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155 Queen Street, Suite 200
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**Subject: Public Comment re Canada Gazette, Part 1, July 16, 2005 –
Large Final Emitters of Greenhouse Gases**

Dear Dr. Mazany,

The following is a Public Comment in response to the announcement in the Canada Gazette, Part 1, July 16, 2005 regarding proposed “LFE regulations” for Large Final Emitters of Greenhouse Gases.

My comments follow:

1. The Canadian Government is misrepresenting the basis of its scientific case.

The Canadian Government’s alleges that its scientific case is based on the UN IPCC’s Third Assessment Report (TAR) 2001, as outlined in Attachment 1 and Attachment 2.

In fact, the Canadian Government’s case is based not from the extensive main report written by the scientists of IPCC TAR 2001, but rather is based on an unscientific and deeply flawed Summary for Policymakers (SPM), which was written by government representatives. Most of the scientists who wrote the main IPCC report did not see or endorse the SPM before its release.

Dr. Richard Lindzen is one of the leading meteorologists in the world today. He is Sloan Professor of Meteorology at the Massachusetts Institute of Technology (MIT) and was a lead author of one of the most important chapters in the main IPCC TAR 2001 scientists’ report. Lindzen was also one of eleven scientists who wrote the US National Academy of Sciences’ (NAS) 2001 Panel on Climate Change report. Commenting on the SPM, Dr. Lindzen wrote in the June 11, 2001 issue of the Wall Street Journal as follows (the full article is included in Attachment 3):

“The Summary for Policymakers, which is seen as endorsing Kyoto, is commonly presented as the consensus of thousands of the world’s foremost climate scientists. Within the confines of professional courtesy, the NAS panel essentially concluded that the IPCC’s Summary for Policymakers does not provide suitable guidance for the U.S. government.

The full IPCC report is an admirable description of research activities in climate science, but it is not specifically directed at policy. The Summary for Policymakers is, but it is also a very different document.

It represents a consensus of government representatives (many of whom are also their nations’ Kyoto representatives), rather than of scientists. The resulting document has a strong tendency to disguise uncertainty, and conjures up some scary scenarios for which there is no evidence.

Science, in the public arena, is commonly used as a source of authority with which to bludgeon political opponents and propagandize uninformed citizens. This is what has been done with both the reports of the IPCC and the NAS. It is a reprehensible practice that corrodes our ability to make rational decisions. A fairer view of the science will show that there is still a vast amount of uncertainty -- far more than advocates of Kyoto would like to acknowledge -- and that the NAS report has hardly ended the debate. Nor was it meant to.”

2. The Canadian Government's case is based on deeply flawed science.

The Canadian Government's website states (Attachment 2):

"It is very likely that the 1990s was the warmest decade, and 1998 the warmest year, of the instrumental record. It is likely that the 20th century warming is unprecedented during the past 1,000 years. Most of the warming of the past 50 years is likely to have been due to increases in GHG concentrations as a result of human activities. Carbon dioxide concentrations, surface temperature and sea level are projected to increase during the 21st century. The projected warming by between 1.4 and 5.8 C over the period 1990 to 2100 is very likely to be without precedent during the last 10,000 years."

The above statements are drawn from the IPCC TAR 2001 Summary for Policymakers and are false.

The above-quoted temperature history of the past 1000 years is drawn from several papers by Dr. Michael Mann of the University of Virginia and colleagues, who used tree-ring data as a proxy for temperature. Mann's so-called "hockey stick graphs indicate that global temperatures were relatively constant for about 900 years and then surged upwards in the last century, allegedly due to increased atmospheric CO2 levels.

It has been conclusively demonstrated by Canadians Steven McIntyre and Dr. Ross McKittrick of the University of Guelph that Mann's "hockey stick" is deeply flawed, as published in several peer-reviewed papers and outlined in an article by McIntyre in the Financial Post on June 17, 2005 (Attachment 4).

Besides the many methodological mistakes and severe data selection biases, McIntyre and McKittrick also showed that Mann's hockey stick can be produced over 90% of the time by loading any set of random numbers into the computer code that Mann used in his research. This is the ultimate condemnation of Mann's flawed methodology.

It is well-known that the Medieval Warm Period (MWP), which occurred from about 900 to 1300 AD, was warmer than today and that this warming was clearly not due to increased atmospheric CO2 levels, humanmade or otherwise.

The existence of the MWP was acknowledged in the UN IPCC's Second Assessment Report, but this tended to disprove the hypothesis that humankind was causing catastrophic global warming.

In what amounts to a major misrepresentation of the current state of scientific knowledge, the MWP was eliminated without comment in the IPCC's Third Assessment Report Summary for Policymakers (TAR SPM 2001).

The US House Energy & Commerce Committee has now launched a federal investigation of the IPCC's bias and incompetence in TAR SPM 2001, and the entire Mann hockey stick fiasco: http://energycommerce.house.gov/108/Letters/06232005_1570.htm

3. The Canadian Government is misrepresenting that there is a so-called “current scientific consensus on climate change” (Attachment 1).

Quoting from the June 17, 2005 Financial Post, on

THE ANTI-CONSENSUS ON CLIMATE:

It is commonly held that there is a global scientific consensus on climate change. Here are some comments from scientists who are not part of the consensus.

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"[The McKittrick and McIntyre findings] hit me like a bombshell, and I suspect it is having the same effect on many others. Suddenly the hockey stick, the poster-child of the global warming community, turns out to be an artifact of poor mathematics."

Richard Muller, Professor of Physics, University of California, Berkeley, "Global Warming Bombshell", MIT Technology Review October 15, 2004.

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"Kyoto is unsubstantiated scientifically.... Climate change is a natural occurrence and would continue unabated even if all human activity on the planet ceased immediately."

Fred Michel, associate professor in earth sciences and director of Carleton University's environmental science program. Quoted in Carleton University Magazine, Spring, 2005.

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"This is the biggest scientific hoax being perpetrated on humanity. There is no global warming due to human anthropogenic activities. The atmosphere hasn't changed much in 280 million years, and there have always been cycles of warming and cooling."

Tad Murty, an expert in meteorology and physical oceanography, and adjunct professor in the department of earth sciences, Carleton University. Quoted in Carleton University Magazine, Spring, 2005.

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"The IPCC review process is fatally flawed. The behaviour of Michael Mann is a disgrace to the profession.... The scientific basis for the Kyoto protocol is grossly inadequate."

Dr. Hendrik Tennekes, former director of the Royal Meteorological Institute of the Netherlands.

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"It is strange that the climate reconstruction of Mann passed both peer review rounds of the IPCC without anyone ever really having checked it."

Dr. Rob van Dorland of the Dutch National Meteorological Agency in an article in the Dutch science magazine Natuurwetenschap & Techniek (NWT) Feb. 27, 2005.

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"Between 1400 and 1600, the temperature shift was considerably higher than, for example, in the previous century. With that, the core conclusion, and that also of the IPCC 2001 Report, was completely undermined."

Dutch climatologist Ulrich Cubasch interviewed on German television, February, 2005.

4. The latest research shows that there is little or no warming in the Lower Troposphere (LT), so IPCC climate model predictions greatly exaggerate future warming.

Computer simulations of climate, in which atmospheric greenhouse gas concentrations increase due to human activities, predict detectable warming not only near the surface but also in the layer of air above the surface, the lower troposphere, which extends in altitude from roughly two to eight kilometres. Records from NASA's Microwave Sounder Units aboard satellites extend back to December of 1978 and cover most of the globe. This data, which incorporates the latest adjustments for satellite orbital decay, is plotted and tabulated herein (Attachment 5).

The satellite-derived record is validated independently by measurements from NOAA balloon radiosonde instruments, which extend back to 1957. Both records show that the temperature of the lower troposphere does vary as a result of natural factors, e.g., the strong El Niño warming pulse of 1997-98 is obvious. However, no meaningful human warming trend, as forecast by the computer simulations, is apparent in the actual data.

