

Post-printing additions to the book, *The Science of Global Warming*

So many new things relevant to this book kept coming up that I have initiated this service to cover them. I will divide the reports by season, i.e. Fall, Winter, Spring and Summer, by month, equinox and solstice)

- **Fall (Autumn):** September (22nd), October, November
- **Winter:** December (21), January, February
- **Spring:** March (20th), April, May
- **Summer:** June (21st), July, August.

So, this site is basically a continuous, running account of the latest literature on climate change and global warming and on Trump's anti-climate change and anti-science policies.

WINTER

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1. A historic year of dismantling climate policies ¹

International Diplomacy

- Withdrawl of the United States from the Paris Agreement.
- Canceled U.S. contribution of \$4 billion to the Green Climate Fund, which helps poor countries adapt to climate change.
- Dismantled the U.S. Agency for International Development, which funded climate programs around the globe.
- Pressured other companies to buy American oil and gas as part of trade negotiations.
- Sent no representatives to COP30, the United Nations climate summit in Brazil.

Environmental Regulations

- Reframed the mission of the EPA to focus on promoting economic activity rather than regulating pollution. Since then, • Unleashed changes that have curtailed the government’s ability to limit dangerous pollutants.
- Revoked the scientific determination that underpins the government’s legal authority to combat climate change.
- Repealed Biden-era regulation that required coal-burning power plants to cut emissions of mercury, a neurotoxin.
- It proposed freezing anti-pollution and fuel-efficiency standards for cars.
- The E.P.A. strips federal protection from millions of acres of wetlands and streams.
- Gives utilities an extra year to clean up coal ash landfills, which can leach toxic metals into nearby waterways.
- Delays deadlines for utilities to control two harmful “forever chemicals” and roll back limits on four other related chemicals.

Energy

- declaring an “energy emergency” expanded support for fossil fuels, while curtailing support for clean energy.
- opened up more than one billion acres of federal lands and waters for oil and gas drilling.
- The E.P.A. revoked regulations of natural gas-fired power plants.
- The Energy Department has intervened to stop aging coal plants from being shut down.
- Trump and Republicans in Congress have repealed subsidies for solar panels, wind turbines and electric vehicles.
- Agencies have slowed or stopped federal approvals for new wind and solar projects.

- Repealed or blocked vehicle efficiency standards to shift away from gasoline-burning cars.
- Companies canceled more than \$32 billion in planned clean energy investments in 2025.

Climate science

- Defunded climate research, erased scientific data and removed terms like “climate change” from federal websites.
- Closed the independent research arm of the E.P.A.
- Cancel funds for NOAA, eliminate climate laboratories and research on severe storms.
- Slashed funding and staffing for the National Climate Assessment, the federal government’s premier report on how global warming is affecting the country.
- Appointed Chris Wright, former chief executive of the fracking company Liberty Energy, head of the Department of Energy.
- Compare that to Obama’s choice of Steven Chu, Ph.D., former head the Livermore Berkely National Laboratory and Nobel Prize winner in Physics!! During Chu’s tenure from 2009 to 2013, his focus was on climate change. That is the way to appoint qualified people.
- Chris Wright, the energy secretary, selected five skeptics of climate science to write their own assessment of global warming, which was criticized by dozens of climate researchers who accused them of mischaracterizing scientific findings.
- Broke up the National Center for Atmospheric Research in Colorado, a world-leading Earth science research institution.

Reference

1 David Gelles (2025) **A historic year of dismantling climate policies**. NY Times based on an article by Brad Plumer, Lisa Friedman, Maxine Joselow and Scott Dance (2025) **How Trump’s First Year Reshaped U.S. Energy and Climate Policy**. NY Times December 22, 2025

2. Protecting the Whooping Crane from Climate Change.

The Whooping Crane is one of the most threatened bird species in the U.S. As of February 2015, the total population was 603 including 161 captive birds. Several years ago, my wife and I had the opportunity to photograph Whooping Cranes at the Aransas National Wildlife Preserve, near Rockport, Texas (see www.ComingsBirds.com). Click on the Flickr link and go to Whooping Crane album. This is one of the photos.



