The Friends of Science Society

Providing Insight into Climate Science

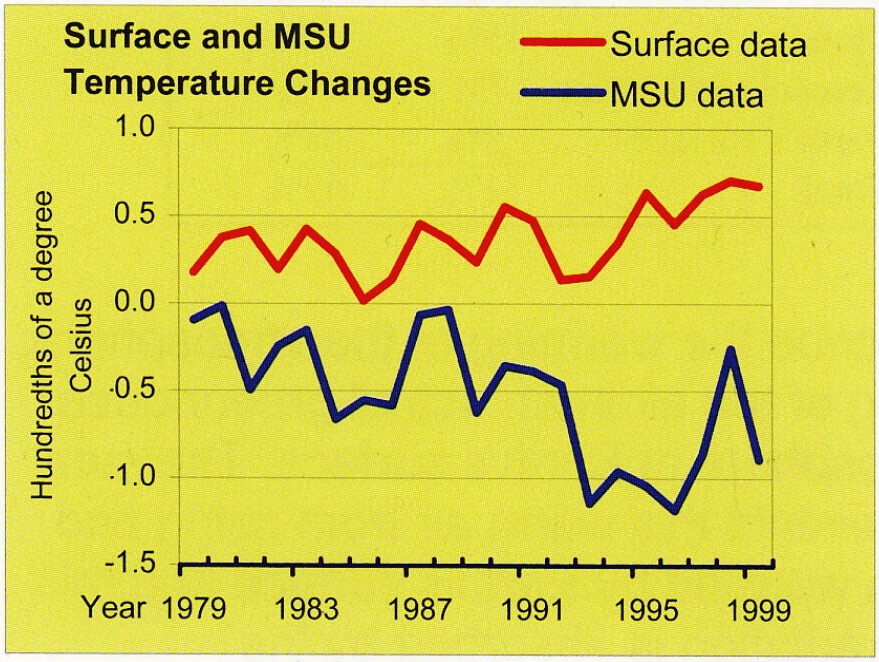
SEEDS – A Climate Critique

by Ken Gregory **June 12, 2008**

The publication "Creating a climate of change" by SEEDS contains many false and misleading statements, as well as serious errors of omission. The errors and omissions give the impression that human produced carbon dioxide (CO_2) is causing dangerous climate change. This information is distributed to Canadian schools. The current climate science shows that CO_2 has a minor role in climate, but greatly enhanced plant growth benefiting both humans and animals.

1.) **Figure 2.1** on page 2-1 shows surface and MSU (satellite) data temperature trends. This graph is reproduced below:

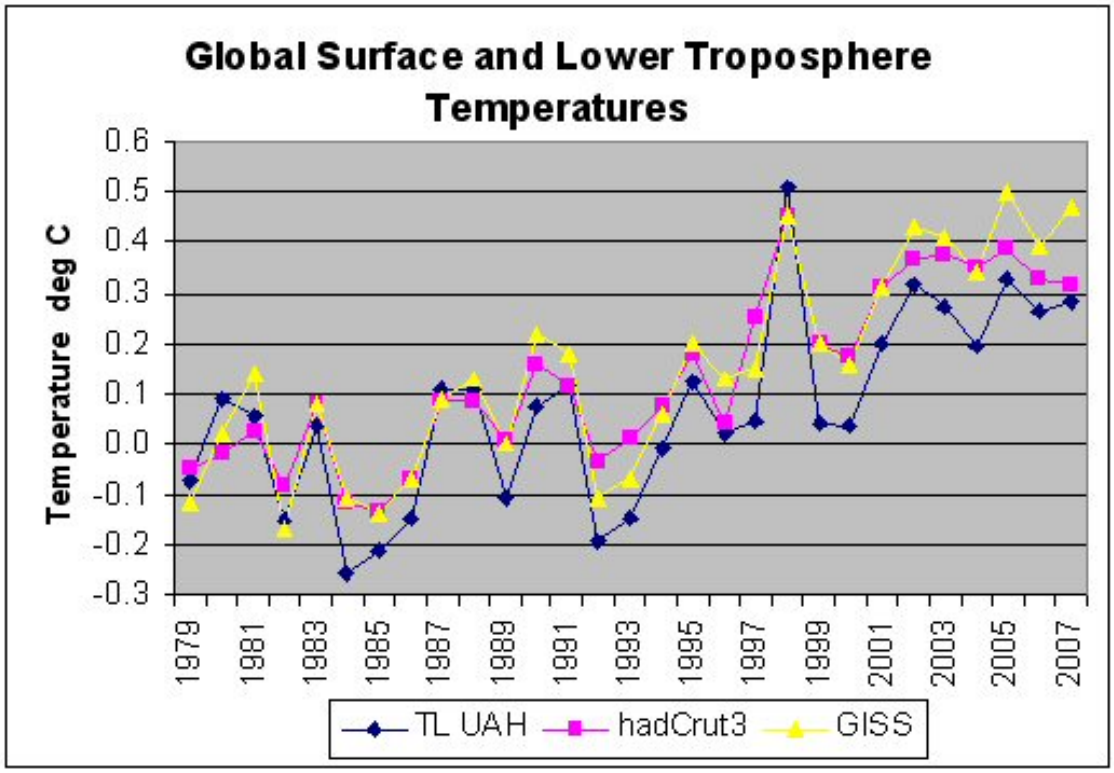
Figure 2.1 Surface and satellite data (Tr 2-1)



