

Trump administration releases report finding ‘no convincing alternative explanation’ for climate change

By [Chris Mooney](#), [Juliet Eilperin](#) and [Brady Dennis](#) November 9 at 2:00 PM



A wind turbine overlooks a coal-fired power station in Gelsenkirchen, Germany. (Martin Meissner/AP)

The Trump administration released a [dire scientific report](#) Friday detailing the growing threats of climate change. The report stands in stark contrast to the administration’s efforts to downplay humans’ role in global warming, withdraw from an international climate accord and reverse Obama-era policies aimed at curbing U.S. greenhouse-gas output.

The White House did not seek to prevent the release of the government’s National Climate Assessment, which is mandated by law, despite the fact that its findings sharply contradict the administration’s policies. The report affirms that climate change is driven almost entirely by human action, warns of potential sea-level rise as high as eight feet by the year 2100, and enumerates climate-related damage across the United States that is already occurring as a result of 1.8 degrees Fahrenheit of global warming since 1900.

“It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century,” the document reports. “For the warming over the last century, there is no convincing alternative explanation supported by the extent of the observational evidence.”

The report’s release underscores the extent to which the machinery of the federal scientific establishment, operating in multiple agencies across the government, continues to grind on even as top administration officials have minimized or disparaged its findings.

Federal scientists have continued to author papers and issue reports on climate change, for example, even as political appointees have altered the wording of news releases or blocked civil servants from speaking about their conclusions in public forums. The climate assessment process is dictated by a 1990 law that Democratic and Republican administrations have followed.

Environmental Protection Agency Administrator Scott Pruitt, Energy Secretary Rick Perry and President Trump have all questioned the extent of humans' contribution to climate change. One of the EPA's Web pages posted scientific conclusions similar to those in the new report until earlier this year, when [Pruitt's deputies ordered it removed](#).

The report comes as Trump and members of his Cabinet are working to promote U.S. fossil-fuel production and repeal several federal rules aimed at curbing the nation's carbon output, including ones limiting [greenhouse-gas emissions from existing power plants](#), oil and gas operations on federal land and carbon emissions from [cars and trucks](#). Trump has also announced he will exit the Paris climate agreement, under which the United States has pledged to cut its overall greenhouse-gas emissions between 26 percent and 28 percent compared with 2005 levels by 2025.

[Scott Pruitt blocks scientists with EPA grants from serving as agency advisers]

The report could have considerable legal and policy significance, providing new and stronger support for the EPA's greenhouse-gas "endangerment finding" under the Clean Air Act, which lays the foundation for regulations on emissions.

"This is a federal government report whose contents completely undercut their policies, completely undercut the statements made by senior members of the administration," said Phil Duffy, director of the Woods Hole Research Center.

The government is [required](#) to produce the national assessment every four years. This time, the report is split into two documents, one that lays out the fundamental science of climate change and the other that shows how the United States is being affected on a regional basis. Combined, the two documents total over 2,000 pages.

The first document, called the Climate Science Special Report, is now a finalized report, having been peer-reviewed by the National Academy of Sciences and vetted by experts across government agencies. It was formally unveiled Friday.

"I think this report is basically the most comprehensive climate science report in the world right now," said Robert Kopp, a climate scientist at Rutgers who is an expert on sea-level rise and served as one of the report's lead authors.

It affirms that the United States is already experiencing more extreme heat and rainfall events and more large wildfires in the West, that more than 25 coastal U.S. cities are already experiencing more flooding, and that seas could rise by between 1 and 4 feet by the year 2100, and perhaps even more than that if Antarctica proves to be unstable, as is feared. The report says that a rise of over eight feet is "physically possible" with high levels of greenhouse-gas emissions but that there's no way right now to predict how likely it is to happen.

When it comes to rapidly escalating levels of greenhouse gases in the atmosphere, the report states, "there is no climate analog for this century at any time in at least the last 50 million years."

Most striking, perhaps, the report warns of the unpredictable — changes that scientists cannot foresee that could involve tipping points or fast changes in the climate system. These could switch the climate into "new states that are very different from those experienced in the recent past."

Given these strong statements — and how they contradict Trump administration statements and policies — some members of the scientific community had speculated that the administration might refuse to publish the report or might alter its conclusions. During the last Republican presidential administration, that of George W. Bush, the national assessment process was highly controversial, and a senior official at the White House Council on Environmental Quality edited aspects of some government science reports.

