

How Biden Plans to Block the Sun to Save the Planet

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STORY AT-A-GLANCE

- › Solar radiation modification (SRM) is a form of geoengineering that aims to cool off the Earth by reflecting sunlight back into space
- › The controversial strategy comes with significant risks, but that didn't stop The White House from moving forward with a research plan for "solar and other rapid climate interventions"
- › The congressionally mandated research plan is focused on atmospheric-based approaches, such as stratospheric aerosol injection (SAI) and marine cloud brightening (MCB)
- › SRM can have unintended consequences, including lower average precipitation, loss of biodiversity and impacts to food production, along with heightening geopolitical tensions
- › There's also a risk that climate modification technologies could be weaponized against the global population by controlling rainfall and drought

Solar radiation modification (SRM) is a form of geoengineering that aims to cool off the Earth by reflecting sunlight back into space.¹ The controversial strategy comes with significant risks, but that didn't stop the White House from moving forward with a research plan for "solar and other rapid climate interventions."²

The congressionally mandated research plan is focused on atmospheric-based approaches, such as stratospheric aerosol injection (SAI) and marine cloud brightening

(MCB), as opposed to space-based approaches, which include mirrors in space, or white roofs and other local-scale measures to increase surface reflectance.³

The research "would help to prepare the United States for possible deployment of SRM by other public and private actors," the report notes,⁴ suggesting the government is seriously considering use of this extremely risky technology — if it hasn't already decided to move forward.

What Is Stratospheric Aerosol Injection?

SAI involves injecting reflective aerosol particles into the stratosphere, where they reflect sunlight away from the Earth.⁵ Volcanic eruptions are natural versions of SAI, but technological constraints surround man-made SAI, as "dispersing aerosols in sufficiently high altitudes is challenging," according to a Climate Analytics report.⁶ The Union of Concerned Scientists (UCS) explained:⁷

"In effect, SAI simulates what happens during large volcanic eruptions, when volcanoes emit small particles into the upper atmosphere (called the stratosphere). These particles reflect sunlight and lead to cooling for as long as they remain in the stratosphere, which may be up to a few years after injection.

By injecting sulfate or other aerosol particles into the stratosphere, SAI would mimic the cooling effect of a large volcanic eruption's effect of lower global temperatures. If ever deployed, SAI would have global impacts, reducing temperatures and altering precipitation patterns across the planet."

By reflecting more solar radiation back into space, the aerosols lower global temperatures but also have a serious "side effect" — they lower average precipitation. As a result, additional geoengineering techniques — such as thinning out cirrus clouds in the upper atmosphere — would be necessary to counteract the decrease in precipitation.⁸ The White House report also highlighted potential issues with SAI, noting:⁹

"SAI approaches could worsen soil acidity, with impacts to food production, compared to warming at Representative Concentration Pathway 8.5 (RCP8.5) levels without SAI in some regions due to acidic deposition (e.g., the Pacific Northwest, southern Greenland, the Himalayas, and polar regions).

The impacts of sunlight scattering could have negative effects on crop growth that harm nutrition and negate the benefits of limiting temperature increases using SAI. SRM would not address ocean acidification or its implications for ocean ecosystems."

Other problems include the potential that SAI could result in increased exposure to particulate matter from the injected aerosols and "changes in radiative forcing," which could offset any potential health benefits from SAI, such as reduced ozone formation. There's also concern that SAI could increase wildfires and smoke exposures in some areas, as well as increase health impacts due to waterborne disease in others.¹⁰

What Is Marine Cloud Brightening?

MCB involves spraying salt or other chemicals into marine clouds in order to increase their reflectiveness.¹¹ "Ship tracks over the ocean demonstrate the mechanism underpinning MCB," according to the White House report.¹² UCS explained, "MCB would involve spraying sea salt into low-lying marine clouds to enhance their brightness and reflectivity in order to increase regional-scale cooling."¹³

Little research into MCB has been conducted, but field trials have already begun in Australia's Great Barrier Reef. Using a seawater sprayer attached to a barge, seawater is sprayed into the air, creating sea salt crystals. "These crystals float into the sky to form a fog and bolster the existing clouds' reflectivity," according to the Great Barrier Reef Foundation.¹⁴

The "brightened" clouds may also stay above the reef longer than ordinary clouds, reflecting even more sunlight.¹⁵ The problem, however, is that this untested strategy could have unintended consequences.

"Potential negative effects could include influencing local weather patterns, potentially mildly suppressing rainfall over the reef and adjacent land," the Reef Restoration and Adaptation Program explained.¹⁶ David Keith, Gordon McKay Professor of Applied Physics with Harvard University, added that several "key risks" exist for marine cloud brightening, which is why his research team does not focus on it:¹⁷

"Even if marine cloud brightening could work, it could affect large scale climate and weather patterns if it were used on a large enough scale, say to achieve a level of "radiative forcing" that would be big enough to offset some of the greatest impacts of climate change.

(This is because marine cloud brightening could only be implemented in limited areas, where the right kinds of clouds exist, which is perhaps only 10 percent of the planet's surface.) There are several key risks that need to be better understood."