The scale incorrectly shows "Hundredths of a degree Celsius". The scale should be in Celsius. The graph shows a cooling MSU temperature trend. The accompanying text says that a recently discovered error in the analysis cause the cooling trend, and that a re-analysis of the data shows it to support the surface-based temperature data. This implies that the graph is intended to show the erroneous MSU data. In fact the satellite data never showed a cooling trend and the graph is false. The re-analysis in 2005 actually changed the trend of the UAH MSU data from +0.09 to +0.12 Celsius per decade (1979 – 2004), which is a minor correction. The figure should show actual corrected temperature data. The corrected satellite data shows a lower warming trend than the surface data, which is contaminated by the effects of urbanization, and so does not support the surface-based temperature data. The GISS temperature index applies a urbanization

correction in the wrong direction in 45% of the stations where a correction is made, making the temperature trend steeper instead of shallower. See here.

The graph below shows annual lower troposphere MSU satellite UAH data and two surface datasets from hadCrut3 and GISS. The average of 1979 – 1998 of the TL UAH is 0 Celsius. The scale of the surface data is adjusted so the average of the first five years of the three datasets are equal.

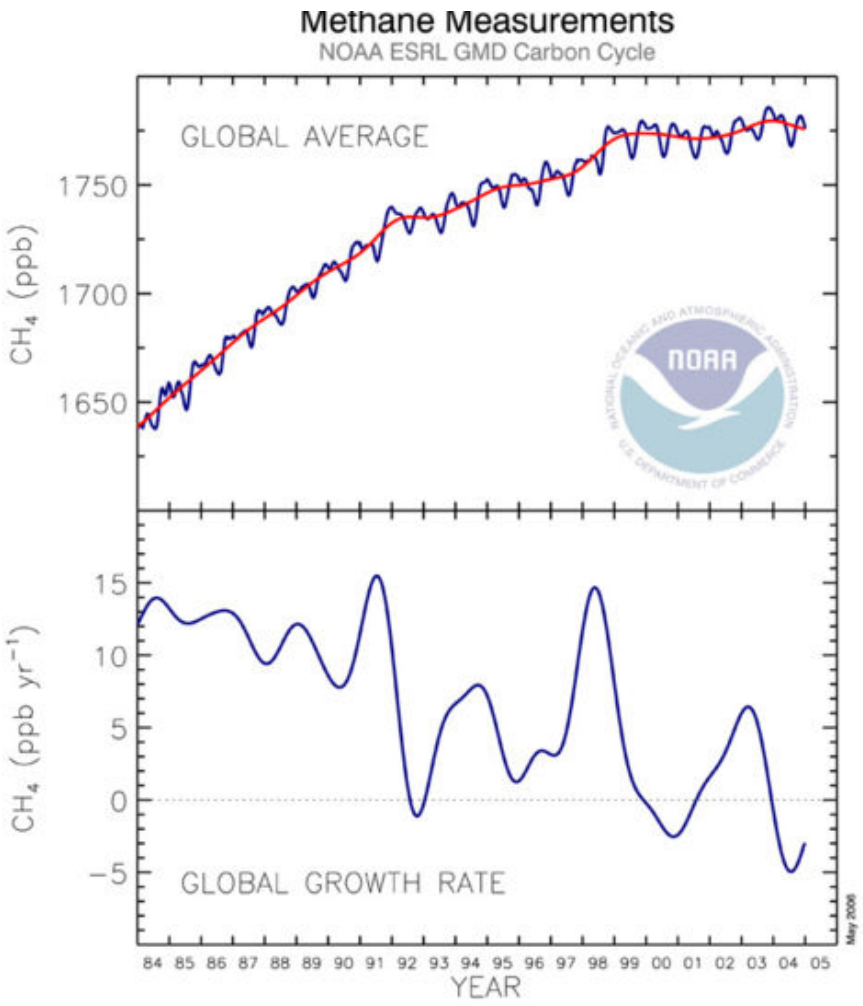


2.) Page 2-2 shows that the natural greenhouse effect warms the Earth's atmosphere by 33 degrees Celsius more than would occur without greenhouse gases. Actually, the natural greenhouse effect includes the effects of clouds.

Figure 2.3 on the same page shows the contributors to the natural greenhouse effect, but omits the contribution of clouds, thereby exaggerating the CO2 contribution. Clouds contribute at least 25% of the greenhouse effect. The figure shows the CO2 accounts for 25%, but the actual contribution is likely in the range 14 to 18%.

3.) Table 2.1 on page 2-3 lists five greenhouse gases. The fifth column shows each contribution to global warming, which sums to 100%. The column heading should be changed to "Contribution to the Enhanced Greenhouse Effect". Greenhouse gas emissions from human activities likely cause less than 25% of the global warming of the 20th century. The table does not include natural causes of global warming.

