



## Geoengineered Sky: Bye-Bye Blue, Hello White

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By [Michael D. Lemonick](#)

Ask the smallest child what color the sky is and you know what answer you'll get, even if that child lives in cloudy Seattle or polluted Mexico City. Even in places where the sky is often gray or vaguely yellowish, everyone knows the sky is supposed to be blue. If the concept of a blue sky isn't literally part of our genetic makeup, it might as well be.

And that's why an otherwise harmless side effect of one new [geoengineering](#) study might turn out to be deeply troubling. Geoengineering itself is a sort of Plan B, a way to fix global warming after the fact if we fail to limit greenhouse-gas emissions. One such scheme involves spewing particles of sulfur dioxide into the atmosphere to cut down on incoming sunlight — and according to [new paper](#) in *Geophysical Research Letters*, that could make that canopy of deep blue a thing of the past. Instead, Ben Kravitz, of the Carnegie Institution for Science at Stanford and his colleagues say, the sky will become a washed-out white.

The washed-out white skies in Beijing are a good example of what our skies could look like post a geoengineered experiment. Credit: Geoff Grant

This is hardly the riskiest thing about geoengineering, as even its proponents freely admit. No one really knows what might happen if we begin tinkering with how much sunlight reaches the Earth. It might affect plant growth adversely, or trigger changes in regional climate, or do things scientists haven't even thought of yet. And while it will almost certainly slow global warming, it would do nothing to keep the oceans from growing [more and more acidic](#) from the carbon dioxide they absorb. Beyond that, this form of geoengineering would be no more than a stopgap measure: the greenhouse gases we're pumping into the atmosphere at an ever-increasing rate will still be there. Global warming will be poised to take off with a vengeance if we ever stopped replenishing the upper atmosphere with particles — a point made by Harvard geoengineering researcher David Keith in a [livechat](#) this week as well.

The distress we might get from looking up and seeing white instead of blue could be pretty significant. So said Rutgers scientist Alan Robock in a 2008 paper titled "[20 reasons why geoengineering may be a bad idea](#)". Robock realized that while sulfur dioxide particles reflect sunlight back into space, they also scatter the light in other directions. Much of it bounces back and forth in the upper atmosphere before heading down to our eyes, and since much of the scattered light is reddish, it combines with the atmosphere's natural blue to produce a whitish color. That argued Robock, "could have strong psychological impacts on humanity."

What Kravitz and his co-authors decided to do was to quantify how much whitening would actually result, plugging virtual particles of sulfur dioxide into a number of climate models, then looking for a consensus of

what the models had to report. The answer: the sky would whiten considerably — similar to what happened after the eruption of Mount Pinatubo in the Philippines in 1991, but even more so, and indefinitely.

Will picture-perfect blue skies be a thing of the past, to be remembered only in pictures and videos?

Pinatubo also caused gorgeous red sunsets for months after the eruption, as the sinking sun bounced off natural particles and sent reddish light directly into peoples' eyes, and the same would happen with artificial particles, Kravitz said. "Lots of people find that really pretty," he said in an interview.

How distressing a whiter sky might be is hard to predict, but at the very least, the authors write, "... our results can provide a basis for psychological research." Kravitz emphasized that he's not necessarily a geoengineering proponent. "I don't think we know nearly enough yet to be considering it as a real option," he said.

While a whiter sky would be just a side effect of sulfur dioxide particle geoengineering, Kravitz said, it could also have a direct effect on peoples' perceptions of climate change. "I think about the polar bear metaphor," he said, which is to say that you might feel sorry for the bears in a changing climate, but their problems are far away from peoples' day-to-day lives. "But a whiter sky would be very noticeable to everyone.

"It could bring the issue home to people," Kravitz said. And that, by implication, would get them to get serious about reducing the emissions that actually cause climate change. Even if we end up resorting to geoengineering to cool the planet temporarily, we'll eventually have to treat the disease itself rather than simply fighting off the symptoms.

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## Comments

By Asteroid Miner (61265-2849)  
on June 4th, 2012

SO<sub>2</sub> [sulfur dioxide] is a poison gas. SO<sub>2</sub> + H<sub>2</sub>O = H<sub>2</sub>SO<sub>3</sub>  
H<sub>2</sub>SO<sub>3</sub> + O = H<sub>2</sub>SO<sub>4</sub> = sulfuric acid. The reaction happens in your lungs. Your lungs dissolve painfully. You die.

By Susan Anderson  
on June 5th, 2012

Since ocean acidification and water quality and supply continue to be escalating problems, I surely do hope we will not try this "solution" which to my jaundiced eye reeks of hubris and tunnel vision, not to mention outright idiocy.

You do well to show that picture of China. This item in the news today shows how elastic our ideas about what constitutes clean air are: China objects to the US Embassy publishing air quality statistics, saying:

"The Beijing government only began reporting PM<sub>2.5</sub> earlier this year after long-standing public and international criticism of its lack of transparency about its air quality.

“The government appears frustrated that ... the U.S. readings underscore the fact that pollution levels considered unhealthy in the U.S. are classified as good by China.

“Wu said it isn’t fair to judge Chinese air by American standards because China is a developing country and noted that U.S. environmental guidelines have become more stringent over time.

“The standard China uses “takes into account the level of our current stage of development,” Wu said.”

<http://news.yahoo.com/china-tells-us-stop-reporting-beijings-bad-air-055535944—finance.html>

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