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CLIMATE PROGRESS

British coal industry flack pushes geo-engineering “ploy” to give politicians “viable reason to do nothing” about global warming. Is that why Lomborg supports such a smoke-and-mirrors approach?

August 12, 2009

Everybody from global warming delayer Bjorn Lomborg to the country’s worst science writer seems to be embracing geo-engineering schemes these days. Geoengineering is “the intentional large scale manipulation of the global environment” to counteract the effects of global warming — such as injecting massive amounts of soot or mirrors into the air.

But why would you choose an experimental combination of chemotherapy and radiation therapy that might make you sicker if your doctors told you diet and exercise — albeit serious diet and excercise — would definitely work (see “Geo-engineering remains a bad idea” and “Geo-Engineering is NOT the Answer“)?

Well, desperation drives some people to contemplate extreme things, and climate scientists are increasingly desperate to prevent the catastrophe we face on our current path of unrestricted greenhouse gas emissions (see “Desperate times, desperate scientists“).

But why do people who don’t believe anthropogenic global warming (AGW) is real or would be catastrophic push it? Richard S. Courtney, British coal industry flack (see bio here), is one such denier who spreads disinformation on various blogs (including this one today). As BigCityLib informs us, Courtney recently made this remarkable admission:

> I am firmly convinced that dangerous AGW is not a problem and cannot become one. However, I do think the possibility of the geo-engineering should be supported. **My reason for this is a political ploy** and I explain it as follows....
>
> The politicians need a viable reason if they are to back-off from this commitment to the constraints [of GHGs] without losing face.
>
> **The geo-engineering option provides the needed viable reason to do nothing about AGW now**....
>
> **This suggested political ploy is not fanciful and it has precedent. Opponents of the nuclear industry have objected that there is no “safe” method to dispose of nuclear waste. The nuclear industry has responded by asserting that the waste could be vitrified. A practical method for the vitrification still remains to be developed, but assertion of the possibility of the vitrification has been sufficient to overcome objections to nuclear power in several countries for nearly 40 years.**

Fool me once....

(See also "Geoengineering and the New Climate Denialism.")

Geo-engineering remains a dubious set of schemes — **literally smoke and mirrors**. Science advisor John Holdren told me in April that he stands by his long-standing critique:

> "The 'geo-engineering' approaches considered so far appear to be afflicted with some combination of high costs, low leverage, and a high likelihood of serious side effects."

Now uber-delay Bjorn Lomborg is embracing geo-engineering — and *NYT*'s John Tierney is flacking that work (here). What a surprise!

RealClimate just published an outstanding response, "A biased economic analysis of geoengineering" by Prof. Alan Robock. Since Robock gave the best talk I ever heard on geo-engineering (here), and since this post is an excellent primer with numerous links, I am reprinting it below (with his permission):

> Bjorn Lomborg's Climate Consensus Center just released an un-refereed report on geoengineering, *An Analysis of Climate Engineering as a Response to Global Warming*, by J Eric Bickel and Lee Lane. The "consensus" in the title of Lomborg's center is based on a meeting of 50 economists last year. The problem with allowing economists to decide the proper response of society to global warming is that they base their analysis only on their own quantifications of the costs and benefits of different strategies. In this report, discussed below, they simply omit the costs of many of the potential negative aspects of producing a stratospheric cloud to block out sunlight or cloud brightening, and come to the conclusion that these strategies have a 25-5000 to 1 benefit/cost ratio. That the second author works for the American Enterprise Institute, a lobbying group that has been a leading global warming denier, is not surprising, except that now they are in favor of a solution to a problem they have claimed for years does not exist.
>
> Geoengineering has come a long way since first discussed here three years ago. [Here I use the term "geoengineering" to refer to "solar radiation management" (SRM) and not to carbon capture and sequestration (called "air capture" in the report), a related topic with quite different issues.] In a *New Scientist* interview, John Holdren, President Obama's science adviser, says geoengineering has to be examined as a possible response to global warming, but that we can make no such determination now. A two-day conference on geoengineering organized by the U.S. National Academy of Sciences was held in June, 2009, with an opening talk by the President, Ralph Cicerone. The American Meteorological Society (AMS) has just issued a policy statement on geoengineering, which urges cautious consideration, more research, and appropriate restrictions. But all this attention comes with the message that we know little about the efficacy, costs, and problems associated with geoengineering suggestions, and that much more study is needed.
>
> Bickel and Lane, however, do not hesitate to write a report that is rather biased in favor of geoengineering using SRM, by emphasizing the low cost and dismissing the many possible negative aspects. They use calculations with the Dynamic Integrated model of Climate and the Economy (DICE) economic model to make the paper seem scientific, but there are many inherent assumptions, and they up-front refuse to present their results in terms of ranges or error bars. Specific numbers in their conclusions make the results seem much more certain than they are. While they give lip service to possible negative consequences of geoengineering, they refuse to quantify them. Indeed, the purpose of new research is to do just that, but the tone of this report is to claim that cooling the planet will have overall benefits, which CAN be quantified. The conclusions and summary of the report imply much more certainty as to the net benefits of SRM than is

really the case.