Whooping Crains at Aransas National Wildlife Preserve, Texas c/o David Comings

Its habitats are currently being threatened by climate change. To counteract this a 3,300-acre new sanctuary has been set up in Texas, called the WOLFBERRY WHOOPING CRANE SACTUARY south of Huston, with funds from grants and private donations.

3. China’s emissions are leveling off.

China is the world’s greatest emitter of CO₂ so any progress on cutting its emissions would be a significant contribution to attaining worldwide net zero. As shown in Figure 1, China’s emissions have been leveling off since March 2024¹

China’s carbon dioxide emissions are flatlining after rising for years



SOURCE: ANALYSIS FOR CARBON BRIEF BY LAURI MYLLYVIRTA

Figure 1. China’s emissions since 2017.¹

Lauri Myllyvirta at the Centre for Research on Energy and Clean Air in Finland, for Carbon Brief said, “the rapid growth of solar and wind power generation is the main force

bringing emissions down, but fossil fuel demand has risen in other sectors.”¹ Compare this effort to the non-efforts of the U.S.

China’s dramatic results also show how effective a concerted effort at controlling global warming can be when the seriousness of the problem is accepted instead of denied.

Reference

1 James Woodford China’s emissions may have finally peaked. New Scientist December 13-26, 2025

4. Renewable Energy in 2025 (Quotes from Jennifer McDermott, (2025))¹

With Trump calling wind and solar power “the scam of the century” and vowing not to approve new projects and canceling others, how did we do in 2025?¹

Solar and battery storage are booming. Solar and storage accounted for 85% of the power added to the grid in the first nine months of the Trump administration, Wood Mackenzie research shows. “The year began with ample federal subsidies for clean energy technologies, a growing number of U.S.-based companies making parts and materials for projects and a lot of demand from states

and corporations, said Tom Harper, partner at global consultant Baringa. paradigm shifting.”

The Republicans’ tax bill reversed, or steeply curtailed clean energy programs established through the Democrats’ flagship climate and healthcare bill in 2022. Wayne Winegarden of the Pacific Research Institute think tank said the time has come for alternative energy to demonstrate viability without subsidies.

Companies can’t make billion-dollar investments with so much policy uncertainty, said Jason Grumet, chief executive of the American Clean Power Assn. Consequently, U.S. greenhouse gas emissions will fall at a much lower rate than projected, said Brian Murray, director of the Nicholas Institute for Energy, Environment and Sustainability at Duke University.

Solar and storage accounted for 85% of the power added to the grid in the first nine months of the Trump administration, Wood Mackenzie research shows. That’s because the economics remain strong, demand is high, and the technologies can be

deployed quickly, said Mike Hall, chief executive of Anza Renewables. Solar energy company Sol Systems said it had a record year as it brought its largest utility-scale project online and grew its business. Energy storage systems company CMBlu Energy said

storage clearly stands out as a winner this year too, moving from optional to essential.

“Trump’s effort to manipulate government regulation to harm clean energy just isn’t enough to offset the natural advantages that clean energy has,” Sen. Sheldon Whitehouse (D-R.I.) said. “The direction is still all good.”

Good year for nuclear and geothermal

Democrats and Republicans have supported investing to keep **nuclear reactors online**, restart previously closed reactors and deploy new, advanced reactor designs. Nuclear power is a carbon free source of electricity, though not typically labeled as green energy like other renewables.

“Who had ‘restart Three Mile Island’ on their 2025 Bingo card?” questioned Baringa partner David Shephard. The Pennsylvania plant was the site of the nation’s worst commercial nuclear power accident, in 1979. The Energy Department is lending \$1 billion to help finance a restart.

