaced division among scientists about whether global warming has kicked into a new and even more dangerous gear.

Hansen, who alerted much of the United States to the harms of climate change in dramatic congressional testimony in 1988, said Thursday that since 2010, the rate of warming has jumped by 50%. Hansen argues that since 2010 there is more sun energy in the atmosphere, and less of the particles that can reflect it back into space thanks to efforts to cut pollution. The loss of those particles means there's less of the cooling effect that they can have.

Hansen said a key calculation used in figuring out how much the world will warm in response to carbon pollution shows much faster warming than the United Nations' Intergovernmental Panel on Climate Change estimates. He called the international goal of limiting warming to 1.5 degrees Celsius (2.7 degrees Fahrenheit) since pre-industrial times "deader than a doornail" and said a less stringent goal of 2 degrees Celsius (3.6 degrees Fahrenheit) is on its deathbed. That matters because increases in average global temperatures lead to more frequent and intense extreme weather events.

"The next few years will show that we indeed do have an acceleration in the [global warming](#) rate," Hansen said in a press briefing. "And it's based on simple good physics."

"The planet is now out of (energy) balance by an incredible amount, more than it ever has been," said Hansen, who has been nicknamed the Godfather of Global Warming.

Several [climate scientists](#) contacted by The Associated Press expressed skepticism about Hansen's study, tinged with respect for his long-term work.

Hansen's study in Thursday's journal [Oxford Open Climate Change](#) is broad-ranging "but has little by way of analytical depth or consistency checks when making claims quite far outside the norm," said Robin Lamboll, a [climate scientist](#) at the Imperial College of London. "It seems primarily aimed at convincing policymakers rather than scientists."

University of Pennsylvania climate scientist Michael Mann, who insisted that since 1990 warming is steadily increasing but not accelerated, [posted a rebuttal](#) to Hansen's claims and said [climate change](#) right now is bad enough and there's no need to overstate the case. Mann said "it has always been risky to ignore (Hansen's) warnings and admonitions" but when claims are made so out of the mainstream the standard for evidence is high, and he said Hansen hasn't met them.

Yet a check of [National Oceanic and Atmospheric Administration data](#) lends support to Hansen's modeling.

Hansen's study said from 1970 to 2010, the world warmed at a rate of 0.18 degrees Celsius per decade, but projected that would increase to a rate of at least 0.27 degrees Celsius per decade after 2010. NOAA data shows that 0.27 degrees is the rate since September 2010.

That starting date is key because that's when scientists could start to see the effect of clean air regulations that reduced aerosol pollution and the amount of sulfur in fuel used by ocean shipping, Hansen said. That type

of more traditional sooty air pollution has a [cooling effect](#) that masks a fraction of the warming from the burning of coal, oil and [natural gas](#), Hansen and many other scientists said.

When scientists try to figure out future and past warming one of the crucial variables is climate sensitivity, which is how much the world warms when carbon dioxide levels in the air double. These calculations have had a wide range and scientists have yet to settle on it, but the latest U.N. climate panel said it is within a [range of 2 degrees Celsius to 5 degrees Celsius](#), with the likely range between 2.5 and 4 degrees and 3 degrees being a good midpoint.

Hansen's study has it at 4.8 degrees Celsius. That's within the widest range, but barely.

It's that high because past research was based on wrong calculations of how fast the world warmed between glacial periods, Hansen said.

Past calculations were based on plant and animal fossil data, figuring microbotic organisms wouldn't adapt to warming, but would move to their preferred temperature range. Hansen said recent research shows that the organisms adapt and stay put, and when his team calculated past temperature changes based on chemical, not biological markers, it showed much faster warming for when carbon dioxide doubled in Earth's ancient history.

Studies on climate sensitivity vary widely and are inconsistent, with [another recent study](#) showing 2.8 degrees not 4.8, said climate scientist Zeke Hausfather of Berkeley Earth and the tech company Stripe. He said Hansen's calculations are "not implausible but not particularly well supported by the literature."

Stanford University climate scientist Rob Jackson, however, said "I tend

to trust Hansen, despite his advocacy. I think his contention that the IPCC has underestimated climate sensitivity will prove out."

Hansen said a more recent climate model—downplayed by the U.N. climate panel for running too hot—is actually more accurate than the ones mainstream [climate](#) scientists prefer based on cloud conditions in the southern ocean.

With a strong natural El Niño, which tends to temporarily warm the globe, and record heat in the air and in the deep oceans, scientists in the past month [have split](#) about what's happening to the globe.

Mann said the warming the world is seeing is what has long been predicted and is not the indication of something unusual or acceleration. The increases reported, he said, are statistically insignificant.

Hausfather said the world is [warming](#) faster, but he calculated the rate at 0.24 degrees Celsius per decade instead of Hansen's 0.27 degrees.

More information: James Hansen et al, Global warming in the pipeline, *Oxford Open Climate Change* (2023). [DOI: 10.1093/oxfclm/kgad008](#)

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