A detailed analysis of the data shows no warming trend in the LT from 12/1978 to 04/1997, and instead merely shows an oscillation around zero temperature change. This is followed by the huge 1997-98 El Niño spike peaking in 04/1998, which quickly reversed itself, and then a possible 0.2 degree C warming from 2000 to 2005 that may still reverse itself as other past oscillations have done. But note the complete lack of correlation with atmospheric CO2 levels, which have been rising consistently at least since measurements began in 1958. There is no evidence that any such warming was caused by increased atmospheric CO2 levels - it was more likely caused by solar variation.

Clearly, the Canadian Government greatly exaggerates future warming (Attachment 2) when it states that:

"The projected warming by between 1.4 and 5.8 C over the period 1990 to 2100 is very likely to be without precedent during the last 10,000 years."

In fact, satellite and balloon measurements bound the amount of possible warming from greenhouse gases at less than 1 degree C in the next hundred years, and probably much less than that number. This is well within the range of natural climate variation and is a strong indicator that there is no catastrophic humanmade global warming crisis.

Conclusion

In conclusion, there is insufficient scientific evidence to proceed with the "LFE regulations for Large Final Emitters of Greenhouse Gases".

Legislators should now appreciate that the magnitude and harmfulness of humanmade global warming has been vastly overstated, that they were duped into ratifying Kyoto and they have seriously misled the Canadian public with scary stories for which there was no evidence.

In time, politicians and civil servants who have misled the public and wasted billions on the Kyoto fiasco could and should be held financially accountable for their willful errors.

There is now strong scientific and economic evidence that the Kyoto Protocol and other such CO2 abatement schemes are massive wastes of scarce global resources that should be used to alleviate real problems, not squandered on fictitious ones.

Respectfully submitted,
Allan M.R. MacRae, B.Sc., M.Eng., P.Eng.
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Attachment 1 – Basis of the Canadian Government’s Scientific Case

Source: http://www.ec.gc.ca/CEPARRegistry/documents/part/kyoto_ghg/index.cfm

The Kyoto Protocol Greenhouse Gases (GHGs) and the Canadian Environmental Protection Act: A synthesis of relevant science from the IPCC Third Assessment Report in the context of CEPA Section 64.

Explanatory Note

As stated in Moving Forward on Climate Change: A Plan for Honouring our Kyoto Commitment [www.climatechange.gc.ca/English/ <<http://www.climatechange.gc.ca/English/>>], the Government's working assumption is that the Canadian Environmental Protection Act, 1999 (CEPA 1999) will be chosen as the legislative vehicle for implementing a regulatory system for emissions of the Kyoto Greenhouse Gases (GHGs) from Large Final Emitters. The plan notes that the Government would regulate under Parts 5 and 11 of CEPA 1999 and that in order to do so, GHGs would first have to be added to the list of substances in Schedule 1 to the Act.

Addition to Schedule 1 is a decision of the Governor-in-Council (the federal Cabinet). The Governor in Council may, if satisfied that a substance meets the criteria set out in section 64 of CEPA, on the recommendation of the Ministers of Environment Canada and Health Canada, make an order adding a substance to Schedule 1.

The criteria set out in Section 64 of CEPA are that a substance is entering or may enter the environment in a quantity or concentration or under conditions that:

- have or may have an immediate or long-term harmful effect on the environment or its biological diversity;
- constitute or may constitute a danger to the environment on which life depends; or
- constitute or may constitute a danger in Canada to human life or health.

Therefore, the first step is to demonstrate that a substance meets at least one of these criteria. In Moving Forward on Climate Change it is noted that international science clearly demonstrates that GHGs meet the second criterion for listing, namely that they constitute a danger to the environment on which life depends.

This report provides a summary of international science from the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in order to determine whether the Kyoto Protocol greenhouse gases (GHGs) (namely, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs)) meet one or more of the criteria set out in section 64 of the Canadian Environmental Protection Act (CEPA, 1999). Material from the IPCC Third Assessment Report has been used exclusively since the findings of the Report are recent and are accepted by scientists and governments worldwide as representing the current scientific consensus on climate change. It is important to note that the IPCC is a UN body that developed the science that forms the basis of the Kyoto Protocol. The scientific literature published since 2001, which will be included in the Fourth Assessment Report of the IPCC (to be produced in 2007), is expected to strengthen the conclusions of the Third Assessment Report. The evidence supports a conclusion that GHGs are entering or may enter the environment in a quantity or concentration or under conditions that constitute or may constitute a danger to the environment on which life depends, and thus meet the criterion of Section 64b.

The Ministers of Environment Canada and Health Canada intend to present this evidence to the Governor in Council in late summer or early fall and recommend that GHGs be added to Schedule 1. With the concurrence of the Governor in Council, a draft order to add GHGs to Schedule 1 and this report would be published in Canada Gazette 1 for a 60 day comment period.

Attachment 2 - The Canadian Government's Synthesis of the Science

Source: http://www.ec.gc.ca/press/2005/050716-2_b_e.htm

The immediate and long-term effects of GHGs

Recent regional changes in temperature have already had discernible impacts on many physical and biological systems. Examples include: shrinkage of glaciers; thawing of permafrost; shifts in ice freeze and break-up dates on rivers and lakes; increases in rainfall and rainfall intensity in most mid- and high latitudes of the Northern Hemisphere; lengthening of growing seasons; and earlier dates for flowering of trees, the emergence of insects and egg-laying in birds.

The IPCC's Third Assessment Report includes detailed evidence that the Earth's climate has changed since the pre-industrial era. Over the 20th century, the global average surface temperature has increased by 0.6 C. It is very likely that the 1990s was the warmest decade, and 1998 the warmest year, of the instrumental record. It is likely that the 20th century warming is unprecedented during the past 1,000 years. Most of the warming of the past 50 years is likely to have been due to increases in GHG concentrations as a result of human activities. Carbon dioxide concentrations, surface temperature and sea level are projected to increase during the 21st century. The projected warming by between 1.4 and 5.8 C over the period 1990 to 2100 is very likely to be without precedent during the last 10,000 years.

Attachment 3 – Wall Street Journal Article by Dr. Richard Lindzen of MIT

<http://interactive.wsj.com/articles/SB992205567633857892.htm>

Wall Street Journal
June 11, 2001

Scientists' Report Doesn't Support the Kyoto Treaty

By Richard S. Lindzen. Mr. Lindzen, a professor of meteorology at MIT, was a member of the National Academy of Sciences panel on climate change.

Last week the National Academy of Sciences released a report on climate change, prepared in response to a request from the White House, that was depicted in the press as an implicit endorsement of the Kyoto Protocol. CNN's Michelle Mitchell was typical of the coverage when she declared that the report represented "a unanimous decision that global warming is real, is getting worse, and is due to man. There is no wiggle room."

As one of 11 scientists who prepared the report, I can state that this is simply untrue. For starters, the NAS never asks that all participants agree to all elements of a report, but rather that the report represent the span of views. This the full report did, making clear that there is no consensus, unanimous or otherwise, about long-term climate trends and what causes them.

As usual, far too much public attention was paid to the hastily prepared summary rather than to the body of the report. The summary began with a zinger -- that greenhouse gases are accumulating in Earth's atmosphere as a result of human activities, causing surface air temperatures and subsurface ocean temperatures to rise, etc., before following with the necessary qualifications. For example, the full text noted that 20 years was too short a period for estimating long-term trends, but the summary forgot to mention this.

Our primary conclusion was that despite some knowledge and agreement, the science is by no means settled. We are quite confident (1) that global mean temperature is about 0.5 degrees Celsius higher than it was a century ago; (2) that atmospheric levels of carbon dioxide have risen over the past two centuries; and (3) that carbon dioxide is a greenhouse gas whose increase is likely to warm the earth (one of many, the most important being water vapor and clouds).

