

Why Global Warming Does Not Threaten Dangerous Temperatures

Des Moore, September 2013

I propose to spend most time today considering the hypothesis that, unless our governments take urgent action to reduce ever increasing emissions of greenhouse gases - usually limited to mentioning only CO₂ emissions - higher and higher temperatures will destroy life and plants, even threaten human existence. I hope you will agree that no substantive evidence exists to support this dangerous warming thesis.

But first I want to pose a question to you that goes to the heart of the matter.

Question: what wage is paid to the union guys who hold up stop signs outside a construction site? No, sorry that question is for a different audience.

My question for today is - what is the main difference between the major parties on the supposed global warming problem? On the surface, very little of substance: both agree Australia should reduce CO₂ emissions by 5 per cent by 2020 and should produce 20 per cent of energy from sources other than coal, gas or oil.

So why does Abbott threaten a double dissolution if the Senate rejects a carbon tax that could achieve the 5 % emissions target and why does Labor oppose such an abolition?

Remember that Labor wants to abolish the \$24 carbon tax from July 2014 and substitute a price on carbon determined by European countries under their trading scheme. Labor insists carbon **must** have a price and claims Abbott's direct action plan will not achieve the 5% objective. Better to have major Australian corporates pay a quasi tax imposed by foreigners!

As to Abbott, politically his promise to abolish the tax got him to where he is today. But the funding for his direct action plan of \$3.4 billion will come from tax revenues. That means he is going to have a quasi carbon tax and this makes for a weak case for a politically risky double dissolution on the 24 dollar one.ⁱ Perhaps Abbott can call on support from enough of the 8 independents in the new Senate and avoid a double dissolution.

Abbott might also take advantage of the apparent backpedalling in the fifth IPCC report due to be published on 27 September. If confirmed, this would support a re-examination of the need for continuing government action to reduce emissions. Although the IPCC still seems to be sticking to its line that human usage of fossil fuels causes dangerous increases in temperatures, the apparent acknowledgement of uncertainties in the science opens the way for further investigations in Australia and a review of spending on emissions reductions.ⁱⁱ

The Extent of Scepticism

Let me turn now to the widely accepted belief that a large proportion of CO₂ emissions from usage of fossil fuels is added to the atmosphere and that the extra heat then radiated back to earth from these CO₂ concentrations causes a temperature increase at the surface of the earth. **Figure 1** shows the strong upward trend in emissions and below that the main offenders of China and India.

But the next step is not so widely accepted. I refer to the proposition that, if governments fail to prevent the increasing usage of fossil fuels, the increasing atmospheric concentrations must lead to danger from ever rising temperatures. True, almost all political leaders, science bodies, international organisations and media outlets seemingly accept this dangerous warming thesis in one form or another, as does a significant proportion of the community. But since the 2007 report by the Intergovernmental Panel on Climate Change the general public has become more skeptical about the alleged danger.

I cannot today outline all the reasons for this increased scepticism. A major one has been that since 1997 temperatures have hardly increased despite strongly increased emissions and that modeled predictions of temperatures have failed badly. Other reasons include the revelation from the Climate-Gate leakage of exchanges of emails between so-called experts that they are uncertain about the science, and even prepared to manipulate data to produce results that fitted the dangerous warming thesis. Then we have the skepticism reflected in the refusal of lower income countries to conclude an international agreement on reducing usage of fossil fuels because they judge continued extensive use of such fuels as vital to their economic development.

A kind of catch-up has also occurred as sceptical scientists realised the dangerous warming thesis was being taken seriously politically. Increased publications and commentaries by sceptics led to critical submissions to governments. In Australia, in 2010 the then Climate Change Minister Wong even discussed a critique by four respected sceptical scientists but she did not agree to hold an independent inquiry into the science. Australia's professionally respected Productivity Commission has also expressed sceptical type views.

People of importance have publicly locked themselves into accepting the dangerous warming thesis and regard reneging of their views as out of the question. Some fashionistas see the thesis as helping international bodies become responsible for protecting the environment.ⁱⁱⁱ

Economic Questions

On the economic side, some see eliminating emissions as needed to prevent economic damage from the supposed ever-increasing temperatures. They acknowledge that eliminating the use of fossil fuels will have adverse short term economic effects in the short term but argue this should be accepted in the interests of future generations. Also, it needs to happen quickly because, if temperatures increase by more than 2 degrees, some claim further increases cannot be stopped.

Over an extended period the usage of fossil fuels could doubtless be eliminated and other sources of energy substituted. The possible economic effects are assessed in a major 2008 reports commissioned by the previous government from economist Ross Garnaut^{iv} and by a similar Treasury analysis^v released by then Treasurer Swan and then Climate Change Minister Wong.

The basic message is our great-grandchildren would be saved **and** their GDP in 2100 would even be higher than otherwise. After the move to less efficient energy reduces annual growth for the next 50 years or so, there would then be a lift in growth rates and the "the main benefits of mitigation (would) accrue in the 22nd and 23rd centuries and beyond".^{vi}

The Garnaut report did acknowledge that, even if there is no reduced usage of fossil fuels between now and 2100, there would be no adverse effects on growth. Its claim is that “Australian material living standards are likely to grow strongly through the 21st century, **with or without** mitigation”^{vii} (my emphasis).

