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Copenhagen: Geoengineering's Big Break?



— [Flickr/Garry](#) (Creative Commons)

Mon Dec. 14, 2009 9:14 AM PST

You won't find geoengineering on the official agenda at the climate summit in Copenhagen. But for anyone watching the trajectory of the climate change debate, the controversial notion of intentionally modifying the planet or its climate system to counteract the effects of global warming is becoming increasingly difficult to ignore. Attracting almost no attention, Russia may have already conducted the first-ever geoengineering field trial. And if the climate talks at Copenhagen fail, it could give geoengineering advocates the lucky break they've been waiting for.

While it hasn't been featured in the formal negotiations, geoengineering has been a significant sub-theme in Copenhagen—the subject of numerous [side events](#), protests, and a documentary film screening. Robert Greene's [Owning the Weather](#), which aired here Sunday night in a venue off the spectacularly lit City Hall Square, paints the longstanding history of human attempts to control and modify the weather—through anything ranging from rain dances to quack cloud seeding efforts and hail cannon fusillades. The film ends with the observation that we are moving ever closer to making this ancient dream (or nightmare, if you prefer) a reality.



Indeed, scientists say there is little doubt that we could bring about an artificial planetary cooling by, say, seeding the Earth's stratosphere with reflective particles, called [sulfate aerosols](#), that would act as an artificial global parasol and cool us down. Such an act would amount to mimicking the climatic effects of a large volcanic eruption, such as the explosion of Mt. Pinatubo in the Philippines in 1991—whose 22 mile high stream of ash, subsequently dispersed across the globe, resulted in half a degree Celsius of global cooling

over the course of the following year.

Granted, the unintended consequences of such an action (such as decreased global precipitation) might be significant. But, goes the thinking among some scientists, if we're facing a climate catastrophe—if we're really going to bake; if Greenland is really going to go—then wouldn't a few side effects be worth it to maintain our fundamental way of life? And the less that is achieved in Copenhagen—the more agreements fall short of absolutely ruling out climate catastrophe by, say, returning global carbon dioxide concentrations to something like 350 parts per million—the more attractive geoengineering sounds, at least as a last resort.

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Continued From Above

Perhaps the most lamentable indication that geoengineering is going mainstream is the fact that political conservatives and contrarians have increasingly begun to embrace it as an alternative to the central project of COP 15—namely, halting and then decreasing global greenhouse gas emissions. Bjorn Lomborg, the Danish environmental contrarian and infamous author of *The Skeptical Environmentalist*, [loves the idea](#). So do Steven Levitt and Stephen Dubner, authors of the bestselling *SuperFreakonomics*, whose chapter on how we can address global warming through geoengineering (rather than emissions cuts) has been [eviscerated](#) by environmentalists and some scientists due to its many inaccuracies and misrepresentations.

Meanwhile, at the other end of the spectrum, anti-geoengineering activists have begun raising hell in an attempt to stop this growing momentum in favor of climate tinkering, before it gets any stronger. They don't trust scientific hubris; they abhor messing with nature. This movement centers on the Canada-based [ETC Group](#) (it stands for "Etcetera"), whose head, Pat Mooney, opines in *Owning the Weather* that scientists are "warm, cuddly, and naive."

However, the mainstream climate scientists who are willing to at least consider geoengineering as a possibility constantly emphasize that such measures should not be an alternative to greenhouse gas reductions—rather, they could serve as an additional safety valve. To that end, these scientists—like [Jason Blackstock](#), a research scholar at the Vienna-based International Institute for Applied Systems Analysis who, along with the British Royal Society, helped to organize [three geoengineering events](#) here in Copenhagen—support ongoing geoengineering *research*, so as to determine with more precision what various types of interventions might do to the planet.

At a panel discussion after the screening of *Owning the Weather*, Blackstock described geoengineering as "terrifying." But as he quickly added, "scientists are not into this because of hubris, but because of fear." Blackstock went on to make the case that there must be international regulations firmly in place before any rogue nation, or individual, attempts a geoengineering intervention of any significant scale.

Such regulations appear increasingly urgent, since government-funded geoengineering research is already underway, although not yet in the United States (so far as we know). The European Commission has launched a [project](#) to study "implications and risks associated with engineering solar radiation to limit climate change." And the United Kingdom, through its Research Council's Energy Program, [will also be funding geoengineering studies](#).

