Submission No. 1

The Independence of Advice.

Submission to the House of Representatives Standing Committee on Industry, Science and Innovation inquiry into long-term meteorological forecasting in Australia.

Tom Quirk

> *The Productivity Commission, as a source of independent advice, should be asked to report on the issue of global warming.*

In a dispute between two parties in a court of law, both sides are given the opportunity to put their best case. The Federal Government should follow this procedure so that the issue of global warming can be critically examined.

The two key issues are who is to be the arbiter on the issue and how will those who wish to put the contrary position to that of the government be given that opportunity.

There is a built-in bias with this issue. The definitive source of advice for global warming is taken by many to be the Inter Governmental Panel on Climate Change (IPCC). Governments have taken this view and as a consequence the federal bureaucracy has, as good public servants, followed government policies and commands. This has resulted in the setting up of a committed agency, the Greenhouse Office, now the Ministry for Climate Change and sympathetic support from other ministries with an interest in the issue.

The scientific assessment of the issue has been financed by government and it is not surprising that academics and universities are quick to see that financial support will be given to those who will support the government position. Is it likely that a proposal that might cast serious doubt on the science of global warming will be supported with government funds? Is it likely that those who have built up climate change institutions will support work that might question their raison d'être and threaten their continuing existence?

So rather than creating a virtuous circle, a vicious circle has been created where the existence of large groups of researchers depends on, to put it in the crudest terms, flooding the public and politicians with talk of imminent disasters that can only be averted by more research and massive changes to the national economy! If further research were to be funded, it would do little damage, possibly a misdirection of resources but if the advice were to be acted on without due deliberation the economic consequences might be worse than the projected disasters.

Is it possible to fund an independent inquiry?

The Chief Scientist or the CSIRO would at first appear to be good sources of advice. However the Chief Scientist, an astronomer, has already committed herself by warning of impending climate disasters. The CSIRO has state and federal governments as major clients. It has been funded to provide regional, state and national projections of future temperature, sea level and weather changes. In addition it has been funded for alternative energy development, clean coal and the geosequestration of carbon dioxide. It is unlikely to wish to kill the golden goose!

In the United States, Congress once had an Office of Technology Assessment. This office was closed on September 29, 1995 by the actions of the Republican majority in Congress as a budget trimming exercise. However in its twenty year life it was seen as an independent and bipartisan agency. Perhaps the closest institution to this position would be the Productivity Commission.

The Productivity Commission enjoys a reputation for independence and while it might not act as the arbiter, it would certainly appear to be independent of the financial needs of academia and the policy support needs of the government.

There is a substantial history of scientists wrongly forecasting the future. Lord Kelvin in the 1890's predicted the world would exhaust the oxygen in the atmosphere through coal burning. More recently we have had resource exhaustion and food famine forecast. It would be wise to proceed cautiously.

The attached appendix gives an alternative explanation of the twentieth century temperature increase. It is possible to explain most of the increase to natural climate changing events. It is an example of why an independent assessment is necessary.

I would propose that the Productivity Commission be asked to report on this issue and that it be given sufficient funds for a proper examination.

The arbiter is ultimately the Federal Government, the House of Representatives and the Senate. There is no alternative.

Appendix: The Analysis of Temperature

> *It is possible to explain much of the temperature rise in Australia during the twentieth century as being due to one event, the Great Pacific Climate Shift of 1977 when the temperature jumped by 0.5^{0}C. This has no connection with anthropogenic carbon dioxide and such future changes cannot be predicted by present climate models.*

Analysing temperature behaviour in Australia and on a global scale has become the bellwether of global warming analysis. Deep suspicions are voiced over the results from the five groups that analyse global temperatures from ground stations, balloons and satellites. In fact it is probably remarkable that there is so much agreement on measurements and in science it is not surprising that there is so much disagreement on interpretation.

It is comforting to know that in Australia much the same game can be played. But the game here is played on one set of measurements, that of the Bureau of Meteorology, so it is all about interpretation.

