

ADVERTISEMENT



Menu

Weekly edition The world in brief War in the Middle East War in Ukraine United States The world economy Business Artificial intelligence Archi

By **Invitation** | Trashing climate science

Donald Trump’s war on climate science has staggering implications

Even a policy of “drill, baby, drill” would imply more climate research, not its evisceration, says
Ralph Keeling

Save Share Give



ILLUSTRATION: DAN WILLIAMS

IF YOU HAVE seen one graph on the subject of climate change, the chances are that it is the one that bears my family name. The Keeling curve, named after my father Charles (who went informally by “Dave”), shows the increase and variation of carbon dioxide in the Earth’s atmosphere over the past seven decades. This iconic graph has, however, fallen victim to budget plans released recently by President Donald Trump’s White House. Those plans call for a wholesale gutting of climate science in America. Among the long list of programmes to be cut is the Mauna Loa Observatory in Hawaii, run by the National Oceanic and Atmospheric Administration (NOAA), where for 67 years key measurements of carbon dioxide have been taken almost continuously. This swing of the axe would certainly be a personal blow. More crucially, it has important scientific as well as symbolic implications.

In the 1950s Roger Revelle, director of the Scripps Institution of Oceanography at UC San Diego, came to believe that carbon dioxide was building up in the Earth’s atmosphere. He hired my father, an ambitious young scientist, to see if this was the case. My father set up his monitoring station on a mountain in the middle of the Pacific Ocean because he thought the well-mixed air over the Pacific would provide samples that reflected planetary, not local, trends. He was right—and so was Revelle.

ADVERTISEMENT

The Mauna Loa measurements, begun in 1958, showed a clear annual cycle. The growth of plants in the northern spring and summer reduces the level of carbon dioxide; the decay in autumn and winter increases it. But there was also a clear rising trend year on year. By the 1960s the measurements provided the first unequivocal evidence that excess carbon dioxide from burning fossil fuels was building up in the atmosphere. In 1965 a report headed up by Revelle outlined for President Lyndon Johnson the threat of rising carbon dioxide and its potential climate impacts.

As the curve grew in length, it inspired a cadre of researchers who grasped the broader implications of the rise. Groundbreaking studies in the late 1970s by luminaries at labs and institutes across America made clear that rising carbon dioxide would cause significant global warming. By the early 1990s it was evident that the warming wave was already upon us. I too was drawn to this field, eventually working closely with my NOAA colleagues to continue the measurements at Mauna Loa and around the world.

The curve has risen from a time when the level of atmospheric carbon dioxide was a bit under 320 parts per million to one where it is pushing 430 parts per million. The Keeling curve is the world’s longest continuous measurement of the single biggest factor driving anthropogenic climate change. And it is rising at a record rate.

The Trump administration’s broad threats to science—climate science especially—go far beyond the potential closure of the Mauna Loa Observatory. Budget proposals for 2026 call for the elimination of the office within NOAA that supports scientific research of the atmosphere and ocean. Also planned are major cuts to climate research at NASA, the Department of Energy and the National Science Foundation. Some in Congress are pushing back. But it’s early days, and the threat remains.

ADVERTISEMENT

What would be lost is staggering. Robust weather forecasts require measurements of today's weather as well as powerful computer models that can account for evolving atmospheric patterns. An ability to forecast climate months or even years ahead requires measurements not just of recent weather, but also of more persistent variables such as ocean temperatures, ocean currents, forest status, snow and ice cover, and the level of the greenhouse gases accumulating in the atmosphere. High-quality long-term observations accurately resolve trends and also validate the models. All these capabilities are now in the crosshairs.

To what end? For decades we have known that our burning of fossil fuels is the chief driver of the current global warming. Gutting today's climate research won't change that. Even if you believed—against the evidence—that the cost of curtailing emissions outweighs the benefits, it does not justify a head-in-the sand approach. Government and the private sector need information to manage risks from floods, fires, heatwaves, droughts, sea-level rise and more. Tough choices will need to be made. How seriously should a coastal city prepare for the probability of ever higher ocean surges? How should we harden military assets to cope with extreme weather events? What crops should we plant in response to more droughts and floods? Industry and others are unlikely to foot the bill for information needed by society at large. Climate research is international and won't stop. But America's contribution has been so great that the world's capacity to continue will be diminished—and America will become more dependent on the work of others.

Already the world has warmed by nearly 1.5°C from pre-industrial levels, and the consequences are upon us. Global economic losses from weather-related extreme events are estimated at over \$220bn a year, while declines in labour productivity due to exposure to extreme heat are reckoned to cost over \$830bn a year. The consequences will grow only more severe. The less we invest in cutting emissions, the costlier the outcomes will be. A “drill, baby, drill” policy calls for more capacity for climate tracking and assessment, not less. We need investment in modelling, support for ongoing measurements of Earth's systems and sufficient R&D to rally the next generation to this urgent cause. Instead, the Trump administration intends to send the climate scientists packing and to shutter research and data-gathering activities. The whole world will pay a price for this recalcitrance, not least America. ■

Ralph Keeling is a distinguished professor at Scripps Institution of Oceanography and president of the Keeling Curve Foundation
Explore more

Opinion

Climate change

By Invitation

 Save Share Give Reuse this content

SUBSCRIBER ONLY | OPINION

Sign up to our Opinion newsletter

Editorials, columns, guest opinions and your letters, all in one place

Sign up