Everyone loves nuclear, said Darrin Kayser, executive vice president at communications company Edelman. It helps that the technology for small, modular reactors is starting to come to fruition, Kayser added. Benton Arnett, a senior director at the Nuclear Energy Institute, said that as the need for clean, reliable power intensifies, “we will look back on the actions being taken now as laying the foundation.”

The Trump administration also supports geothermal energy, and the tax bill largely preserved geothermal tax credits. The Geothermal Rising association said technologies continue to mature and produce, making 2025 a breakthrough year.

Offshore wind had a terrible year. **Momentum for offshore wind in the United States came to a grinding halt just as the industry was starting to gain traction**, said Joey Lange, a senior managing director at Trio, a global sustainability and energy advisory company. The Trump administration stopped construction on major offshore wind farms, revoked wind energy permits and paused permitting, canceled plans to use large areas of federal waters for new offshore wind development and stopped federal funding for offshore wind projects. That has decimated the projects, developers and tech innovators, and no one in wind is raising corresponding capital, said Eric Fischgrund, founder and CEO at Fisch Tank PR. Still, Fischgrund said he is optimistic because the world is transitioning to cleaner energy. More clean energy needed in 2026

An energy strategy with a diverse mix of sources is the only way forward as demand grows from data centers and other sources, and as people demand affordable, reliable electricity, said former Sen. Mary Landrieu (D-La.). Landrieu, now with Natural Allies for a Clean Energy Future, said **promoting or punishing specific energy technologies on ideological grounds is unsustainable.**

Experts expect solar and battery storage to continue growing in 2026 to add a lot of power to the grid quickly and cheaply. The market will continue to ensure that most new electricity is renewable, said Amanda Levin, policy analysis director at the Natural Resources Defense Council.

Hillary Bright, executive director of Turn Forward, thinks offshore wind will still play an important role. It is ready and needed to help address the demand for electricity in the new year, which will become increasingly clear “to all audiences,” she said. Turn Forward advocates for

offshore wind. That skyrocketing demand “is shaking up the political calculus that drove the administration’s

early policy decisions around renewables,” she said.

Blue Wave CEO Sean Finnerty thinks that states, feeling the pressure to deliver affordable, reliable electricity, will increasingly drive clean energy momentum in 2026 by streamlining permitting and the process of connecting to the grid, and by reducing costs for things like permits and fees.

Reference

1. McDermott, Jennifer (2025) Clean energy optimism for 2026? Despite obstacles posed by President Trump, the sector made some notable progress this year, advocates say. L.A.T Times December 26.

5. Experts blame warming for intensifying global drought-to-deluge cycle

On page 41 of *The Science of Global Warming* book, I described a Weather Whiplash and Wildfires situation

which explained how climate change contributes to wildfires by producing an alternation between droughts and excess rain. The excess rain stimulates the growth of plants and undergrowth, while the drought dries it out, setting it up to contribute to wildfires.

Lin II and others (2025)¹ describe similar whip lash but focus on the excessive rain and resulting floods and mud slides. California has recently experienced both ends of the whiplash. In January 2025, the drying part of the whiplash, combined with 100 mph Santa Ana winds, to destroy the Pacific Palisades and Altadena by wildfires (page 41- 44). Christmas Eve and Christmas Day were the rainiest in the modern record for many parts of Southern California, Thus, in December of the same year as the massive wildfires, the mudslide half of the whiplash has destroyed parts of the mountain town of Wrightwood, CA.



Flooding and Mudslides in Wrightwood, CA, December 2025

Damage was reported across the state, with flooding, landslides and fallen trees also reported in the Central Valley and the San Francisco Bay Area. Tornado

Reference

Rong-Gong Lin II (2025) *Unwrapping a Wet Christmas. Experts blame warming for intensifying global drought-to-deluge cycle. LA Times December 24.*

6. Judge’s Ruling repeals Trump moratorium on wind energy projects

This article in the LA Times, is so important in trying to understand Trumps policies on wind energy, that I am reproducing the whole article.