Increasing Geopolitical Tensions

Adding to the controversy, the use of SRM carries "significant geopolitical risks," the White House report noted.¹⁸ An example of this occurred in 2023, when a startup team — Make Sunsets — said it had launched weather balloons containing helium and sulfur dioxide (SO₂) into Mexican skies in order to alter the stratosphere.¹⁹

The company was selling "cooling credits" via its website for \$10, in exchange for releasing 1 gram of SO₂. The Mexican government fought back, however, announcing plans to "prohibit and, where appropriate, stop experimentation practices with solar geoengineering," causing the team to suspend its operations.²⁰ However, Make Sunsets is still reportedly planning to conduct further weather modification experiments in the U.S.

But the fact remains, if and when SRM becomes widely used, it will have global effects that transcend borders. Supercomputers have run models to predict how solar radiation management may affect different parts of the Earth, not only in terms of temperature

but also rainfall and snowfall. Govindasamy Bala, from the Indian Institute of Science and author of a U.N. climate report, said "the science is there,"²¹ but it's far from an exact one.

"I think the next big question is," Bala told Reuters, "do you want to do it? ... That involves uncertainty, moral issues, ethical issues and governance." As Reuters reported, "That's because every region would be affected differently. While some regions could gain in an artificially cooler world, others could suffer by, for example, no longer having conditions to grow crops."²² Paulo Artaxo, environmental physicist at University of Sao Paulo and another report author, added:²³

"Basically the message is more or less the same as (the previous report): The science is not mature enough. The side effects of any of the known geoengineering techniques can be very significant ... Society has to consider if these side effects are too big to try any strategy."

Will Biodiversity Suffer?

Among the risks outlined by the White House were those related to biodiversity. Again, it's impossible to know what ramifications alterations to the stratosphere, clouds and sunlight reaching the Earth could have.

"SRM would likely also affect ecosystem functioning like net primary productivity and more integrative aspects of ecosystems like biodiversity, for example, because SRM may increase the proportion of diffuse rather than direct incoming solar radiation," the White House noted,²⁴ adding:²⁵

"Implementing SRM is expected to limit the risks to biodiversity associated with higher temperatures but is also expected to affect the characteristics of solar radiation and potentially cloud cover (associated with changing precipitation patterns) without impacting higher CO2 levels."

These changes could have significant effects on vegetation and ecosystem health broadly, leading to unknown impacts to biodiversity, particularly when

combined with other anthropogenic stressors (deforestation, urbanization, chemical use, etc.)."

What's more, if geoengineering were started and then abruptly stopped, it would "significantly increase the threats to biodiversity from climate change," according to researchers in Nature Ecology & Evolution.²⁶

This means geoengineering could cause significant damage. In a news release from Springer Nature, it's explained that, once started geoengineering is too dangerous to stop – but given the politicized nature of the technology, such rapid starts and stops are likely:²⁷

"Abrupt termination causes changes in local climates that are 2-4 times more rapid than those caused by climate change itself ... in many cases, rapid geoengineering threatens ecosystems by forcing species to move in one direction to maintain similar temperature conditions and a different direction for similar precipitation conditions.

Biodiversity-rich areas, such as tropical oceans and the Amazon basin, are particularly likely to be affected negatively. These results indicate that geoengineering, and, in particular, its rapid termination, could cause irreversible loss of biodiversity."

Could Geoengineering Backfire, Lead to Agricultural Control?

There are other concerns about geoengineering's nefarious side, particularly since Bill Gates remains heavily invested in climate modification technologies that not only will destabilize the Earth's climate systems more, but also can be weaponized against the global population by controlling rainfall and drought. In a previous interview I conducted with Vandana Shiva, Ph.D., she explained:²⁸

"The company that collects patents on gene-edited organisms, both in health and agriculture, is Editas, founded by a main financial investor for the Gates Foundation. Gates is also a big investor in Editas.

So, here's a company called Editas to edit the world as if it is a Word program. The two scientists who got the Nobel Prize this year have both been funded in their research by Gates. My mind went back to how Rockefeller financed the research, got the Nobel Prize, and then made the money.

So, you finance the research. Then you finance the public institutions, whether they be national or international. You invest and force them down the path where they can only use what is your patented intellectual property. And, as he has said in an interview, his smartest investment was vaccines, because it is a 1-to-20 return. Put \$1 in and make \$20. How many billions of dollars have been put in? You can imagine how many trillions will be made.

At the end of it, where does food come from? It comes from seed. He wants to control it. It comes from land. He's controlling that. He's become the biggest farmland owner [in the U.S.]. But you need weather [control]. You need a stable climate.

So, what could be a weapon of control of agriculture? Weather modification. He calls it geoengineering. This is engineering of the climate. Again, making it look like he's going to solve global warming by creating global cooling."

You can follow the rapid expansion of geoengineering research and experimentation via an interactive online geoengineering map created by ETC Group and the Heinrich Boell Foundation. More than 1,700 such projects have already been identified.²⁹

Sources and References

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- ⁶ [Climate Analytics March 2023](#)
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