

Communicating Climate Science: Moral Responsibility in Theory and Practice

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Overview

I. Anthropogenic climate change: science and ethics

II. Connecting science and ethics in theory:

A simple argument concerning the moral obligations of climate experts

III. Confronting science and ethics in practice:

Three complications to the simple argument

Anthropogenic climate change:
Science and ethics

Fixation on scientific questions...

- Is Earth's climate already changing on a global scale?
- Are the observed changes due to anthropogenic ghg emissions?
- How is global climate likely to change over the next century?
- Is it likely that climatic change during the 21st century will harm humans and/or ecosystems in significant ways? How and when?
- How might we prevent or prepare for the projected changes?
- How much would it cost to do so?

Fixation on scientific questions... & controversies

- Likewise, those opposed to policy action on climate change often focus their attacks on the scientific evidence offered in support of claims about the causes and reality of climate change and its likely future extent:
 - Ground/MSU satellite controversy
 - “Hockey stick” controversy
 - Flux adjustment and model shortcomings
- Climate change less often is framed as an ethical issue, and publicized controversy less often has to do with ethical claims.

Contrast with immigration policy

- Rather than target empirical claims about the number of illegal immigrants in the U.S. or the economic burden (or benefit) they bring...
- Lately, opponents of some proposed immigration policies have emphasized ethical arguments, focused on fairness and justice:
 - Entering the country illegally is wrong. We should not reward this behavior with special opportunities for work permits and citizenship; on the contrary, we should make illegal presence a felony rather than merely a civil violation.
 - Granting citizenship to illegal aliens would not be fair to other people who have struggled for years through legal channels to gain U.S. residency and citizenship.

Ethical questions about climate change...

- Who, if anyone, is morally responsible for harms that result from past anthropogenic greenhouse gas emissions? (Jamieson 1992, 1998)
 - Are nations morally responsible for emissions that occurred before their potentially harmful effects were appreciated? (Shue 1992, Jamieson 2001, Singer 2002, Traxler 2002)
- Is action on climate change morally required, or are there more pressing problems on which our finite resources should be focused instead? (Lomborg 2001)
- Are there moral reasons to favor a policy of adaptation to, rather than prevention of, future climate change? (Gardiner 2004, Jamieson forthcoming)

Ethical questions... (cont'd)

- If greenhouse gas emissions are to be reduced, or measures for adapting to climate change are to be taken, who should bear the economic burden?
 - Is it unfair to place greenhouse emission restrictions on developing nations?
(Shue 1995, Baer 2002, Singer 2002, Traxler 2002)
- If a ghg emission trading program is established, what is the fairest way to distribute the emission permits?
 - Per person? According to efficiency? According to year-2000 emissions?

...Many of these normative questions concern nations and ordinary citizens.

Another set of ethical questions...

- A particularly interesting sub-population: climate experts.
- What special moral responsibilities, dilemmas and constraints are faced by climate scientists, given the fixation on scientific questions about climate change in mass media coverage and in policy contexts?
 - Are climate experts morally obligated to communicate their research findings to the public?
 - If the role responsibilities of climate scientists qua scientists conflict with their general moral responsibilities qua citizens, which take precedence?
 - Is it wrong for climate experts to also serve as activists/advocates for particular policy actions?

Connecting science and ethics in theory:
A simple argument concerning the moral
obligations of climate experts

Communicating research findings to the public

- (P1) If a moral agent has reason to think that (a) an action by her would help to prevent serious harms to humans and (b) that action would involve little risk of serious harm to her, then she has a prima facie obligation to perform the action.
- (P2) Scientists are moral agents.
- (P3) In general, scientists have reason to think that if their research findings portend serious harms to the public, then (a) communicating the worrisome findings to the public would help to prevent the occurrence of at least some of the projected harms and (b) such communication would involve little risk of serious harm to the scientist.

In general, when their research findings portend serious harm to the public, scientists (including climate scientists) have a prima facie moral obligation to communicate those findings to the public.