4.) Page 2-6 says that methane emissions are increasing at 0.7% per year, implying that this is a serious problem. A serious omission is the failure to report that the methane concentration in the atmosphere has not increased since 1999, and have been falling since 2004!



Top: Global average atmospheric methane mixing ratios (blue line) determined using measurements from the GMD cooperative air sampling network. The red line represents the long-term trend. Bottom: Global average growth rate for methane. Contact: Dr. Ed Dlugokencky, NOAA ESRL GMD Carbon Cycle, Boulder, Colorado, (303) 497-6228 (ed.dlugokencky@noaa.gov, http://www.cmdl.noaa.gov/ccgg).

5.) Page 2-7 says that aerosols cool the atmosphere. Actually, aerosols come in many forms, and some cool the atmosphere, but some, especially human produced aerosols, may warm the atmosphere and surface. Ramanathan et al (2007) gathered the best data set ever on brown clouds of aerosols in Asia and their effect on heating rates in the low atmosphere and surface. They found that half of the observed warming is associated with the brown clouds of aerosols, not greenhouse gases. See here and here.

6.) Page 3-1 presents Figure 3.1 Temperature changes in the Northern Hemisphere over the past 1000 years. This graph is the infamous “hockey stick” graph used in the IPCC third assessment report. Curiously, the graph has labels “Medieval Warm Period” and “Little Ice Age”, but these well documented events are not evident in the graph’s temperature history. The IPCC used this study to falsely claim that the current warm period is unusual.

This graph is the product of a flawed study by M. Mann et al (1998, 1999). Two Canadian researchers, Steve McIntyre and Ross McKitrick, found numerous problems with the study. The paper, McKitrick and McIntyre, (2003): "Corrections to the Mann et. al. (1998) Proxy Data Base And Northern Hemispheric Average Temperature Series" shows:

"The particular “hockey stick” shape derived in the MBH98 proxy construction – a temperature index that decreases slightly between the early 15th century and early 20th century and then increases dramatically up to 1980 — is primarily an artefact of poor data handling, obsolete data

and incorrect calculation of principal components." They found that Mann had left out important datasets that show large temperature variations, inappropriately truncated data that fails to show warming, and weights bristlecone pine tree-ring data (that does not correlate to temperatures) 390 times that of other data. Mann's computer program would produce hockey stick shapes from random input data. See here.