And then, there's the Russian Federation. Geoengineering ideas have a long history in Russia—and now, they appear to be moving to the next scientific level.

Although so far it has received little or no attention, the journal *Russian Meteorology and Hydrology* [recently](#)

[published a new kind of geoengineering study](#) whose lead author is the journal's editor, the prominent Russian scientist [Yuri A. Izrael](#). Known for his opposition to the Kyoto Protocol, his skepticism of human-caused global warming, and his enthusiasm for geoengineering, Izrael also happens to be a top scientific adviser to Vladimir Putin. And now, his paper reports on what is probably the very first geoengineering field trial. Izrael and his team of scientists mounted aerosol generators on a helicopter and a car chassis, and proceeded to blast out particles at ground level and at heights of up to 200 meters. Then they attempted to measure just how much sunlight reaching the earth was reduced due to the aerosol plume.

This small-scale intervention was effective, the Russian scientists say. And in an [accompanying article](#) on geoengineering alternatives, Izrael and colleagues note that "Already in the near future, the technological possibilities of a full scale use of [aerosol-based geoengineering] will be studied."

Up until now, scientists have largely studied the possibilities of geoengineering in relatively unthreatening computer models—not out in nature itself. They've just run a series of simulations to try to assess likely impacts. In this context, the apparent trajectory of Russian research sounds like something quite new. And it may prompt increasing calls for regulation of geoengineering interventions, even at the small scale research level where environmental consequences would be relatively minimal.

Indeed, last night in Copenhagen after the *Owning the Weather* screening, the prominent climate scientist Stephen Schneider of Stanford University remarked that if any country engages in a geoengineering initiative that affects the people or environment of another country, it could be considered an "act of war."

It is important to bear in mind that weather modification schemes have long been closely tied to the military. In the Vietnam War, the US military tried to seed clouds in an attempt to flood the Ho Chi Minh trail and impair the operations of the Viet Cong. And none other than nuclear scientist and Ronald Reagan adviser Edward Teller—the model for "Dr. Strangelove"—was one of the early US geoengineering proponents.

If an international competition begins to advance farthest and fastest in geoengineering research for *military* reasons—premised on the idea that one might use weather or climate modification as a strategic weapon—that would likely render ongoing research classified, observes Blackstock. It would also surely lead to greater public backlash from organizations like the ETC. Group.

That's the last thing scientists like Blackstock, who support ongoing public geoengineering research and dialogue, want to see. One thing is certain: Although a few years ago one might seriously make the argument that we shouldn't even discuss the possibility of geoengineering—for doing so could weaken the case for quick and deep cuts in greenhouse gas emissions, and empower the Lomborgs, Levitts, and Dubners of the world—that idea just sounds ludicrous now. The public conversation about geoengineering is steadily growing: the scientific research on the topic is steadily increasing. There is no putting this idea back in the box.

Moreover, if it becomes increasingly clear that we can't control global warming in any more sober way, it seems very likely that the pressure will mount, and mount, and mount, to have a backup plan in place. Blackstock uses the analogy of a car driving in fog and heading towards a precipice: It's good to have ordinary brakes, but if those fail, you also want an emergency brake.

It's an ingenious argument, but the degree to which it ultimately proves convincing may directly correlate with the degree to which COP15 or later efforts take the strongest measures possible to curb global warming. In particular, any further devastating climate impacts, particularly to vulnerable low-lying developing countries, may draw new calls for geoengineering research or interventions. And given the current state of deliberations in Copenhagen, that's the scariest thing of all.

This story was reported by Chris Mooney of [Discover](#) as part of the [Copenhagen News Collaborative](#), a cooperative project of several independent news organizations. Check out the constantly updated feed [here](#). Mother Jones' comprehensive Copenhagen coverage is [here](#), and our special climate change package is [here](#).

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COMMENTS

**Jesus Christ Mooney, the more**

Submitted by Anonymous (not verified) on Mon Dec. 14, 2009 12:18 PM PST.

Jesus Christ Mooney, the more I read you, the less impressed I am. Either you are ignorant, or are purposefully misleading.

