

Partial Response to the London Channel 4 Film "The Great Global Warming Swindle"
Carl Wunsch 11 March 2007

I believe that climate change is real, a major threat, and almost surely has a major human-induced component. But I have tried to stay out of the "climate wars" because all nuance tends to be lost, and the distinction between what we know firmly, as scientists, and what we suspect is happening, is so difficult to maintain in the presence of rhetorical excess. In the long run, our credibility as scientists rests on being very careful of, and protective of, our authority and expertise.

The science of climate change remains incomplete. Some elements are based so firmly on well-understood principles, or on such clear observational records, that most scientists would agree that they are almost surely true (adding CO₂ to the atmosphere is dangerous; sea level will continue to rise,...). Other elements remain more uncertain, but we as scientists in our roles as informed citizens believe society should be deeply concerned about their possibility: a mid-western US megadrought in 100 years; melting of a large part of the Greenland ice sheet, among many other examples.

I am on record in a number of places as complaining about the over-dramatization and unwarranted extrapolation of scientific facts. Thus the notion that the Gulf Stream would or could "shut off" or that with global warming Britain would go into a "new ice age" are either scientifically impossible or so unlikely as to threaten our credibility as a scientific discipline if we proclaim their reality. They also are huge distractions from more immediate and realistic threats. I've focussed more on the extreme claims in the literature warning of coming catastrophe, both because I regard the scientists there as more serious, and because I am very sympathetic to the goals of those who sometimes seem, however, to be confusing their specific scientific knowledge with their worries about the future.

When approached by WagTV, on behalf of Channel 4, known to me as one of the main UK independent broadcasters, I was led to believe that I would be given an opportunity to explain why I, like some others, find the statements at both extremes of the global change debate distasteful. I am, after all a teacher, and this seemed like a good opportunity to explain why, for example, I thought more attention should be paid to sea level rise, which is ongoing and unstoppable and carries a real threat of acceleration, than to the unsupportable claims that the ocean circulation was undergoing shutdown (Nature, December 2005).

I wanted to explain why observing the ocean was so difficult, and why it is so tricky to predict with any degree of confidence such important climate elements as its heat and carbon storage and transports in 10 or 100 years. I am distrustful of prediction scenarios for details of the ocean circulation that rely on extremely complicated coupled models that must run unconstrained by observations for decades to thousands of years. The science is not sufficiently mature to say which of the many complex elements of such forecasts are skillful. Nonetheless, and contrary to the impression given in the film, I firmly believe there is a great deal about the mechanisms of climate to be learned from models. With effort, all of this ambiguity is explicable to the public.

In the part of the "Swindle" film where I am describing the fact that the ocean tends to expel carbon dioxide where it is warm, and to absorb it where it is cold, my intent was to explain that warming the ocean could be dangerous---because it is such a gigantic reservoir of carbon. By its placement in the film, it appears that I am saying that since carbon dioxide exists in the ocean in such large quantities, human influence must not be very important --- diametrically opposite to the point I was making---which is that global warming is both real and threatening.

Many of us feel an obligation to talk to the media---it's part of our role as scientists, citizens, and educators. The subjects are complicated, and it is easy to be misquoted or quoted out of context. My experience in the past is that these things do happen, but usually inadvertently---most reporters really do want to get it right.

Channel 4 now says they were making a film in a series of "polemics". There is nothing in the communication we had (much of it on the telephone or with the film crew on the day they were in Boston) that suggested they were making a film that was one-sided, anti-educational, and misleading. I took them at face value---a great error. I knew I had no control over the actual content, but it never occurred to me that I was dealing with people who would deliberately distort my views.

The letter I sent them as soon as I heard about the actual program is below.

As a society, we need to take out insurance against catastrophe in the same way we take out homeowner's protection against fire. I buy fire insurance, but I also take the precaution of having the wiring in the house checked, keeping the heating system up to date, etc., all the while hoping that I won't need the insurance. Will any of these precautions work? Unexpected things still happen (lightning strike? plumber's torch igniting the woodwork?). How large a fire insurance premium is it worth paying? How much is it worth paying for rewiring the house? \$10,000 but perhaps not \$100,000? Answers, even at this mundane level, are not obvious.

How much is it worth to society to restrain CO₂ emissions---will that guarantee protection against global warming? Is it sensible to subsidize insurance for people who wish to build in regions strongly susceptible to coastal flooding? These and others are truly complicated questions where often the science is not mature enough to give definitive answers, much as we would like to be able to provide them. Scientifically, we can recognize the reality of the threat, and much of what society needs to insure against. Statements of concern do not need to imply that we have all the answers. Channel 4 had an opportunity to elucidate some of this ambiguity and complexity. The outcome is sad.

I am often asked about Al Gore and his film. I don't know Gore, but he strikes me as a very intelligent man who is seriously concerned about what global change will mean for the world. He is a lawyer/politician, not a scientist, but he has clearly worked hard to master a very complicated subject and to convey his worries to the public. Some of the details in the film make me cringe, but I think the overall thrust is appropriate. To the

extent that he has gotten some things wrong, I mainly fault his scientific advisers, who should know better, but not Al Gore.

In general, good scientists (unlike lawyers) are meant to keep in mind at all times that conceivably they are wrong. There is a very wide spectrum of scientific knowledge ranging from the almost certain, e.g. that the sun will indeed rise tomorrow, or that no physical object can move faster than the speed of light; to inferences that seem very plausible but for which one can more readily imagine ways in which they might prove incorrect (e.g., that melting of the Greenland ice cap means that sea level will rise); to fiercely disputed ideas (e.g., that variations in the North Atlantic circulation directly control the climate of the northern hemisphere). Most of us draw conclusions that seem to us the most compelling, but try hard to maintain an open mind about counter arguments or new observations that could prove us wrong. Reducing the extremely complicated discussion of future climate change to the cartoon level we see on both extremes is somewhat like making public policy on the basis of a Batman movie.

