SEPP Science Editorial #1 (8/23/08)

The absence of a warming trend in the last 10 years cannot be used to deny the existence of a greenhouse effect from rising CO2. All we can say is that whatever is producing the cooling, whether an internal oscillation of the atmosphere-ocean system or external cause like solar, it is large enough to cancel the putative warming from rising CO2. We cannot even deduce from this cancellation what the climate sensitivity to CO2 is.

We can however state with some assurance that natural climate changes can be as large or larger than those produced by increases in CO2. We can get some guidance from the observed increase between 1920-40, which was almost surely of natural origin -- although some authors and the IPCC have at times maintained that it is anthropogenic. [They deduced this from a statistical analysis that is almost certainly wrong]

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SEPP Science Editorial #2 9/6/08

In my opinion, the evidence is overwhelming that decadal-scale climate variability is controlled by changes in solar activity (which in turn controls the intensity of incoming cosmic radiation). The strongest evidence (see NIPCC report, Fig 14) comes from observations on stalagmites, covering a time period of 1,000s of years and shows a detailed correspondence between cosmic ray intensity and earth climate. But we also know from observations of the last 100 years that climate changes are controlled by internal oscillations, such as the Pacific Decadal Oscillation, with typical periods of 20-30 years. This raises a certain puzzle: Are there two independent natural forcings that control the climate or is it possible that the solar forcing controls the timing of the PDO and other atmosphere-ocean oscillations? This intriguing possibility I first heard suggested by a Scripps oceanographer more than a decade ago but has recently been given more substance by Australian astronomer Ian Wilson. This is still work in progress and you will be hearing more about it in the future.

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SEPP Science Editorial #3 (9/13/08)

It's become quite clear that the climate has not warmed for a decade, since 1998, the year of the strong El Nino. But what about the two decades before 1998? The iconic graph of global mean surface temperature of the IPCC seems to show a strong warming trend of 0.2 degC per decade (see Fig 4a of NIPCC report, based on the GISS analysis). But not so fast: The well-controlled US data how no such trend (NIPCC, Fig 4b). Tree-ring data (see Hot Talk, Cold Science, Fig16), not subject to any local urban heating, show zero trend; ice core temperatures (NIPCC, Fig 2) show no warming either. The notorious Hockeystick proxy data mysteriously stop at 1980, just when things become interesting. But we have tropospheric temperature data from balloon-borne radiosondes and from microwave instruments in weather satellites. Both of these data sets show essentially no warming between 1979 and 1997. Climate models tell us that if greenhouse (GH) effects dominate, then the surface trend in the tropics should be about half that of the troposphere. And half of zero is zero. Hmm, maybe there has been no significant GH warming between 1979 and 1997 at all, then an upward jump in 1998, followed by slight cooling. A look at the satellite data (NIPCC, Fig 13) seems to suggest just that.

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SEPP Science Editorial #4 (9/13/08)

An EPA Technical Support Document (June 21, 2008) is meant to provide scientific support to the EPA-ANPR. Its Section 5 "Attribution of Observed Climate Change to Anthropogenic Greenhouse Gas Emissions at the Global and Continental Scale." contrasts with the NIPCC Report "Nature, Not Human Activity, Controls the Climate" http://www.sepp.org/publications/NIPCC_final.pdf

This is indeed the key issue: How to decide whether the cause of global warming is natural (and therefore unstoppable) or whether anthropogenic greenhouse gases are responsible.

Since the major greenhouse gas, carbon dioxide, is globally distributed, we need to determine whether the observed rise in CO2 can produce the kind of temperature increase demonstrated by greenhouse models.

The key parameter is the so called "climate sensitivity (CS)," usually defined as the increase of global mean surface temperature produced by a doubling of global CO2 concentration.

Published models give differing values of CS, usually ranging between 1.5 and 4.5 degC. It has become evident that these differences result from different ways in which models are parameterized. Depending on assumed parameter values, the climate sensitivity can even be lower than 1.5 and can range up to 11.5 degC.

The question then arises about the validity of such model results, which has to be established with a comparison to observations. But observed temperature trends of the past 100 years are sometimes positive (1920-1940) and sometimes negative (1940-1975, and also since 1998), in spite of increasing CO2 trends. Clearly one cannot reproduce observed temperatures simply by using greenhouse (GH) models. As a result, the IPCC has attempted to reproduce the observed temperature history of the 20th century by using a combination of GH gas forcing, aerosol and ozone forcing, and natural forcings (which include volcanoes and Total Solar Irradiance -- TSI). There are at least four problems with this procedure, which makes it unsuitable for validating climate models:

1. Agreement between observed temperature history and model results can only be achieved by choosing the right adjustable parameters for these major anthropogenic and natural forcings. This clearly becomes an exercise in "curve fitting" and nothing more. While a suitable choice of parameters may fit the global temperature data, the same choice cannot fit the northern hemisphere and southern hemisphere separately.

