XXXXXXXXX
XXXXXXX
XXXXX

3 July 2011

Professor Ian Chubb,
Australian Chief Scientist,
GPO Box 9839
CANBERRA ACT 2601

Dear Professor Chubb,

When I read your article headlined "Beyond reasonable doubt: respecting the science" on the ABC's The Drum (see http://www.abc.net.au/unleashed/2777942.html) I was absolutely gobsmacked.

I appreciate that someone who comes from neuroscience and university administration may not be very conversant with climate science and the claims that surround it, so I suspect that you have been very poorly informed, take things at face value or are unaware of several crucial issues.

In this note I intend to address
(a) the position of the national science academies that you hold in some regard
(b) your apparent notion that consensus somehow determines scientific truth
(c) the nature and quality of evidence that you seem to think exists
(d) some empirical evidence for you to consider
and
(e) ask whether you deny the empirical evidence that I demonstrate, and if you accept it then I ask what actions you will now take in regard to it

My own background is an extensive investigation of climate issues for the last 6 years, with some emphasis on the history, workings and claims of the IPCC. I have written two published peer-reviewed papers on climate matters, numerous opinion pieces and various widely-cited documents published by different outlets, with some of those documents being cited on the floor of the US senate and in UK and Canadian news media.

1. Statements from national science academies (etc.)

You mentioned the national science academies and their statements of support for the hypothesis of significant man-made warming. Are you aware that these and other high

level field-specific science organisations are members of the ICSU? (The ICSU was formerly the International Council of Science Unions but recently changed the name to International Council for Science despite retaining the old acronym. Its website is http://www.icsu.org/)

Confirmation of this membership is easily available via a list on webpage http://www.icsu.org/about-icsu/our-members/?icsudocid=national-members, and webpage http://www.icsu.org/about-icsu/our-members provides links to display data for all members.

The ICSU worked for 20 years for the establishment of the IPCC, (see my http://scienceandpublicpolicy.org/images/stories/papers/originals/climate_science_corrupted.pdf quoting Franz and others). A telling example is that at the 1985 Villach conference where all attendees were individual invited, the ICSU representative called for the "development of the necessary policies at the national and international level". The first chairman of the IPCC, Bert Bolin, had worked on ICSU projects for many years, written several of its reports, chaired and wrote up the minutes of conferences such as at Villach, and since 1958 had been saying that carbon dioxide would cause significant warming.

ICSU membership requires the upholding of ICSU positions on various subjects (see above web page) and given the ICSU's involvement with the IPCC I think we can confidently predict the ICSU's position on man-made climate change. It is not difficult therefore to surmise that the near-simultaneous release of statements of support from the science academies was probably at the ICSU's instigation.

Also how many of those academies and organisations surveyed their members before releasing such statements? To the best of my knowledge just one, Russia, and it rejected the hypothesis. I have been informed, second-hand admittedly, that the statement from the US National Academy of Science was written by an executive subcommittee without consulting ordinary members, and I think that one can confidently assume that believers of significant man-made warming would be anxious to serve on such subcommittees.

I understand that the situation was similar in other countries with either executive subcommittees or the executive itself writing those statements.

My hypothesis is simple to test - just ask the Australian Academy of Science for a copy of its survey to members and if that does not exist, then an account of who wrote its statement and with what amount of consultation.

By the way, many science academies, including Australia's are also members of the InterAcademy Council, the organisation that undertook the independent review of the IPCC. One wonders just how independent this review was when criticism of scientific detail would have reflected badly on the ICSU's involvement.

2. The curious notion that consensus determines scientific truth

I am sure that from your experience you fully understand that consensus is a tool for administration whether that be for politics, universities or wherever. I am puzzled as to why you would think it is a tool that can be applied to science to determine a scientific truth (or, as you acknowledge, what's a provisional truth until it's prove false).

From your medical background, are you familiar with Ignaz Semmelweis or perhaps John Warren and Barry Marshall? Semmelweis battled against the consensus that it was perfectly okay to move from dissecting cadavers for research to assisting women in childbirth without thoroughly washing one's hands with antiseptic. Warren and Marshall discovered that, contrary to the consensus of the day, peptic ulcers were caused by the Helicobacter pylori bacterium.

