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## [Time to Test Volcano-Inspired Planet Cooling Scheme?](#)



CLAUDIO SANTANA / AFP - Getty Images

This file photo shows a cloud of ash billowing from Puyehue volcano near Osorno in southern Chile, on June 5, 2011. Scientists are considering tiny field tests of a technology to mimic the cooling effect of volcanic eruptions on the climate.

As crops wither, Greenland melts and infrastructure buckles under unrelenting heat, Harvard University scientists are beginning to consider a tiny field trial of a technology that could help cool the planet.

They won't do it unless the plan goes "through some kind of serious public approval process and (is) primarily publicly funded," [David Keith](#), a physicist and leading geoengineering researcher, told NBC News Wednesday.

The idea is to inject sulfate particles into the stratosphere where they combine with water vapor to form aerosols that reflect some of the sun's rays before they reach earth. It essentially mimics the effect of a volcanic eruption.

**But, ironically, doing so could deplete the ozone layer that protects us from harmful ultraviolet rays. That's because the aerosols increase the reactive surface area for the conversion of chlorine (present from the release of now-banned chlorofluorocarbons) to a form that destroys ozone. The question is, how much ozone would be lost, and what benefit would be gained in the process?**

"We think it makes sense to do some in situ experiments to actually get a better understanding of the ozone loss," Keith said.

The details for any such experiment are not yet final, nor have he and his colleague, atmospheric scientist [James Anderson](#), submitted a proposal.

That's in contrast to a [recent report in The Guardian](#) that the pair is planning to conduct an experiment in New Mexico within a year that will "involve the release of tens or hundreds of kilograms of particles to measure the impacts on ozone chemistry."

When asked by NBC News about the report, Keith said it "is substantially fabricated" and written in a way "to make us look like cowboys out to mess with the climate for profit."

"We are just the opposite of that."

**The scientific community, however, is beginning to consider outdoor tests of geoengineering schemes "with careful experiments where you really ask nature questions," Keith said.**

**Based on modeling studies, the current balance of data "to me suggests that a small amount of sulfate aerosol geoengineering would definitely have risk, but would have benefits that are much larger than the risk," Keith said.**

A controlled field experiment, he added, would help the researchers better understand the risks and benefits and thus help policy makers decide if the technologies should be pursued.

“If we knew precisely how much ozone loss there was as a function of water vapor and sulfate and chlorine, there would be no reason to do the experiment,” Keith said. “The point is we don’t.”

For some, the mere idea of geoengineering the planet [serves as a distraction](#) to efforts to curb emissions of carbon dioxide and other greenhouse gases that are causing the climate to change.

Other studies pin the schemes as too costly and [fraught with unintended consequences such as increasing rainfall](#).

**For Keith, the prospect geoengineering the climate could be a good idea, especially for people in parts of the developing world who are likely to experience crop losses due to climate change.**

“But I’m not advocating that we actually do it now ... **we need a broad and serious research program,**” he said.

*John Roach is a contributing writer for NBCNews.com. To learn more about him, check out his [website](#). For more of our [Future of Technology](#) series, watch the featured video below.*