Meeting with
Climate Minister Wong, Professor Penny Sackett and Professor Will Steffen
15 June 2009

Briefing Paper
by Senator Steve Fielding

This briefing paper outlines questions put forward by Senator Steve Fielding to the Climate Change Minister Penny Wong, the Chief Scientist, Professor Penny Sackett and Professor Will Steffen.

While the questions below are those which the Senator would like answered, the supporting material has been supplied from some leading scientists from Australia and overseas.

These are questions Senator Fielding would like answered so he can make an informed decision on whether or not an emissions trading scheme is the best course of action for Australia to take to deal with climate change and global warming.

The Senator remains open minded and has requested that the government address these questions, the answers to which are fundamental to shaping any climate change legislation.

QUESTION 1.

Is it the case that CO2 increased by 5% since 1998 whilst global temperature cooled over the same period (see Fig. 1)?

If so, why did the temperature not increase; and how can human emissions be to blame for dangerous levels of warming?

QUESTION 2.

Is it the case that the rate and magnitude of warming between 1979 and 1998 (the late 20th century phase of global warming) was not unusual in either rate or magnitude as compared with warmings that have occurred earlier in the Earth's history (Fig. 2a, 2b)?

If the warming was not unusual, why is it perceived to have been caused by human CO2 emissions; and, in any event, why is warming a problem if the Earth has experienced similar warmings in the past?

QUESTION 3.

Is it the case that all GCM computer models projected a steady increase in temperature for the period 1990-2008, whereas in fact there were only 8 years of warming were followed by 10 years of stasis and cooling. (Fig. 3)?

If so, why is it assumed that long-term climate projections by the same models are suitable as a basis for public policy making?

SUPPORTING DATA & CHARTS

QUESTION 1 – Supporting data and charts

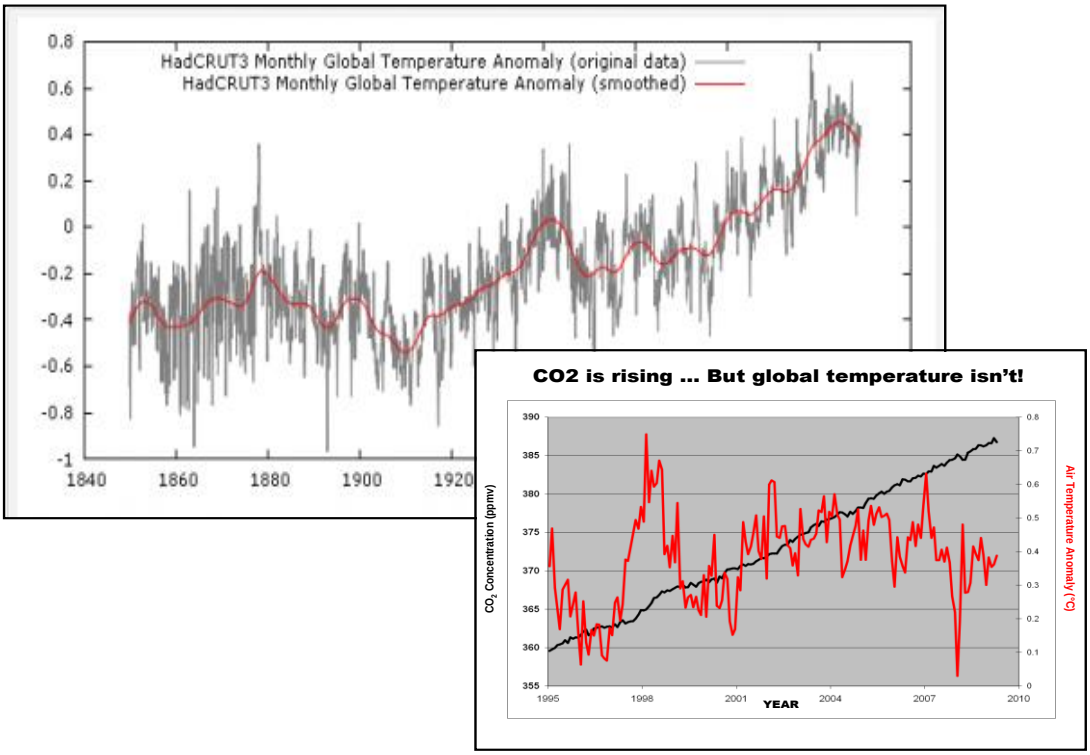

Figure 1.