And how much phlogiston is in your office? Too much and your office is a fire risk, at least according to the consensus that prevailed from the late seventeenth to the late eighteenth centuries.

Wegener's hypothesis of continental plates (later modified to tectonic plates), diseases caused by miasmas and humours. I could go on but surely there's no need.

Consensus does not determine scientific truth. It never has.

Einstein famously said, in response to a petition against his work by 100 people, that if he was wrong it wouldn't take 100 people to prove it. If just one could show a flaw in his hypothesis he'd have to reject it.

A (provisional) scientific truth is only determined by how well a hypothesis accounts for all known observations and how well it predicts future observations.

And how well does the hypothesis of significant man-made warming hold up? Very poorly. Over the last 60 years global average temperatures generally increased only from 1977 to 1998; the rest of the time the trends were basically flat.

Now maybe you believe that if the consensus is wrong then it will be put right at some point in the future. If that's the case then I should I take it that you therefore think it appropriate that billions or even trillions of dollars are spent chasing a chimera for years, and even decades, when there are more pressing issues facing mankind?

3. A matter of evidence

You say "*After the work of very many scientists over more than 50 years, the views on climate change have converged to the point where the evidence has moved from possible to beyond reasonable doubt.*"

Followed by "*After the work of scientists from multiple disciplinary backgrounds the lines of evidence on climate change have converged to support a high degree of confidence that climate is changing and that human activity is a primary cause*."

Let me ask you a simple question - where is the credible empirical evidence that supports the hypothesis of significant and dangerous man-made warming?

I ask for empirical evidence and I do so deliberately. The IPCC's "evidence" for significant man-made warming - and in fact the "evidence" for the same from any other organisation or individual – seems to be based on climate models.

Chapter 2 of the IPCC's 2007 report listed in table 2.11 (pg 201), 16 climate forces related to the radiative transfer of heat. I show below the level of scientific understanding that table listed for each:

Forcing	**Level of Scientific Understanding**
Long-lived greenhouse gases	High
Stratospheric ozone	Medium
Tropospheric ozone	Medium
Direct Aerosol	Medium to Low
Surface albedo (Land Use)	Medium to Low
Cloud albedo effect (all aerosols)	Low
Stratospheric water vapour from CH4	Low
Surface albedo (BC aerosol on snow)	Low
Persistent Linear Contrails	Low
Solar irradiance	Low
Volcanic aerosol	Low
Stratospheric water vapour from causes other than CH4 oxidation	Very Low
Tropospheric water vapour from irrigation	Very Low
Aviation-induced cirrus	Very Low
Cosmic Rays	Very Low
Other surface effects	Very Low

Can you explain how accurate climate models can be created when so many of these forces are so poorly understood?

Chapter 8 of the same report described numerous flaws in climate models. It especially mentioned the poor modelling of the El Nino-Southern Oscillation (ENSO), saying

> *During the last decade, there has been steady progress in simulating and predicting ENSO (...) and the related global variability using AOGCMs (...). ... Despite this progress, serious systematic errors in both the simulated mean*

climate and the natural variability persist. For example, the so-called 'double ITCZ' problem noted by Mechoso et al. (...) remains a major source of error in simulating the annual cycle in the tropics in most AOGCMs, which ultimately affects the fidelity of the simulated ENSO. Along the equator in the Pacific the models fail to adequately capture the zonal SST gradient, the equatorial cold tongue structure is equatorially confined and extends too far too to the west (...), and the simulations typically have thermoclines that are far too diffuse (...). Most AOGCMs fail to capture the meridional extent of the anomalies in the eastern Pacific and tend to produce anomalies that extend too far into the western tropical Pacific. Most, but not all, AOGCMs produce ENSO variability that occurs on time scales considerably faster than observed (...), although there has been some notable progress in this regard over the last decade (...) in that more models are consistent with the observed time scale for ENSO (...). The models also have difficulty capturing the correct phase locking between the annual cycle and ENSO. Further, some AOGCMs fail to represent the spatial and temporal structure of the El Niño-La Niña asymmetry (...). Other weaknesses in the simulated amplitude and structure of ENSO variability are discussed in Davey et al. (2002) and van Oldenborgh et al. (2005) (pg 623, some references replaced here by ellipsis for clarity)

Results indicated considerable model skill out to 12 months for ENSO prediction (pg 626 – and presumably if skill was better than 12 months we would have been told)

So the IPCC tells us that ENSO system is poorly modelled.