2. The procedure concentrates on GH gases but ignores other possible important human influences, such as changes in surface albedo and evaporation -- from agriculture, from deforestation and reforestation, from major biomass burning, from urban heat islands, and from major pollution, like the Asian 'brown cloud."

3. An even more serious problem is the inadequate way in which models handle water vapor, the most important GH gas, and especially the properties and distribution of clouds. Most differences in CS between models arise from these microphysics factors and choice of cloud parameters. This can be seen from the poor way in which models handle precipitation. Even more important, while all models incorporate a positive feedback from WV, observational results suggest that the feedback is actually negative.

4. Finally, the IPCC has ignored what is perhaps the major natural forcing, resulting from changes in solar activity. Investigations of paleo-temperatures, for example in stalagmites, have established without doubt a detailed correlation between temperature and cosmic ray intensity (which in turn is modulated by changes in solar activity). Under the category of "solar forcing" the IPCC considers only changes in TSI, which are too small to be important.

Having disposed of this method of validating climate models, one falls back on the so called "fingerprint method," which compares the patterns of temperature change calculated from GH models with observed patterns. Such a comparison is carried out in CCSP Report SAP-1.1, and has been further elaborated in a research paper by Douglass et al. [International Journal of Climatology, Royal Meteorological Society, Dec. 2007].

Contrary to the claim on page 37, line 31 [Karl 2006], the comparison of modeled and observed fingerprints shows clear disagreement [see figures 1.3F and 5.7E, and also 5.4G from CCSP-1.1]. While the Executive Summary of this report claims agreement, this is achieved by a statistical device, i.e. by using the "range" of values instead of their "distribution" (see figure 4G, page 13 in CCSP 1.1). However, the use of range is clearly inappropriate [Douglass et al. 2007] since it gives undue weight to "outliers."

We conclude, therefore -- contrary to the assertions of the EPA Tech Document -- that climate sensitivity must be well below the values quoted by climate models, and that any estimates of future warming based on such models are not reliable. Another way of putting our result: The evidence clearly shows that the increase in CO2 has not produced a detectable increase in global temperature. **We believe that this is the strongest argument against the EPA's attempt to treat carbon dioxide as a pollutant under the Clean Air Act.**

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SEPP Science Editorial #5 (9/20/08)

A new paper by Ramanathan and Feng [PNAS 17 Sept 2008], using IPCC estimates of climate sensitivity, concludes that the observed increase in GH gases has already committed the world to a warming of 2.4 degC [1.4-4.3 degC] above pre-industrial values. Any additional release of GHG would further increase the warming during the 21st century. Even the most aggressive CO2 mitigation cannot reduce the already committed warming of 2.4 degC. Hmm, so all the calamities envisioned by Gore et al. will come true no matter what we do. Well not quite. First, and most important, the increase in GHG likely has nothing to do with the observed 20th century of 0.6 degC [see NIPCC Report]. And secondly, what about the crucial threshold temperature increase of 2 degC. Where did that come from? I think I can shed some light on this. An article I wrote in the Eos Forum [1997] was prompted by the claims of Swedish meteorologists Rodhe and Azar [1997] that the present level of CO2 would lead to a warming of 2 degC. And -- an obscure report by the Stockholm Environment Institute – likely a self-reference – had demonstrated that such a condition would be "dangerous to the climate system" (in the sense of Article 2 of the Global Climate Treaty). They argued that one must reduce the CO2 concentration by reducing emissions by 60-80 percent. But there is sufficient evidence that historic temperatures exceeded the 2 degC level without having "endangered" the climate system [Singer 1998].

So how did 2 degC become so widely accepted as the 'critical' level? I think it's because it is the "Goldilocks" solution: not too small, not too large, just right. If Rodhe and Azar had picked, say 0.5 degC, then we would all be long since dead, with the climate system in ruins, and nothing could help us. Perhaps people who moved to the Antarctic could survive, to paraphrase Sir David King. On the other hand, if they had picked 5.0 degC, then there would have been no need to do anything to mitigate CO2. Apparently, enough political types thought that a 60-80 percent reduction was "reasonable" and doable. The Stern report propagates this kind of nonsense. That's what makes the Ramanathan-Feng paper so poignant. If R-F are correct and if Al Gore is correct, then the situation is hopeless and we might as well live it up.