Yet multiple experts, as well as some administration officials and federal scientists, said that Trump political appointees did not change the special report's scientific conclusions. While some edits have been made to its final version — for instance, omitting or softening some references to the Paris climate agreement — those were focused on policy.

"I'm quite confident to say there has been no political interference in the scientific messages from this report," David Fahey, an atmospheric scientist with the National Oceanic and Atmospheric Administration and a lead author of the study, told reporters on

Friday. “Whatever fears we had weren’t realized. ... This report says what the scientists want it to say.”

A senior administration official, who asked for anonymity because the process is still underway, said in an interview that top Trump officials decided to put out the assessment without changing the findings of its contributors even if some appointees may have different views.

Glynis Lough, who is deputy director of the food and environment program at the Union of Concerned Scientists and had served as chief of staff for the National Climate Assessment at the U.S. Global Change Research Program until mid-2016, said in an interview that the changes made by government officials to the latest report “are consistent with the types of changes that were made in the previous administration for the 2014 National Climate Assessment, to avoid policy prescriptiveness.”

Perhaps no agency under Trump has tried to downplay and undermine climate science more than the EPA. Most recently, political appointees at the EPA instructed two agency scientists and one contractor not to speak as planned at a [scientific conference](#) in Rhode Island. The conference marked the culmination of a three-year report on the status of Narragansett Bay, New England’s largest estuary, in which climate change featured prominently.

[EPA removes climate pages from public view after two decades]

The EPA also has altered parts of its website containing detailed climate data and scientific information. As part of that overhaul, in April the agency took down pages that had existed for years and contained a wealth of information on the scientific causes of global warming, its consequences and ways for communities to mitigate or adapt. The agency said that it was simply making changes to better reflect the new administration’s priorities and that any pages taken down would be archived.

Pruitt has repeatedly advocated for the creation of a government-wide “red team/blue team” exercise, in which a group of outside critics would challenge the validity of mainstream scientific conclusions around climate change.

Other departments have also removed climate-change documents online: The Interior Department’s Bureau of Land Management, for example, [no longer provides access](#) to documents assessing the danger that future warming poses to deserts in the Southwest.

And when U.S. Geological Survey scientists working with international researchers published [an article in the journal Nature](#) evaluating how climate change and human population growth would affect where rain-fed agriculture could thrive, the USGS published a [news release](#) that omitted the words “climate change” altogether.

The Agriculture Department’s [climate hubs](#), however, remain freely available online. And researchers at the U.S. Forest Service [have continued to publish papers this year](#) on how climate change is affecting wildfires, wetlands and aquatic habitat across the country.

While the Trump administration has not altered the new climate science report substantially, it is already coming under fire from some of the administration’s allies.

The day before it was published, Steven Koonin, a New York University physicist who has met with Pruitt and advocated for the “red team/blue team” exercise, [preemptively criticized](#) the document in the Wall Street Journal, calling it “deceptive.”

Koonin argued that the report “ominously notes that while global sea level rose an average 0.05 inch a year during most of the 20th century, it has risen at about twice that rate since 1993. But it fails to mention that the rate fluctuated by comparable amounts several times during the 20th century.”

But one of the report’s authors suggested Koonin is creating a straw man. “The report does not state that the rate since 1993 is the fastest than during any comparable period since 1900 (though in my informal assessment it likely is), which is the non-statement Steve seems to be objecting to,” Kopp countered by email.

Still, the line of criticism could be amplified by conservatives in the coming days.

Meanwhile, the administration [also released](#), in draft form, the longer Volume 2 of the National Climate Assessment, which looks at regional impacts across the United States. This document is not final but is now available for public comment and will now begin a peer review process, with final publication expected in late 2018.

Already, however, it is possible to discern some of what it will conclude. For instance, a peer-reviewed [EPA technical document](#) released to inform the assessment finds that the monetary costs of climate change in the United States could be dramatic.

That document, dubbed the **Climate Change Impacts and Risk Analysis**, finds that in a high-end warming scenario, high temperatures could lead to the loss per year of “almost 1.9 billion labor hours across the national workforce” by 2090. That would mean \$160 billion annually in lost income to workers.

With high levels of warming, coastal property damage in 2090 could total \$120 billion annually, and deaths from temperature extremes could reach 9,300 per year, or in monetized terms, \$140 billion annually in damage. Additional tens of billions annually could occur in the form of damage to roads, rail lines and electrical infrastructure, the report finds.