That's very interesting in light of chapter 3's numerous comments about the very substantial influence of the ENSO on the global climate system, comments such as:

The dominant mode of global-scale variability on interannual time scales is ENSO, although there have been times when it is less apparent. The 1976–1977 climate shift, related to the phase change in the Pacific Decadal Oscillation and more frequent El Niños, has affected many areas and most tropical monsoons. (pg 238)

El Niño-Southern Oscillation events involve large exchanges of heat between the ocean and atmosphere and affect global mean temperatures. (pg 288)

Understanding of the variability and trends in different oceans is still developing, but it is already apparent that they are quite different. The Pacific is dominated by ENSO and modulated by the Pacific Decadal Oscillation (PDO), which may provide ways of moving heat from the tropical ocean to higher latitudes and out of the ocean into the atmosphere (...), thereby greatly altering how trends are manifested. (pg 246)

Analyses by Trenberth and Stepaniak (2003b) reveal more divergence of energy out of the deep tropics in the 1990s compared with the 1980s due to differences in ENSO, which may account for at least some of the changes discussed above. (pg 278)

> *The nature of ENSO has varied considerably over time. Strong ENSO events occurred from the late 19th century through the first 25 years of the 20th century and again after about 1950, but there were few events of note from 1925 to 1950 with the exception of the major 1939–1941 event (Figure 3.27). The 1976–1977 climate shift (...) was associated with marked changes in El Niño evolution (...), a shift to generally above-normal SSTs in the eastern and central equatorial Pacific and a tendency towards more prolonged and stronger El Niños.* (pg 287)

The obvious conclusion is that a very influential force on climate is very poorly modelled, which doesn't say much for climate models.

Climate models are therefore quite a worry. Many climate forces are poorly understood and cannot be accurately incorporated into models, and others are known to be modelled poorly.

Were you aware that the IPCC uses the average results of multiple executions of 22 models as if that averaging somehow imbues credibility? If climate models are accurate then why use 22. At most, only one could be correct so, if we optimistically assume that was the case, it seems that its output is averaged with that from 21 incorrect models.

Faith in climate models is clearly misplaced, but the IPCC's pivotal chapter, chapter 9, was written by people deeply involved with climate modelling who extensively cited their own work (40% of references) and more than 45 from a network of people who have co-authored papers together or are work colleagues.

I can make this statement because I have analysed the authorship of that chapter. My analysis cannot be refuted because I drew very extensively on information provided in that report (see http://scienceandpublicpolicy.org/images/stories/papers/originals/McLean_IPCC_bias.pdf).

Do you condone the practice of having people with the most obvious vested interests in supporting flawed tools write the key chapter of a report? I certainly don't.

Surely we can't be expected to accept any claims derived from these flawed climate models. Models are a virtual so their output is at best virtual, rather than real evidence.

So where is that real evidence of a significant human influence on climate? Where's the observational data that clearly demonstrates a situation that can only be attributed to a human influence?

To the best of my knowledge there is none. What you claim is "beyond reasonable doubt" doesn't seem to have a shred of credible empirical evidence to support it.

