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Subject: Revisions to Chapter 8

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To all Lead Authors of the 1995 IPCC Report, and all contributors to Chapter 8,

I am taking the unusual step of writing to you directly in order to keep you apprised of some very serious allegations that have been made recently by the Global Climate Coalition (GCC). The GCC has written a nine-page analysis of changes made to the Oct. 9th, 1995 version of Chapter 8, entitled "The IPCC: Institutionalized 'Scientific Cleansing' ". This document has been widely distributed to the press, and has been used as the basis of both an article in "Energy Daily" (May 22nd, 1996) and an editorial in the Washington Times (May 24th, 1996).

The GCC alleges that unauthorized changes were made to Chapter 8 after the

November 1995 Madrid IPCC meeting, that these changes were politically motivated, and that important scientific uncertainties were intentionally suppressed. These allegations impugn my own scientific integrity, the integrity of the other Lead Authors of Chapter 8, and the integrity of the IPCC itself.

I am therefore sending you an electronic version of the original article in Energy Daily, together with a cover letter to "Energy Daily" and our full reply. Dennis Wamsted, the author of the "Energy Daily" article, is also the editor of that publication, so our chances of getting the attached reply published are perhaps somewhat slim. In the event that "Energy Daily" reject our reply we will probably submit a modified version of it to Nature or Science.

The Oct. 9th version of our chapter was the only chapter in the 1995 IPCC WG I report to have both an executive summary up front and a concluding summary (our old Section 8.7). After much criticism in October and November 1995, I decided to remove the concluding summary. About half of the information in the concluding summary was integrated with material in Section 8.6 - in other words, it did not disappear completely, as the Global Climate Coalition has implied. The lengthy Executive Summary of Chapter 8 addresses the issue of uncertainties in great detail - as does the underlying Chapter itself.

The supreme irony of the criticism raised by the Global Climate Coalition is that I fought very hard at Siguna, Brighton, and Asheville to INCLUDE sections on signal and noise uncertainties in Chapter 8. You may remember that the issue of "overlap" between Chapter 8 and Chapters 3, 5 and 6 was often raised at our three drafting sessions, and many advocated removing the Chapter 8 sections on signal and noise uncertainties, since these issues were partially covered in other chapters.

I am troubled that this controversy has surfaced. I had hoped that any controversy regarding the 1995 IPCC Report would focus on the science itself, and not on the scientists. I guess I was being naive.

With best regards,

Ben Santer

ORIGINAL ARTICLE BY ENERGY DAILY

Energy Daily
Wednesday May 22

Doctoring The Documents?

BY DENNIS WAMSTED

Revisions to key report understate climate change uncertainties.

The key document outlining the scientific backing for global climate change has been rewritten without proper authority, according to the Global Climate Coalition, a group of U.S. businesses opposing immediate action to reduce greenhouse gas emissions.

The changes were made in Chapter 8 of the Second Assessment Report on climate change being prepared by the Intergovernmental Panel on Climate Change (IPCC). That report is scheduled for publication soon. Copies of the draft chapter, approved by participating governments, including the United States, at the IPCC's plenary meeting in Rome last December, and the final copy of the chapter, Detection of Climate Change and Attribution of Causes, were given to The Energy Daily by the coalition.

In an accompanying analysis, the coalition argues that the changes "cause the chapter to understate the uncertainties about climate change causes and effects that were clearly evident in the original report and to increase the apparent scientific support for attribution of changes in climate to human activities."

For example, on the question of when it will be possible to link human activities conclusively to climate change, the approved draft reads:

"Finally, we come to the most difficult question of all: 'When will the detection and unambiguous attribution of human-induced climate change occur?' In the light of the very large signal and noise uncertainties discussed in this chapter, it is not surprising that the best answer to this question is, 'We do not know.' "

That stark admission has been deleted from the revised chapters which soft-pedals the uncertainties. "Finally, we come to the difficult question of when the detection and attribution of human-induced climate change is likely to occur. The answer to this question must be subjective, particularly in the light of the large signal and noise uncertainties discussed in this chapter."

