

Email of July 25, 1996 to Lead Authors of IPCC Working Group I Report¹

Date: Thu, 25 Jul 96 21:02:35 PDT
From: Ben Santer <bsanter@rainbow.llnl.gov>
To: (78 undisclosed recipients)²
Subject: Latest zinger from Singer

To all Lead Authors of the 1995 IPCC Working Group I Report, and to all Contributors to Chapter 8,

You will all have received (from Dr. S. Fred Singer) copies of Dr. Singer's letter of July 25th to the Wall Street Journal. This letter makes some very serious allegations, and again raises the spectre of "*scientific cleansing*" of Chapter 8. I am disturbed by the use of this term. Over the last few years, "*ethnic cleansing*" has taken on vivid meaning for most of us. We have seen examples of "*ethnic cleansing*" in Bosnia and Rwanda. "*Ethnic cleansing*" is a synonym for genocide – the systematic and planned extermination of an entire national, racial, political, or ethnic group. Singer's allegations of "*scientific cleansing*" are morally repugnant to me, playing as they do on our familiarity with the use of the word "*cleansing*" in a non-scientific context.

Singer's latest letter to the *Wall Street Journal* contains serious factual inaccuracies.

1. Singer states that there is "*an absence of any evidence for a current warming trend*". This is untrue. There is clear evidence that the Earth has warmed by 0.3-0.6 degrees Celsius over the past century. This evidence is thoroughly documented in Chapter 3 of the 1995 IPCC Working Group I Report on the "*Science of Climate Change*". Anyone who could read this report and reach the conclusion that there is "*an absence of any evidence for a current warming trend*" is seriously out of touch with reality.
2. Singer claims that "*Chapter 8 is mainly based on two research papers.*" Again, this erroneous statement serves to document Singer's inability to argue on the basis of the facts. Chapter 8 references more than 130 scientific papers – not just two. Its bottom-line conclusion that "*the balance of evidence suggests a discernible human influence on global climate*" is not solely based on the two Santer *et al.* papers that Singer alludes to. This

¹ The email has been reformatted. No words have been changed.

² Note: The email addresses of the 78 recipients have been removed.

conclusion derives from many other published studies on the comparison of modelled and observed patterns of temperature change – for example, papers by Karoly *et al.* (1994), Mitchell *et al.* (1995), Hegerl *et al.* (1995), Karl *et al.* (1995), Hasselmann *et al.* (1995), Hansen *et al.* (1995) and Ramaswamy *et al.* (1996). It is supported by many studies of global-mean temperature changes, by our physical understanding of the climate system, by our knowledge of human-induced changes in the chemical composition of the atmosphere, by information from paleoclimatic studies, and by a wide range of supporting information (sea-level rise, retreat of glaciers, *etc.*). To allege, as Singer does, that “*Chapter 8 is mainly based on two research papers*” is just plain wrong.

3. Singer further alleges that “*The draft of Chapter 8, under Santer’s direction, was mailed for comment in May 1995, well before either paper was published and available for critical evaluation*”. Again, this is demonstrably untrue. Drafts of both the Santer *et al.* papers that Singer refers to were available to reviewers upon request during the country review stage. No such request was made by Dr. Singer. One of the Santer *et al.* papers was published as PCMDI report #21 in January 1995 – five months before the start of the IPCC country review process. (PCMDI reports are routinely distributed to over 300 scientists and scientific organizations worldwide). Finally, as noted by Tom Wigley, John Mitchell, Bob Charlson and myself in a letter to “*Science*” (15 March, 1996):

“The criterion for inclusion of material in the IPCC reports is not that the material should be in the peer-reviewed literature, but that it should be accessible to reviewers of IPCC drafts. Thus, published reports, book chapters, and manuscripts submitted for publication or in the press, were acceptable material. The reason for this is partly to ensure that the report, when published, would be up-to-date and truly reflect the state of the art”.