4. A peer-reviewed paper that shows empirical evidence of natural causes

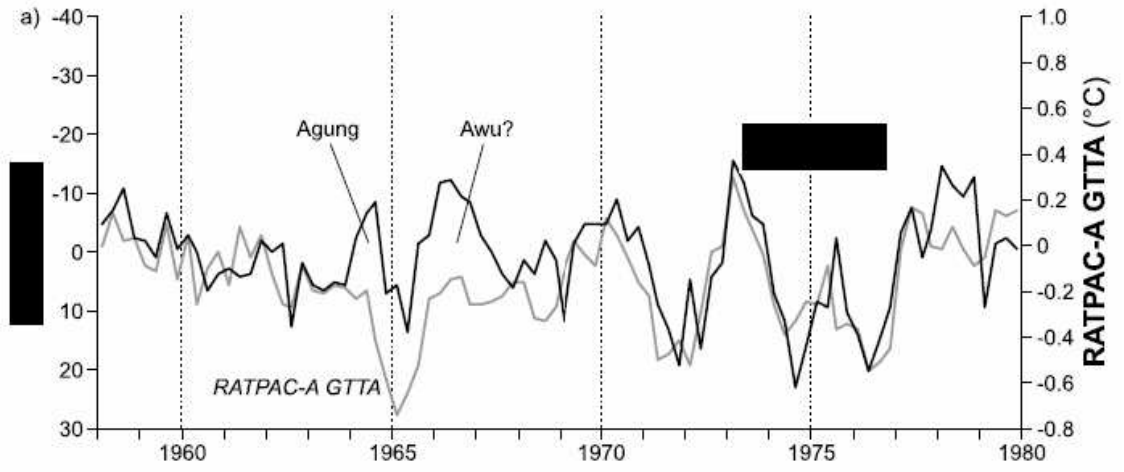
There is however good empirical evidence to show that climate is probably very substantially driven by other forces and that little remains to be accounted for by carbon dioxide or any other climate force. What's more this hypothesis was published in the scientific literature in July 2009 (reference given shortly).

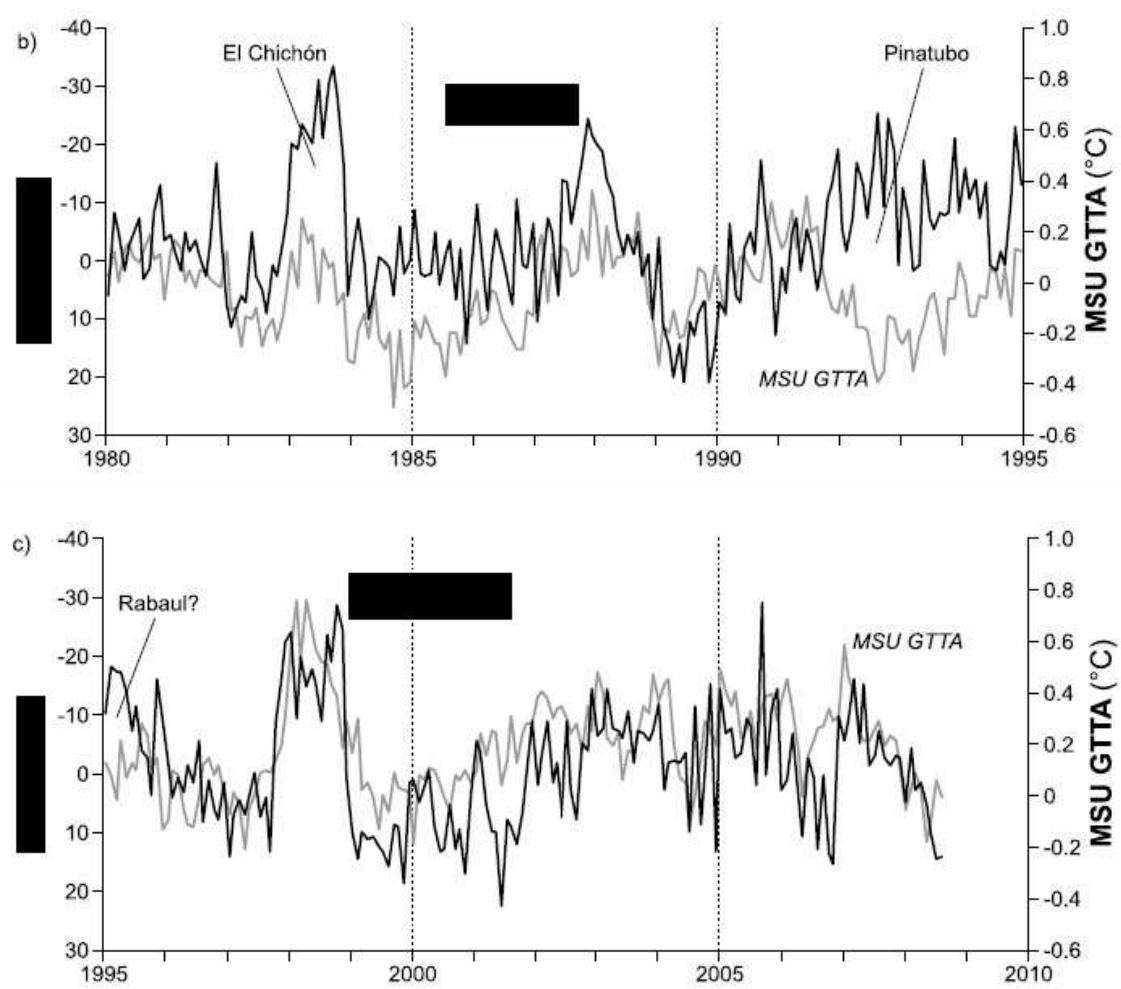
You say "*As Australia's Chief Scientist I will be an advocate for this and all of science, to ensure that when the body of evidence lies beyond reasonable doubt, we do what we can to listen to what our scientists are saying*."