How can you fail to mention that Rajendra K. Pachauri has been pushing for geo-engineering solutions? How come you neither criticize him or differentiate him from the so called right wing groups you do critique?

http://www.timesonline.co.uk/tol/news/environment/article6938298_ece

Carbon must be sucked from air, says IPCC chief Rajendra Pachauri

Drastic cuts in carbon emissions may not be sufficient to avoid the worst ravages of global warming and the world will need to suck carbon from the atmosphere to avert permanent damage to the climate, according to a leading world authority on climate science.

In an interview with The Times, Rajendra Pachauri, chairman of the UN's Intergovernmental Panel on Climate Change (IPCC), proposed that new techniques should be applied to help to mop up atmospheric levels of carbon dioxide that have been pumped into the atmosphere from the burning of fossil fuels.

"There are enough technologies in existence to allow for mitigation," he said. "At some point we will have to cross over and start sucking some of those gases out of the atmosphere."

Speaking days before the start of the UN climate summit in Copenhagen, Dr Pachauri, who collected the 2007 Nobel Peace Prize on behalf of the IPCC with Al Gore, said that such a strategy needed to be pursued as a matter of urgency.

**Rajendra Pachauri position on geoengineering**

Submitted by [Sol Shapiro](#) on Wed Dec. 16, 2009 2:59 PM PST.

From the Times Online article you linked, it is not clear whether Rajendra Pachauri supports study of solar radiation management, a short term response to a climate crisis - or only the benign approach of carbon dioxide removal. Hopefully, we should be looking at both. If the worst IPCC effects are realized, we had better be ready with srm!!

**I fully support**

Submitted by [MNPundit](#) (not verified) on Mon Dec. 14, 2009 3:32 PM PST.

I fully support geoengineering because I do not think we have the will power to do anything. Absent killing every republican alive, we are not going to be able to do what we need on reducing emissions.

But the aerosol sprays has never struck me as a good idea. It has the draw backs you mention of course, but making things colder would just make us pump out more carbon to keep ourselves warm in the winter. That is, unless you only did the aerosol in the summer, which might actually help.

I personal prefer reflectors in space (i.e. lots and tiny satellites over the poles).

Duh, of course....

Submitted by [avannavon](#) on Mon Dec. 14, 2009 9:37 PM PST.



The whole point is that while "global warming" is a hoax and a farce, global drying is not.

Get it straight.

Lack of atmospheric water vapor is a major league bummer, especially for nations near the Equator. It also plays major havoc with the Monsoon.

But none of these effects are due to "global warming" nor are they caused by greenhouse gas emissions. As stated, these claims are fraudulent and do nothing to improve or respond to reality.



Global Warming is a hoax???? Hmmmmmmm.

Submitted by [Kem Patrick73](#) on Thu Dec. 17, 2009 10:04 PM PST.

Well Avannavon, if global warming is a hoax, why are both of the Earth's ice caps melting away? If there is less moisture in the atmosphere, perhaps it is because it's too hot.

I do know we are 11 inches short of rain this year and hope we don't get all 11 inches by Dec 31st.

SorryAvannavon, but there is no sensible argument that we are experiencing global warming and a greenhouse effect due to an excessive amount of CO2 in the atmosphere. Thousands of highly qualified scientists and professors, most of whom have earned a Phd in subjects affiliated with Earth's climate and or oceans, say just the opposite of your comments. Are they all wrong? ___ I think not.

Just ONE small example of what global warming has accomplished: ___ In our recorded history and in fact we can say for the past 50+million years, the Northwest Passage in the Arctic has been blocked by ice for most of any year. It took Admussen two years to traverse the passage.

Now ships can easily traverse the Northwest Passage in days with no need for an ice breaker to assit them. The troubling thing about that is, that has happened in just the last two years time.

The Arctic is warming and what's bad about that is the methane gas, which was once safely locked up in the ice is now escaping into our atmosphere. One digit of methane is equal to 22 digits of CO2. There are 400+gigatons of methane in the vast Arctic and God help us all when it all bursts out. ___ Or someone help us.

At the current rate of thawing, I give us just five years before it does burp out. And NO!!! ___ I don't want to believe it either, but one can easily see it with their own two eyes, or one eye if that's all one has.