But -- and I cannot stress this enough -- we are not in a position to confidently attribute past climate change to carbon dioxide or to forecast what the climate will be in the future. That is to say, contrary to media impressions, agreement with the three basic statements tells us almost nothing relevant to policy discussions.

One reason for this uncertainty is that, as the report states, the climate is always changing; change is the norm. Two centuries ago, much of the Northern Hemisphere was emerging from a little ice age. A millennium ago, during the Middle Ages, the same region was in a warm period. Thirty years ago, we were concerned with global cooling.

Distinguishing the small recent changes in global mean temperature from the natural variability, which is unknown, is not a trivial task. All attempts so far make the assumption that existing computer climate models simulate natural variability, but I doubt that anyone really believes this assumption.

We simply do not know what relation, if any, exists between global climate changes and water vapor, clouds, storms, hurricanes, and other factors, including regional climate changes, which are generally much larger than global changes and not correlated with them. Nor do we know how to predict changes in greenhouse gases. This is because we cannot forecast economic and technological change over the next century, and also because there are many man-made substances whose properties and levels are not well known, but which could be comparable in importance to carbon dioxide.

What we do know is that a doubling of carbon dioxide by itself would produce only a modest temperature increase of one degree Celsius. Larger projected increases depend on "amplification" of the carbon dioxide by more important, but poorly modeled, greenhouse gases, clouds and water vapor.

The press has frequently tied the existence of climate change to a need for Kyoto. The NAS panel did not address this question. My own view, consistent with the panel's work, is that the Kyoto Protocol would not result in a substantial reduction in global warming. Given the difficulties in significantly limiting levels of atmospheric carbon dioxide, a more effective policy might well focus on other greenhouse substances whose potential for reducing global warming in a short time may be greater.

The panel was finally asked to evaluate the work of the United Nations' Intergovernmental Panel on Climate Change, focusing on the Summary for Policymakers, the only part ever read or quoted. The Summary for Policymakers, which is seen as endorsing Kyoto, is commonly presented as the consensus of thousands of the world's foremost climate scientists. Within the confines of professional courtesy, the NAS panel essentially concluded that the IPCC's Summary for Policymakers does not provide suitable guidance for the U.S. government.

The full IPCC report is an admirable description of research activities in climate science, but it is not specifically directed at policy. The Summary for Policymakers is, but it is also a very different document. It represents a consensus of government representatives (many of whom are also their nations' Kyoto representatives), rather than of scientists. The resulting document has a strong tendency to disguise uncertainty, and conjures up some scary scenarios for which there is no evidence.

Science, in the public arena, is commonly used as a source of authority with which to bludgeon political opponents and propagandize uninformed citizens. This is what has been done with both the reports of the IPCC and the NAS. It is a reprehensible practice that corrodes our ability to make rational decisions. A fairer view of the science will show that there is still a vast amount of uncertainty -- far more than advocates of Kyoto would like to acknowledge -- and that the NAS report has hardly ended the debate. Nor was it meant to.

Attachment 4 – FP Article by Steven McIntyre on Mann’s “Hockey Stick”

Revisiting the 'stick'

Despite proof that the official 1,000-year temperature history (the hockey stick) is wrong, government scientists refuse to correct the flaws in the data

Steve McIntyre

Financial Post

Friday, June 17, 2005

In the global warming debate, one of the most potent tools of Kyoto treaty advocates was the "hockey stick diagram," which became famous a few years ago when the Intergovernmental Panel on Climate Change (IPCC) used it to argue that the "1990s were the warmest decade in the millennium and 1998 the warmest year." These sound bites were used in speeches advocating Kyoto during the 2002 ratification debate; the government of Canada promoted the hockey stick on its Web site, sent it to schools across the country and quoted its conclusion in pamphlets mailed out to all Canadians.

The "hockey stick" theory overturned the findings in the first IPCC report that the world's climate had been warmer in the medieval era, when, for example, Vikings settled in Greenland.

In two peer-reviewed articles published this past winter, Ross McKittrick and I showed that there had been no effort by the IPCC to verify the hockey stick study, and that there were problems in the calculations sufficiently serious to overturn its conclusions. Our main article was published in the same scientific journal that published the hockey stick graph used by the IPCC.

The story was reported around the world. Coverage began in the National Post and the Dutch science magazine *Natuurwetenschap & Techniek*. Since then articles have appeared in, among others, *Nature*, *Science*, *The Economist*, and the front page of *The Wall Street Journal*. The story has been reported on the BBC and Global, as well as German and Dutch television. My Web site -- www.climateaudit.org -- has received more than 250,000 hits since mid-February.

Our most publicized claim has been pretty much universally accepted: We showed that an unreported step in the original calculations mines datasets for hockey-stick shaped series. We showed that this method can produce hockey sticks even from random data. Since we published our computer code, many others easily verified this result.

The authors' original study puts the maximum weight on the most controversial data, in that the hockey stick relies on indexes of tree ring widths to project temperatures. Amid more than 400 tree ring series, the authors included a controversial set of 15 U.S. bristlecone pine records, which have a pronounced hockey stick shape. However, the specialists who studied bristlecones had explicitly stated their hockey stick shape is not a temperature signal but is likely due to aerial carbon dioxide fertilization. The hockey stick program loads maximum weight on these bristlecone records: If they are removed from the data, the hockey stick shape disappears. We showed that the authors had discovered this themselves and they not only failed to disclose it, they claimed the opposite in a later commentary on their own work.

We also showed that the hockey stick authors (Mann, Bradley and Hughes) had withheld vital data (certain verification statistics) that showed their conclusions were statistically insignificant, and that their interpretation of the one verification statistic they did report was incorrect.

The reaction from climate scientists has been varied. Richard Muller of Berkeley likened our contribution to removing a piece of a jigsaw puzzle that was in the wrong place so that investigation about climate history can resume with a clean slate. Hans von Storch, a famous German climate scientist, said it was "good that debate about the temperature history of the last millennium can be resumed again without reservations," and that we were entitled to "thanks" for this contribution. On the other hand, Andrew Weaver of the University of Victoria, a prominent Canadian climate scientist, said our original paper should have been "rejected" and he believed that giving equal space to both sides in a dispute can be dangerous, particularly when applied to scientific matters.

To date, none of our claims has been disproved. This is not to say they have all been accepted or that our work has not been criticized. There has been much more effort by climate scientists to try and disprove our results than ever went into checking the original hockey stick. We made the process easy by publishing all our computer code, unlike the hockey stick authors, who still refuse to release theirs seven years after the original publication. They told the Wall Street Journal that to show the algorithm they used would be "giving in to intimidation."

We know of five submissions thus far to academic journals commenting on our most recent results (in addition to two submissions last year on some earlier results). In the United States, the mere submission of two papers criticizing our results prompted the University Corporation for Atmospheric Research (UCAR), a prominent, federally funded institution that receives hundreds of millions of dollars for climate research, to issue a nation-wide press release declaring our criticisms were "unfounded." Although one of the two papers was shortly thereafter rejected by the journal (the other is still undergoing review), UCAR has not announced its rejection and the original press release remains on the UCAR Web site.

Without getting into particulars beyond what has been publicly disclosed, none of the papers commenting on our work actually contest any of our specific findings. None dispute the undisclosed computational step. None contest the unacceptable dependence of the results on the bristlecone pines; none try to argue that bristlecone series are a valid "proxy" for temperature history. None address the failure of the hockey stick to pass simple verification tests.

Instead scientists are trying to argue that the hockey stick errors "don't matter." One style of comment does not test the impact of the erroneous method on the hockey stick itself but on completely different data sets or on unrelated computational problems. Our reply to these responses is more or less: "So what?" The only context we are interested in is the actual hockey stick itself.