Main graph:
Global surface temperature between 1850 and 2008 after the U.K. Meteorological Office (Hadley Centre and Climatic Research Unit of the University of East Anglia).

Inset graph:
CO2 measurements taken at Mauna Loa Observatory in Hawaii (in black, rising) plotted against the Hadley temperature record since 1995 (in red, falling). These two sets of statistics are used by the IPCC in its reports. The IPCC considers them to be gold standards of our ability to measure atmospheric CO2 concentration of carbon dioxide and global temperature, respectively.

Notes:
The current hypothesis is that human CO2 emissions will cause dangerous levels of global warming. The 1995-2008 data test this hypothesis, and it fails the test.

Note that CO2 also increased rapidly during the earlier cooling between 1940 and 1979. Again, global temperature falls whilst CO2 continues to rise, and thus the hypothesis is invalidated a second time.

SUPPORTING DATA & CHARTS

QUESTION 2 – Supporting data and charts

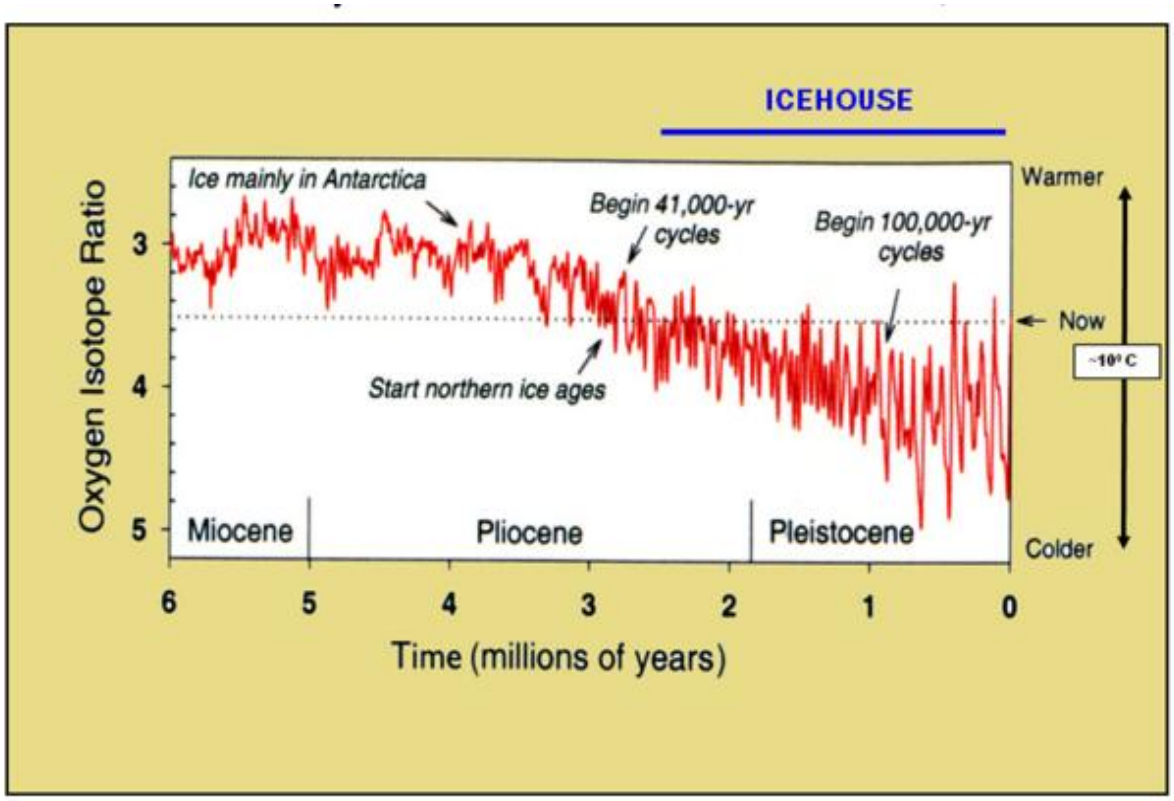

Figure 2a.

Composite deep ocean temperature curve from DSDP Sites 846 and 849, North Pacific, over the last 6 million years (proxy: oxygen isotope ratios in marine cores). The approximate temperature scale relates to closely similar climatic fluctuations that occurred in oceanic surface waters, in a pattern that recurs worldwide, but varies in exact magnitude from place to place.

Note that temperatures were higher than today's at many times in recent earth history, and expressly so during the early Holocene (about 8,000 years ago), during previous warm interglacials during the last several hundred thousand years, and for an extended period between 6 and 3.5 million years ago.