Edward Wegman is chairman of the NAS Committee on Applied and Theoretical Statistics and a Fellow of the Royal Statistical Society. He prepared a report in response to these criticisms:

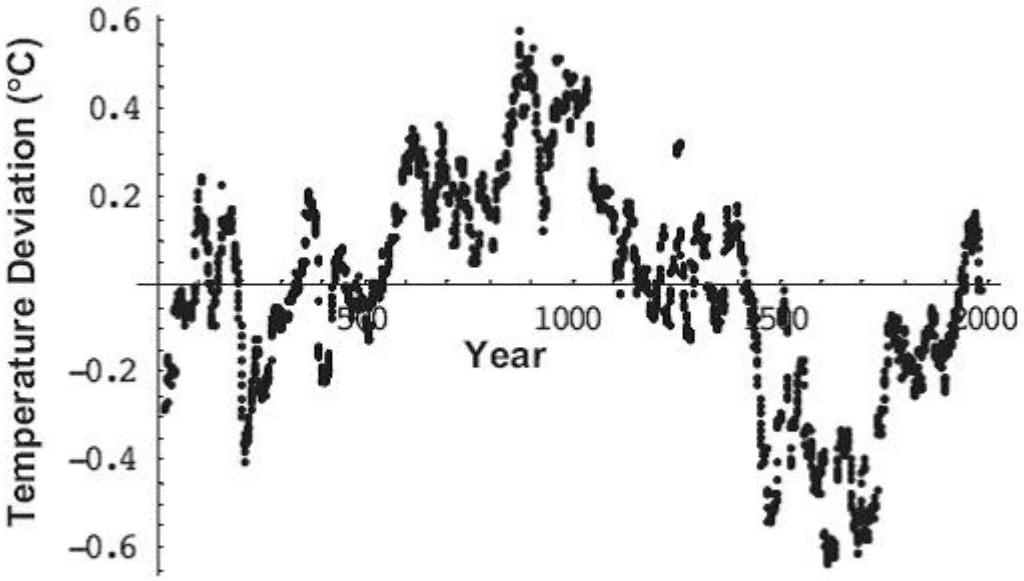
Wegman et al., (2006): "Ad Hoc Committee report on the "Hockey Stick" global climate reconstruction", commissioned by the US Congress House Committee on Energy and Commerce, 2006. His report confirmed the criticisms of the McKitrick and McIntyre.

"Overall, our committee believes that Mann's assessments that the decade of the 1990s was the hottest decade of the millennium and that 1998 was the hottest year of the millennium cannot be supported by his analysis." See here

7.) Page 3-1 The statement "The present global temperature is more than 0.6 C higher than at any time during the past 1000 years." has been shown to be false. Many studies show the "Medieval Warm Period" and "Little Ice Age" were major climatic events.

A study by Dr. Craig Loehle shows these events in his temperature reconstruction using non-tree ring proxy data in the graph below. See here

A 2000 Year Temperature History Base on Non-Tree Ring Proxy Data



8.) Figure 3.2 on page 3-2 shows a temperature history of almost no variation from the year 1000 to 1900, and the absurd IPCC model projection of increasing temperatures of up to 5 degrees Celsius to the year 2100. These projections are presented as if they are forecasts; they are not. The computer models have been shown time and time again to have no skill in

forecasting temperatures. No discussion is presented of the assumptions implicit in the projections, so the reader is left with the false impression that the projections are credible forecasts.

The IPCC projection are not credible because:

- The IPCC ignores all natural causes of climate change
- The IPCC ignores the Sun and cosmic rays as a cause of climate change
- The IPCC assumes that clouds causes a strong positive feedback, while real world measurements show that clouds cause a strong negative feedback See here
- The IPCC models do not include the natural cycles of the oceans
- The IPCC models show that CO2 warming would cause a distinctive and unique pattern of warming in the atmosphere, that is totally absent from the observational record.
- The IPCC computer-modeled trend of the tropical lower atmosphere is 100% to 300% higher than observed.