Perhaps most damning, the summary of the draft has been revised significantly. For starters, it no longer appears at the end of the chapter, but at the beginning. But it is not just the placement that has been changed; the content also has been modified substantially. In the initial summary, the authors wrote that while changes in global-mean, annually averaged temperatures observed during the past century are unlikely to be due entirely to natural causes, "this explanation cannot be ruled out completely."

The draft summary also pointed out that attributing changes in global temperature to emissions from human activities remains problematic.

"A major difficulty with such studies is in associating cause and effect with a high degree of confidence."

"Attribution of an observed climate change to a particular mechanism can be established only by testing competing hypotheses. Thus, unique attribution of a 'significant' observed change requires specifying the signals of all likely alternative explanations, and statistical determination that none of these

mechanisms is a satisfactory explanation for the observed change. This is a difficult task, and one that detection studies to date have not addressed in a rigorous statistical way."

The draft then noted that "Pattern-based detection studies are probably of greater relevance for the attribution issue than studies of global-mean change.... Detection of a significant change...in a pattern-based study would give some scientists more confidence in the attribution of observed changes to a specific cause or causes, even without rigorous statistical testing of alternative explanations."

However, the draft continued, "While some of the pattern-based studies discussed here have claimed detection of a significant climate change, no study to date has positively attributed all or part of that change to anthropogenic causes. Nor has any study quantified the magnitude of a greenhouse-gas effect or aerosol effect in the observed data - an issue that is of primary relevance to policymakers."

The revised chapter reads much differently, with the summary concluding:

"Viewed as a whole, these results indicate that the observed trend in global mean temperature over the past 100 years is unlikely to be entirely natural in origin. More importantly, there is evidence of an emerging pattern of climate response to forcing by greenhouse gases and sulphate aerosols in the observed climate record. This evidence comes from the geographical, seasonal and vertical patterns of temperature change. Taken together, these result points towards a human influence on global climate."

The only remaining uncertainty, the revised chapter contends, is the magnitude of the change. These revisions have the energy community hopping mad, with the climate coalition arguing in a lengthy memo that the credibility of the entire IPCC process - crucial to any future policy directives - is at stake.

"The IPCC now is faced with an embarrassing situation," the coalition wrote. "On at least the issue that has received more media and public attention than any other, its published report on the science of potential global climate change defies both the letter and the spirit of the IPCC's rules governing its reports."

"Unless the management of the IPCC promptly undertakes to republish the printed versions of the underlying...report...the IPCC's credibility will have been lost."

COVERING LETTER TO ENERGY DAILY:

June 3, 1996

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The Editor
Energy Daily
627 National Press Building
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Dear Sir,

We would like to respond to an article that was published in Energy Daily on May 22, 1996. The article, by Dennis Wamsted, was entitled "Doctoring The Documents?" and deals with alleged improprieties on the part of the Lead Authors of Chapter 8 of the 1995 Report by Working Group I of the Intergovernmental Panel on Climate Change (IPCC). The principal allegations are that unauthorized changes were made to this chapter after an IPCC meeting held in November 1995 in Madrid, and that important scientific uncertainties were suppressed. These allegations are apparently based on material supplied to Mr. Wamsted by the Global Climate Coalition (GCC).

The allegations are serious. It may be that Mr. Wamsted thought they were well-founded on the basis of the material supplied by the GCC, but this is incorrect. We believe that Mr. Wamsted should at the very least have contacted one of the Lead Authors of Chapter 8 in order to obtain a more balanced view of how and why revisions were made to this chapter. We feel sure that Energy Daily is dedicated to balanced and factually correct reporting. To ensure that this balance is restored, and that the misinterpretations, misconceptions, and factual errors in Mr. Wamsted's article are corrected, we request that Energy Daily publish our extended reply.

As supporting information, we are enclosing the now-published version of Chapter 8, together with excerpts from a review of the full 1995 IPCC Second Scientific Assessment by the World Energy Council.

Sincerely,

Dr. Benjamin D. Santer
Convening Lead Author of Chapter 8 of 1995 IPCC Working Group I Report

REPLY TO ENERGY DAILY ARTICLE: JUNE 3, 1996

We would like to respond to an article that was published in Energy Daily on May 22, 1996. The article, by Dennis Wamsted, was entitled "Doctoring The Documents?" and deals with alleged improprieties on the part of the Lead Authors of Chapter 8 of the 1995 Report by Working Group I of the Intergovernmental Panel on Climate Change (IPCC). This Report is a

comprehensive assessment of the scientific information on climate change, involving hundreds of scientists worldwide. The chapter in question evaluates the scientific evidence from studies that have attempted to detect significant climate change and determine whether some portion of that change can be attributed to human activities.