Azar, C., and H. Rodhe, Targets for stabilization of atmospheric CO2, Science, 276, 1818-1819, 1997.
Singer, S. F., Unknowns about climate variability render treaty targets premature Eos, Trans. AGU, 78. 584, 1997.
Singer, S.F., Reply. EOS, Trans. AGU, 79, page 188, April 14,1998
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SEPP Science Editorial #6 (9/27/08)

I have tried to follow the active discussion of the paper by Douglass and Christy (DC) in Energy & Environment Aug 2008. If I read it correctly, it appears to give some implicit support for the IPCC -- albeit at a lower value of climate sensitivity (CS) [conventionally defined as the temperature rise from a doubling of CO2]. Here are some comments:

1. One should exercise great caution before accepting any value for climate sensitivity (CS) obtained by a comparison of current climate models with observations. The reason quite simply is that the IPCC models do not incorporate all of the important forcings. They do include the forcing from increasing greenhouse gases based on actual atmospheric measurements. However, the reported CS depends on many arbitrary parameters fed into the models. For example, Stainforth et al [2005] quote values for CS between 1.4 and 11.5 degC (as I recall), depending on choices for just six microphysical cloud parameters, said to be selected by 'expert judgment.'

2. Aerosol effects are assumed to be unimportant by DC, although this has not been demonstrated. There has been a reported solar dimming and brightening in the past 30 years, likely related to changes in the aerosol content. But the published data do not distinguish between absorption and reflection. There have also been changes in "earthshine" although I'm not aware of any direct interpretation or explanation.

3. The DC analysis arrives at essentially zero net feedback, with some kind of negative feedback (a la Lindzen?) just canceling the positive WV feedback incorporated in all IPCC models. Such a coincidence would seem to be unlikely.

4. More to the point, perhaps, the IPCC neglects any natural forcing from the variability of solar activity. Based on what we know of the performance of the sun, based also on current measurements of sunspots, of the aa index, etc, one must assume that there have been some changes in the past 30 years and that these have been influencing global temperatures. This would also influence any determination of climate sensitivity.

5. Summing up, I believe that getting a reliable numerical value for climate sensitivity (CS) is rather difficult. Perhaps we can all agree that **CS is greater than zero but small enough** – well below the lower IPCC limit (as already found by Douglass, Christy, Pearson, Singer IJC/RoyMetSoc 2007) – **so we don't need to worry about Global Warming**.
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SEPP Science Editorial #7 (10/4/08)
Sarah Palin is the only major candidate who has expressed doubts about manmade global warming – and she is right. This attack in the CS Monitor does not understand the interpretation of a temperature trend:

http://features.csmonitor.com/environment/2008/10/03/what-does-palin-believe-causes-climate-change/

The common way to define a temperature trend is to equate it to the slope of a straight line that provides the 'best fit' for values of temperatures (usually yearly averages) plotted against time. The implicit assumption is that the trend does not vary with time. But we know that's not true; climate is always changing –warming or cooling. The 'trend' therefore depends on the choice of the time interval – the beginning year and the ending year. (Think of the fluctuations of the stock market.) And the choice is often quite arbitrary. So, for example, we have seen an overall warming trend since 1850, the end of the Little Ice Age [Akasofu 2008], and a cooling since 1998.

A different problem has to do with the quality of the data. It is generally agreed that atmospheric temperature data are more reliable than surface data. But 'global' data from weather balloons go back only 50 years – and the truly global data from satellites only 30 years. The latter show a warming trend from 1979 to present. But one can also interpret the data as showing essentially zero trend from 1979 to 1997, followed by a sudden 'jump' and another zero or even cooling trend since 1998 [NIPCC 2008, Fig. 13]. The point is that the observations do not correspond to what greenhouse models would predict.

So Sarah Palin is right. The temperature record shows a mixture of natural and human causes, with the latter quite a bit smaller. There is absolutely no reason to believe that anthropogenic global warming (AGW) will be of any consequence – even by 2100. And, of course, impacts of any AGW will be unimportant too.
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SEPP Science Editorial #8 (10/11/08)
By Christopher Monckton -- The 1 F rise in surface temperatures in the last 30 years of the 20th century is by no means unprecedented or inexplicable. There was a similar 1 F rise in temperatures in the 1920s and 1930s, and that was well before anyone could claim CO2 was to blame. There are numerous papers in the peer-reviewed literature (e.g. Usoskin et al., 2003; Hathaway et al., 2004; Solanki et al.., 2005) that demonstrate that the Sun's activity over the 70-year period centered on the early 1960s was greater than at almost any previous similar period throughout the past 11,400 years. Akasofu (2008) points out that global mean surface temperatures have been rising at a rate of approximately 1 F per century for 300 years. The considerable drop in temperatures in the past seven years (equivalent to 0.7 F per decade) has obliterated any imagined anthropogenic signal. Soon (2008) has shown that, if one allows for a lag of a decade or two caused by the uptake and release of heat by the oceans, the temperature trends of the past 30 years can be respectably explained by changes in solar activity. The 300-year warming that stopped in 1998 was the result of the steady increase in solar activity since the end of the 70-year sunspot-free Maunder Minimum