Defending (P1)

- (P1) If a moral agent has reason to think that (a) an action by her would help to prevent serious harms to humans and (b) that action would involve little risk of serious harm to her, then she has a prima facie obligation to perform the action.
- Offered here as an intuitively acceptable moral principle that might be defended from within a variety of ethical frameworks.
 - **Example:** If we see an injured pedestrian in urgent need of medical care, and we have a cell phone that we could easily use to call an ambulance, it is morally reprehensible for us to just walk by.
 - There may be conditions that override the obligation.

Defending (P2)

(P2) Scientists are moral agents.

- We might think that joining the scientific profession saddles one with additional moral responsibilities, but why should we think that it releases one from ordinary moral obligations?
- It is easy to identify situations in which we think that general/ordinary moral responsibilities clearly trump role responsibilities (tied to knowledge-seeking) that come with being a scientist (see Douglas 2003).
 - **Example:** Limitations on treatment of human experimental subjects.
- Burden of proof seems to be on those who would deny P2.

Defending (P3)

- (P3) In general, scientists have reason to think that if their research findings portend serious harms to the public, then (a) communicating the worrisome findings to the public would help to prevent the occurrence of at least some of the projected harms and (b) such communication would involve little risk of serious harm to the scientist.
- In general, if people know about potential dangers, they are in a better position to avoid or prepare for them.
 - **Example:** Communicating that smoking causes cancer deters some people from starting to smoke and leads others stop, preventing some cancers that would otherwise occur.

“These issues are so pressing that ecologists have a responsibility not to remain quiet when their findings can contribute to the debate. We should communicate the results of our science clearly and vigorously, in understandable terms, to the public and policy arenas.”

-- Wiens (1997)

“The science of climate change is under attack – an attack that is coordinated, well-funded and given constant play in the media. ... The impression created in the public mind is that climate scientists are deeply divided, and action to reduce greenhouse-gas emissions would be premature. ... We’re not asking you to become campaigners or to compromise your independence. But we wish you would defend your profession as any other professionals would. ... Isn’t it time you started fighting for your science?” – Monbiot (2005)

Time to speak up for climate-change science

If debate is left to greens and sceptics, people think the evidence is equal on each side.

Sir — The science of climate change is under attack — an attack that is coordinated, well-funded and given constant play in the media. The stronger the scientific consensus on climate change becomes, the more the media suggest that the science is uncertain.

Lobby groups such as the Scientific

mind is that climate scientists are deeply divided, and action to reduce greenhouse-gas emissions would be premature.

Yet the consensus among climatologists, glaciologists and atmospheric physicists — that anthropogenic climate change is a reality — is as robust as is likely to be found on any scientific issue.

professionals would. This includes training people in media relations, sending eminent delegations to meet editors and senior journalists, writing letters to the papers to correct misleading articles and seeking every opportunity to put the record straight.

Isn't it time you started fighting for

“If our future is under threat, scientists have a duty to say so. Where, for example, is the volcanologist who refuses on the grounds of ‘neutrality’ to warn of impending eruptions? Or the tropical meteorologist who sits tight-lipped with his models and satellite data while a Category 5 storm spins towards a vulnerable Caribbean coastline? ... Climate scientists need to accept their role in the real world. As part of the small proportion of the population who actually understand the dire situation we are in, scientists have a moral responsibility to help us find a way out of the crisis.”

– Lynas (2005)