I judge the short term adverse effects are understated and the benefits overstated. Climate economist Professor Richard Tol, a former IPCC lead author, estimates the cost of mitigatory action by 2100 would be about 40 times greater than the benefits^{viii} But the most important defects are the failure to recognise that nuclear power is already close to being economically efficient and that historical experience suggests continued technological advances will improve the economics of other renewable energy sources.

Assessing the Science – New Evidence & Doubts about Existing Evidence

As mentioned, the dangerous warming thesis is based on the widely held belief that a proportion of CO₂ emissions is added to the atmosphere and the extra heat then radiated back to earth by the CO₂ causes a temperature increase at the surface of the earth. But is there a causal connection between the increasing concentrations and any increase in temperatures? In considering this I draw on important new research by physicist Tom Quirk.

Let me first note that an internationally accepted standard for atmospheric calculation shows that the increases in CO₂ concentrations do *not* result in a *commensurate* increase in radiation back to the surface of the earth. In fact, an example calculation shows that if concentrations doubled from existing levels of about 400ppm to 800ppm, there would only be a 10 per cent increase in radiation back to the earth’s surface (see the left axis of the graph in **Figure 2**).^{ix}

The effect of this radiation on temperatures is open to serious debate. Bill Kininmonth, the former head of the Climate Centre of our Bureau of Meteorology, argues persuasively that the evaporation from the oceans (which constitute 70 per cent of the earth’s surface) has an offsetting effect on upwards temperatures from radiation. Accordingly, although IPCC modelling assumes there will be a positive effect on temperatures, the evaporation may involve sufficient temperature damping to significantly reduce the temperature increasing from the radiation. This is a major uncertainty about the proposition that we face dangerous warming unless countervailing action is taken.

A further important uncertainty arises from the acceptance by the climate establishment of the estimate that 55 per cent of CO₂ emissions from fossil fuels remain in the atmosphere. This estimate reflects an investigation made some 30 years ago on the basis of very limited observations. But important recent research by Tom Quirk suggests that the 55 per cent estimate of concentrations is far too high and it may be only about 16 per cent (see **Figure 3**). If this is correct, it means the fossil fuel emissions contribution is only a third of what has been assumed in the analysis used by the IPCC.^{xi}

It is important also to examine what might be termed supporting evidence.

Temperatures and Concentrations of CO₂ – More New Evidence

Moving to the relationship between temperatures and emissions, look first at **Figures 4, 5 and 6**.

Figure 4 shows both annual averages and ten year averages for *global* temperatures from 1900 as published by the Hadley Centre of the UK's Met Office and used by the IPCC. This demonstrates the considerable climate variations from year to year^{xii} but it is not easy to detect the major change-points indicating changes in the trend. However **Figure 6** shows major red dot points in the ten year averages of global temperatures and this statistical analysis shows major change points in the early 1920s, late 1940s, mid 1970s and late 1990s.

Figure 5 shows for *Australia* annual averages from 1910 as published by our Bureau of Meteorology with its supposedly high quality data. This Figure has a black line showing a major change point in the mid 1970s. The jump then in Australian temperatures of about 0.4 of a degree reflects an ocean temperature change known as the Pacific Decadal Oscillation.

This Pacific Decadal Oscillation effect is important because it reflected *natural* causes arising from a sudden replacement of cold water with warm water along the western Pacific coast of the North Americas. That had no causal connection with fossil fuel emissions.

This analysis suggests about half of the published temperature increase over the past 100 years of about 0.8 of a degree reflected natural causes, *not* increased emissions of fossil fuels.

Figure 7 allows a comparison of changes in concentrations with the changes in temperatures shown in **Figure 6**. The lack of any continuing connection between the two seems obvious.

This leads to **Table 1** summarising these changes in the different periods. First, there have been two periods during which temperatures were relatively stable but CO₂ concentration levels increased quite strongly (except for a brief period in the 1940s). Those two periods are from 1939 to 1977 and from 1997 to the present. Second, the period from 1977 to 1997 shows both temperatures and CO₂ concentration levels increasing. This is the period when the Pacific Decadal Oscillation clearly made a major contribution to the temperature increase.

Third, only the 1910 to 1939 period suggests a possible causal connection between changes in concentrations and temperatures. But **Figure 7** shows that period had only a small increase in concentrations.

Considering all this analysis, how can there be any definitive conclusion that a causal correlation exists between changes in temperatures and changes in CO₂ concentration levels?

Accuracy of Temperatures, Comparisons with the Past and Modelling of the Future

Other reasons for questioning any definitive conclusion include serious doubts about the accuracy of the temperatures published by official agencies and used by the IPCC. These published temperatures are calculated by averaging only the minimum and maximum recorded for the day. But if the daily averages are calculated more properly by averaging temperatures *every 30 minutes* a vastly different picture emerges.