9.) Figure 3.3 on page 3-2 shows variations of temperature, methane and carbon dioxide over 420,000 years based on ice core data. The text states, "When the CO2 lags the temperature changes at these times, it suggests a positive feedback is operating…" In fact the data does not give any indication of the positive feedback. The CO2 increases after temperature increased because more CO2 is expelled from the oceans, as warm water can hold less dissolved CO2. The section does not present the detailed data required to shows the CO2 lag with respect to temperature. It would be appropriate to show this detail as given here

10.) Page 3-3 states that the CO2 concentration today is higher than in the previous 420,000 years, during which time it varied from 180 to 300 ppmv. This statement is very likely false. Direct measurements of historical CO2 concentrations documented by Ernst-Georg Beck show concentrations exceeding 400 ppmv three times since 1812. See here

A study of stomatal frequency in fossil leaves shows the CO2 level was 348 ppmv 9600 years ago. In the more distant past, CO2 levels were up to 15 times present levels.

The ice core data assumes the ice forms a closed system, which is false. When the ice core is brought to the surface, the pressure falls causing the clathrates to decompose to the gas form, exploding in the process as if they were microscopic grenades, forming tiny cracks in the ice. Gas escapes through these cracks as the ice core is brought to the surface, but since CO2 forms clathrates at lower pressures than other gases, CO2 is preferentially lost leading to depletion of CO2 in the gas trapped in the ice core. Consequently, the measured CO2 concentration from deep ice cores is less than the CO2 concentration of the originally trapped air. See here

11.) Figure 3.5 on page 3-4 shows the observed and modeled global temperature change from the Canadian model CGCM. The text states that this is one of the most credible models available, but gives no validation statistics to support this statement. This model projects that at an altitude corresponding to a pressure of 300 hPa, the warming trend should be 0.67 Celsius per decade in the tropics for the period 1979 - 1999. The average of 4 radiosonde datasets shows the actual trend at this altitude was only 0.094 Celsius per decade. The model shows 7 times the actual trend, completely falsifying the model. This is not surprising, as the model does not include the effects of the Sun which is the primary cause of climate change. The chapter gives no evidence whatsoever that CO2 is a major driver of climate change, and presents no scientific explanation of why increasing CO2 would cause a significant increase in temperature. The model shows a large warming trend because it was programmed with a large climate sensitivity to CO2 without justification. See here

12.) Page 3-6 states that the greatest danger of climate change for Canadians is due to changes in the frequency and intensity of extreme weather events. It gives no reasons for this belief. Climate models forecast greater warming in the polar regions than the temperate regions due to less water vapor in cold air. Storms are driven by the difference in temperatures between these regions, so CO2 induced warming would cause less severe storms, not more.

With respect to hurricane intensity, computer models shows that CO2 will cause higher sea surface temperatures, reduce the temperature difference between the surface and the storm top, and will increase the vertical wind shear (related to the trade wind speed). The increase in vertical wind shear and the decrease in temperature difference between the surface and storm top both serve to reduce hurricane intensity. This almost cancels the effect of higher sea surface temperatures, so there is no reason to expect more severe hurricanes in a warmer world. See. here

This section also states warming will result in heat stress, enhance disease risk and increased risk of forest fires. There is no scientific basis for any of these claims.