This could all be lessened considerably, the report notes, if warming is held to lower levels.

Jason Samenow contributed to this report.

US government report says that climate change is real — and humans are to blame

Conclusions of climate-change science analysis are at odds with US President Donald Trump's policies.

Jeff Tollefson
03 November 2017



Drew Angerer/Getty

Heat waves are growing more common in many parts of the United States. From warmer temperatures to more extreme weather, melting glaciers and rising sea levels, humanity is fundamentally changing the planet by pumping greenhouse gases into the atmosphere, US government scientists said on 3 November in their latest assessment of climate science.

The average global temperature has increased by 1 °C since the start of the Industrial Revolution, the 600-page report says — adding that the last 115 years comprise “the warmest period in the history of modern civilization”. The analysis warns that temperatures could increase another 4°C by the end of the century, with dramatic consequences for humans and natural ecosystems.

The findings are at odds with the policies of US President Donald Trump, who has questioned well-established tenets of climate science and vowed to protect and promote the US fossil-fuel industry. Trump's stances led many scientists to worry that his administration would try to block or tamper with the climate-change assessment, but several scientists who helped to write the document reported no problems.

“We weren't interfered with, and we ended up producing something that I think is of tremendous value,” says David Fahey, an atmospheric scientist with the National Oceanic and Atmospheric Administration in Boulder, Colorado, and a coordinating lead author of the analysis.

The climate-science report is the first volume of the fourth National Climate Assessment, a legally mandated analysis of the causes and impacts of global warming that is due in 2018. The other two parts of the forthcoming assessment were released today in draft form, for public comment. One analysis focuses on how climate change is affecting life in the United States, from crop yields to property damage from extreme weather. The other summarizes the latest findings on the global carbon cycle. Both of those documents will undergo a formal review by the US National Academy of Sciences.

“The science speaks for itself,” says Don Wuebbles, a climate scientist at the University of Illinois at Urbana-Champaign and co-chair of the climate-science report. “It's hard to counteract the basic observations and the truth of the science with any kind of political playing around.”

The trio of documents paints a dramatic picture of how global warming is affecting people and communities across the United States. Tidal flooding is accelerating in more than 25 coastal cities along the Atlantic Ocean and Gulf of Mexico. Large forest fires have become more frequent in the western part of the country, while warmer spring temperatures and shrinking mountain snowpack are combining to reduce the amount of water available to the region's cities and farms. As a result, the draft climate-impacts report warns, “chronic, long-duration hydrological drought is increasingly possible before the end of the century”.

Few observers expect the report to affect how the Trump administration approaches energy and environmental issues. In August, the US National Oceanic and Atmospheric Administration disbanded an advisory committee that was intended to help the nation prepare for a warmer climate, by translating the findings of the coming climate assessment into guidance for cities, states and industry.

Nonetheless, many scientists and environmentalists lauded the new reports for bolstering the case for more-aggressive action against climate change.

“The full assessment, when it gets published, is going to show that there are palpable impacts that are going to hit every part of the country,” says Andrew Light, a senior fellow at the World Resources Institute, an environmental think-tank in Washington DC. “It's the responsibility of leaders to take note of that and act accordingly.”

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U.S. Report Says Humans Cause Climate Change, Contradicting Top Trump Officials

WASHINGTON — Directly contradicting much of the Trump administration's position on climate change, 13 federal agencies unveiled an exhaustive scientific report on Friday that says humans are the dominant cause of the global temperature rise that has occurred since the start of the 20th century, creating the warmest period in the history of civilization.

Over the past 115 years global average temperatures have increased 1.8 degrees Fahrenheit, leading to record-breaking weather events and temperature extremes, the report says. The global, long-term warming trend is "unambiguous," it says, and there is "no convincing alternative explanation" that anything other than humans — the cars we drive, the power plants we operate, the forests we destroy — are to blame.

The report was approved for release by the White House, but the findings come as the Trump administration is defending its climate change policies on several fronts. The United Nations convenes its annual climate change conference next week in Bonn, Germany, and the American delegation is expected to face harsh criticism over President Trump's decision to walk away from the 195-nation Paris climate accord and top administration officials' stated doubts about the causes and impacts of a warming planet.