My main areas of agreement with this report are that global warming is an important, serious problem, that SRM with stratospheric aerosols or cloud brightening would not be expensive, and that we indeed need more research into geoengineering. The authors provide a balanced introduction to the issues of global warming and the possible types of geoengineering.

But Bickel and Lane ignore the effects of ocean acidification from continued CO2 emissions, dismissing this as a lost cause. Even without global warming, reducing CO2 emissions is needed to do the best we can to save the ocean. The costs of this continuing damage to the planet, which geoengineering will do nothing to address, are ignored in the analysis in this report. And without mitigation, SRM would need to be continued for hundreds of years. If it were stopped, by the loss of interest or means by society, the resulting rapid warming would be much more dangerous than the gradual warming we are now experiencing.

Bickel and Lane do not even mention several potential negative effects of SRM, including getting rid of blue skies, huge reductions in solar power from systems using direct solar radiation, or ruining terrestrial optical astronomy. They imply that SRM technologies will work perfectly, and ignore unknown unknowns. Not one cloud has ever been artificially brightened by injection of sea salt aerosols, yet this report claims to be able to quantify the benefits and the costs to society of cloud brightening.

They also imply that stratospheric geoengineering can be tested at a small scale, but this is not true. Small injections of SO2 into the stratosphere would actually produce small radiative forcing, and we would not be able to separate the effects from weather noise. The small volcanic eruptions of the past year (1.5 Tg SO2 from Kasatochi in 2008 and 1 Tg SO2 from Sarychev in 2009, as compared to 7 Tg SO2 from El Chichón in 1982 and 20 Tg SO2 from Pinatubo in 1991) have produced stratospheric clouds that can be well-observed, but we cannot detect any climate impacts. Only a large-scale stratospheric injection could produce measurable impacts. This means that the path they propose would lead directly to geoengineering, even just to test it, and then it would be much harder to stop, what with commercial interests in continuing (e.g., Star Wars, which has not even ever worked).

Bickel and Lane also ignore several seminal papers on geoengineering that present much more advanced scientific results than the older papers they cite. In particular, they ignore Tilmes et al. (2008), Robock et al. (2008), Rasch et al. (2008), and Jones et al. (2009).

With respect to ozone, they dismiss concerns about ozone depletion and enhanced UV by citing Wigley (2006) and Crutzen (2006), but ignore the results of Tilmes et al. (2008), who showed that the effects would prolong the ozone hole for decades and that deployment of stratospheric aerosols in a couple decades would not be safe as claimed here. Bickel and Lane assert, completely incorrectly, “On its face, though, it does not appear that the ozone issue would be likely to invalidate the concept of stratospheric aerosols.”

With respect to an Arctic-only scheme, they suggest in several places that it would be possible to control Arctic climate based on the results of Caldeira and Wood (2008) who artificially reduce sunlight in a polar cap in their model (the “yarmulke method”), whereas Robock et al. (2008) showed with a more realistic model that explicitly treats the distribution and transport of stratospheric aerosols, that the aerosols could not be confined to just the Arctic, and such a deployment strategy would affect the summer Asian monsoon, reducing precipitation over China and India. And Robock et al. (2008) give examples from past volcanic eruptions that illustrate this effect, such as the pattern of precipitation reduction after the 1991 Pinatubo eruption (Trenberth and Dai, 2007):