4. Singer bemoans the failure of the IPCC “*for permitting the lead author of a crucial chapter to use his own unpublished work as a basis and for not including as a lead author my University of Virginia colleague Professor Patrick J. Michaels, who, at the time, had published the only refereed paper on the subject*”. Here, too, Singer seems to be viewing reality through some strange distortion filter. The implication of his statements is that none of my work has been published in the peer-reviewed literature, and that Pat Michaels published the first paper on pattern-based detection. I doubt whether even Pat Michaels would make such outrageous claims.

First, had Singer read Chapter 8 thoroughly, he would have noted that Chapter 8 cites two pattern-based detection studies (by myself and other scientists) that appeared in a peer-reviewed scientific publication, *Climate Dynamics*, in 1993 and 1994. By my reckoning, 1993 and 1994 predate the start of the IPCC country review process in May 1995.

Second, Pat Michaels was not the first to publish refereed papers on the subject of pattern-based detection. The first practical pattern-based study was by Tim Barnett and Mike Schlesinger in 1987. This was published in the peer-reviewed *Journal of Geophysical Research* (an earlier theoretical paper on this subject was published by Klaus Hasselmann in 1979). Pat Michaels pattern-based study was published seven years AFTER the Barnett and Schlesinger paper. It appeared in the *Journal of the Franklin Institute*. The review process could not have been that arduous – the paper was received on 7 Sept. 1994, and accepted for publication on 10 Oct. 1994.

Third, Pat Michaels was invited to contribute to Chapter 8. He declined to do so. One of the Lead Authors of Chapter 8, Tom Wigley, wrote to Pat Michaels on Nov. 21, 1994, and on Feb. 21, 1995, soliciting comments on the portrayal of Michaels' *Franklin Institute* paper in a Dec. 8, 1994 version of Chapter 8. Prof. Michaels did not respond to these requests.

5. Singer claims that Chapter 8 has been scientifically cleansed. The specific act of cleansing that he refers to pertains to Figure 8.10b in Chapter 8. This figure shows the correlation between a model-predicted pattern of temperature change (in response to combined changes in CO₂ and sulphate aerosols) and observed patterns of temperature change over 1910 to 1993. The figure also includes a least-squares linear trend fitted to the correlation time series over the 50-year period 1944-1993. Singer decries the fact that other, shorter timescale trends are not shown on this figure, although they are shown in our 1995 *Climate Dynamics* paper (Fig. 10). The shorter timescale trends are non-significant. Singer implies that the IPCC report fails to show these shorter time-scale trends simply because they are non-significant, and hence that I have suppressed scientific information that would tend to contradict the conclusion that there is a discernible human influence on climate.

Singer's basic problem here is that he does not understand the concepts of signal and noise. On timescales of 10 years or less, ambient noise levels are large (arising from ENSO-type variability, the short-term transient effects of volcanic eruptions, etc.) and signals of human effects tend to be small, since the changes in human-induced radiative forcing tend to be small. Signal-to-noise (S/N) ratios for such short timescale trends are therefore low, and it is difficult to detect human influences. A case in point is the short (17-year) MSU time series. On longer timescales, noise levels tend to decrease, changes in human influences are larger, and hence any anthropogenic signal (and S/N ratios) will be larger. This means that if one wants to search for an anthropogenic signal in observed data, there is little sense in making short timescale trends the focus of such a search!

Our 1995 *Climate Dynamics* paper and 1996 Nature paper consider the issue of trend significance on a range of timescales. The same is true of the 1996 Hegerl *et al.* paper soon to appear in the *Journal of Climate*. Our papers and Gabi Hegerl's paper provide full information on trend significance as a function of timescale and season.

Figures 8.10a and 8.10b were restricted to 50-year timescale trends as a pedagogical example of the differences in model-versus-observed pattern similarity between "CO₂-only" and "CO₂+aerosol" signal. There was and is no sinister plot to suppress uncertainties. In fact, Singer fails to note that Figure 8.3 in the now-published Chapter 8 SPECIFICALLY ILLUSTRATES trend significance as a function of timescale (from 10 to 100 years), and shows that the shortest timescale trends (10 year trends) are non-significant! Furthermore, the issue of non-significance of short timescale trends is comprehensively covered in Chapter 8:

"The key point to note here is that the MSU record is short (<20 years) for the purposes of detecting a slowly evolving anthropogenic signal. This short record limits comparisons of satellite-based and model-predicted data to decadal time-scale temperature trends. These trends are strongly affected by the background noise of interannual to decadal time-scale natural variability (see, for example, the lack of significance for the most recent 10-year trends in near-surface temperature in Figure 8.3). It is therefore difficult to make a meaningful interpretation of any differences in trend on these short time-scales" (page 438).

