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The Latest on Hacking the Planet

 by [Eli Kintisch](#) on February 20, 2010 7:18 PM | [Permanent Link](#)
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SAN DIEGO—The prospect of cooling the planet manually—geoengineering—was the subject of several presentations here today, including two presentations that involved new findings on the controversial idea. The scene was the annual meeting of the American Association for the Advancement of Science (which publishes *ScienceNOW*). It turns out that there's a lot scientists don't know about various cooling methods, but that's changing steadily. And researchers are learning lessons that suggest that some techniques may have fewer barriers than previously thought.

But before they got to the sessions, the scientists had to contend with protesters. Outside of the meeting room, a smattering of activists with drums, cameras, and a megaphone spread the message that the government is already performing geoengineering. [More on that here.](#)

Once inside the conference center, University of Calgary physicist David Keith presented work on the concept of spreading droplets called aerosols in the stratosphere, where they could block a small fraction of the sun's rays. A paper published last year suggests that the main way scientists have proposed to do so, spraying sulfur dioxide gas, wouldn't work. Sulfur dioxide is converted in the atmosphere into droplets of sulfuric acid—a monthlong process that happens in nature after the eruption of volcanoes, which spew the gas. But the paper found that the acid droplets would clump up and fall out of the sky before they could have much cooling effect. For example, injecting 10 megatons of sulfur—roughly the amount of sulfur belched forth by Mount Pinatubo in 1991—would counteract less than half of the “forcing” energy thought to be responsible for global warming.

To get around this problem, Keith and colleagues—some of whom wrote the first paper—have proposed spraying the acid, not the gas, with airplanes. In data that has yet to be published or peer-reviewed, Keith and his collaborators found that only “a few megatons per year” of sulfur could be more than twice as effective at blocking radiation as the sulfur dioxide.

Seeding the skies with sulfur would pose great risks, of course, but the scientists said studying the technique was important. One challenge is balancing temperature changes with changes that geoengineering might cause. That includes changes in rainfall and snow patterns, which would result from altering the balance of radiation striking the ground.

In previous modeling efforts, adding sun-blocking particles uniformly across the globe has tended to undercool the poles while overcooling the equator. So Ken Caldeira, a geochemist at the Carnegie Institution in Stanford, California, tried various modeling runs in which geoengineering was used to try to counteract a severe warming—a doubling of preindustrial CO₂ concentration. In new work yet to be published, he distributed the particles to try to minimize those effects, for example, putting more geoengineering particles at the poles versus the equator. (Global warming is greatest at the poles.) By doing that, Caldeira was able to minimize the undercooling/overcooling problem, but it worsened the effects on precipitation.

That said, Caldeira emphasizes, either variety of geoengineering—doing it uniformly at the pole or the geographically optimized version—have shown less total warming and less disruption of rain patterns. “In a high global warming world, more people would be better off with geoengineering, but some people would be worse off,” he said.

[ENLARGE IMAGE](#)


Seeding the skies. Geoengineering approaches include spreading aerosols in the stratosphere, where they could block a small fraction of the sun's rays.

Credit: Wikimedia Commons / Blink


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Looks to me that Eli Kintisch is just bad as it gets. People have the right to question when there is no real answers given. To such activities as atmosphere dispersal of compounds unknown to you. Geo-engineering is very here in 2010 and it's time for disclosure. This continual denial needs to come to an end. If AAAS is about "Science serving Society" then changes in there media staff may be in there interest. People are losing trust in Science and policy makers.

Yesterday, 11:57:54 PM – Like – Reply

**jk**

How much would this contribute to the acidification of the oceans, caused by the raising CO2 levels?

Yesterday, 10:50:41 PM – Like – Reply

**Guest**

So, I'm not a scientist, but I do look up in the sky often. Take a look at the planes doing the aerosol spraying. The spray stays in the sky for hours and becomes a cloud. Count the number of days without cloud cover. Compare it with sunny days ten or even five years ago. Learn about HAARP, learn about the Cloverleaf Project, which involved the use of commercial planes to distribute unknown chemicals into the air. Take a look at the U.S. Space command's 2020 vision. Take a look at the levels of Barium, Aluminum, and Stachybotrys in our air and water. Take a look at the epidemic of Vitamin D deficiency, of the astronomical rise in rates of respiratory disease and cancer.

I'm surprised that a scientist is able to blithely ignore or deny these facts.

Jaydayrock

Jaydayrock

Yesterday, 7:57:22 AM – Like – Reply

**Brad Arnold**

"A paper published last year suggests that the main way scientists have proposed to do so, spraying sulfur dioxide gas, wouldn't work." Yeah, I've always thought it was stupid that we would use the same aerosol as a volcano. I suppose the only reason people think sulfur dioxide is because they want the cooling effect of a volcanic eruption, but it ought to be obvious that there are much better sun dimming aerosols (more effective and less acidic).

By the way, buckle down for abrupt climate change by mid-century (when a complex system, like our climate, is forced, like by our gigantic carbon emissions, it resists change, but then abrupt changes to a new stable state - the reason I predict abrupt climate change soon is that the primary warning signal of that abrupt change is stasis like the lack of general warming we've seen in the last couple of years. Do you understand the consequences of abrupt climate change (too far from the food chain, huh?)?

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