Mr. Wamsted's article relies on information from the Global Climate Coalition, which he characterizes as "a group of U.S. businesses opposing immediate action to reduce greenhouse gas emissions". The Global Climate Coalition alleges that:

- o Unauthorized changes were made to Chapter 8 ("The key document outlining the scientific backing for global climate change has been rewritten without proper authority", writes Mr. Wamsted).
- o Scientific uncertainties were suppressed (The revised chapter, according to Mr. Wamsted, "soft-pedals the uncertainties". He further asserts that "The only remaining uncertainty, the revised chapter contends, is the magnitude of the (human-induced) change").

Mr. Wamsted then gives a number of specific examples that purportedly support these serious allegations. We show below that these allegations are baseless.

At the beginning of October 1995, a draft of the Summary for Policymakers (SPM), together with all eleven chapters of the 1995 IPCC Working Group I Report, was circulated to governmental and non-governmental participants of an IPCC meeting that was to be held in Madrid from November 27-29th, 1995. The primary goal of the Madrid meeting was to modify where necessary, and then formally approve the SPM, and to accept the eleven scientific chapters. The circulated chapters were dated October 9th, 1995.

It is true that changes were made to Chapter 8 after the Madrid meeting. However, these changes did not circumvent procedural rules. As is required by IPCC procedures, changes were made in direct response to:

- o Written comments made by governments and non-governmental organizations (NGOs) during October and November 1995;
- o Comments made by governments and NGOs during the plenary sessions of the Madrid meeting. These comments helped to identify specific problems with the clarity of the text of Chapter 8, leading to misinterpretation of some of the scientific statements. Such problems were a natural outcome of the difficulties encountered in conveying complex scientific ideas to lay persons.

Post-Madrid changes to Chapter 8 were made solely in response to review comments and/or in order to clarify scientific points. None of the changes were politically motivated. The suggestion by the Global Climate Coalition that this was the case is entirely wrong. All revisions were made with the sole purpose of producing the best-possible and most clearly-explained assessment of the science, and were under the full scientific control of the Convening Lead Author of Chapter 8.

Did the changes alter the substance of the scientific conclusions of Chapter 8, as the Global Climate Coalition has alleged? The answer is categorically no. The evaluation of the scientific evidence in Chapter 8 was the same before and after the Madrid meeting. The bottom-line assessment of the science in the Oct. 9th version of Chapter 8 was "Taken together, these results point towards a human influence on climate". The final assessment in the now-published Summary for Policymakers is that "the balance of evidence suggests that there is a discernible human influence on global climate". The latter sentence, which is entirely consistent with the earlier Oct. 9th sentence, was unanimously approved at the Madrid meeting by delegates from nearly 100 countries.

Did the Lead Authors of Chapter 8 engage in "scientific cleansing" as the Global Climate Coalition have alleged, and purge material that would have tended to highlight uncertainties? Here, too, the answer is no. Over four-and-a-half pages of Chapter 8 are specifically devoted to the discussion of uncertainties in estimates of natural climate variability and the expected "signal" due to human activities. The remaining text abounds with caveats and discussions of other uncertainties.

Uncertainty is an integral part of the climate change detection and attribution problem, and the discussion of uncertainty is an integral part of the main text and executive summary of Chapter 8. Mr. Wamsted could not be further from the truth with the claim that "The only remaining uncertainty, the revised chapter contends, is the magnitude of the change". The only plausible explanation for this statement is that Mr. Wamsted had not read the published version of Chapter 8 before writing his article, and relied solely on information supplied by the Global Climate Coalition.

A major concern of the Global Climate Coalition, reports Mr. Wamsted, is that the "Concluding Summary" (Section 8.7) in the Oct. 9th version of Chapter 8 has now been removed. The Oct. 9th version of Chapter 8 was the only chapter in the 1995 IPCC WG I report to have both an executive summary up front and a concluding summary. After receiving much criticism of this redundancy in October and November 1995, the Convening Lead Author of Chapter 8 decided to remove the concluding summary. About half of the information in the concluding summary was integrated with material in Section 8.6. It did not disappear completely, as the Global Climate Coalition has implied. The lengthy Executive Summary of Chapter 8 addresses the issue of uncertainties in great detail - as does the underlying Chapter itself.