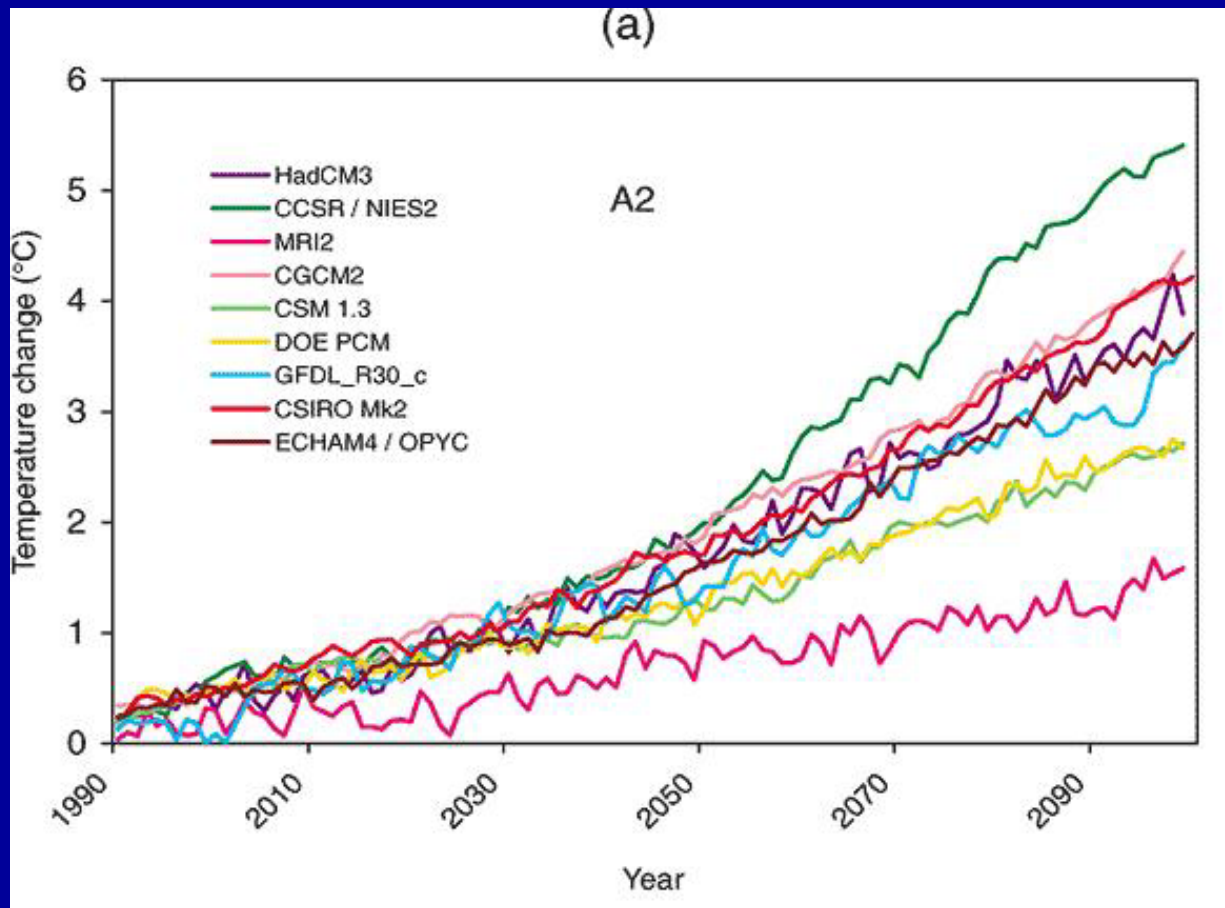
Confronting science and ethics in practice:
Three complications to the simple argument

Complications to the simple argument...

- Uncertainty
 - When exactly should findings be communicated?
- Multidisciplinarity and big science
 - Who exactly should communicate which results?
- Technical knowledge, truthfulness and advocacy
 - How exactly should results be communicated?