The other type of response is to argue that a hockey stick can be produced even without the erroneous method by, for instance, increasing the number of principal components used to represent the North American tree ring network. But every such permutation that we have seen boils down to a back-door method of allowing the bristlecone series to dominate the final results. Once you are aware of the role of these defective proxies in the hockey stick, you can't simply ignore them or reintroduce them (as the authors did). But this is what is being attempted. Further, these salvage attempts fail common statistical verification tests. But in every example we have seen, these failed statistical tests are withheld from the reader, as they were in the original article and as they are in the papers cited in the UCAR press release.

A third type of response has been to mischaracterize our work. As Muller and others have clearly understood and as we have explained on many occasions, our work to date has been entirely

critical. We are not advocating our own reconstruction of climate. We are simply arguing against "flawed intelligence" which is not backed by the data. If this reopens debate for other interpretations, including those held by the IPCC in the pre-hockey-stick-author era (see the lower half of the chart above), then that would be a welcome outcome.

What has been the reaction from the government and the IPCC? Not once have we been contacted by Environment Canada or any other Canadian government ministry dealing with climate research to discuss our work. I contacted Canada's then-chief climate science advisor (Henry Hengeveld) last fall and took him to lunch to explain our work. He shrugged it off and never followed up. Environment Canada has a comment on its Web site dismissing our work, based only on a claim by the original authors that the errors did not matter. A reader from Manitoba forwarded to us an e-mail from Environment Canada responding to his question about why they still promote the hockey stick. Apparently they have dismissed our research on the basis of some unpublished and fallacious commentary they found on the Internet, without ever asking for our input. We have had no contact from the IPCC either.

Our efforts to promote the concept of auditing important climate studies prior to usage in public policy is getting increased attention. We have learned that people have the wrong idea about journal peer review. Users of scientific research for policy-making generally assume that when an article is published in a peer-reviewed journal it means someone checked the data, checked the calculations and checked that the stated conclusions are supported by the evidence presented. But peer review does not guarantee any of this. Influential papers in climate research can go for years without the data or methods even being disclosed, let alone independently checked, even as huge policy investments are made based on them. So we have urged policy-makers to put in place formal processes to ensure complete disclosure of data and methods for any scientific work that is being used to drive policy debates. We urge the development of audit procedures to verify compliance with such requirements. We believe such innovations would be good for science and good for the policy-making process, even if a few more scientific icons get broken as a result.

One of the first places we would recommend such procedures is the temperature data set used by the IPCC. Other researchers have tried without success to get access to the supporting data. One of them shared with us the response he received from the principal author of the dataset: "We have 25 years invested in this work. Why should we let you look at it, when your only objective is to find fault with it?"

THE ANTI-CONSENSUS ON CLIMATE:

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Richard Muller, 2004. Global Warming Bombshell. MIT Technology Review

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Dutch Climatologist Ulrich Cubasch interviewed on German television, February, 2005.

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Stephen McIntyre is the co-author (with Ross McKittrick of the University of Guelph) of three peer reviewed articles on statistical defects of the hockey stick climate history.; Ran with fact box "The Anti-Consensus on Climate" which has been appended to the story.

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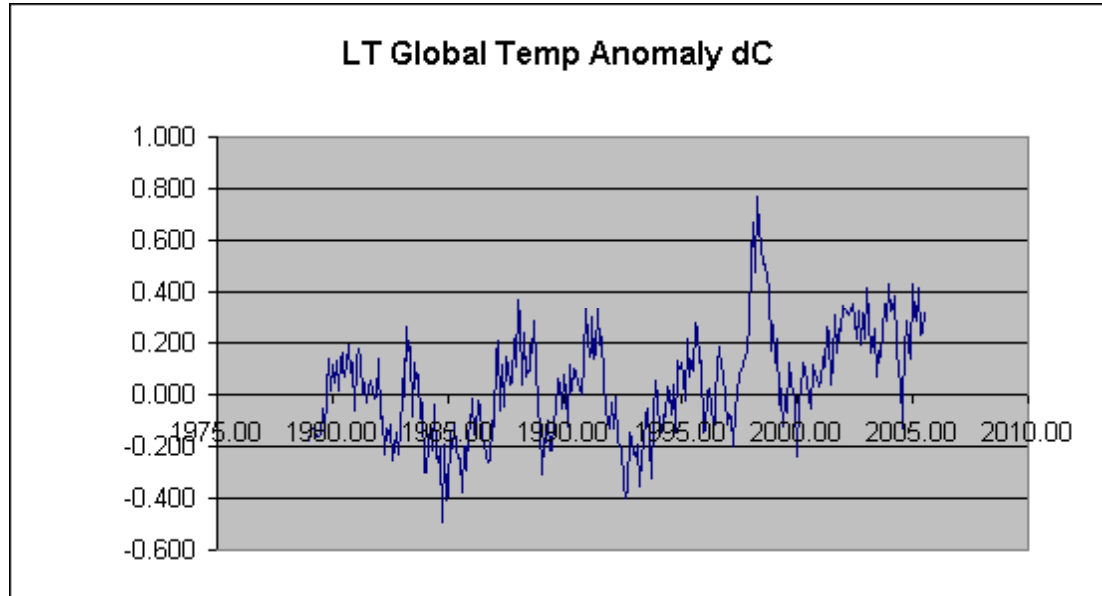
Attachment 5 – Latest Data of Lower Troposphere Temperatures

MONTHLY MEANS OF LOWER TROPOSPHERE LT5.2

Source: Roy W. Spencer, The University of Alabama at Huntsville.

http://vortex.nsstc.uah.edu/data/msu/t2lt/tltglhmam_5.2

Plotted by Allan MacRae, August 2005



ANNUAL CYCLE BASED ON 79001-98365 12-MONTH RUNNING MEAN

<u>YEAR</u>	<u>MONTH</u>	<u>GLOBAL</u>	<u>NH</u>	<u>SH</u>	<u>DAYS</u>	<u>GLOBAL</u>	<u>NH</u>	<u>SH</u>	<u>DAYS</u>	<u>YEAR.xx</u>
1978	12	-0.175	-0.127	-0.222	31	-99.99	-99.99	-99.99	42	1978.96
1979	1	-0.132	-0.259	-0.005	31	-99.99	-99.99	-99.99	73	1979.04
1979	2	-0.132	-0.196	-0.069	28	-99.99	-99.99	-99.99	101	1979.13
1979	3	-0.132	-0.127	-0.137	31	-99.99	-99.99	-99.99	132	1979.21
1979	4	-0.163	-0.186	-0.141	30	-99.99	-99.99	-99.99	162	1979.29
1979	5	-0.162	-0.247	-0.078	31	-99.99	-99.99	-99.99	193	1979.38
1979	6	-0.151	-0.197	-0.105	30	-99.99	-99.99	-99.99	223	1979.46
1979	7	-0.050	0.059	-0.159	31	-99.99	-99.99	-99.99	254	1979.54
1979	8	-0.160	-0.100	-0.219	31	-99.99	-99.99	-99.99	285	1979.63
1979	9	0.023	-0.006	0.052	30	-99.99	-99.99	-99.99	315	1979.71
1979	10	0.135	0.080	0.190	31	-0.104	-0.126	-0.081	346	1979.79
1979	11	0.019	0.059	-0.021	25	-0.091	-0.106	-0.077	360	1979.88
1979	12	0.118	0.137	0.098	31	-0.066	-0.083	-0.050	360	1979.96
1980	1	0.044	-0.114	0.201	25	-0.053	-0.070	-0.036	354	1980.04
1980	2	0.127	0.044	0.209	29	-0.031	-0.050	-0.013	354	1980.13
1980	3	0.017	-0.199	0.233	31	-0.019	-0.056	0.019	354	1980.21
1980	4	0.148	-0.034	0.330	30	0.008	-0.043	0.059	354	1980.29
1980	5	0.162	0.040	0.284	31	0.036	-0.019	0.091	354	1980.38
1980	6	0.097	0.027	0.166	30	0.057	0.000	0.113	354	1980.46