"This report has some very powerful, hard-hitting statements that are totally at odds with senior administration folks and at odds with their policies," said Philip B. Duffy, president of the Woods Hole Research Center. "It begs the question, where are members of the administration getting their information from? They're obviously not getting it from their own scientists."

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The climate science report is part of a congressionally mandated review conducted every four years known as the National Climate Assessment. The product of hundreds of experts within the government and academia and peer-reviewed by the National Academy of Sciences, it is considered the United States' most definitive statement on climate change science.

That has not stopped the Environmental Protection Agency from wiping references to climate change from its website and barring its scientists from presenting scientific reports on the subject.

The E.P.A. administrator, Scott Pruitt, has said carbon dioxide is not a primary contributor to warming. Rick Perry, the energy secretary, asserted Wednesday that "the science is out" on whether humans cause climate change.

Jim Bridenstine, the Oklahoma congressman whom President Trump nominated to lead NASA, came under fire this week from multiple lawmakers demanding to know his position on climate change. "Carbon dioxide is in fact a greenhouse gas," Mr. Bridenstine allowed, but declined to say if he accepted it as the primary cause of climate change. He did pledge that scientists would not be punished or reassigned for working on or speaking about global warming.

Yet none of those agencies nor the White House moved to stop the report's publication, and the White House Office of Science and Technology Policy signed off on the final release, despite fear among some scientists involved in the research that the Trump administration would block it or seek to water it down.

"I'm quite confident to say there has been no political interference on the messages of this report," said David Fahey, a scientist at the National Oceanic and Atmospheric Administration and a lead author of the report.

The E.P.A. and other agencies involved in the report referred questions to NOAA, which oversaw the research.

The report says the Earth has set temperature highs for three years running, and six of the last 17 years are the warmest years on record for the globe. Weather catastrophes from floods to hurricanes to heat waves have cost the United States \$1.1 trillion since 1980, and the report warns that such phenomena may become common.

"The frequency and intensity of extreme high temperature events are virtually certain to increase in the future as global temperature increases," the report notes. "Extreme precipitation events will very likely continue to increase in frequency and intensity throughout most of the world." In the United States, the report finds that every part of the country has been touched by warming, from droughts in the Southeast to flooding in the Midwest to a worrying rise in air and ground temperatures in Alaska, and conditions will continue to worsen.

"This assessment concludes, based on extensive evidence, that it is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century," the report states. "For the warming over the last century, there is no convincing alternative explanation supported by the extent of the observational evidence." The findings, other researchers said, create an unusual situation in which the government's policies are in direct opposition to the science it is producing.

"This profoundly affects our ability to be leaders in developing new technologies and understanding how to build successful communities and businesses in the 21st century," said Christopher Field, director of the Stanford Woods Institute for the Environment. "Choosing to be dumb about our relationship with the natural world is choosing to be behind the eight ball."

Some critics of climate change science attacked the report as the product of holdovers from the Obama administration and chastised the Trump administration for allowing it to be published. Others said the science may be valid but the findings did not justify new regulations to address the rise of emissions.

"I really don't think that determines policy at all," said Marlo Lewis Jr., a senior fellow at the Competitive Enterprise Institute, a libertarian advocacy group. Mr. Lewis said he does not deny that the majority of warming is caused by emissions. "The thing is, I'm also going to affirm that there are risks of climate policy as well as climate change," he said. "To me the real issue is, where do the risks lie? Suppressing your economy is never a good solution."

The report finds with very high confidence that the average annual temperature over the contiguous United States has increased by 1.2 degrees Fahrenheit (0.7 degrees Celsius) since 1986, relative to the previous century. It is projected to rise, scientists said with an equally high degree of confidence, about 2.5 degrees Fahrenheit (1.4 degrees Celsius) by midcentury. That will mean hotter days and nights, particularly in urban and densely populated areas.

The report finds with high confidence that if greenhouse gas concentrations were stabilized at their current level, the world would still see at least an additional 1.1 degree Fahrenheit (0.6 degree Celsius) of warming over this century.

"This new report simply confirms what we already knew. Human-caused climate change isn't just a theory, it's reality," said Michael E. Mann, a professor of atmospheric science at Pennsylvania State University. "Whether we're talking about unprecedented heat waves, increasingly destructive hurricanes, epic drought and inundation of our coastal cities, the impacts of climate change are no longer subtle. They are upon us. That's the consensus of our best scientists, as laid bare by this latest report."