Uncertainty

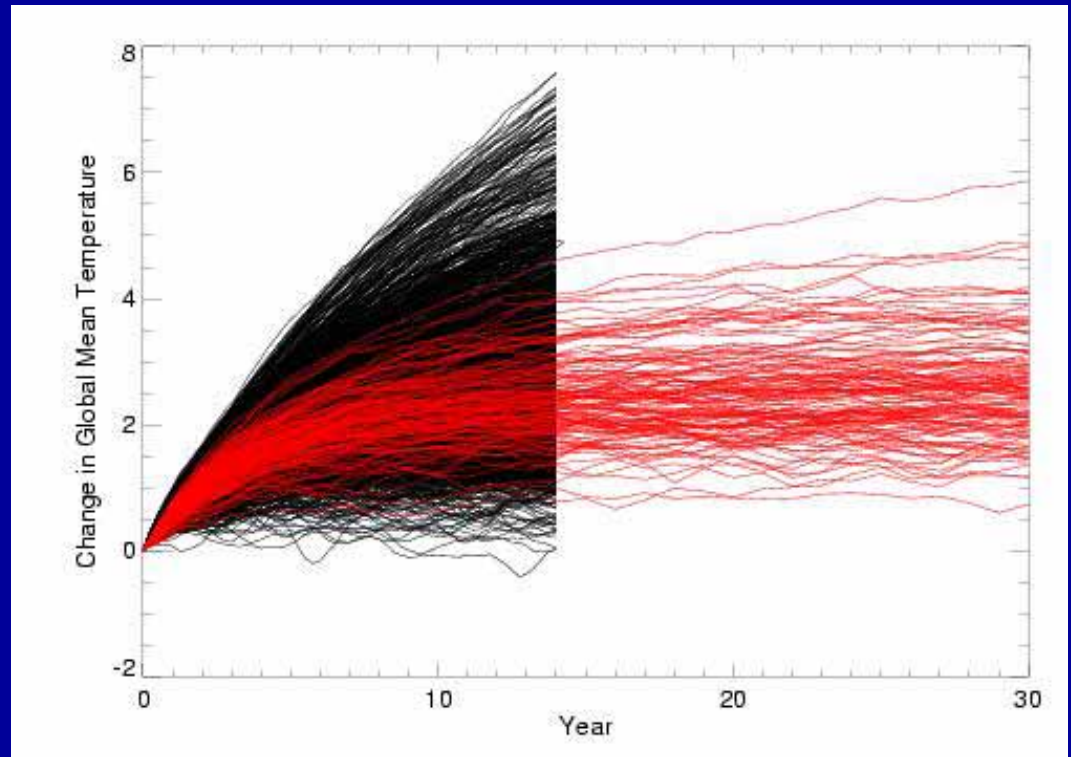
- How strong does the evidence have to be that significant harms are occurring (or will occur), before scientists should sound the alarm?
 - Broad scientific consensus that some climate change is occurring and that anthropogenic greenhouse gas emissions are at least partly responsible.
 - But, considerable uncertainty remains about how climate will change over the next century under various emission scenarios, especially when it comes to regional and local changes.



Projections of global annual mean temperature change under A2 emission scenario, made by several different climate models (from IPCC 2001)

Some first phase “climate sensitivity” results...

When run with CO₂ levels set to double their pre-industrial levels, some models showed a much larger temperature response than those found in smaller ensemble studies.



From www.climateprediction.net

Costs of false alarms and too early warnings...

- False alarms may impose harms that otherwise could have been avoided, since people may make sacrifices or alter their behavior in ways that actually increase their risk of various harms.
 - **Example:** A false alarm is sounded that a hurricane will arrive. People engage in risky driving practices in order to evacuate in advance of the anticipated storm. Additional car accidents occur.
- False alarms can damage scientific credibility, reducing effectiveness of warnings in other cases in which harms really will occur.
- Even if it is true that harms are occurring or will occur as warned, credibility can be damaged if it is revealed that the alarm was sounded when the evidence clearly was not sufficient.

Multidisciplinarity and big science

- Conclusions about the likely harms associated with climate change are, in effect, the endpoint of a long chain of complex inferences that span a very broad range of disciplines...atmospheric physics and chemistry, medicine, hydrology, oceanography, ecology, agriculture, economics...
- Can any individual scientist have expertise broad and deep enough to competently assess this chain of inferences?
- Rather than individual scientists, is it more appropriate for institutions to communicate key results via consensus reports produced through extensive dialogue among many scientists from the relevant fields?

Communicating technical knowledge

- “Communicating” findings to the public is important for purposes of preventing harms, since the public’s taking preventive or preparatory measures presumably is motivated by their understanding or appreciation of the potential harms.
 - Such understanding/appreciation may be not be achieved if technical findings are just “reported” (for example), as in a published journal article.
- But communicating technical knowledge is challenging, and practical realities can create difficult decisions and dilemmas for scientists...