President Trump issued the ban on his first day back in office through an executive order that called for the temporary withdrawal of nearly all federal land and waters from new or renewed wind energy leasing. The president said such leases “may lead to grave harm” including negative effects on national security, transportation and commercial interests, among other justifications.

A federal judge struck down the Trump administration’s ban on federal permits for wind energy projects in what supporters said was an important victory for the embattled industry. U.S. District Judge Patti B. Saris of the District of Massachusetts ruled Monday that **the ban is “Arbitrary and capricious and contrary to law,”** and that the concern about “grave harm” was

insufficient to justify the immense scope of a moratorium on all wind energy. The challenge was brought by attorneys general in 17 states, including California, and Washington, D.C.

In it, they argued that halting federal wind permits created an “existential threat” to the wind industry that could erase billions of dollars in investments and tens of thousands of jobs. A court has agreed with California and our sister states nationwide: **The Trump Administration’s attempt to thwart states’ efforts to make energy more clean, reliable, and affordable for our residents is unlawful and cannot stand,**” California Atty. Gen. Rob Bonta said in a statement, **“The Trump Administration seems intent on raising costs on American families at every juncture** — and California is equally committed to challenging every one of its illegal attempts to make life more expensive for Californians.”

At least seven major offshore wind projects were paused as a result of the federal permitting ban, according to the nonprofit Natural Resources Defense Council, plus several more that were in early phases of development.

“This ban on wind projects was illegal, as this court has now declared. **The administration should use this as a wake-up call, stop its illegal actions and get out of the way of the expansion of renewable energy,**” Kit Kennedy, the council’s managing director for power, said in a statement.

The lawsuit noted the president’s executive order was issued the same day as his National Energy Emergency Declaration, which encouraged domestic energy development not tied to wind and other renewables. Trump has heavily supported fossil fuel production including oil, gas and coal. In a statement to The Times, White House spokeswoman Taylor Rogers said offshore wind projects were given “unfair, preferential treatment” under the Biden administration while the rest of the energy industry was “hindered by burdensome regulations.”

“President Trump’s Day one executive order instructed agencies to review leases and permitting practices for wind projects with consideration for our country’s growing demands for reliable energy, effects on energy costs for American families, the importance of marine life and fishing industry, and the impacts on ocean currents and wind patterns,” Rogers said. “President Trump has ended Joe Biden’s war on American energy and unleashed America’s energy dominance to protect our economic and national security.”

California has vowed to stay the course on offshore wind despite the federal challenges. The state has an ambitious goal of 25 gigawatts of floating offshore wind energy by 2045, by which point California officials say offshore wind could represent 10% to 15% of the Golden State’s energy portfolio. Five ocean leases have already been granted to energy companies off Humboldt County and Morro Bay.

In August, the Trump administration said it was cutting \$679 million for “doomed” offshore wind projects, including \$427 million that had been earmarked for California. Ted Kelly, director and lead counsel of U.S. clean energy at the nonprofit Environmental Defense Fund, said obstructing the build-out of clean power is the wrong move as the country’s need for electricity is surging from data centers, industry and other demands.

Wind, solar and battery storage offer the most affordable ways to get more reliable power on the grid, Kelly said. “We should not be kneecapping America’s largest source of renewable power,” he said, “especially when we need more cheap, homegrown electricity.

Conclusion: Trump’s ruling against wind and solar energy is blatantly wrong. Wind and solar energy are significantly cheaper than oil or coal, so if Trumps goal with his National Energy Emergency Declaration, was to increase the Nation’s energy supply, he certainly should not have excluded these renewables. The only thing that makes sense is that the fossil fuel industry has given him so much money, and Harold Hamm has so much influence, that Trump is blatantly attempting to crush these two critical renewables, which are such a threat to the fossil fuel industry. Hardly a decision that has the best interests of U.S. citizens.