in 1700; the cooling since then reflects the decline in solar activity since its peak in the 1960s and 1970s, combined with the unusually-prolonged sunspotless solar minimum of the past two and a half years. Taking the period since 1700 as a whole, it is virtually impossible to detect any anthropogenic signal. Additional atmospheric CO2 can be expected, on balance, to cause some warming: but it is now obvious that the degree of warming to be expected is considerably less than that which is imagined by the IPCC. -

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SEPP Science Editorial #9 (10/18/08)
Why we don't need fusion power?

Nuclear fusion of light nuclei (not fission of Uranium) is the energy source of the Sun. Large amounts of energy are produced when hydrogen isotope (deuterium and tritium) nuclei fuse. In the sun these processes take place because temperatures and pressures are high. The same process occurs in hydrogen bombs during the short periods when high temperatures and pressures are created by a fission bomb. Fusion research tries to create these conditions in the laboratory to produce continuous amounts of energy.

There are three problems. It has proven extremely difficult to confine unstable hydrogen plasmas through magnetic fields or other means. Secondly the engineering problems of turning a success in the laboratory into a commercial energy-producing reactor are daunting. And finally, we don't really need fusion power; we have easier and probably cheaper alternatives.

The laboratory problem has engaged some of the most brilliant experimental and theoretical physicists. I have known many of them, having worked in plasma physics at one time. Fifty years ago Princeton University started the Stellarator Experiment in the hope of creating a commercial fusion reactor. Later, fusion physicists went to a different system called the Tokamak based on a Russian design. More recently, at the Lawrence Livermore National Laboratory they tried to achieve the high compression and temperature by using lasers to implode a tiny pellet containing hydrogen isotopes. None of these schemes has worked so far in achieving a continuous reaction in which the energy output would exceed the energies used to achieve fusion reactions. The goal of a commercial reactor always seemed 50 years away – and I expect it to continue that way for some time to come.

But do we really need fusion? Granted that fossil fuels are being depleted and are becoming more costly and will someday become impractically expensive, we have many good alternatives. Even before we go to massive installations of wind or solar energy, we have the standard nuclear fission reactor based on uranium. It is relatively cheap, it is safe, and it works. The cost of raw uranium will undoubtedly increase as high-grade deposits are depleted. But as we use up the fissionable U-235 isotope there's more than 100 times as much non-fissionable U-238 available in convenient form that can be turned into fissionable plutonium by neutron bombardment in a breeder reactor, and used as a reactor fuel.

Estimates vary but most experts agree that uranium will be a viable source of energy and perhaps the best one available for thousands of years. And in addition to uranium, we also have abundant thorium that can be used to fuel fission reactors. It becomes a matter of semantics whether an energy source that can be relied on for, say 10,000 years or more, is sustainable. But it is an empty argument. The point is we can do it now with available technology.

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SEPP Science Editorial #10 (11/1/08)
The Fingerprint Controversy Part-1

The crucial question is: **Is warming (predominantly) due to natural or human causes?** How can one tell? The issue is of obvious importance since natural causes cannot be influenced in any way by policies that limit greenhouse (GH) gas emissions, such as CO2. Resolving the question is a difficult scientific task. Natural causes are plausible; the climate has been warming and cooling for billions of years on many different time scales [See, e.g., Singer and Avery 2007]. On the other hand, GH warming is also plausible, since the concentration of GH gases has been increasing due to human activities.

The method agreed to by everyone is the "fingerprint" method, which compares the pattern of temperature trends calculated from GH models with the pattern observed in the atmosphere. The first application of this method may have been by Santer et al in IPCC-SAR [1996]. However, Santer misapplied the method in order to force the conclusion that warming was due to human causes, namely GH gases.