Professional norms vs. general moral responsibilities I

- Suppose that facts about
 - the context of communication and
 - the background knowledge and psychological tendencies of the audienceare such that one can more effectively communicate the state of scientific knowledge to the audience if one violates some of the usual norms associated with the communication of scientific knowledge.
- Is it morally reprehensible to adhere to those norms if the results to be communicated portend harm to humans?
 - **Example:** If presenting evidence selectively in mass media contexts makes it more likely that the public will come to understand the what current science indicates about the risks of global climate change, is it morally reprehensible to adhere to a norm that prohibits selective presentation of evidence?

Professional norms vs. general moral responsibilities II

- Does our judgment concerning reprehensibility change at all if professional norms of scientific communication are violated not in order to more effectively communicate scientific results but for the purpose of inducing support for policy action on climate change?
 - **Example:** By dramatizing impacts of climate change and painting scary scenarios we may in fact more effectively build support for policy action that will prevent projected harms.
- ...A change from aiming simply to induce true belief about the state of the science to aiming to induce support for defensible policy action.

Schneider on a “double ethical bind”

“On the one hand, as scientists we are ethically bound to the scientific method, in effect promising to tell the truth, the whole truth, and nothing but – which means that we must include all doubts, the caveats, the ifs, ands and buts. On the other hand, we are not just scientists but human beings as well. And like most people we’d like to see the world a better place, which in this context translates into our working to reduce the risk of potentially disastrous climate change. To do that we need to get some broad based support, to capture the public’s imagination. That, of course, means getting loads of media coverage. So we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we might have. This “double ethical bind” we frequently find ourselves in cannot be solved by any formula. Each of us has to decide what the right balance is between being effective and being honest. I hope that means being both.”

-- Schneider (1989/2006)

If scientists should do both, how?

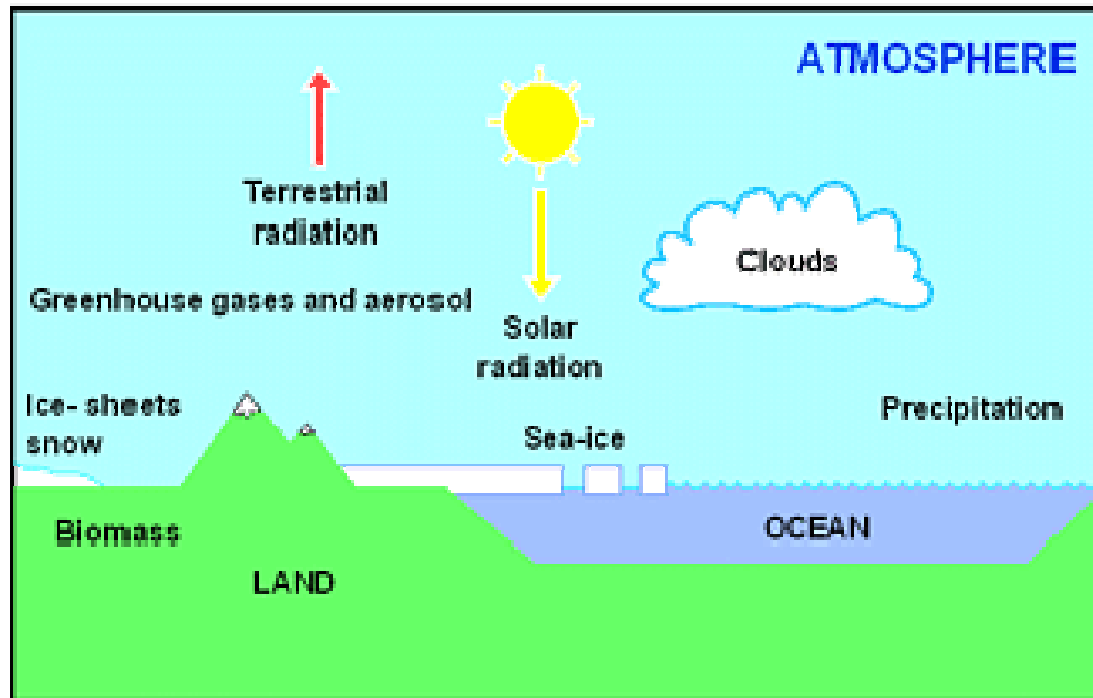
- Even if there is no “formula” for deciding how to adjudicate between and/or balance climate scientists’ role responsibilities and their general responsibilities, can’t something more be said?
- Schneider’s proposed solution for balancing honesty and effectiveness:
 - (a) Produce a hierarchy of products that engage the issue in more and less detail and delve more and less deeply into remaining uncertainties.
 - (b) In mass media contexts, use easy-to-grasp metaphors that convey both urgency and uncertainty.
 - **Example:** Climate is like a die, with some hot faces, some wet faces, etc. I think inaction on global warming is loading the climatic die with more heat and intense drought and flood faces. (Schneider 2006)
- But this says nothing about the appropriateness of paining “scary scenarios” ...