Reference

Hayley Smith (2025) Ruling repeals Trump moratorium on wind energy projects. Judge calls executive order arbitrary and unlawful. California, part of group that challenged the ban, plans to forge ahead despite federal funding cuts. LA Times December

7. Some of the Nonsense in Trump’s Order

This section illustrates some of the bogus excuses Trump used in his above executive order.

Trump relied on his appointed Secretary of the Interior, Doug Burgum, to provide excuses for his actions. Burgum said, “offshore wind turbines and towers create radar interference called “clutter,” which “obscures legitimate moving targets and generates false targets in the vicinity of the wind projects,” posing a threat to national security. He also said, Trump’s “action addresses emerging national security risks, including the rapid evolution of the relevant adversary technologies, and the vulnerabilities created by large-scale offshore wind projects with proximity near our east coast population centers. The Trump administration will always prioritize the security of the American people.”

Kirk Lippold, a national security expert and former Navy commander of the USS Cole, said invoking national security on this matter is akin to **“blowing smoke at the American**

people.” The issue of clutter has been known for years and can be resolved through software and firmware changes on weapons systems and radars, as well as proper training for their operators, he said. “Citing national security in this case is a false and specious argument that once again demonstrates that the administration really is not interested in developing the energy dominance portfolio that President Trump advocated for from his first day in office,” Lippold told The Times. “Having energy dominance means you have a wide variety and depth of energy sources, from fossil fuels to nuclear to wind to solar, everything.”

Lippold noted that Burgum also cited national security threats in August when the administration issued a stop-work order on the Revolution wind project, which was 80% complete. The Interior secretary told CNN at the time that bad actors could take advantage of radar distortion to “launch a swarm drone attack through a wind farm,” which Lippold said is laughable. He added that a “Drone swarm” getting that close to the U.S. coast would mark an immense intelligence failure.

Concern about clutter is also something that would have been addressed much earlier in the planning process for the individual projects, said John Conger, director emeritus of the Center for Climate and Security who oversaw the Defense Department’s clearinghouse for energy siting under the Obama administration.

For example, officials might require certain turbines to be relocated or require additional radars to fill in gaps in coverage before signing off on an offshore wind project, Conger said. He said the projects paused on Monday would have been evaluated and cleared previously by the Defense Department, so he found it odd that the current administration would find issue with all five of them at once.

“It’s curious that they’ve decided to change multiple sites at the same time, which makes it sound like they have not individually evaluated them,” Conger said. “If there was new information that came up, it would have been individual information.”

Dave Belote, former director of the Defense Department’s energy siting agency, also questioned the administration’s claims in a statement Monday. “**I find Secretary Burgum’s claims of national security-related risks and vulnerabilities to be bogus,**” Belote, now chief executive of solar energy consulting firm DARE Strategies, said. North American Aerospace Defense Command “has technical fixes in place today to edit interference out of its radar displays, and wind project developers have been paying for these fixes since 2013.”

Experts said the administration’s move also has implications for energy affordability, grid reliability and the economy. “Electricity prices are climbing, and our grid is facing rising demand from data centers, industry and homes,” said Ted Kelly, director and lead counsel of U.S. clean energy with the nonprofit Environmental Defense Fund. “**Wind — when allowed to move forward — offers some of the most affordable, reliable power.**”

Energy affordability has become a major issue across the nation this year, with residential electric bills increasing about 13% nationwide since January, according to the U.S. Energy Information Administration. **Wind and solar remain the least expensive forms of new build electricity generation,** according to the financial advisory firm Lazard.

The suspended projects were fully permitted, nearly complete **and represented tens of billions of dollars in infrastructure investment that has employed thousands of workers to date**, said Hillary Bright, executive director of the wind advocacy group Turn Forward. What's more, they are poised to deliver "much-needed power to regions already struggling to keep up with rising electricity demand."

"Suspending legitimate permits approved after years of rigorous consultation with expert federal agencies — including the Department of War — does nothing to advance our country's longterm economic or energy security," Bright said in a statement.

Even with Vineyard Wind only partially completed, it saved New England residents roughly \$2 million a day during a cold snap this month, according to a report in the Boston Globe.