In one attempt, he compared the geographic pattern of surface temperature trends, derived from GH models, with the observed pattern. He calculated a "pattern correlation coefficient" and claimed that it was increasing with time "as the human signal emerged from the background noise of climate variability" [IPCC-SAR, 1996, chapter 8]. However, when the graph there is compared to the one in his original publication [Santer et al 1995], one discovered that he had removed all of the trend lines, including zero and negative trends, except the one that suggested an increasing correlation in the last 50 years. When questioned about this by e-mail, he replied that it was done for "pedagogic reasons" [Singer 1997].*

Santer's second attempt, also in chapter 8 of IPCC-SAR, was to compare the modeled and observed latitude and altitude patterns of temperature trends. It was soon discovered, however, that his claimed "agreement" was due to a selective use of data; he had chosen a time interval (1963-1987) during which the tropospheric trend was increasing, while the overall trend during the period (1957-1995) was not [Michaels and Knappenberger 1996].

By then it had become quite apparent that there was a disparity between the observed trends in the troposphere and the surface [NRC 2000; Singer 2001]. Douglass, Pearson and Singer carried out a full-scale comparison of available model results and temperature observations from balloons, satellites, and reanalysis [2004]. They concluded that the observations did not confirm the expected increase (from GH models) in temperature trends with altitude in the tropics; but they did not delve into the implication of this disparity. As a result, their result was largely ignored.

Next, a full-scale investigation of this problem was carried out as part of the federally financed Climate Change Science Program. CCSP-SAP-1.1 [2006], the first and most crucial of the 21 reports of the CCSP, titled "Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences," confirmed the result of Douglass et al [2004].

To be sure, the abstract of CCSP 1.1 claims that the discrepancies between surface warming and tropospheric warming trends have been removed. This statement distorts the sense of the CCSP report and has been widely misunderstood as having confirmed the validity of GH models. CCSP-1.1 admits, however, (p.3) that in the tropics "the majority of observational data sets show more warming at the surface than in the troposphere….[but] almost all model simulations show more warming in the troposphere than at the surface." In other words, there exists indeed a discrepancy, which has not been removed. This Executive Summary was authored by Wigley, with the participation of the chapter lead authors, including Santer.

Following the publication of CCSP 1.1, and using best available models and data, Douglass, Christy, Pearson, and Singer [2007] extended their comparison between model results and observations in the tropical zone and concluded again that the observations did not confirm the GH model results. This paper was also ignored until a group of independent scientists, the Nongovernmental International Panel on Climate Change (NIPCC) published its summary report in 2008. Drawing mainly on the data from CCSP-1.1 and Douglass et al [2007], NIPCC [Singer et al 2008] showed conclusively the disparity between GH models and observations.

The NIPCC then drew the obvious logical conclusion: Since GH models cannot explain the observations, the warming of the past 30 years must be due predominantly to causes other than GH gases. In other words**, the human contribution to the warming trend since 1979 is minor and insignificant** – a conclusion contrary to that of IPCC [2007]. Another way of stating the NIPCC result: Climate Sensitivity is considerably less than the values quoted by the IPCC, i.e. 1.5 – 4.5 C, and more in accord with the much lower values deduced by other methods [Schwartz, Monckton, Lindzen, Spencer].

Douglass DH, Pearson BD, Singer SF. 2004. Altitude dependence of atmospheric temperature trends: Climate models versus

observations. *Geophysical Research Letters* **31**: L13208, Doi:10.1029/2004/GL020103.

Douglass DH, Christy JR, Pearson BD, Singer SF. 2007. A comparison of tropical temperature trends with model predictions. *International Journal of Climatology* **27**: Doi:10.1002/joc.1651.

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Santer BD, Taylor KE, Wigley TML, Penner JE, Jones PD, Cubash U. 1995. Towards the detection and attribution of an anthropogenic effect on climate. *Climate Dynamics* 12:77-100

Santer BD, Wigley TML, Barnett TP, Anyamba E. 1996. Detection of climate change and attribution of causes. In *Climate Change 1995: The Science of Climate Change*, Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change, Houghton JT, Meira Filho LG, Callander BA, Harris N, Kattenberg A, Maskell K (eds). Cambridge University Press: Cambridge, New York; 572.

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Singer SF. 2001. Global warming: An insignificant trend? *Science* **292**:1063–1064.

Singer SF and Avery DT. 2007. *Unstoppable Global Warming – Every 1500 Years.* Rowman & Littlefield. Lanham, MD

Singer SF. et al 2008. *Nature, Not Human Activity, Rules the Climate: Summary for Policymakers of the Report of the Nongovernmental International Panel on Climate Change*, Singer SF (ed.). The Heartland Institute: Chicago, IL.