<http://www.energybulletin.net/3647.html>

That link contains the most important paper ever penned by man. ___ Why? ___ Because, what the author predicted is now happening and we'd better do something about it right now.



Kem and many others would like another glass of Koolaid

Submitted by Anonymous (not verified) on Thu Dec. 17, 2009 10:58 PM PST.

this is what happens when non-scientists try to interpret science and more importantly when scientists spend all their time trying to explain their latest results to the layman. Science is a field that is ever changing, nothing is absolute! That's right, I said NOTHING!!! Look up how many times fundamental "constants" like the speed of light or mass of an electron have changed. There is no consensus, there is no such thing as consensus in good science. There are multiple working hypotheses that develop into theories... we are at the hypothesis stage! If the world is going to end in 5 years as you so dramatically proclaim, then there is nothing we can do to stop it. And I've got a news flash, unless the biggest polluters (China and India)

reduce emissions, all of our economy crushing policies will result in us spending billions to relocate people to higher ground (should have done it already with New Orleans), while China laughs all the way to the bank. Back to reality people, its not so simple or straightforward as you make it out to be and it never will be. Go get a Ph.D. in a respectable field like chemistry, physics, or geology, then maybe you'll begin to understand.

P.S. that paper is an interesting theory, propped up by wacko environmentalists to scare people!



The Paper Is an interesting theory???

Submitted by [Kem Patrick73](#) on Fri Dec. 18, 2009 12:26 PM PST.

You wrote, " find a scientist who has a Phd in geology".

Okay, a very highly regarded by her peers, scientist and professor at the U of Alaska, who has eared her Phd in Geology and who has spent most of her adult life studying the Arctic's perma-frost, states that the author of that paper, a man who is another world renowned geologist, says that he is 100% correct and the methane already beginning to release from the Arctic area is indeed a "Ticking Time Bomb" . More than a 1,00 other highly regarded scientiststotally agree. That is termed a consensus BTW.

I am not a scientist and don't pretend to be one. I do have the ability to reason and use some common sense and determine if what a scientist says is reasonable and or r factual, that opinion based upon the studies and if the studies and opinion have been peer reviewed. I don't have a problem then of quoting them.

The words penned in that paper, which you have describe as scary nonsense, are already happening. Just visit the Arcticv and speak with the people who live there, you don't have to be a scientist or possess a Phd to see for yourself that what the author wrote is a slam dunk fact and yes indeed it is scary. It shloud be just as scary as having a killer pointing a gun at your head.

What you have written shows and well proves that you are just another person who does not wish to accept well proven facts. ___ What are your qualifications? ___ Of course if you should post them here, no one would know who you are. Your comments are just worthless blathering, although very harmful blathering. Give us some documented facts to back up your words.



P.S.

Submitted by [avamavon](#) on Mon Dec. 14, 2009 9:47 PM PST.

Pauchari has called for a full investigation of climate data manipulation and peer review on a major scale following the revelations at Hadley.

There is NO real basis for the hysteria, no scientific proof that carbon dioxide or methane have an insulating effect on the atmosphere.

You have heard the alarmists claiming "there is a 30% increase in the amount of carbon dioxide" ----sounds like a lot, until you realize that they are talking about a parts per billion increase in the concentration of a gas that makes up one four-hundredth of ONE PERCENT of our atmosphere anyway. Kinda puts that "30%" statistic in view, doesn't it? Thirty percent of nothing is still nothing, Dada.

You have also heard them crying, oh, a five degree increase in temperature would be "catastrophic!" ----It wasn't catastrophic circa 1270 AD when temperatures were five degrees warmer on average. The worst "tragedy" was that England had real vineyards and competed with France. There was no catastrophic flooding. Coastlines were about the same. Big whoop, again.

Pachauri knows this. and so should you. All this hvne is iust that---hvne. While air pollution

is and continues to be a serious issue, the global warming hoax does nothing to face the real issue. The greed of politicians seeking something new to tax completely overwhelms the scientific realities and the need to limit point emissions, especially in developing countries like China and India, where the worst localized pollution continues to exist.



"Pauchari has called for a

Submitted by Anonymous (not verified) on Tue Dec. 15, 2009 12:07 AM PST.