In the paper[i] "Observed climate change in Australia over the past century" Nicholls and Collins, of the Bureau of Meteorology, state:

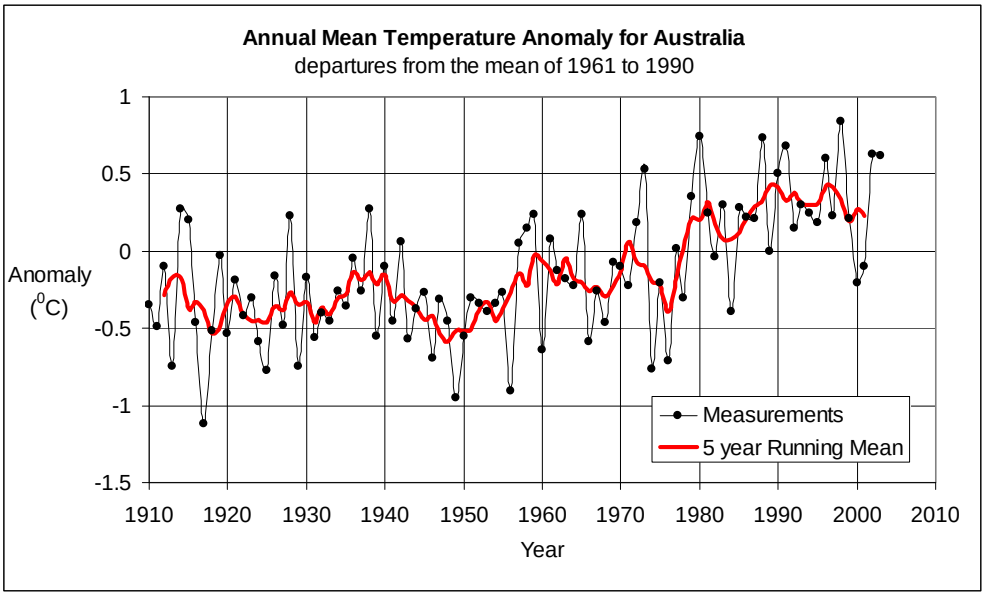
> "*…It seems likely that much of the warming is due to increased atmospheric concentrations of greenhouse gases….*"

This statement draws on modelling results by Karoly et al that indicate most of the temperature rise is compatible with increasing anthropogenic CO_2.

The analysis is worth examining by returning to the data[ii]. In the Nicholls and Collins paper, annual temperature anomalies are analysed from 1910 to 2003. The temperatures shown there are annual mean minimum and maximum temperatures, together with continuous curves showing a five year running mean of both series.

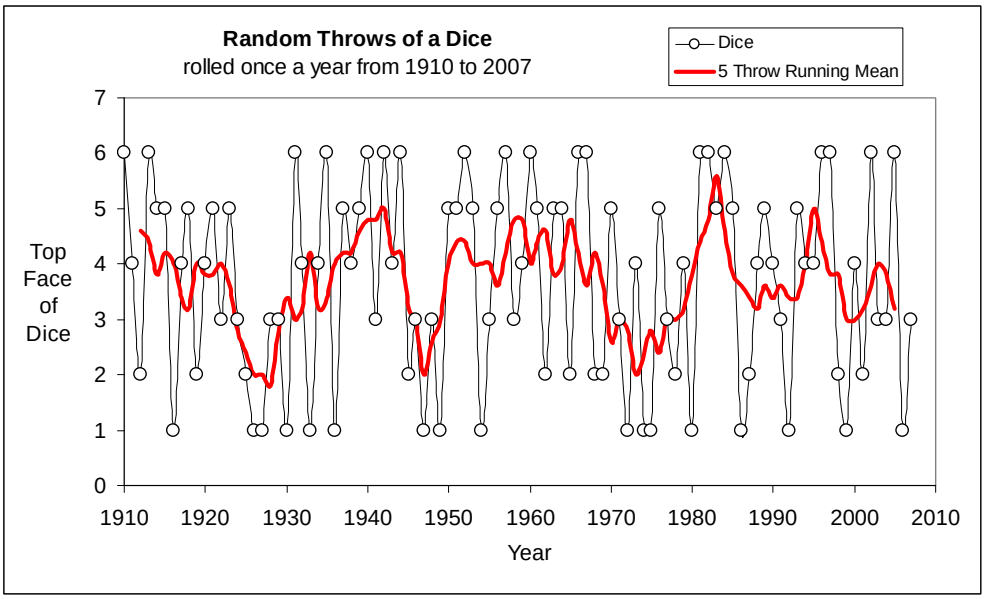
Figure 1 below is drawn from the same data set but shows annual mean temperatures. In addition it shows the five year running mean. The eye is led by the running mean, but statistically, with average fluctuations of 0.3^{0}C from year to year and no strong correlation of year on year temperature change for most of the data, this has no value.

Figure 1



If a six sided dice were thrown to simulate a random series and the mean of five consecutive throws plotted as a running mean were calculated, then the result would be as shown in Figure 2.