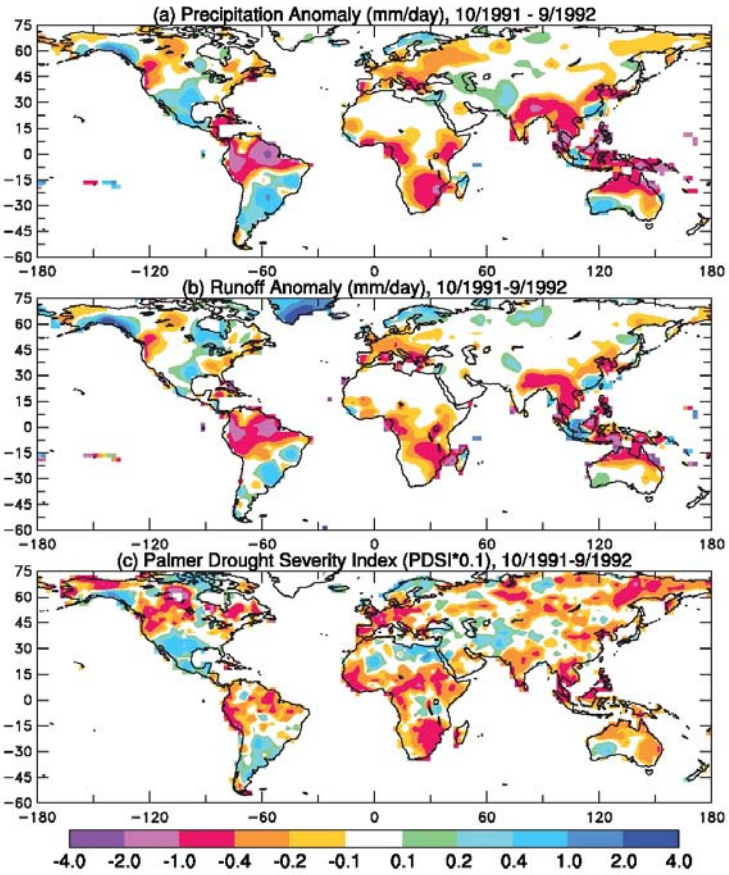

Figure 3. (a) Observed precipitation anomalies (relative to 1950–2004 mean) in mm/day during October 1991–September 1992 over land. Warm colors indicate below normal precipitation. (b) As for Figure 3a but for the simulated runoff [*Qian et al.*, 2006] using a comprehensive land surface model forced with observed precipitation and other atmospheric forcing in mm/day. (c) Palmer Drought Severity Index (PDSI, multiplied by 0.1) for October 1991–September 1992 [*Dai et al.*, 2004]. Warm colors indicate drying. Values less than −2 (0.2 on scale) indicate moderate drought, and those less than −3 indicate severe drought.

With respect to cloud brightening, Bickel and Lane ignore the Jones et al. (2009) results that cloud brightening would mainly cool the oceans and not affect land temperature much, so that it is an imperfect method at best to counter global warming. Furthermore Jones et al. (2009) found that cloud brightening over the South Atlantic would produce severe drought over the Amazon, destroying the tropical forest.

They also ignore a huge class of ethical and world governance issues. Whose hand would be on the global thermostat? Who would trust military aircraft or a multi-national geoengineering company to have the interests of the people of the planet foremost?

They do not seem to realize that volcanic eruptions affect climate change because of sulfate aerosols produced from sulfur dioxide gas injections into the stratosphere, the same that is proposed for SRM, and not by larger ash particles that fall out quickly after and eruption and do not cause climate change.

They dismiss air capture (“air capture technologies do not appear as promising as solar radiation management from a technical or a cost perspective”) but ignore the important point that it would have few of the potential side effects of SRM. Air capture would just remove the cause of global warming in the first place, and the only side effects would be in the locations where the CO2 would be sequestered.

For some reason, they insist on using the wrong units for energy flux (W) instead of the correct units of W/m^2, and then mix them in the paper. I cannot understand why they choose to make it so confusing.

The potential negative consequences of stratospheric SRM were clearly laid out by Robock (2008) and updated by Robock et al. (2009), which still lists 17 reasons why geoengineering may be a bad idea. One of those important possible consequences, the threat to the water supply for agriculture and other human uses, has been emphasized in a recent *Science* article by Gabi Hegerl and Susan Solomon.

Robock et al. (2009) also lists some benefits from SRM, including increased plant productivity and an enhanced CO2 sink from vegetation that grows more when subject to diffuse radiation, as has been observed after every recent large volcanic eruption. But the quantification of these and other geoengineering benefits, as well as the negative aspects, awaits more research.

It may be that the benefits of geoengineering will outweigh the negative aspects, and that most of the problems can be dealt with, but the paper from Lomborg’s center ignores the *real consensus* among all responsible geoengineering researchers. The *real consensus*, as expressed at the National Academy conference and in the AMS statement, is that mitigation needs to be our first and overwhelming response to global warming, and that whether geoengineering can even be considered as an emergency measure in the future should climate change become too dangerous is not now known. Policymakers will only be able to make such decisions after they see results from an intensive research program. Lomborg’s report should have stopped at the need for a research program, and not issued its flawed and premature conclusions.