In proper geologic context, there is nothing unusual about modern global temperatures.

Palaeoclimatic data sets from deep ocean seabed cores and polar ice cores provide the gold standard of our knowledge about past climate change.

Mix, A.C., Pisias, N.G., Rugh, W., Wilson, J., Morey, A. & Hagelberg, T. (1995). Benthic foraminiferal stable isotope record from Site 849, 0-5 Ma: Local and global climate changes. In: Pisias, N.G., Mayer, L., Janecek, T., Palmer-Julson, A. & van Andel, T.H. (eds.), *Proc. ODP, Scientific Results 138, College Station, TX (Ocean Drilling Program), 371-412.*

Mix, A.C., J. Le & N.J. Shackleton (1995) Benthic foraminifer stable isotope stratigraphy of Site 846: 0-1.8 Ma. In: Pisias, N.G., Mayer, L., Janecek, T., Palmer-Julson, A. & van Andel, T.H. (eds.), *Proc. ODP, Scientific Results 138, College Station, TX (Ocean Drilling Program), 839-856.*

QUESTION 2 – Supporting data and charts …. cont.

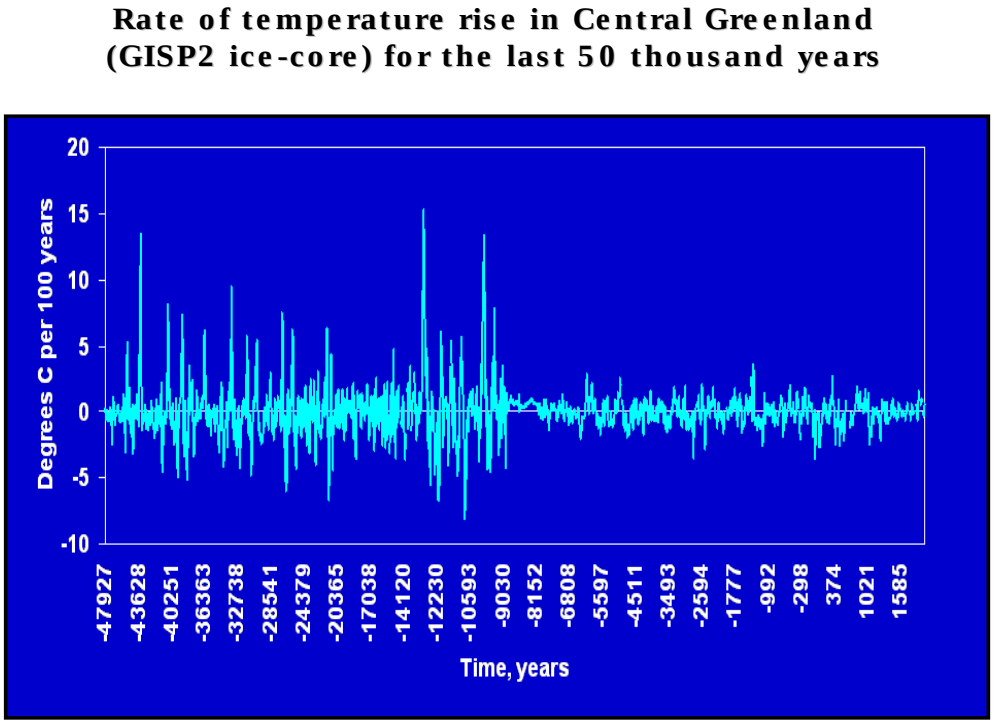

Figure. 2b.

Rate of temperature change for the last 48 000 years in °C/century, based on the analysis of oxygen isotope ratios from the GISP2 ice core in Greenland (after a slide by Andre Illarianov, 2004). Note that during the last 9,000 years of the Holocene, temperature change occurred regularly at rates between +2.5° and -2.5°C/century. Earlier, during the last glaciation, rates of change as high as 15°C/century are indicated.

The rate of temperature rise has therefore many times in the past been higher than it was in the 20th century. The rate of temperature change, both in Greenland and globally, during the late 20th Century Warming was between 1 and 2 deg. C/century. Thus recent, modern rates of warming fall well within the natural rates of change of the last 10,000 years.

In proper context, there is nothing unusual about the rate of late 20th century warming.

Palaeoclimatic data sets from deep ocean seabed cores and polar ice cores provide the gold standard of our knowledge about past climate change.

Data plotted after Alley, R.B., 2004. *GISP2 Ice Core Temperature and Accumulation Data*. NOAA.