1980	7	0.070	0.021	0.120	31	0.067	-0.003	0.138	354	1980.54
1980	8	0.127	0.027	0.227	31	0.093	0.008	0.178	354	1980.63
1980	9	0.191	0.047	0.335	30	0.106	0.012	0.200	354	1980.71
1980	10	0.087	0.133	0.041	31	0.102	0.017	0.188	354	1980.79
1980	11	0.124	0.124	0.123	30	0.109	0.022	0.197	359	1980.88
1980	12	-0.059	-0.095	-0.023	30	0.096	0.004	0.188	358	1980.96
1981	1	0.141	0.131	0.151	31	0.103	0.022	0.183	364	1981.04
1981	2	0.180	0.077	0.283	28	0.106	0.025	0.188	364	1981.13
1981	3	0.140	0.140	0.140	25	0.117	0.052	0.181	358	1981.21
1981	4	0.003	0.073	-0.068	21	0.107	0.061	0.153	349	1981.29
1981	5	0.047	0.081	0.014	31	0.097	0.064	0.129	349	1981.38
1981	6	-0.032	0.014	-0.078	30	0.086	0.063	0.108	349	1981.46
1981	7	0.041	0.011	0.071	31	0.083	0.062	0.104	349	1981.54
1981	8	0.054	0.083	0.026	23	0.077	0.067	0.088	341	1981.63
1981	9	0.023	-0.023	0.069	30	0.063	0.061	0.064	341	1981.71
1981	10	-0.014	0.026	-0.054	31	0.053	0.051	0.056	341	1981.79
1981	11	-0.005	-0.008	-0.002	30	0.042	0.040	0.045	341	1981.88
1981	12	0.135	0.103	0.166	31	0.059	0.057	0.062	342	1981.96
1982	1	-0.090	-0.216	0.037	31	0.038	0.026	0.051	342	1982.04
1982	2	-0.088	-0.193	0.017	28	0.017	0.003	0.030	342	1982.13
1982	3	-0.234	-0.366	-0.101	31	-0.015	-0.039	0.010	348	1982.21
1982	4	-0.131	-0.045	-0.218	30	-0.025	-0.046	-0.005	357	1982.29
1982	5	-0.154	-0.294	-0.014	31	-0.043	-0.079	-0.007	357	1982.38
1982	6	-0.113	-0.258	0.031	30	-0.050	-0.102	0.002	357	1982.46
1982	7	-0.256	-0.249	-0.263	31	-0.076	-0.124	-0.027	357	1982.54
1982	8	-0.189	-0.287	-0.090	31	-0.093	-0.151	-0.036	365	1982.63
1982	9	-0.150	-0.254	-0.045	24	-0.107	-0.169	-0.045	359	1982.71
1982	10	-0.228	-0.351	-0.105	31	-0.125	-0.201	-0.049	359	1982.79
1982	11	-0.120	-0.419	0.179	30	-0.135	-0.236	-0.034	359	1982.88
1982	12	-0.001	-0.050	0.047	31	-0.147	-0.249	-0.045	359	1982.96
1983	1	0.142	0.145	0.138	31	-0.127	-0.218	-0.036	359	1983.04
1983	2	-0.006	-0.150	0.138	28	-0.120	-0.214	-0.027	359	1983.13
1983	3	0.259	0.186	0.332	31	-0.078	-0.167	0.011	359	1983.21
1983	4	0.170	-0.005	0.345	30	-0.053	-0.163	0.058	359	1983.29
1983	5	0.188	-0.019	0.396	31	-0.023	-0.140	0.093	359	1983.38
1983	6	-0.083	-0.190	0.025	30	-0.021	-0.134	0.093	359	1983.46
1983	7	0.120	0.124	0.116	31	0.012	-0.102	0.126	359	1983.54
1983	8	0.061	0.085	0.038	31	0.033	-0.070	0.137	359	1983.63
1983	9	0.078	0.027	0.129	30	0.049	-0.050	0.148	365	1983.71
1983	10	-0.092	-0.169	-0.015	31	0.061	-0.034	0.156	365	1983.79
1983	11	-0.029	0.032	-0.089	30	0.068	0.003	0.134	365	1983.88
1983	12	-0.300	-0.313	-0.288	31	0.043	-0.019	0.105	365	1983.96
1984	1	-0.302	-0.356	-0.247	28	0.008	-0.060	0.075	362	1984.04
1984	2	-0.183	-0.305	-0.060	29	-0.007	-0.072	0.059	362	1984.13
1984	3	-0.112	-0.322	0.098	31	-0.038	-0.116	0.039	362	1984.21
1984	4	-0.215	-0.326	-0.104	27	-0.070	-0.141	0.002	359	1984.29
1984	5	-0.042	-0.217	0.134	31	-0.089	-0.157	-0.020	359	1984.38
1984	6	-0.232	-0.187	-0.277	30	-0.101	-0.158	-0.045	359	1984.46

1984	7	-0.263	-0.308	-0.219	31	-0.135	-0.195	-0.074	359	1984.54
1984	8	-0.203	-0.178	-0.228	31	-0.157	-0.218	-0.097	359	1984.63
1984	9	-0.489	-0.466	-0.511	30	-0.205	-0.259	-0.151	359	1984.71
1984	10	-0.192	-0.256	-0.127	31	-0.213	-0.266	-0.160	359	1984.79
1984	11	-0.404	-0.573	-0.235	30	-0.244	-0.318	-0.171	359	1984.88
1984	12	-0.379	-0.581	-0.177	28	-0.250	-0.338	-0.161	356	1984.96
1985	1	-0.144	-0.197	-0.090	31	-0.236	-0.323	-0.149	359	1985.04
1985	2	-0.204	-0.129	-0.278	28	-0.238	-0.310	-0.166	359	1985.13
1985	3	-0.114	-0.297	0.068	31	-0.238	-0.308	-0.169	359	1985.21
1985	4	-0.197	-0.308	-0.086	30	-0.237	-0.307	-0.167	362	1985.29
1985	5	-0.245	-0.213	-0.277	31	-0.254	-0.306	-0.202	362	1985.38
1985	6	-0.248	-0.359	-0.137	30	-0.255	-0.320	-0.190	362	1985.46
1985	7	-0.375	-0.554	-0.197	27	-0.264	-0.339	-0.188	358	1985.54
1985	8	-0.197	-0.373	-0.020	31	-0.263	-0.356	-0.170	358	1985.63
1985	9	-0.201	-0.342	-0.061	27	-0.239	-0.346	-0.133	355	1985.71
1985	10	-0.290	-0.314	-0.265	31	-0.248	-0.351	-0.145	355	1985.79
1985	11	-0.135	-0.116	-0.155	27	-0.226	-0.314	-0.138	352	1985.88
1985	12	-0.127	-0.061	-0.193	31	-0.205	-0.271	-0.140	355	1985.96
1986	1	-0.014	0.015	-0.043	31	-0.194	-0.252	-0.136	355	1986.04
1986	2	-0.157	-0.305	-0.008	28	-0.190	-0.266	-0.115	355	1986.13
1986	3	-0.139	-0.154	-0.123	28	-0.193	-0.254	-0.131	352	1986.21
1986	4	-0.021	-0.080	0.039	30	-0.178	-0.235	-0.121	352	1986.29
1986	5	-0.043	-0.107	0.021	31	-0.160	-0.226	-0.095	352	1986.38
1986	6	-0.153	-0.136	-0.170	30	-0.152	-0.207	-0.097	352	1986.46
1986	7	-0.187	-0.269	-0.105	31	-0.138	-0.186	-0.090	356	1986.54
1986	8	-0.227	-0.286	-0.168	31	-0.141	-0.178	-0.103	356	1986.63
1986	9	-0.261	-0.349	-0.173	30	-0.146	-0.180	-0.112	359	1986.71
1986	10	-0.257	-0.266	-0.248	31	-0.143	-0.176	-0.111	359	1986.79
1986	11	-0.101	-0.210	0.008	30	-0.141	-0.183	-0.098	362	1986.88
1986	12	-0.124	-0.211	-0.036	31	-0.140	-0.196	-0.084	362	1986.96
1987	1	0.161	0.265	0.057	31	-0.125	-0.175	-0.076	362	1987.04
1987	2	0.205	0.289	0.122	28	-0.097	-0.129	-0.066	362	1987.13
1987	3	-0.063	-0.002	-0.125	31	-0.091	-0.116	-0.066	365	1987.21
1987	4	0.118	0.055	0.182	30	-0.080	-0.105	-0.055	365	1987.29
1987	5	-0.045	-0.118	0.027	31	-0.080	-0.106	-0.054	365	1987.38
1987	6	0.144	0.039	0.250	30	-0.056	-0.091	-0.020	365	1987.46
1987	7	0.117	0.105	0.129	28	-0.031	-0.061	-0.001	362	1987.54
1987	8	0.039	-0.012	0.090	31	-0.008	-0.038	0.021	362	1987.63
1987	9	0.050	0.119	-0.019	30	0.018	0.001	0.034	362	1987.71
1987	10	0.212	0.217	0.207	31	0.058	0.043	0.073	362	1987.79
1987	11	0.109	0.084	0.133	30	0.075	0.067	0.084	362	1987.88
1987	12	0.370	0.538	0.201	31	0.118	0.131	0.104	362	1987.96
1988	1	0.289	0.369	0.209	31	0.128	0.140	0.117	362	1988.04
1988	2	0.037	0.060	0.015	24	0.116	0.123	0.110	357	1988.13
1988	3	0.239	0.213	0.265	31	0.143	0.142	0.143	357	1988.21
1988	4	0.066	-0.033	0.165	30	0.139	0.135	0.142	357	1988.29
1988	5	0.092	0.202	-0.017	31	0.150	0.163	0.138	357	1988.38
1988	6	0.090	0.123	0.058	27	0.146	0.170	0.123	354	1988.46