"Pauchari has called for a full investigation of climate data manipulation and peer review on a major scale following the revelations at Hadley."

Keep believing that. Hadley and the CRU won Pauchari his Nobel Prize and are directly responsible for his lifestyle of conspicuous, non-green consumption.

He's never going to investigate them, not really.

But no fear, Chris Mooney, science reporter and skeptic will. Ha Ha Ha.



Chicken Little Alarmists--Exposed as Thugs...

Submitted by [Kent Clizbe](#) (not verified) on Tue Dec. 15, 2009 10:48 AM PST.

The IPCC Chicken Little ("The sky is falling! The sky is falling! Quick—stop working and pay me a lot of money!") whining and screaming have been exposed for what they are—alarmist babbling based on dishonest "science."

The UN's enforcement of a "no-discussion zone," because the debate is over is classic totalitarian force over reasoned debate and discussion. Unfortunately for the IPCC clique, Al Gore's internet allows normal people to see what's going on:

<http://www.climatechange-fraud.com/climate-reports/5851-video-un-security...>

The momentum is with us now. We will organize and press the issue.

Schneider and his "handlers" were not having any of that much praised "free and honest, open scientific debate." Much easier to simply have armed goons detain a journalist who actually asked a question.

Schneider, Al Gore, and their minions, with their "let them eat cake" attitudes are eerily similar to previous elites. The communist elites enjoyed the same privileges and mouthed the same type of platitudes. Where are they now?

No Consensus--No Warming (NOC-NOW)--Stop the Scam--Halt the IPCC

We have a quickly growing Yahoo Group (CO2 is Plant Food), and a petition (NOC-NOW) that simply spells out a Declaration of Climate Independence.

We also have a Facebook Group: No Consensus--No Warming (NOC-NOW)--Stop the AGW Scam.

The petition will be provided to the US Congress, the White House, the UN, the IPCC, the EU Commission, and other representative bodies involved in "Climate Change" policy deliberations.

We will be heard.

Please join the group: <http://groups.yahoo.com/group/co2isplantfood>

And sign the petition: http://www.ipetitions.com/petition/NOC_NOW/

Join Facebook group: <http://www.facebook.com/group.php?gid=191580771509>

We can stop this scam, together.

Kent Clizbe

NOC-NOW

Stop the Scam—Halt the IPCC

No Consensus—No Warming



good

Submitted by [ming](#) on Tue Dec. 15, 2009 6:34 PM PST.

Thanks for the info. [Pittsburgh Penguin for men](#)Very helpful![cheap Pittsburgh Penguins Men's Chicago Blackhawks](#)



Hey Kent Clizbe. Since you

Submitted by [Chuck](#) (not verified) on Tue Dec. 15, 2009 11:52 PM PST.

Hey Kent Clizbe. Since you are throwing out false information for support of your cult of deniers, you might want to look at some pictures of every glacier in the world from 1960 to current times (including Glacier National Monument), which are all receding at an alarming rate. How do explain that in your "Global Cooling" argument? Hmm. You people are out of your freaking minds. You and your ilk are a bunch of selfish, greedy, manipulative, lying freaks. Take your Faux News and your Hummer and find another planet to live on, please.



UGG Classic

Submitted by [shoesiji](#) (not verified) on Tue Dec. 15, 2009 11:59 PM PST.

tagged as:

the blog you write is dynamic and positively,please update in time,i am willing to reading it.

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Submitted by [Anonymous](#) (not verified) on Wed Dec. 16, 2009 5:59 AM PST.

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Large Scale Ocean Based Algae Biofuel Feedstock Production

Submitted by [Robert Tulip](#) on Sun Dec. 20, 2009 7:07 PM PST.

tagged as:

Thanks Chris, I've been seeking comment on a large scale terrestrial engineering proposal to suck carbon from the air using algae.

Description is at

http://rtulip.net/ocean_based_algae_production_system_provisional_patent

No one has yet come up with any reason why this would not fix the climate.

The first step is to prove that polymer bags of fresh water will float in the ocean, and then establish CO2 removal using algae as a new global industry, manufacturing diesel fuel, soil fertilizer and fish food. This method can drive CO2 back down to 280 ppm in a few decades.

Robert Tulip

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