* Santer also made significant text changes in Chapter 8 of the IPCC-SAR report, after its approval by coauthors. See discussion by SF Singer et al [*Bull. AMS* 78:81-82, 1997], and E. Masood [*Nature* 381:039, 1996]

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SEPP Science Editorial #11 (11/8/08)

The Fingerprint Controversy Part-2

Using the observational data and model results of the IPCC and of the government-supported Climate Change Science Program (CCSP), NIPCC has demonstrated a major disagreement between modeled and observed fingerprints of temperature trends. The NIPCC conclusion, opposed to that of the IPCC, is that **the human contribution to warming is not significant.**

Not surprisingly, the NIPCC report [Singer et al 2008] and a research paper by Douglass et al [2007] have come under attack from supporters of the IPCC. The latest such attack, a just-published paper by Ben Santer and 16 coauthors [hereinafter S17] claims that there is something wrong with the observational data -- and also that the uncertainties are so large that there is no longer a discrepancy between models and observations.

We are of course replying and confident that we will prevail. However, it is interesting that S17, in the process of attacking NIPCC, necessarily also attack the data used in CCSP Report 1.1 [2006] and in the IPCC report [2007]. These data, which NIPCC used without any change, have been "superseded,"

according to S17 – although S17 never state so explicitly. We wonder therefore whether there will be formal corrections issued for the CCSP and IPCC reports to take account of the new "corrected" data.

A note: It is perfectly natural that results from data can change based on better analyses. But unless one audits the raw data and analysis methods used by S17, there is little an outside observer can do. However, we should caution against any hasty adoption of corrections to data analysis -- and particularly if they have just been published and not yet been properly vetted. We know from the experience of the infamous hockey-stick that the refereeing process is often quite casual and not designed to discover underlying errors in the analysis. We also note with regret that one of the key papers cited by S17 has not even been published, it is listed as "in press."

Douglass DH, Christy JR, Pearson BD, Singer SF. 2007. A comparison of tropical temperature trends with model predictions. *International Journal of Climatology* **27**: Doi:10.1002/joc.1651.

IPCC (Intergovernmental Panel on Climate Change). 2007. Summary for policymakers. In *Climate Change 2007: The Physical Science Basis*, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Solomon S, Qin D, Manning M, Chen Z, Marquis M, Avery KB, Tignor M, Miller HL (eds). Cambridge University Press: Cambridge, New York.

Santer BD and 16 coauthors 2008. Consistency of modeled and observed temperature trends in the tropical troposphere. *International Journal of Climatology*. Royal Meteorological Society. Available at http://sciencepolicy.colorado.edu/prometheus

Singer SF. et al 2008. *Nature, Not Human Activity, Rules the Climate: Summary for Policymakers of the Report of the Nongovernmental International Panel on Climate Change*, Singer SF (ed.). The Heartland Institute: Chicago, IL.
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SEPP Science Editorial #12 (11/15/08)

The Fingerprint Controversy -- Part-3

We continue the saga of the paper of Santer+16 co-authors [S17 in IJC 2008]. You recall from recent TWTW newsletters at www.sepp.org that it attacks the findings of Douglass, Christy, Pearson, and Singer [DCPS in IJC 2007] as well as of the NIPCC report "Nature – Not Human Activity – Rules the Climate" http://www.sepp.org/publications/NIPCC_final.pdf

S17 claim that the observed temperature trends in the tropical troposphere agree with those calculated from greenhouse (GH) models. The claim is based on two assertions: The observations (or more properly, the analyses of the data) have changed drastically just in the past two years. And also -- the uncertainties of both observed and modeled trends are found to be much larger.

The first thing that struck me about S17 was their figure 6A, which depicts 7 (yes, seven) curves derived from the same set of radiosonde data, each claiming to show the true dependence of the temperature trend with (pressure) altitude. The curves fall into three "families" that show striking differences – for reasons that I will discuss elsewhere. Here I will concentrate on one feature only: the time interval chosen by S17 is 1979 – 1999. Please remember that 1998 was the year of unusual warmth because of a strong El Nino.

Does the choice of endpoint matter and affect the trend values shown? You betcha. To check up on this matter, I briefly thought of writing to Santer at <santer1@llnl.gov> to request the underlying temperature data. But why waste time? So I used a proxy, the MSU-UAH data set for lower troposphere temperatures from satellites, kindly sent to me by John Christy. Here then are the OLS trends calculated for a time interval starting at the beginning of the satellite data set, 1979, and ending in 1993, 1996, 1999, or 2002: -0.010, 0.035, 0.103, 0.121 degC/decade.

