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http://news.nationalgeographic.com/news/2006/08/060804-global-warming_2.html Page #2-National Geographic News August 4, 2006 by: Kate Ravilious Extreme Global Warming Fix Proposed: "Fill the Skies With Sulfur"

The question is: Why is the EPA requiring all sulfur to be taken out of diesel fuel by the end of 2006, because sulfur pollutes the air...and now there is serious consideration being given to this proposal which will contaminate our air?


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Extreme Global Warming Fix Proposed: Fill the Skies With Sulfur

Kate Ravilious for [National Geographic News](#) August 4, 2006

A Nobel Prize-winning scientist has proposed a controversial method for protecting Earth from global warming: seeding the atmosphere with sulfur to reflect the sun's rays.

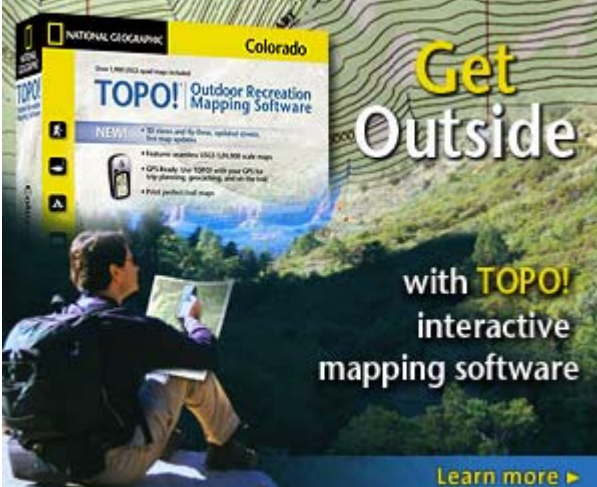
In the current issue of the journal *Climate Change*, Paul Crutzen of Germany's Max Planck Institute for Chemistry suggests injecting particles of sulfur into the stratosphere—the upper layer of the atmosphere—to cool the planet and buy time for humans to reduce greenhouse gas emissions.

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The sulfur particles would be dropped from high-altitude balloons or fired into the atmosphere with heavy artillery shells, he says.

Once airborne the particles would act like tiny mirrors, bouncing the sun's light and heat back into space.

Crutzen's plan would imitate the cooling effects of volcanic eruptions, which send large sulfur-rich clouds into the atmosphere.

When Mount Pinatubo in the Philippines erupted in 1991, he points out, the huge plume of sulfur cooled the Earth by 0.9 degree Fahrenheit (0.5 degree Celsius) the following year.

A relatively small amount of sulfate could produce a level of cooling similar to that caused by the Pinatubo eruption, according to Crutzen's calculations.

Crutzen, who won the Nobel Prize in Chemistry in 1995 for his work on the ozone layer, stresses that it is still important for nations to cut back



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greenhouse gas emissions, but extreme measures like this may be necessary to provide more time.

(See *National Geographic* magazine's ["Global Warning: Signs From Earth."](#))

"I hope that my experiment will never have to take place," he said in an email.

Geo-Engineering

This isn't the first time that scientists have suggested meddling with Earth's climate in order to reduce the impact of global warming.

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Two years ago John Latham, an atmospheric scientist from the U.S. National Center for Atmospheric Research in Boulder, Colorado, and his colleagues put forward a plan to whisk up seawater to encourage cloud formation in the lower atmosphere, thereby reflecting radiation back into space.

"All of us recognize that geo-engineering seems increasingly likely to be the only route to staving off a cataclysm in the short term before new, clean energy sources are developed sufficiently," Latham said.

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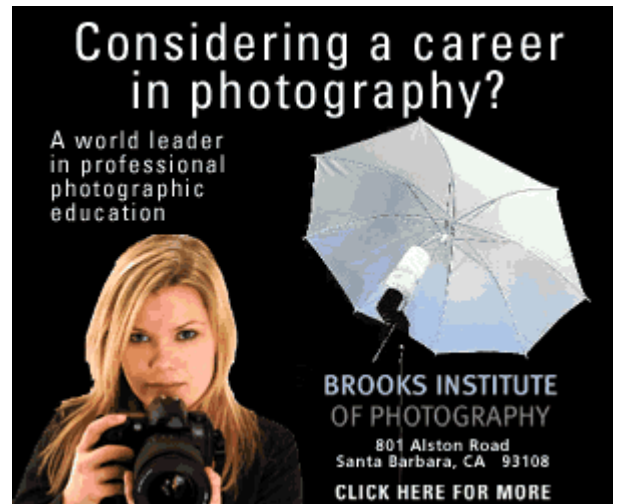


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He thinks that Crutzen's idea is feasible, but he says further investigation is needed.

"This idea could help to hold the temperature constant, but we need to examine some of the potential adverse ramifications," Latham said.

Crutzen admits that there is a risk of the sulfur becoming a health hazard if it rained back down on Earth.

In addition there could be an increase in damage to the ozone layer and a whitening of the sky.

"If things go wrong during the experiment, then [we would] stop," he said. "In a few years the atmosphere [will] return back to its earlier condition."

On the upside, sunsets and sunrises would become more spectacular.

Crutzen calculates that launching enough sulfate to have an effect for two years would cost between 25 billion and 50 billion U.S. dollars, about \$25 to \$50 per head in the developed world.



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There may still be time for nations to reduce greenhouse emissions enough to make such extreme measures unnecessary, Crutzen concludes, but no one can know for certain.

"We don't know the future, so this question is impossible to answer," he said.

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Sulfur Geoengineering 2006

Bomb Earth's atmosphere with sulphur, researcher says

By [Thomas C Greene in Washington](#)

Published Tuesday 1st August 2006 09:36 GMT

Firing artillery shells into the stratosphere to release sulphur particles could defeat global warming, climate researcher Paul Crutzen says.

In a paper to be published in the journal *Climatic Change* in August, the professor will explain his scheme in greater detail.

So far we have learned, from this [press release](#) (http://www.springer-sbm.com/index.php?id=291&backPID=132&L=0&tx_tnc_news=2646), that sulphur particles can reflect sunlight well enough to lower the Earth's temperature, if that ever becomes necessary.

Crutzen reckons that the effect would last about two years. He bases this on observations of the Mount Pinatubo eruption in 1991, which released significant quantities of sulphur into the atmosphere and may have lowered the Earth's average temperature by 0.5 degrees Celsius. Or not.

Crutzen says he doesn't think of "climate engineering" as a first-line response to global warming, but if governments fail to enact the proper controls for greenhouse gas emissions, it might become a necessary emergency measure.

What could possibly go wrong? Oh, heaps of things. Very little is known about how sunlight affects weather patterns, so fiddling with it could result in anything from minor changes to catastrophic droughts throughout the world's most fertile regions.

On the other hand, we might already have come to depend on "global dimming" from air pollution to keep global warming at bay, so this artificial volcano idea might be the way back from disaster.

There is evidence suggesting that recent efforts to reduce greenhouse gas emissions has caused a spike in global temperatures over the past decade. Without our protective layer of industrial pollutants, the Earth's atmosphere is now reflecting less solar radiation, and temperatures are rising. We could be rendering the planet uninhabitable just because we're afraid of a little shmutz in the air.

The message, then, that air pollution is good for the Earth, will no doubt resonate deeply with the Bush administration. And while the Bushies have been hostile toward the idea of global warming, certainly the idea of attacking a complicated problem with heavy artillery will appeal to them so strongly that we might see some action soon. ®

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