1988	7	0.191	0.255	0.126	31	0.152	0.182	0.122	357	1988.54
1988	8	0.164	0.288	0.040	31	0.163	0.208	0.118	357	1988.63
1988	9	0.284	0.306	0.262	30	0.182	0.223	0.142	357	1988.71
1988	10	0.127	0.178	0.075	31	0.175	0.220	0.130	357	1988.79
1988	11	-0.062	-0.117	-0.007	30	0.161	0.203	0.118	357	1988.88
1988	12	-0.119	-0.125	-0.114	31	0.117	0.145	0.090	357	1988.96
1989	1	-0.311	-0.335	-0.287	31	0.066	0.084	0.048	357	1989.04
1989	2	-0.169	-0.136	-0.202	28	0.050	0.069	0.031	362	1989.13
1989	3	-0.184	-0.077	-0.290	31	0.014	0.044	-0.016	362	1989.21
1989	4	-0.101	0.028	-0.231	30	0.000	0.050	-0.049	362	1989.29
1989	5	-0.219	-0.130	-0.308	31	-0.026	0.021	-0.074	362	1989.38
1989	6	-0.216	-0.151	-0.281	30	-0.051	-0.001	-0.101	365	1989.46
1989	7	-0.098	-0.048	-0.148	31	-0.075	-0.026	-0.124	365	1989.54
1989	8	-0.055	-0.066	-0.044	31	-0.094	-0.056	-0.131	365	1989.63
1989	9	0.064	0.097	0.030	29	-0.112	-0.074	-0.151	364	1989.71
1989	10	0.049	0.049	0.049	31	-0.119	-0.085	-0.153	364	1989.79
1989	11	-0.052	-0.176	0.072	30	-0.118	-0.090	-0.147	364	1989.88
1989	12	0.077	0.026	0.129	31	-0.101	-0.077	-0.126	364	1989.96
1990	1	0.011	-0.022	0.044	31	-0.074	-0.050	-0.098	364	1990.04
1990	2	-0.124	-0.017	-0.231	28	-0.071	-0.041	-0.100	364	1990.13
1990	3	0.118	0.345	-0.109	31	-0.045	-0.005	-0.085	364	1990.21
1990	4	0.015	0.078	-0.048	30	-0.035	-0.001	-0.070	364	1990.29
1990	5	0.098	0.170	0.026	31	-0.008	0.025	-0.041	364	1990.38
1990	6	0.090	0.237	-0.058	30	0.017	0.057	-0.023	364	1990.46
1990	7	0.045	-0.006	0.096	31	0.029	0.060	-0.002	364	1990.54
1990	8	0.030	0.050	0.010	31	0.036	0.070	0.003	364	1990.63
1990	9	0.000	0.052	-0.052	30	0.031	0.066	-0.004	365	1990.71
1990	10	0.136	0.142	0.129	31	0.038	0.074	0.003	365	1990.79
1990	11	0.330	0.310	0.349	30	0.070	0.114	0.026	365	1990.88
1990	12	0.226	0.259	0.192	31	0.082	0.134	0.031	365	1990.96
1991	1	0.145	0.191	0.099	31	0.094	0.152	0.036	365	1991.04
1991	2	0.177	0.214	0.140	28	0.117	0.170	0.064	365	1991.13
1991	3	0.300	0.451	0.148	31	0.132	0.179	0.086	365	1991.21
1991	4	0.138	0.240	0.036	30	0.143	0.192	0.093	365	1991.29
1991	5	0.168	0.328	0.009	29	0.148	0.205	0.092	363	1991.38
1991	6	0.330	0.309	0.352	30	0.168	0.211	0.126	363	1991.46
1991	7	0.190	0.206	0.174	31	0.181	0.229	0.132	363	1991.54
1991	8	0.220	0.212	0.228	31	0.197	0.243	0.151	363	1991.63
1991	9	0.067	0.151	-0.017	30	0.202	0.251	0.154	363	1991.71
1991	10	-0.055	0.001	-0.111	31	0.186	0.239	0.133	363	1991.79
1991	11	-0.105	0.004	-0.213	30	0.150	0.214	0.087	363	1991.88
1991	12	-0.130	-0.139	-0.122	31	0.120	0.180	0.060	363	1991.96
1992	1	-0.027	0.019	-0.073	31	0.105	0.165	0.045	363	1992.04
1992	2	-0.128	-0.020	-0.235	29	0.080	0.145	0.015	363	1992.13
1992	3	-0.011	-0.025	0.002	31	0.054	0.105	0.004	363	1992.21
1992	4	-0.186	-0.280	-0.091	30	0.028	0.063	-0.006	363	1992.29
1992	5	-0.196	-0.416	0.025	31	-0.003	0.000	-0.006	365	1992.38
1992	6	-0.206	-0.402	-0.011	30	-0.047	-0.058	-0.036	365	1992.46