This well illustrates that once Trump decides to do something to help the fossil fuel industry, he will use any level of b.s. to justify his orders.

Reference

Hayley Smith (2025) **Trump suspends major wind projects, cites national security**. L A. Times December

8. Air Conditioning – A positive feedback loop.

According to a report from the International Energy Agency last year, AI data centers will make up less than 10% of the increase in energy demand between now and 2030, far less than the energy demand from space cooling - mostly air conditioning.

There were fewer than 2 billion AC units in the world in 2016. By 2050, that could be nearly 6 billion, according to a 2018 report from the IEA. It's a vicious cycle. As temperatures rise, the need for cooling technologies increases. In turn, more fossil-fuel power plants are firing up to meet that demand, turning up the temperature of the planet in the process.

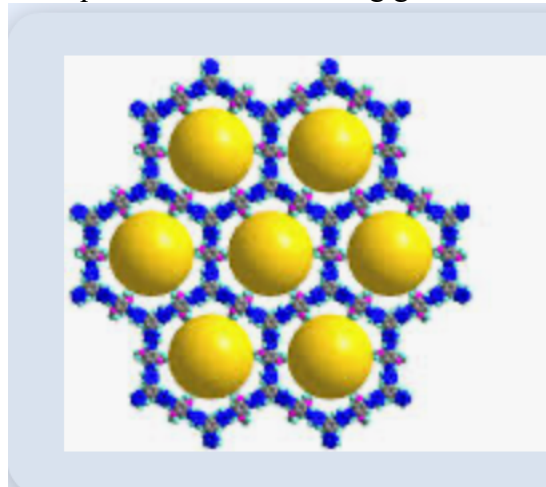
9. 47,690 heat related deaths in 2023

A study by Gallo, E (2024)¹ estimated 47,690 (confidence interval 28,853 to 66,525) people died of heat related causes in 2024. The study was based on mortality records in 823 contiguous regions from 35 countries to estimate sex- and age-specific heat-related mortality in Europe during 2023. They estimated that the heat-related mortality burden would have been

+80.0% higher in absence of present-century adaptation, especially in the elderly. Their results highlight the importance of historical and ongoing adaptations in saving lives during recent summers and the urgency for more effective strategies to further reduce the mortality burden of forthcoming hotter summers.

10. MOFs to Pull water out of the air.

Omar Yaghi is one of three scientists that won the 2025 Nobel Prize for their discovery of metal-organic frameworks, or **MOFs**. They consisted of metal ions bound to organic molecules that form repeating structural landscapes. They had an enormous internal surface area over 6,000 m²/gm. This makes them quite suitable for storing gases such as hydrogen and methane.



A MOF (in blue).

in 2014, Yaghi's team of researchers at UC Berkeley had an epiphany. The tiny pores in MOFs could be designed so the material would pull water molecules from the air around them, like a sponge—and then, with just a little heat, give back that water as if squeezed dry. Just one gram of a water absorbing MOF has an internal surface area of roughly 7,000 square meters.

The company he founded, called Atoco, is racing to demonstrate a pair of machines that Yaghi believes could produce clean, fresh, drinkable water virtually anywhere on Earth, without even hooking up to an energy supply. One of the reasons MOFs are relevant to climate change is that **it can be an alternative to dehumidification to produce water for the HnOAE technology (p 126) as well as for capturing CO₂.**

Reference

Kaufman, A C (2026) Omar Yajhi is still thirsty. MIT Technology Review 129, January-February

11. CO₂ Sink to Source in Africa

Forests and shrubby woodlands on the continent have previously been one of the world's biggest carbon sinks, accounting for 20 per cent of all the CO₂ taken up by plants. The lion's share of this is in the Congo rainforest, the second largest in the world after the Amazon.

Sometimes called the “lungs of Africa”, it absorbs an estimated 600 million tons of CO₂ per year.