6. With reference to Figure 8.10b (discussed in 5 above), Singer states that *"I have twice questioned Santer about this clear instance of "scientific cleansing," but so far he has not replied"*. I have not replied to Singer for two reasons. First of all, it is a waste of my valuable time to reply to Singer. If I addressed all the ludicrous claims made by Dr. Singer in op-eds and *"letters to the editor"*, I would have no time to do any scientific research. Such a result would presumably be of some satisfaction to Dr. Singer, and I will not give him that satisfaction.

Second, as you are aware from my emails to Dr. Singer dated June 6 and June 11, 1996 (these were copied to all Lead Authors of the 1995 IPCC WG I report and all contributors to Chapter 8), I twice submitted written requests to Dr. Singer for the addresses of all recipients of Singer's June 3 *"Dear Colleague"* letter. You may remember that Singer's letter implied that the IPCC – and not the Lead Authors of Chapter 8 – made changes to the Chapter subsequent to the Madrid meeting. This was entirely incorrect. As Convening Lead Author, I was responsible for the post-Madrid changes to Chapter 8. I asked Singer for the

opportunity to set the record straight. Singer did not and has not given me this opportunity. To date, he has failed to provide the list of recipients of his June 3 "*Dear Colleague*" letter.

This incident illustrated that no useful purpose would be served by any form of discourse with Dr. Singer. Any further emails or correspondence that I receive from him will be sent back unread. He has wasted enough of my time, and will only waste yours if you reply to his most recent letter.

7. Regarding the recent Santer *et al.* *Nature* paper, Singer echoes the claim made by Pat Michaels that we were "selective" in our use of data. This particular red herring was skewered in the email that I sent out yesterday.

It's rather touching that Singer should assure the potential readers of his *Wall Street Journal* letter that he is "*not alleging here that Santer consciously selected the data to match the desired conclusion*". How thoughtful of him. But I'll bet it's sure satisfying to some parties to see the words "*...Santer consciously selected the data to match the desired conclusion*" in print on the pages of the *Wall Street Journal*.

The sickening thing is that the *Wall Street Journal* may actually publish Singer's letter. After the events of the last few months, I would not be particularly surprised if they give him the last word. Mr. Ned Crabb, the editor of the "*Letters to the Editor*" section of the *Wall Street Journal*, informed me that he allows two rounds of response to op-ed pieces. Presumably Dr. Singer still has a round left, while anything that we write will be rejected. Nevertheless, I will be sending excerpts from this email to the *Wall Street Journal*.

I am copying this letter to Dr. S. Fred Singer so that he gets the clear message that I will have nothing further to do with him. The same applies to Drs. Seitz, Ellsaesser, and Michaels. If these gentlemen submit papers to *bona fide* peer-reviewed publications, I will respond to scientific issues that they address. But I will not waste any further time replying to their op-ed pieces, letters to newspapers, unreviewed reports, and press releases. I have wasted enough time already; I would encourage you not to waste your time in an extended discourse with these gentlemen in the pages of our national newspapers.

As you know from my email messages of June 6 and 11, 1996, I made an attempt to discuss scientific issues with Singer in an open and honest way. That attempt has failed. Singer's charges of "*scientific cleansing*" are odious in the extreme. They are also dead wrong. The same applies to his insinuations of selective data analysis in my own research. The more often Singer repeats these allegations, the more chance that someone, somewhere, will believe them.

That's sad, but ultimately irrelevant. No matter how loudly Dr. S. Fred Singer broadcasts his visions of political tampering and scientific cleansing, he cannot halt the inexorable progress of the science itself.

With very best regards,

Ben Santer