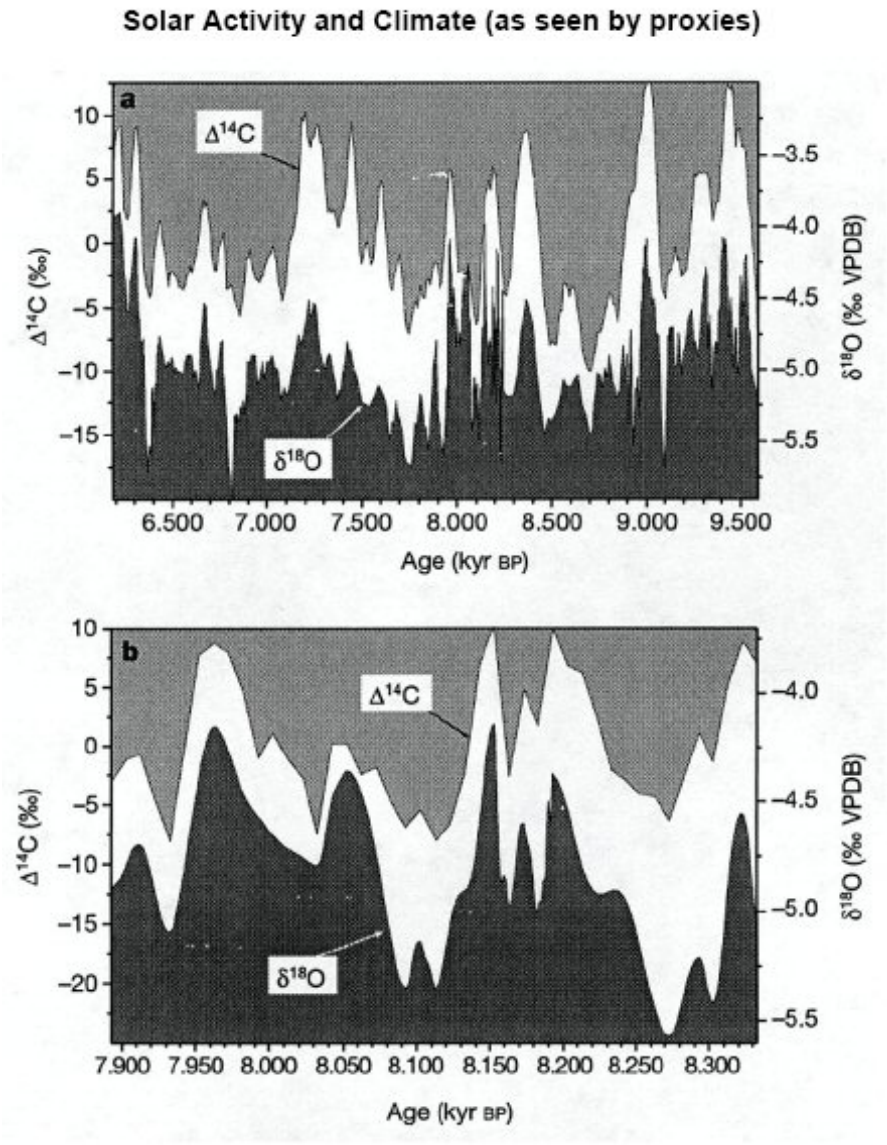
13.) Page 3-6 The summary of possible impacts of climate change on Canadians on should include the following benefits of CO2 emissions:

- A warmer climate would extend the area suitable for growing crops.
- A warmer climate would have many health benefits, especially respiratory benefits
- CO2 is a major plant fertilizer. A 300-ppm CO_2 increase would raise the forest's productivity by about 50%. This may prevent or delay the destruction of habitat.
- CO2 fertilization increases farmers' crop yields, which have increased about 15% since 1950 due to CO2 alone.

14.) Omission: The Sun. There is overwhelming evidence that the Sun is the primary driver of climate change, but a discussion of the Sun's effects are absent from this chapter. Changes in the Sun's activity strongly affects the interplanetary magnetic field, which in turn affects the amount of cosmic rays entering the atmosphere. Cosmic rays act as a catalyst in making cloud condensation nuclei. High Sun activity causes less cosmic rays and less low clouds, allowing more sunlight to warm the surface. See here

A comparison of the Sun's activity to temperature shows that the Sun has contributed at least 75% of the warming on the 20th century. See here

There may by hundreds of correlations between measures of the Sun and climate. Here is a correlation of carbon-14 produced by cosmic rays – hence a proxy for solar activity versus oxygen-18, which is a climate proxy.



15.) Omission: Temperature history. The SEEDS document does not include any current graph of global temperature history during the instrumentation era since 1880. The temperature history shows a significant cooling from 1940 – 1970 when CO2 emissions were increasing rapidly. It should also show the temperature history as measured by satellites, which are the only global measure of temperature uncontaminated by the effects of urbanization and land use changes. A climate change document should include this data.

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