Logging and mining are destroying swathes of the Congo rainforest, with the result that African forests went from being a carbon sink to a carbon source in 2010 to 2017.

African forests lost 106 million tons of biomass per year from 2011 to 2017. That is equivalent to roughly 200 million tons of CO₂ emissions per year.

References

Luhn, Alec (2025) *Africa's forests are now emitting more CO₂ than they Absorb*. *New Scientist*.

Rodriquez-Veiga, P. (2025) *Loss of tropical moist broadleaf forest has turned Africa's forests from a carbon sink into a source*. *Nature Portfolio* 15,41-47.

12. Arctic Warming will Persist.

Because of the warming of the oceans, the warming of the arctic of 1.5°C over preindustrial levels, will persist even after cutting emissions and CDR. This was the conclusion of a study by Dong et al, 2025. They also concluded that average sea ice extent would remain 1 million square kilometers smaller, even if excess CO₂ was removed. These findings highlight the irreversible nature of Arctic climate change even under aggressive CDR scenarios and emphasize the need for improved representation of Arctic processes in climate models to reduce uncertainties in climate projection and mitigation strategy design.

References

Dong, X. et al Warm and wet anomalies persist across the pan-Arctic after carbon dioxide removal *Environ. Res. Lett.* 20 (2025) 124052

Luhn, A. *Some Arctic warming 'irreversible' even if we cut atmospheric CO₂* *New Scientist* December 2025

13 Global Ocean Warming Hits New Record

“Global ocean warming continued unabated in 2025 in response to increased greenhouse gas concentrations and recent reductions in sulfate aerosols, reflecting the long-term accumulation of heat within the climate system, with conditions evolving toward La Niña during the year. In 2025, global upper 2000 m ocean heat content (OHC) increased by $\sim 23 \pm 8$ ZJ relative to 2024 according to IAP/CAS estimates.”¹

The progressive increase in ocean temperature is shown in Figure 1, from Pan et al, 2026

1

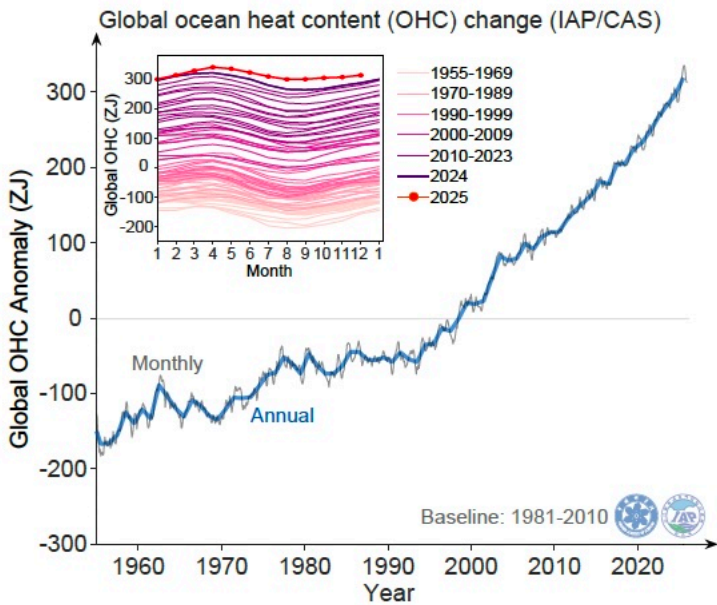


Fig. 1. Global upper 2000 m OHC changes from 1955 through 2025 (units: ZJ). The thick lines denote the annual values, while the thin lines represent the monthly values. The OHC anomalies are relative to the 1981–2010 baseline. The inner box shows the intra-annual variation of OHC, with 2025 values highlighted in red.

In a situation analogous to atmospheric CO₂ levels where both the amount and the rate of increase are increasing, for the oceans, both the temperature increase (Figure 1) and the rate of the temperature increase, are increasing (Figure 2).