I would like to see you put that into practice by examining this evidence and if you feel, as I do, that it lies beyond reasonable doubt then you will be an advocate for people listening to this theory.

Below are three graphs that show global average atmospheric temperature and a climate force, with some key periods of cooling, attributable to the named volcanic eruptions, indicated. The three graphs show consecutive periods of time, but graph (a) has a different temperature data source to (b) and (c) because the better quality data used in the latter pair was not available for the period shown in graph (a).

(For the labelling of the right Y-axis, "GTTA" is the Global Tropospheric Temperature anomaly, and RATPAC-A and MSU are both sources for the temperature data.)





A simple question - in your opinion, does the unlabelled black graph line correlate reasonably well with the grey temperature graph line?

The paper that the graph comes from was published in the Journal of Geophysical Research (see http://mclean.ch/climate/docs/McLean_deFreitas_Carter_JGR_2009.pdf).

The unlabelled black graph line is the Southern Oscillation Index and it's an indicator of the state of the El Nino-Southern Oscillation (ENSO).

In this graph the SOI has been shifted forwards by seven months, which logically means that ENSO can drive temperature but not vice versa.

Here is the evidence, surely beyond reasonable doubt, that the ENSO is very likely the driver of global average temperature. What drives ENSO is the subject of ongoing speculation but scientists agree that ENSO is natural and has operated for at least 125,000 years.

As I mentioned above, the IPCC reported that the ENSO has a significant influence on global climate and that the modelling of the ENSO was poor, so it's hardly a surprise that the IPCC failed to reach this conclusion, although realistically that would be unlikely from an organisation whose charter directs it to focus only on the risks posed by any human influence on climate.

What I didn't mention above is that the CSIRO and Bureau of Meteorology have publicly stated that the ENSO has a very significant influence on Australia's temperature, rainfall and even sea level. Their climate reports contain numerous statements to that effect but there's typically no mention ENSO when it comes to predictions of future climate.

Another issue, less explicit in the paper, is that the close relationship between ENSO and temperature has not significantly deteriorated over the last 50 years, and in particular the graph lines have not drifted apart during an extended period of increasing atmospheric carbon dioxide. The evidence - again surely beyond reasonable doubt - says that carbon dioxide has negligible impact on temperature.

Two further points deserve a mention. Firstly, the ENSO is a short-term force but when a period with few El Nino events (or conditions close to that threshold) is followed by one with far more El Nino events (ditto), one would expect a rising trend in temperatures. This situation arose late last century with the shift towards favouring El Nino starting in June 1976, about seven months before global temperatures started to rise.