No need to comment further, except I just cannot resist quoting from page 130 of the CCSP-SAP-1.1 report <www.climatescience.gov/Library/sap/sap1-1/finalreport/default.htm> [Karl et al 2006]. In an Appendix, Wigley, Santer, and Lanzante explain the mysteries of "statistical issues regarding trends" to the great unwashed in real simple words:

"Estimates of the linear trend are sensitive to points at the start or end of the data set…. For example, if we considered tropospheric data over 1979 through 1998, because of the unusual warmth in 1998 … the calculated trend may be an overestimate of the true underlying trend."

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SEPP Science Editorial #13 (11/29/08)

The Fingerprint Controversy -- Part-4

We continue the saga of the paper of Santer+16 co-authors [S17 in Int'l J Clim 2008]. You recall from recent TWTW newsletters at www.sepp.org that it attacks the findings of Douglass, Christy, Pearson, and Singer [DCPS in IJC 2007] as well as of the NIPCC report *"Nature – Not Human Activity – Rules the Climate"* http://www.sepp.org/publications/NIPCC_final.pdf NIPCC (see figures 6, 7, 8, and 9) demonstrates the disparity between modeled and observed fingerprints. Please note that all NIPCC figures are taken from the (April 2006) CCSP-SAP-1.1 report <www.climatescience.gov/Library/sap/sap1-1/finalreport/default.htm> (of which Santer was a lead author).

S17 now claim that the observed temperature trends in the tropical troposphere are "consistent" with those calculated from greenhouse (GH) models. Their claim is based on two assertions: The observations (or more properly, the analyses of the radiosonde data) have changed drastically just in the past two years since the CCSP report was published. And also -- the uncertainties of both observed and modeled trends are now found to be so large as to produce an overlap , i.e. there is no longer a disagreement.

S17 make much of the effects of auto-correlation in increasing the "standard error" of the observed trends. But in the final anlysis, their structural uncertainty far exceeds the statistical value. In trying to find the

uncertainty of the model trends, S17 show that they really don't know how to "average" the results of models of different quality. They finally resort to displaying (in their Fig 6) what amounts to the "range" of trend values (i.e., from the lowest to the highest). But "range" is not a valid statistical measure (although incorrectly used by Wigley in the CCSP Executive Summary) since it gives undue weight to "outliers." Paradoxically, the more models one averages, the wider the "range" – but the smaller the dispersion of a Gaussian (normal) distribution.

No need to comment further, except I just cannot resist pointing to page 134 of the CCSP-SAP-1.1 report [Karl et al 2006]. In an Appendix, Wigley, Santer, and Lanzante explain the mysteries of statistical issues regarding auto-correlation to the great unwashed in real simple words. But as far as I can tell, they never applied it to either models or observations in the CCSP report itself.
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SEPP Science Editorial #14 (12/6/08)

The Problem with Sea Surface Temperature (SST)

Oceans cover 71% of the Earth's surface but are poorly instrumented, esp. before 1945. Instruments too are changing: from buckets that sample SST along ship routes to inlet temperatures of cooling water (after the era of sailing ships) – and buoys increasingly after 1980. Satellites don't do well; infrared emissions come from a thin "skin" only 10 microns thick and are obscured by clouds, haze etc, while microwave emissions depend on emissivity, a strong function of sea state (affected by waves and surface winds). Since 1980 we have a situation where data from floating buoys (from a warm layer of about 50 cm depth) are increasingly combined with ship inlet data (from a colder depth of ~10 m). Doesn't this lead to a fictitious warming trend? And worse: What about the GH effect over the ocean? The increased downwelling IR from increasing CO2 (and water vapor) is completely absorbed in the 10-micron skin. How much of this energy actually goes to heating the bulk layer beneath the skin and to increasing SST? And what fraction is immediately re-emitted upward or used to increase evaporation? Consulting experts, I get values between zero and 100%. Not very enlightening, is it. Some of these problems are discussed in the NIPCC report and in references cited there.

The heat content of the deep ocean, not surprisingly, has increased in the past century. In a paper in Science (2005), James Hansen cites this as the "smoking gun" for AGW. All bunk! More recent ocean data are still in a state of flux, being corrected by authors. We will have to wait a little longer for answers.
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SEPP Science Editorial #15 (12/13/08)

The Problem with Sea Surface Temperature (SST) (2)

Oceans cover 71% of the Earth's surface; SST essentially determines surface temperature. While not subject to the problems of land temperature data (urban heat islands, weather station placement and maintenance, etc), SST has even more severe problems, mainly related to coverage and to changes in methods of measurement. Just recently, the Hadley Centre had to fix a 'glitch' caused by a change from wooden to canvas sampling buckets, which led to a temperature 'discontinuity.'