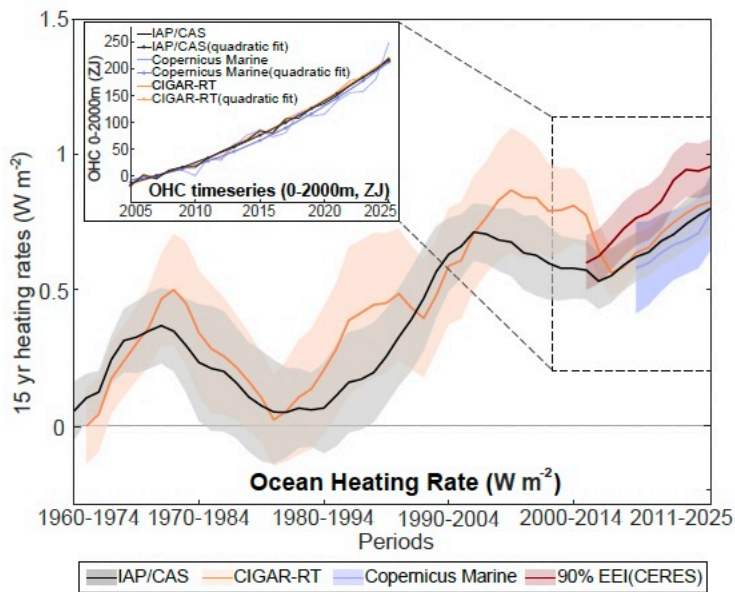


Fig. 2. Running 15-year ocean heating rates and uncertainties for the IAP/CAS, CIGAR-RT, Copernicus Marine, and CERES satellite observations of the net TOA radiation (units: Wm^{-2}). For the observational datasets and reanalysis data, uncertainties are represented by twice the standard deviation of ensemble warming rates for each product. All heating rates are expressed per unit area of Earth’s surface ($5.1 \times 10^{14} m^2$). The inset displays the annual

OHC time series (colored solid lines) and the quadratic fits to the OHC (colored solid lines with circle markers) over 2005–2025, relative to the 2005–2009 baseline (units: ZJ).

Highlights:¹

- In 2025, the global upper 2000 m OHC (Ocean Heat Content) was the highest recorded by modern instruments, ~23 ZJ higher than the 2024 value.
- Record-high OHC in 2025 arose in the tropical and South Atlantic, Mediterranean Sea, North Indian, and Southern Oceans.
- The results show that the global ocean continued to warm in 2025, with the upper 2000 m OHC **reaching the highest value ever observed.**

References

1. Pan Y, et al (2026) Ocean Heat Content Sets Another Record in 2025. *Advances in Atmospheric Sciences*. Jan 9:1-23. <https://doi.org/10.1007/s00376-026-5876-0>

2. Ocean Temperatures Just Hit a Dire New Record. Scientific American Newsletter
JANUARY 09, 2026

14. U.S. Greenhouse Gas Emissions Are Rising for the First Time in Two Years—They Could Climb Far Higher

After more than two years of progress on reducing greenhouse gas (GHG) emissions, the U.S. is on track to record an estimated 2.4 percent increase in 2025 compared with 2024, according to a new Rhodium Group report. The findings indicate the energy costs of the rapidly expanding artificial intelligence data center industry and cryptocurrencies, with emissions tied to the power sector rising by an estimated 3.8 percent in 2025.

Trumps emphasis on coal did not help.

Reference

Today in Science Newsletter Jan 13, 2026

15. China built massive solar and wind renewables.

China built more solar and wind power in 2025 (well over 300 gigawatts of capacity – equivalent to about 300 nuclear power plants) than the U.S. has in its entire history. China built so much new clean energy that it exceeded its power demand growth. As a result, the country burned less fossil fuel for electricity this year than in 2024. And China exported over \$200 billion in clean energy technologies to other countries in 2025, increasing their adoption around the world.

This is a lesson to the Trump administration that has canceled many solar and wind projects.

Yale Climate Connections, 2026