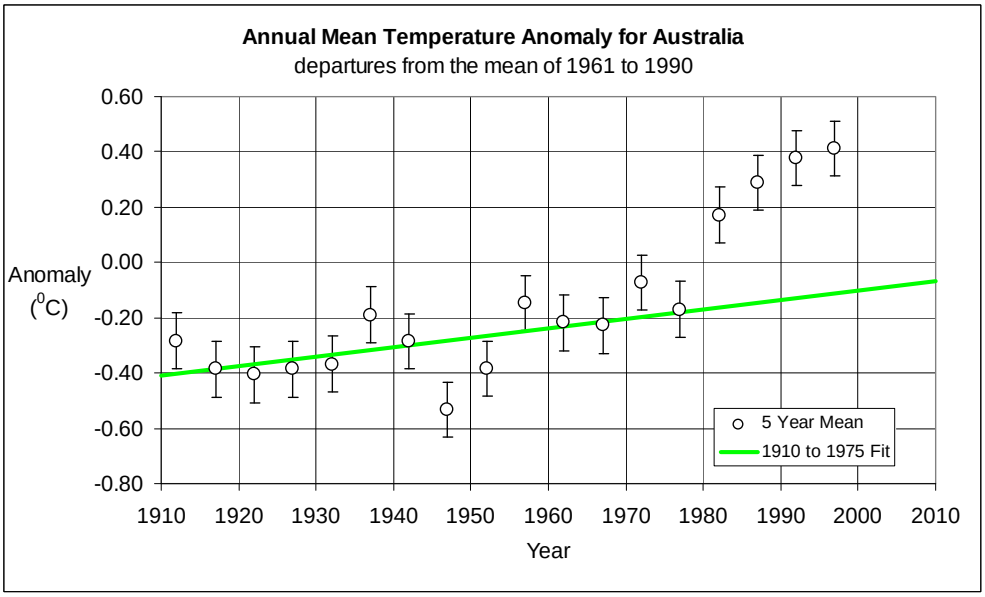
Figure 2



This demonstrates the use of running means can be quite misleading as a representation of trends. It also shows that substantial multiple year variations are possible in a system such as the climate-weather system with random annual variations.

Keeping to the spirit of five year averages, Figure 3 shows the annual temperature anomalies as separate five year annual means: that is 1910 to 1914, 1915 to 1919 and so on.

Figure 3



A constant temperature anomaly of -0.30^{0}C would fit all the measurements up to 1980. In fact the straight line shown is a best fit for 1910 to 1975 and gives a rise of 0.34 +/- 0.17^{0}C per century. The errors shown are standard errors of the mean values. They cover, as you would expect, the running mean values of Figure 1.

The most remarkable feature in Figure 3 is the difference of the temperatures after 1980 from the projected temperature trend. The difference is some four standard errors and is statistically very significant. There is an apparent temperature shift of 0.5^0C in the late 1970's

The temperature step is connected with the Great Pacific Climate Shift of 1976[iii], an event whose origins are uncertain but widely acknowledged, even in IPCC reports.

Back in 1976, the Pacific Ocean underwent a major transformation in sea surface temperature patterns. Suddenly warm water replaced cold water that had dominated the sea surface for most of the prior three decades near the west coast of North America and along the equatorial eastern Pacific.

In 1997, researchers at the University of Washington reported that a multi-decadal oscillation in Pacific sea surface temperature and pressure had been discovered, while trying to explain decadal changes in salmon fishery production. They called it the Pacific Decadal Oscillation. They noted that a major shift had taken place after 1976 from what they termed the cold mode to the warm mode of the oscillation.

It is often discussed as a possible source of Australia's temperature change.

This interpretation shows that for Australia the best description of the warming in the twentieth century is the major contribution of 0.5^0C coming from the Great Pacific Climate Shift. The causes of the balance of the temperature change, 0.3^0C, remain uncertain.

The temperature shift has nothing to do with anthropogenic CO_2 nor could such changes be predicted by present climate models.

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[i] Neville Nicholls and Dean Collins 2006: "Observed climate change in Australia over the past century" Energy & Environment Volume 17, No.1, 1

[ii] Tom Quirk 2009 "The Australian temperature anomaly 1910-2000", Energy & Environment Volume 20, No. 1+2, 97

[iii] Michael J. McPhaden and Dongxiao Zhang 2002 "Slowdown of the meridional overturning circulation in the upper Pacific Ocean", Nature vol 415, 303.