1992	7	-0.342	-0.575	-0.109	31	-0.092	-0.124	-0.061	365	1992.54
1992	8	-0.398	-0.460	-0.337	31	-0.144	-0.181	-0.107	365	1992.63
1992	9	-0.363	-0.328	-0.398	30	-0.179	-0.220	-0.139	365	1992.71
1992	10	-0.150	-0.201	-0.098	31	-0.187	-0.238	-0.137	365	1992.79
1992	11	-0.163	-0.108	-0.218	30	-0.192	-0.246	-0.138	365	1992.88
1992	12	-0.232	-0.117	-0.347	31	-0.201	-0.244	-0.157	365	1992.96
1993	1	-0.239	-0.180	-0.297	31	-0.218	-0.261	-0.175	365	1993.04
1993	2	-0.196	-0.084	-0.308	28	-0.224	-0.266	-0.181	365	1993.13
1993	3	-0.353	-0.282	-0.424	31	-0.253	-0.288	-0.217	365	1993.21
1993	4	-0.234	-0.284	-0.184	30	-0.257	-0.288	-0.225	365	1993.29
1993	5	-0.190	-0.167	-0.213	31	-0.256	-0.267	-0.245	365	1993.38
1993	6	-0.077	-0.129	-0.025	30	-0.246	-0.245	-0.246	365	1993.46
1993	7	-0.056	-0.123	0.011	31	-0.221	-0.206	-0.236	365	1993.54
1993	8	-0.192	-0.222	-0.162	31	-0.204	-0.186	-0.221	365	1993.63
1993	9	-0.320	-0.385	-0.255	30	-0.200	-0.191	-0.210	365	1993.71
1993	10	-0.088	-0.172	-0.005	31	-0.195	-0.188	-0.202	365	1993.79
1993	11	-0.080	-0.140	-0.020	30	-0.188	-0.191	-0.185	365	1993.88
1993	12	0.056	0.119	-0.008	31	-0.164	-0.171	-0.157	365	1993.96
1994	1	-0.008	0.115	-0.132	31	-0.144	-0.146	-0.143	365	1994.04
1994	2	-0.156	-0.114	-0.198	28	-0.141	-0.148	-0.134	365	1994.13
1994	3	-0.148	-0.033	-0.262	31	-0.124	-0.127	-0.120	365	1994.21
1994	4	-0.079	0.061	-0.220	30	-0.111	-0.099	-0.123	365	1994.29
1994	5	-0.081	0.120	-0.281	31	-0.102	-0.074	-0.129	365	1994.38
1994	6	0.030	0.076	-0.016	30	-0.093	-0.057	-0.128	365	1994.46
1994	7	0.019	0.092	-0.054	31	-0.086	-0.039	-0.134	365	1994.54
1994	8	-0.074	0.003	-0.151	31	-0.076	-0.020	-0.133	365	1994.63
1994	9	0.040	0.109	-0.029	30	-0.047	0.021	-0.114	365	1994.71
1994	10	-0.144	0.057	-0.344	31	-0.052	0.040	-0.143	365	1994.79
1994	11	0.128	0.250	0.006	30	-0.034	0.072	-0.141	365	1994.88
1994	12	0.102	0.132	0.072	31	-0.030	0.073	-0.134	365	1994.96
1995	1	0.124	0.385	-0.137	31	-0.019	0.096	-0.135	365	1995.04
1995	2	0.072	0.319	-0.175	28	-0.002	0.129	-0.133	365	1995.13
1995	3	-0.026	0.028	-0.079	31	0.009	0.135	-0.117	365	1995.21
1995	4	0.214	0.379	0.049	30	0.033	0.161	-0.095	365	1995.29
1995	5	0.067	0.227	-0.093	31	0.045	0.170	-0.079	365	1995.38
1995	6	0.133	0.325	-0.060	30	0.054	0.190	-0.083	365	1995.46
1995	7	0.096	0.146	0.046	31	0.060	0.195	-0.075	365	1995.54
1995	8	0.276	0.352	0.200	31	0.090	0.225	-0.045	365	1995.63
1995	9	0.260	0.345	0.174	30	0.108	0.244	-0.028	365	1995.71
1995	10	0.126	0.114	0.137	31	0.131	0.249	0.013	365	1995.79
1995	11	0.128	0.352	-0.096	30	0.131	0.257	0.004	365	1995.88
1995	12	-0.143	-0.311	0.024	31	0.110	0.220	0.000	365	1995.96
1996	1	-0.135	-0.086	-0.184	31	0.088	0.180	-0.004	365	1996.04
1996	2	0.015	-0.005	0.035	29	0.085	0.156	0.014	365	1996.13
1996	3	0.026	-0.037	0.089	31	0.088	0.149	0.027	365	1996.21
1996	4	-0.046	-0.225	0.133	30	0.066	0.099	0.034	365	1996.29
1996	5	-0.112	-0.058	-0.165	31	0.052	0.075	0.028	365	1996.38
1996	6	-0.117	-0.062	-0.171	30	0.031	0.043	0.019	365	1996.46

1996	7	-0.015	0.011	-0.042	31	0.021	0.031	0.011	365	1996.54
1996	8	0.113	-0.069	0.295	31	0.007	-0.005	0.018	365	1996.63
1996	9	0.183	0.054	0.312	30	0.001	-0.028	0.030	365	1996.71
1996	10	0.101	0.078	0.124	31	-0.001	-0.031	0.029	365	1996.79
1996	11	0.093	0.284	-0.099	30	-0.003	-0.036	0.029	365	1996.88
1996	12	-0.013	0.068	-0.093	31	0.007	-0.005	0.019	365	1996.96
1997	1	-0.118	-0.240	0.003	31	0.010	-0.016	0.035	365	1997.04
1997	2	-0.074	-0.082	-0.065	28	0.002	-0.023	0.027	365	1997.13
1997	3	-0.085	-0.042	-0.128	31	-0.007	-0.024	0.009	365	1997.21
1997	4	-0.199	-0.114	-0.285	30	-0.020	-0.014	-0.026	365	1997.29
1997	5	-0.052	-0.025	-0.079	31	-0.015	-0.012	-0.018	365	1997.38
1997	6	0.005	0.078	-0.067	30	-0.005	0.000	-0.010	365	1997.46
1997	7	0.086	0.209	-0.037	31	0.004	0.017	-0.009	365	1997.54
1997	8	0.095	0.240	-0.049	31	0.002	0.043	-0.038	365	1997.63
1997	9	0.124	0.320	-0.071	30	-0.003	0.065	-0.070	365	1997.71
1997	10	0.157	0.209	0.104	31	0.002	0.076	-0.072	365	1997.79
1997	11	0.170	0.080	0.261	30	0.009	0.059	-0.042	365	1997.88
1997	12	0.288	0.211	0.365	31	0.034	0.071	-0.003	365	1997.96
1998	1	0.529	0.522	0.535	31	0.089	0.136	0.042	365	1998.04
1998	2	0.673	0.722	0.624	28	0.146	0.198	0.095	365	1998.13
1998	3	0.475	0.572	0.378	31	0.194	0.250	0.138	365	1998.21
1998	4	0.773	1.034	0.512	30	0.274	0.344	0.204	365	1998.29
1998	5	0.648	0.701	0.595	31	0.333	0.406	0.261	365	1998.38
1998	6	0.574	0.679	0.469	30	0.380	0.455	0.305	365	1998.46
1998	7	0.511	0.712	0.311	31	0.416	0.498	0.334	365	1998.54
1998	8	0.508	0.576	0.441	31	0.451	0.526	0.376	365	1998.63
1998	9	0.462	0.609	0.315	30	0.479	0.550	0.408	365	1998.71
1998	10	0.412	0.543	0.280	31	0.501	0.579	0.423	365	1998.79
1998	11	0.166	0.236	0.096	30	0.500	0.591	0.409	365	1998.88
1998	12	0.271	0.353	0.189	31	0.499	0.604	0.394	365	1998.96
1999	1	0.123	0.282	-0.035	31	0.464	0.583	0.346	365	1999.04
1999	2	0.216	0.359	0.074	28	0.429	0.555	0.303	365	1999.13
1999	3	-0.037	0.049	-0.124	31	0.386	0.511	0.261	365	1999.21
1999	4	0.063	0.370	-0.244	30	0.328	0.456	0.199	365	1999.29
1999	5	-0.006	0.164	-0.176	31	0.272	0.411	0.133	365	1999.38
1999	6	-0.125	0.136	-0.386	30	0.214	0.366	0.063	365	1999.46
1999	7	-0.004	0.111	-0.119	31	0.171	0.315	0.026	365	1999.54
1999	8	-0.066	0.043	-0.175	31	0.122	0.270	-0.026	365	1999.63
1999	9	0.123	0.252	-0.005	30	0.094	0.241	-0.052	365	1999.71
1999	10	0.055	0.072	0.038	31	0.064	0.200	-0.073	365	1999.79
1999	11	-0.003	0.204	-0.209	30	0.050	0.198	-0.098	365	1999.88
1999	12	-0.005	0.208	-0.218	31	0.026	0.185	-0.132	365	1999.96
2000	1	-0.236	-0.144	-0.329	31	-0.004	0.149	-0.157	365	2000.04
2000	2	-0.013	0.073	-0.098	29	-0.022	0.127	-0.171	365	2000.13
2000	3	0.008	0.043	-0.027	31	-0.018	0.127	-0.163	365	2000.21
2000	4	0.120	0.304	-0.064	30	-0.013	0.121	-0.147	365	2000.29
2000	5	0.097	0.164	0.031	31	-0.005	0.121	-0.130	365	2000.38
2000	6	0.051	0.100	0.002	30	0.010	0.118	-0.097	365	2000.46
2000	7	-0.019	0.066	-0.103	31	0.009	0.114	-0.097	365	2000.54