Clearly, it is beyond the scope of this letter to give the full scientific justification for each of the changes Mr. Wamsted mentions. Chapter 8 deals with a complex scientific issue, and it is easily possible to consider individual changes out of the scientific context in which they occur. One crucial example highlights the problem.

Mr. Wamsted, apparently using the Global Climate Coalition's analysis of Chapter 8 as a source, quotes the following sentences from the Oct. 9th version of Chapter 8:

"Finally, we come to the most difficult question of all: When will the detection and unambiguous attribution of human-induced climate change

occur? In the light of the very large signal and noise uncertainties discussed in this Chapter, it is not surprising that the best answer to this question is, 'We do not know'."

He then contrasts this with the corresponding statement in the now-published chapter:

"Finally, we come to the difficult question of when the detection and attribution of human-induced climate change is likely to occur. The answer to this question must be subjective, particularly in the light of the large signal and noise uncertainties discussed in this chapter. Some scientists maintain that these uncertainties currently preclude any answer to the question posed above."

Unfortunately, Mr. Wamsted's quote ends here, thus conveying the erroneous impression that "We do not know" has been swept under the carpet. Had he continued, he and his readers would have received a more balanced impression of the changes made. In fact, the next sentences read as follows:

"Other scientists would and have claimed, on the basis of the statistical results presented in Section 8.4, that confident detection of a significant anthropogenic climate change has already occurred. As noted in Section 8.1, attribution involves statistical testing of alternative explanations for a detected observed change, and few would be willing to argue that completely unambiguous attribution has already occurred, or was likely to happen in the next few years".

Why were changes made here? Throughout the text of Chapter 8, "detection" and "attribution" are defined and handled separately. Detection involves showing that some observed climate change is unusual, while attribution is the process of demonstrating cause and effect. The Oct. 9th statement quoted above lumped detection and attribution together. This was clearly confusing to some of the participants at the Madrid meeting. The revision considers detection and attribution separately in trying to answer the "when can we expect" question. This is more in line with the rest of the chapter. The changes are a more accurate reflection of the currently diverse scientific opinion - some scientists say we've already detected significant climate change, others say that we can't claim detection at present, and both sides concur that unambiguous attribution hasn't happened yet.

The Global Climate Coalition - a less than disinterested party - has made serious allegations regarding the scientific integrity of the Lead Authors of Chapter 8, and of the IPCC process itself. We are troubled that Mr. Wamsted did not consult with the Lead Authors of Chapter 8 or with members of the IPCC Working Group I Technical Support Unit before writing his article. Had he done so, he would have gained a better understanding of how and why changes were made to Chapter 8.

Finally, we refer to an alternative assessment of the full 1995 IPCC Second Scientific Assessment by the World Energy Council. Like the Global Climate Coalition, the World Energy Council is also a consortium of energy interests. The similarity ends there. The World Energy Council and Global Climate Coalition reach very different conclusions regarding the scientific balance

of the post-Madrid version of Chapter 8, and the extent to which it accounts for important uncertainties. We are encouraged that the World Energy Council makes the following statements regarding the 1995 IPCC report:

"It is important that commentators on the IPCC SAR's (Second Assessment Report's) discussion of human influence on global climate do not run ahead of the evidence and of what the SAR actually says, and fail to note sufficiently well the references to ongoing uncertainty".

"The IPCC's reputation rests upon its scientific objectivity, excellence and balance and it must not run ahead of the game if its reputation is to be safeguarded. The careful reader will judge the IPCC's SAR to have retained scientific integrity".

The published version of Chapter 8 is the best possible evaluation of the evolving scientific evidence. It was produced by a process that rigorously adhered to the procedural guidelines laid down for the production of IPCC reports and to the scientific principles of openness, honesty and peer review. We would encourage Mr. Wamsted and others to read Chapter 8 and form their own opinions on the scientific justification for its conclusions, and not to rely solely on views espoused by the Global Climate Coalition.

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