Secondly, if we have an ENSO-induced temperature pattern it is a fallacy to calculate the temperature trend and then claim that all the warming is due to human activity. Only when one had removed the ENSO-driven component could a reasonable trend be established, although even it may not be entirely due to carbon dioxide. To the best of my knowledge no-one has used the hypothesis of our paper to remove the ENSO component from the temperature record.

You said "*Sometimes scientific research can lead to discoveries and findings that people do not want to hear, but that does not mean that they shouldn't hear them or that governments should not respond to them.*"

I completely agree. So how do you think I felt when a criticism of one sentence in the Analysis section of our paper - not the Discussion and Conclusions which are the most important parts of any paper - was used to try to dismiss these findings, when the journal failed to comply with its own procedures and restrictions, and when a phony review of our response blocked it from publication? (details available via http://mclean.ch/climate/ENSO_paper.htm)

You, yourself, said in your article "*It is not too hard to take a sentence out of a long essay, or even part of a sentence, and bend it to bolster your otherwise fragile point. It is enough, some think, simply to create doubt.*" It certainly worked to suppress our findings.

But aren't you objecting to such actions? Aren't you saying that people should hear these views and that they should look at the evidence?

You also said "*While I took this role to advocate for all of science, the nature of the climate change debate allows me to emphasise the importance of scientific evidence and informed opinions –not the loud or the personal*.".

The paper showed scientific evidence and explained how recognised physical processes could account for the observations. Further, it showed superior and more consistent evidence of ENSO-driven temperature than those who rely on climate models to claim that anthropogenic emissions of carbon dioxide have a significant influence on temperature.

Consider yourself to now be informed, and presumably with an opinion based on that information.

If the above statement seems crass then view it in the light of your comment, "*As experts in their field, scientists have an obligation to use their expertise to help inform the public and policy makers. These experts are not setting out to incite anger; they are communicating the findings of their extensive research*."

5. Will you as Chief Scientist support or ignore the empirical evidence?

You said in your article "*The message is simple. When science is conducted properly, and interpreted after extensive, and critical, analysis, knowledge and understanding are increased and improved. We shift or confirm what we think*."

I believe that the paper showed the proper analysis, it established that a seven month time lag appeared likely, and the Discussion in our paper not only confirmed it with the graphs shown above but also discussed the physical processes that would account for it.

Having seen the empirical evidence for the ENSO being the dominant driver of temperatures and climate, have you now shifted what you think?

Do you still believe that there is still evidence to "*support a high degree of confidence that climate is changing and that human activity is a primary cause*?"

The first conclusion, that climate is changing, is not in dispute because it has done for billions of years. The second part of that statement, that human activity is the primary cause, has no credible empirical evidence to support it whereas the alternative hypothesis presented in the above-mentioned paper certainly does.

You closed your piece by saying "*As Australia's Chief Scientist I will be an advocate for this and all of science, to ensure that when the body of evidence lies beyond reasonable doubt, we do what we can to listen to what our scientists are saying*."

Earlier in the article you said "*These scientists do not write policies, that is the role of the Government. I do believe though that it is important for their research to be heard and understood in order for the policy writers to make the most informed choices possible.*

... That said we need to be aware that communicating scientific findings is not the same thing as the political response to those results. In essence, the mainstream political debate in Australia is about which party has the better response - not so much whether the science is right."

Where is the logic in saying that a party having a better response to a scientific situation is of more importance than whether the science is correct? Isn't your role to advise the government on scientific matters, and doesn't your statement imply that you don't care if the science is wrong?

Here's your opportunity to react as your article says to react – by looking at the evidence and listening to what's being said.

I believe that our paper offered solid evidence that ENSO drives temperature. If you also consider that the evidence was substantial, or maybe "beyond reasonable doubt", then I ask you, will you now be an advocate for this evidence-based finding by strenuously raising the matter with the government and ensuring that it listens?

We would, of course, be happy to discuss any issues or answer any questions that arise from this paper and isn't this the kind of dialogue that you would like to see?

I look forward to your response and because this letter will be made public I seek your permission to also make your response public.

Yours sincerely

John McLean

(no signature on electronic copy)