2000	8	-0.056	0.148	-0.259	31	0.010	0.123	-0.104	365	2000.63
2000	9	0.113	0.226	0.001	30	0.009	0.121	-0.103	365	2000.71
2000	10	0.081	0.107	0.054	31	0.011	0.124	-0.102	365	2000.79
2000	11	0.072	0.074	0.069	30	0.018	0.114	-0.079	365	2000.88
2000	12	0.031	0.076	-0.014	31	0.021	0.103	-0.061	365	2000.96
2001	1	0.051	0.119	-0.018	31	0.045	0.125	-0.035	365	2001.04
2001	2	0.148	0.037	0.259	28	0.057	0.122	-0.008	365	2001.13
2001	3	0.106	0.247	-0.035	31	0.065	0.139	-0.009	365	2001.21
2001	4	0.265	0.318	0.212	30	0.077	0.141	0.014	365	2001.29
2001	5	0.237	0.407	0.068	31	0.089	0.161	0.017	365	2001.38
2001	6	0.041	0.158	-0.077	30	0.088	0.166	0.011	365	2001.46
2001	7	0.132	0.260	0.005	31	0.101	0.182	0.020	365	2001.54
2001	8	0.306	0.498	0.113	30	0.131	0.211	0.051	364	2001.63
2001	9	0.158	0.261	0.054	30	0.135	0.214	0.056	364	2001.71
2001	10	0.255	0.254	0.256	31	0.150	0.227	0.073	364	2001.79
2001	11	0.246	0.328	0.164	30	0.164	0.248	0.081	364	2001.88
2001	12	0.249	0.261	0.237	31	0.183	0.263	0.102	364	2001.96
2002	1	0.348	0.468	0.227	31	0.208	0.293	0.123	364	2002.04
2002	2	0.328	0.451	0.204	28	0.222	0.325	0.119	364	2002.13
2002	3	0.320	0.434	0.206	31	0.240	0.341	0.139	364	2002.21
2002	4	0.309	0.289	0.329	30	0.244	0.339	0.149	364	2002.29
2002	5	0.336	0.333	0.338	31	0.252	0.332	0.172	364	2002.38
2002	6	0.357	0.402	0.312	30	0.278	0.353	0.204	364	2002.46
2002	7	0.291	0.456	0.126	31	0.292	0.369	0.214	364	2002.54
2002	8	0.219	0.204	0.234	31	0.284	0.345	0.224	365	2002.63
2002	9	0.321	0.327	0.315	30	0.298	0.350	0.246	365	2002.71
2002	10	0.190	0.006	0.374	31	0.292	0.329	0.256	365	2002.79
2002	11	0.316	0.291	0.341	30	0.298	0.326	0.270	365	2002.88
2002	12	0.213	0.083	0.344	31	0.295	0.311	0.279	365	2002.96
2003	1	0.412	0.532	0.293	31	0.301	0.316	0.285	365	2003.04
2003	2	0.299	0.234	0.365	28	0.298	0.299	0.297	365	2003.13
2003	3	0.161	0.156	0.165	31	0.285	0.276	0.294	365	2003.21
2003	4	0.206	0.327	0.084	30	0.276	0.279	0.274	365	2003.29
2003	5	0.251	0.448	0.053	31	0.269	0.289	0.250	365	2003.38
2003	6	0.073	0.264	-0.119	30	0.246	0.277	0.214	365	2003.46
2003	7	0.172	0.235	0.109	31	0.236	0.259	0.213	365	2003.54
2003	8	0.147	0.353	-0.059	31	0.230	0.271	0.188	365	2003.63
2003	9	0.247	0.418	0.076	30	0.223	0.279	0.168	365	2003.71
2003	10	0.357	0.543	0.172	31	0.238	0.324	0.151	365	2003.79
2003	11	0.286	0.374	0.198	30	0.235	0.331	0.139	365	2003.88
2003	12	0.434	0.533	0.334	31	0.254	0.369	0.138	365	2003.96
2004	1	0.322	0.298	0.347	31	0.246	0.350	0.143	365	2004.04
2004	2	0.336	0.565	0.107	29	0.249	0.376	0.122	365	2004.13
2004	3	0.388	0.560	0.216	31	0.269	0.410	0.128	365	2004.21
2004	4	0.198	0.209	0.187	30	0.268	0.400	0.136	365	2004.29
2004	5	0.075	0.227	-0.077	31	0.253	0.381	0.125	365	2004.38
2004	6	0.060	0.046	0.075	30	0.253	0.364	0.141	365	2004.46
2004	7	-0.131	-0.063	-0.198	31	0.226	0.338	0.115	365	2004.54
2004	8	-0.025	0.148	-0.198	31	0.212	0.321	0.103	365	2004.63
2004	9	0.170	0.255	0.084	30	0.205	0.307	0.103	365	2004.71

2004	10	0.282	0.308	0.257	31	0.199	0.287	0.111	365	2004.79
2004	11	0.181	0.340	0.022	30	0.190	0.284	0.096	365	2004.88
2004	12	0.138	0.131	0.145	31	0.164	0.250	0.079	365	2004.96
2005	1	0.428	0.483	0.372	31	0.175	0.266	0.083	365	2005.04
2005	2	0.307	0.291	0.322	28	0.172	0.245	0.099	365	2005.13
2005	3	0.285	0.441	0.130	31	0.163	0.234	0.092	365	2005.21
2005	4	0.414	0.610	0.219	30	0.181	0.267	0.094	365	2005.29
2005	5	0.227	0.231	0.223	31	0.194	0.268	0.120	365	2005.38
2005	6	0.247	0.464	0.030	30	0.209	0.302	0.116	365	2005.46
2005	7	0.322	0.470	0.174	31	0.247	0.347	0.148	365	2005.54

DECADAL TREND= 0.123 0.193 0.052

Check: Used 10*SLOPE function (=linear regression line) - checks ~perfectly with Spencer.
12/78-7/05 0.122 0.193 0.052

Analysis1 Use 10*SLOPE function for varying dates:

1/80-1/98	0.034258	0.1174	-0.049
1/98-7/05	-0.02439	-0.077	0.0281
1/80-4/97	0.010448	0.0964	-0.076
4/97-7/05	0.068705	0.0476	0.0896