Some questions for discussion...

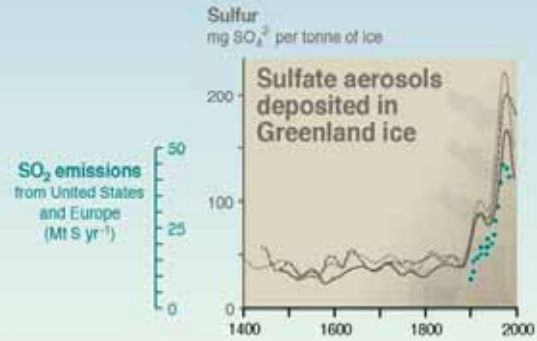
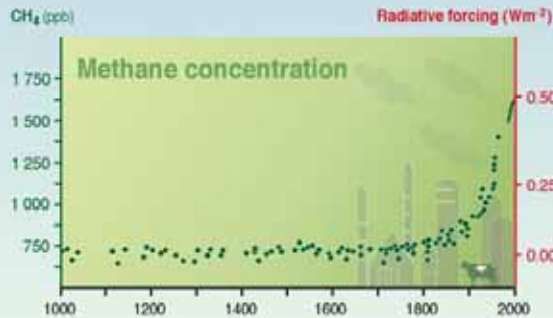
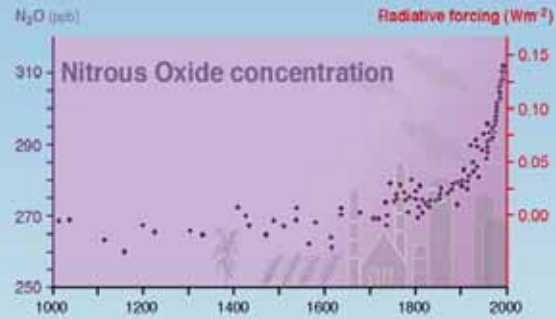
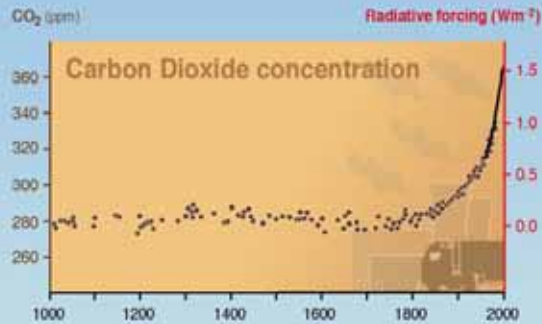
- If scientists do have a moral responsibility to communicate some research results to the public...
 - Through what outlets can/should scientific information about climate change be communicated?
 - When have scientists done enough? Not enough?
- If it is appropriate for scientists to be advocates for policy action...
 - What can scientists do to preserve their scientific credibility when doing so?
 - What makes for an effective advocate-scientist? An ineffective one?
- Any other questions / comments / thoughts?

“...the special abilities of scientists also create special duties of advocacy. Often, only scientists have the requisite information to make an informed decision about the rights and wrongs of a particular situation or the ability to make a difference. When they do not use advocacy to make a difference, scientists become complicit in environmental harm.”

-- Shrader-Frechette (1996)



Indicators of the human influence on the atmosphere during the Industrial era



SYR - FIGURE 2-1
WG1 FIGURE SPM-2