Since 1980 we have a situation where data from floating buoys (from a warm layer of about 50 cm depth) are increasingly combined with ship inlet data (from a colder layer at depth of ~10 m). Could this lead to a *fictitious* warming trend? How to check whether this produces a problem? One method would be to process ship data and buoy data separately before combining them. I have not been successful in penetrating the data analysis bureaucracy to arrange for such a test. But there may be a simpler way (which I first proposed at a conference in Erice in 2005): Compare day-time and night-time SST trends. If they do not differ, then the 'buoy effect' is likely of little importance.

Singer, S. F. (2006). How effective is greenhouse warming of sea surface temperatures? In International Seminar on Nuclear War and Planetary Emergencies. Climatology: Global Warming. (ed. A Zichichi and R. Ragini). World Scientific Publishing Company, Singapore. pp. 176-182.
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SEPP Science Editorial #16 (12/20/08)

The sorry state of surface temperature data:

GW advocates are 'spinning' the 'warmth' of 2008, claiming it to be the xth warmest year since yy – all the while trying to ignore the low temperature records being set worldwide [see Item #6]. I share the critical views about the quality of the surface data, along with Courtney, d'Aleo, Gray, McKitrick, Watts and many others who have looked into the matter. I consider only satellite data truly reliable [See discussion in NIPCC report].

So I was struck by a short item about 2008 temperatures in the blog of NY Times writer Andrew Revkin http://dotearth.blogs.nytimes.com/2008/12/16/a-cooler-year-on-a-warming-planet/?emc=eta1

The top graph shows the geographic distribution of 2008 mean temperatures, compared to a base period of 1951-1980. Two features are very striking:

1. The base period is of course a cool period just before the sudden temperature rise around 1977. This would explain why one sees so much warming.

2. The most interesting feature is the warmth of the FSU, and particularly the extreme warmth of Siberia. I was puzzled by that and then recalled that during the communist period station managers were said to be under-reporting temperatures in order to gain larger fuel allocations.

I'm wondering now what the pattern would be like if we chose a *post-communist* base period, say 1990-2005. Would the pattern be preserved? Would Siberia still show strong warming in 2008?

[There's the additional matter of the closing down of many weather stations in that area after 1980.]

We can now look at the second GISS graph and note two interesting features:

1. Unlike the Hadley surface data, and unlike the satellite data, the graph shows 21st-century temperatures that are higher than 1998. The reason for that is not clear.
2. Close inspection also shows an unusual temperature increase starting in 1992, which is not present in the satellite data for the northern hemisphere. This would seem to support the hypothesis that pre-1990 Siberian temperatures might have been under-reported.

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SEPP Science Editorial #17 (12/27/08)

Keeping the IPCC honest

I know it's a tough job – but let's just check their iconic, widely-quoted conclusion and parse its meaning:

"Most of the observed increase in globally-averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations." [IPCC Synthesis Report, SPM, Nov 2007]. How should one interpret this *ex cathedra* declaration to the faithful?

IPCC helpfully defines 'very likely' as '90-99% certain.' But they don't tell us how they reached such well-defined certainty. What remarkable unanimity! Just how many and whom did they poll?

IPCC doesn't define the word 'most.' We may assume it means anything between 51 and 99%. Quite a spread. But a footnote informs us that solar forcing is less than 10% of anthropogenic [0.12/ 1.6 W/m^2]; so 'most' must be closer to 99% than to 51%.

OK; let's check out the data since 1958. But we don't want to rely on contaminated surface data – which IPCC likely used – although they omitted to say so. Atmospheric data were readily available to the IPCC in the CCSP-SAP-1.1 report (Fig 3a, p.54; convening lead author John Lanzante, NOAA), with independent analyses by Hadley Centre and NOAA that agree well. And further, according to GH models, atmospheric trends should be larger than surface temperature trends.

1958 – 2005: Total warming of +0.5 C – but how much of that is anthropogenic?

1958 -- 1976: Cooling

1976 – 1977: Sudden jump of +0.5 C Cannot be due to GHG

1977 – 1997: No detectable trend

1998 - 1999: El Nino spike
2000 – 2001: No detectable trend
2001 – 2003: Sudden jump of +0.3 C Cannot be due to GHG
2003 – present No trend, maybe even slight cooling

Conclusion: The IPCC's '**most'** is not sustained by observations; the human contribution is very likely only 10% -- 0.01 C per decade -- or even less.
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