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Mr. Steven Green
Head of Production
Wag TV
2D Leroy House
436 Essex Road
London N1 3QP

10 March 2007

Dear Mr. Green:

I am writing to record what I told you on the telephone yesterday about your Channel 4 film "The Global Warming Swindle." Fundamentally, I am the one who was swindled---please read the email below that was sent to me (and re-sent by you). Based upon this email and subsequent telephone conversations, and discussions with the Director, Martin Durkin, I thought I was being asked to appear in a film that would discuss in a balanced way the complicated elements of understanding of climate change---in the best traditions of British television. Is there any indication in the email evident to an outsider that the product would be so tendentious, so unbalanced?

I was approached, as explained to me on the telephone, because I was known to have been unhappy with some of the more excitable climate-change stories in the British media, most conspicuously the notion that the Gulf Stream could disappear, among others. When a journalist approaches me suggesting a "critical approach" to a technical subject, as the email states, my inference is that we are to discuss which elements are contentious, why they are contentious,

and what the arguments are on all sides. To a scientist, "critical" does not mean a hatchet job---it means a thorough-going examination of the science. The scientific subjects described in the email, and in the previous and subsequent telephone conversations, are complicated, worthy of exploration, debate, and an educational effort with the public. Hence my willingness to participate. Had the words "polemic", or "swindle" appeared in these preliminary discussions, I would have instantly declined to be involved.

I spent hours in the interview describing many of the problems of understanding the ocean in climate change, and the ways in which some of the more dramatic elements get exaggerated in the media relative to more realistic, potentially truly catastrophic issues, such as the implications of the oncoming sea level rise. As I made clear, both in the preliminary discussions, and in the interview itself, I believe that global warming is a very serious threat that needs equally serious discussion and no one seeing this film could possibly deduce that.

What we now have is an out-and-out propaganda piece, in which there is not even a gesture toward balance or explanation of why many of the extended inferences drawn in the film are not widely accepted by the scientific community. There are so many examples, it's hard to know where to begin, so I will cite only one: a speaker asserts, as is true, that carbon dioxide is only a small fraction of the atmospheric mass. The viewer is left to infer that means it couldn't really matter. But even a beginning meteorology student could tell you that the relative masses of gases are irrelevant to their effects on radiative balance. A director not intending to produce pure propaganda would have tried to eliminate that piece of disinformation.

An example where my own discussion was grossly distorted by context: I am shown explaining that a warming ocean could expel more carbon dioxide than it absorbs -- thus exacerbating the greenhouse gas buildup in the atmosphere and hence worrisome. It was used in the film, through its context, to imply that CO₂ is all natural, coming from the ocean, and that therefore the human element is irrelevant. This use of my remarks, which are literally what I said, comes close to fraud.

I have some experience in dealing with TV and print reporters and do understand something of the ways in which one can be misquoted, quoted out of context, or otherwise misinterpreted. Some of that is inevitable in the press of time or space or in discussions of complicated issues. Never before, however, have I had

an experience like this one. My appearance in the "Global Warming Swindle" is deeply embarrassing, and my professional reputation has been damaged. I was duped---an uncomfortable position in which to be.

At a minimum, I ask that the film should never be seen again publicly with my participation included. Channel 4 surely owes an apology to its viewers, and perhaps WAGTV owes something to Channel 4. I will be taking advice as to whether I should proceed to make some more formal protest.

Sincerely,

Carl Wunsch
Cecil and Ida Green Professor of
Physical Oceanography
Massachusetts Institute of Technology

cc: Hamish Mykura, Channel 4

(Hard copy to follow)

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From: jo locke
Sent: 19 September 2006 16:22
To: Carl Wunsch
Cc: Eliya Arman
Subject: Climate Change Documentary

Dear Professor Wunsch,

Many thanks for taking the time to talk to me this morning. I found it really useful and now have the issues much clearer in my mind.

I wanted to email you to outline the approach we will be taking with our film to clarify our position. We are making a feature length documentary about global warming for Channel Four in the UK. The aim of the film is to examine critically the notion that recent global warming is primarily caused by industrial emissions of CO2. It explores the scientific evidence which jars with this hypothesis and explores alternative theories such as solar induced climate change. Given the seemingly inconclusive nature of the evidence, it examines the background to the

apparent consensus on this issue, and highlights the dangers involved, especially to developing nations, of policies aimed at limiting industrial growth.

We would like to do an interview with you to discuss the notion that there is a scientific consensus on the effects of global warming on the Great Ocean Conveyor Belt, the Gulf Stream and the North Atlantic Drift. It has been widely reported that Britain and Western Europe could soon be plunged into a mini ice age, and we would like to show that it is simply not true that they will shut down. We would like to talk to you about the numerical models and whether they give us a realistic perspective of the impact of climate change on the oceans. We would also like to talk to you about the 'memory' of oceans, and how it can take varying amounts of time for a disturbance to be readable in the North Atlantic. Fundamentally, we would like to ask you whether scientists have enough information about the complex nature of our climate system. Do the records go back far enough to identify climate trends, and can we conclusively separate human induced change from natural change?

Our filming schedule is still relatively fluid at the moment, but we hope to be in Boston around the second week of November. Please don't hesitate to contact me or my producer, Eliya Arman, if you have any further questions, and I look forward to hearing from you soon.

Yours sincerely,

Jo Locke
Assistant Producer
WagTV
2d Leroy House
436 Essex Road
London N1 3QP

t 020 7688 5191 f 020 7688 1702
www.wagtv.com <<http://www.wagtv.com/>>