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15 Responses to “British coal industry flack pushes geo-engineering “ploy” to give politicians “viable reason to do nothing” about global warming. Is that why Lomborg supports such a smoke-and-mirrors approach?”

1. *Gary Herstein* says:
   August 12, 2009 at 10:25 pm

   I confess that, on admittedly general grounds, I find any enthusiasm for geo-engineering all but incomprehensible. Images that come to mind include George C. Scott in *Dr. Strangelove* breathlessly saying, “Gee, I wish WE had a bomb like that!” to some Alfred E. Neuman plutocrat giving a gap-toothed grin and saying, “What, me worry?”

   Technology is fundamentally different from science: while science is the realm of the unexpected, technology is the realm of the *uninteneded*. Things *NEVER* work out the way you intended with technology; there are always unforeseen consequences emerging in the near and the far term. AGW is itself a product of just such unintended consequences.

   And Gosh, Mr. Peabody! That worked out so well!

   “Mit der Dummheit kämpfen die Götter selbst vergebens” — Schiller

2. *Lou Grinzo* says:
   August 12, 2009 at 10:34 pm

   Wait a gosh darned second–you’re saying that Lomborg and some of his fellow deniers aren’t really turning over a new leaf? Perish the thought! I might have to spend a few moments on my fainting couch to recover from the shock...

   Of course this blog posting is correct. Lomborg is an opportunist and a denier who will say and do anything to promote himself and oppose serious actions to limit CO2 emissions. The only difference between him and Courtney is that he’s just smart enough not to admit what he’s doing.

   Just when I think I’ve finally seen how low they can go, they find a stairwell to yet another sub-basement.

3. *Bob Wright* says:
   August 12, 2009 at 10:46 pm

   We are already geoengineering by releasing CO2 and aerosols into the environment, and there is some balance between the greenhouse effect and aerosol caused global dimming. There is even some evidence sulfate emissions standards in the US and Europe have increased temperatures. As CO2 lasts for centuries and aerosols quickly fall out, would not a drastic reduction of coal burning cause the greenhous effect to dominate? We may need artificial dimming in the absence of sulfate aerosols until CO2 is reduced to 350 ppm.

   How do we geoengineer for ocean acidification? Dump pulverized Calcium Carbonate and wollastonite-like minerals into the sea? If species like coral and terapods can’t form cal carb shells, the ocean food chain might stop, and it might happen relatively soon. The analogy is turning every rain forest into fields of weeds. This is truly scary stuff.

4. *Roger* says:
   August 13, 2009 at 12:12 am

Thanks, as always, for the informative post, Joe.

Slightly off topic, but relevant to the big picture, yesterday a group of concerned citizens and fellow fans of your blog, from MA and NJ, met for lunch in Boston to discuss the state of the climate conundrum. We came to two overarching conclusions:

1) Folks in the climate movement would have a greater overall impact if they all focused on one big, uncomplicated, audacious objective, and

2) A key such objective would be to get President Obama to present a clear “State of the Climate” address to help fill the huge gap between what climate scientists know, and what the general public knows, about the situation. Done right, this one act by this one man could bring complacent citizens to support strong Congressional action overnight.

5. *Richard Pauli* says:
August 13, 2009 at 12:47 am

The further down the wrong road the coal industry travels, the harder it will be to turn around and exit.

They are doubly cursed: they are acting wrongly, and their motivation is greed.

The coal company board rooms must be very interesting right now. The risk increases, the time decreases, and their misbehavior escalates.

6. *Esko Pettay* says:
August 13, 2009 at 1:59 am

We should not let coal industry or their buddies rob geoengineering. The scientific community needs to be active in the discussion keeping everyone informed about the possible risks and reminding that geoengineering is not an alternative to mitigation.
Diet and exercise is what we should be doing but if that doesn’t take care of the problem we may need chemotherapy and radiation therapy in addition. Or maybe we can find something that doesn’t make us as sick. Whatever we may need I sure hope that it is developed by proper scientists and not ones paid by the fast food chain whose food we used to get fat.