SUPPORTING DATA & CHARTS

QUESTION 3 – Supporting data and charts

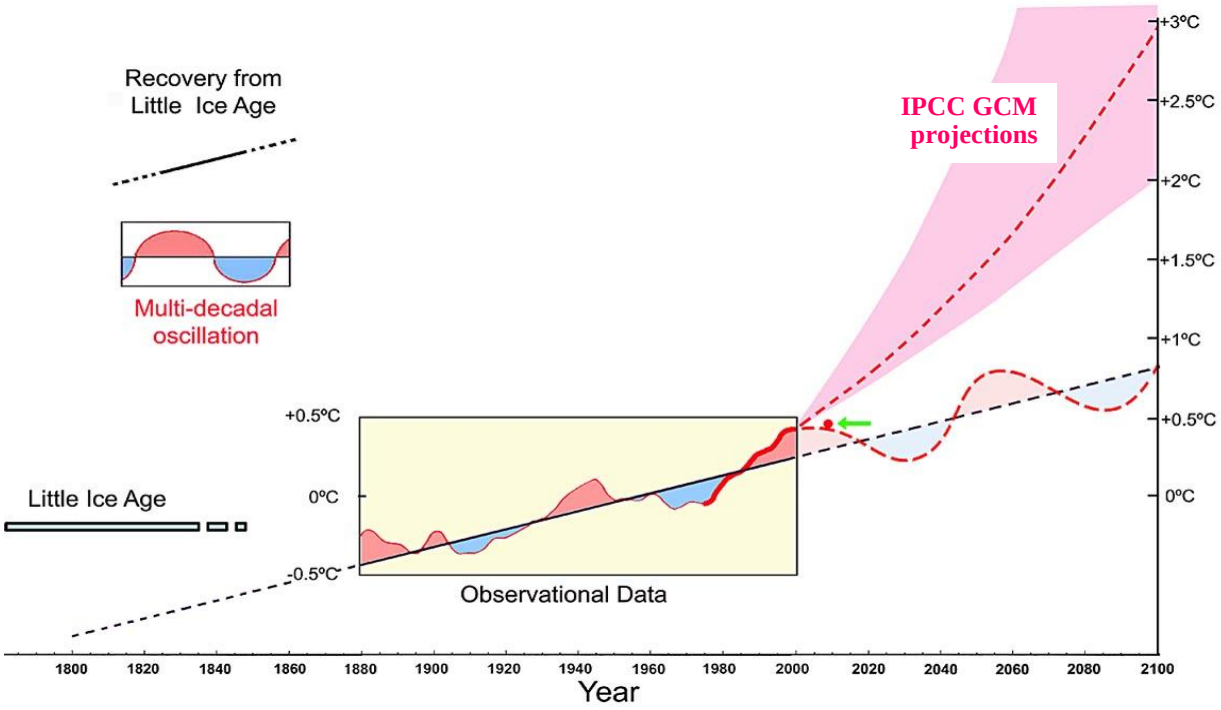

Figure 3.

Measured surface temperature from 1880 to 2000 (in yellow box) followed by IPCC model projections of future temperature made in 2001 (red dotted line plus pink envelope). Red dot (indicated with green arrow) represents the global temperature in 2008.

Note that all IPCC projections now fall outside the error bounds of the trend based on the elapsed temperature record. Global average temperature appears to be following its usual 30 year oscillations, superposed upon the established upward trend of ~0.5^0C per century that has marked the recovery from the Little Ice Age (Akasofu,2009).

Given their manifest inability to correctly project global temperature over periods as short as a decade or two ahead, GCM models are not suitable as a basis on which to formulate policy. In recognition of this, CSIRO attaches a DISCLAIMER to its modelling studies, for example:

> "This report relates to climate change scenarios based on computer modelling. Models involve simplifications of the real processes that are not fully understood. Accordingly, no responsibility will be accepted by CSIRO or the QLD government for the accuracy of forecasts or predictions inferred from this report or for any person's interpretations, deductions, conclusions or actions in reliance on this report" *(Walsh et al., 2002).*

Akasofu, Syun, 2009. Natural causes of 20th Century warming: recovery from the Little Ice Age and oscillatory change. Heartland-2 International Conference on Climate Change, New York, March 9, 2009. *http://www.heartland.org/events/NewYork09/proceedings.html*

Walsh, K. et al., 2002. *Climate Change in Queensland Under Enhanced Greenhouse Conditions.* Final Report 1997-2002, 84 pp.