The ones who see the whole picture and are not motivated by fossil fuel industries money need to shouting about geoengineering too. There are many who understand the risks and are motivated only by the fear that we have passed or will pass the point of no return. They understand that whatever we do we need to reduce CO2 emissions. At the moment even very cautious suggestions about geoengineering seem to get hostile response from many. Instead we should encourage smart people to come up with more geoengineering ideas and have discussion about those.

We may need geoengineering in addition to mitigation. There may be techniques that are harmless enough. Reducing CO2 emissions and concentration must be the priority, but it may not be enough. Some of the most promising geoengineering techniques should be tested in small scale (not the dangerous ones). If we ever need to use them in bigger scale then it should be U.N. driven process.

7. *Chris McGrath* says:
August 13, 2009 at 2:35 am

Like the diet and exercise metaphor Jo but it would be cuter still if you added, stop smoking to it.

[*JR: Good one!*]

8. *Florifulgurator* says:
August 13, 2009 at 5:28 am

How to name Lomborg's Climate Consensus Center and pieces like Bickel & Lane? – Science astroturfing?

9. *Bryan Seigneur* says:
August 13, 2009 at 11:15 am

After, or while, we cut our carbon liberation to zero or some–I admit, totally unknowable, given the ongoing changes in the earth system that influence climate–sustainable amount, we are nevertheless going to be *forced* to do some geo-engineering, as the effects of our extraordinary carbon liberation linger.

After or while we stop our current geo-engineering, we are going to have to do some counter-geo-engineering, anyway.

10. *Peter Sergienko* says:
August 13, 2009 at 12:48 pm

Unforunately, a lot of smart and influential people assume that we can continue with business as usual because we'll find future technological solutions to global heating, including geo-engineered solutions. I've come to think of global heating as the most serious and immediate problem among many serious problems associated with the fossil fuel economy. Any fair and comprehensive analysis of geo-engineering solutions to global heating, even assuming we can overcome the associated ethical, political, financial, and technical issues, should consider all of the problems associated with business as usual. Problems that won't be solved by geo-engineering for temperature range from ocean acidification (and associated habitat and species destruction), to mountaintop removal coal mining (more habitat and species destruction), to peak oil and coal, to the continued pollution of air, water, and soil arising out of the extraction, refining and use of fossil fuels, to a system of defense spending that we cannot afford and a foreign policy that creates ill will and resentment toward the United States because it is premised largely on garrisoning the globe to secure oil supplies. The ultimate question is whether or not we can muster the political will to transition into a post fossil fuel economy without being overwhelmed by these types of problems.

11. *Brett Jason* says:
August 13, 2009 at 2:32 pm

The appeal of geo-engineering is exactly as you say, an excuse for everyone to do nothing. It lets individuals, politicians and nations off the hook. We can all just continue to do business/live our lives as usual and relax, confident that at some point, some one (we don't know when, who or precisely how) come up with a last minute missile launch that will destroy the meteor just seconds before it hits the earth. It would be a bad joke if so many people weren't taking it seriously.

12. *Sasparilla* says:
August 13, 2009 at 3:56 pm

Great article Joe. Expect the denier's to move in force over to this type of argument (i.e. just do the free lunch geo-engineering solution) that sounds like a solution to non informed but isn't – once it becomes clear their denier play is running out of gas/coal/effectiveness.

My own opinion is that when there is serious lobbying by the bad apples for this kind of thing, it will be more difficult to battle/counter than their denier plays as they will be able to say their just trying to fix

things. Such a spin should appeal to the denier rank and file as well.

Thank goodness they weren’t smart enough to push on this avenue previously. Hopefully we can get everything moving in the right direction before these guys hit this full force.

We’ve got to get the climate bill through, before this can get in there and muddy the waters.

13. *Wilma* says:
August 13, 2009 at 4:00 pm

Honestly, doesn’t anybody reading this blog notice the planes spewing aerosols on a daily basis into the air we breathe?

14. *William T* says:
August 13, 2009 at 7:59 pm

Of course, if you’re the CO2 industry making billions of profits each year (and bau projections are looking pretty good too) you’d do anything you could to delay restrictions on that profit. And down the track when more urgent action becomes obviously critical to all, who better than the CO2 industry to shift itself to injecting other pollutants into the atmosphere and oceans. More profit!

I’m beginning to agree with James Hansen on those criminal investigations.

15. *Wilma* says:
August 14, 2009 at 4:47 pm

Yes of course, it is ironic. The CO2 industry would, maybe, might, sort of, could of, or is aware of the fact that aircraft “are” injecting aerosols into the stratosphere in order for them to continue to make billions of profits each year.