Such data is available back a few years and Tom Quirk has done the calculation for 101 days in March to June 2013 in two locations (see **Figure 8**). For a location on the east coast (Cairns), the result is an average markedly lower than the *published* average. In short, the existing maximum and minimum method of calculating averages produces a systematic upward bias, probably as much as 0.3-0.4C of a degree.^{xiii}

If Australian published temperatures have an upward bias so too will any modelling of our future temperatures. These systematic errors also apply to other continents where maximum and minimum thermometers are used for land temperatures^{xiv}.

Another upward bias in published temperatures arises from failing to take account of the urban heat island effect. In urban areas temperatures recorded include the effect of heat retained by buildings. Tom Quirk has tested this by comparing the Bureau of Meteorology recording site in Melbourne with that at Laverton for the period from 1940 to 2010 (see **Figures 9-10**). Given the commonalities apart from buildings, urban heating is clearly the main reason for the significantly larger increase in the minimum recorded for Melbourne.

However the BOM's published temperatures appear to make no allowance for the effects of urban heating and there also appear to be other upwards bias influences in its published data.

But what about the oft-made claim that temperatures are higher now than they were a century ago? As soon as August finished we were told that Australia's eastern coast had experienced the highest winter temperature since 1910. Yes indeed, our 2013 winter temperature was 0.03 higher than in 1973 – clearly a signal of danger!

Temperature records such as this do not establish a need for government action. The test is whether a causal relationship exists between increased CO₂ concentrations and increased temperatures – and whether published data are correct.

What is the most credible conclusion about the total published temperature increase of around 0.8 of a degree over the last century? My view is that about half is incorrectly calculated and the other half reflects natural causes.

Bear in mind also that humans experienced higher temperatures than now during the Medieval Warming Period (about 800-1,100AD), and also during the Greco-Roman warm period (600 BC - 200 AD), when fossil fuel usage in both would have been very small.

Finally on temperatures, have a look at the very extensive modelling undertaken by the IPCC (**Figure 11**). None of the many predictions has coincided with actual published temperatures. This is another illustration of the problems with the so-called "science" used by the IPCC.

Other Greenhouse Gases

Figures 12 and 13 show a sharp increase in the contribution of methane gases to atmospheric concentrations between 1940 and 1980 and then a subsequent sharp drop. The CSIRO-BOM State of the Climate report, published in 2010, asserted that methane has shown similar increases to carbon dioxide. But both the rise and fall reflect initial leakages from pipelines and the subsequent fixing of those leakages. This is just one of many examples of the failure of the CSIRO to properly identify events which influence climate – and those that don't.

Droughts and Rainfall

Another part of the dangerous warming scare is that below average rainfalls and droughts are a sign that higher temperatures and more droughts are on the way. But past Australian droughts occurred when global temperatures were lower than now and wet years occurred when such temperatures were rising. Annual rainfall records for the Murray Darling Basin

(Figures 14 and 15) do not suggest any threat from persistently lower rainfalls or that there is a close connection between changes in average temperatures and in rainfalls.

Antarctic and Arctic Ice Sheets –Sea Levels and the Reef

Another warming scare relates to supposed meltings of ice and resultant damaging increases in sea levels. But satellite measurements of sea levels from 1994 (Figure 16) show that a continuation of the average rate of increase since then hardly signal danger and would allow most sea-side property owners to take appropriate preventive measures.^{xv}

As to the Arctic (Figure 17, Top Half), while there is a downward trend in ice extents, recent reports indicate that a re-icing is now in progress and extensive Arctic meltings have occurred in the past when CO2 emissions were very much lower.^{xvi} Meltings in the Arctic have no effect on sea levels because the ice there is already in the sea. As to the Antarctic, the total ice area there has been increasing and satellite data covering the past thirty years show a distinct cooling of the Antarctic region.

Turning to the Great Barrier Reef, a major concern relates to possible bleaching caused by global warming. However, most of the reef recovered from the bleachings of 1998 and 2002 and any action by Australia to reduce emissions would not help there unless there is an effective international agreement by major emitters.

Possible Errors in Estimated Influences on Warming/Cooling

The foregoing has suggested possible errors in analysis but did not refer to the wide margins of error applying to the estimates compiled by the IPCC of the ten various possible warming and cooling influences on temperatures. These are important because the combined effect of the various influences determines what the IPCC decides is their total effect on temperatures.^{xvii} (Figure 18) shows that the estimated total of these influences adds to 1.6 watts per square metre, with an error margin ranging from 0.6 to 2.4 watts. This estimate is not included here in order to comment on the various influences but to illustrate the very wide potential for error.

Conclusion

In summary, many uncertainties emerge from a careful assessment of claims that a danger exists of ever increasing temperatures. No substance can be established for that claim because no definitive causal correlation can be established between past changes in temperatures and in atmospheric concentrations of CO2. Some past temperature increases are clearly due to natural causes and new research shows published temperatures have a significant upward bias. New research also suggests that, as the extent of CO2 concentrations in the atmosphere is much smaller than previously thought, any danger from rising temperatures is much diminished. Once account is taken of naturally caused increases, of the much smaller CO2 concentrations, and of the upward bias, the need for action to reduce fossil fuel emissions disappears. Of course, some argue that precautionary government action should be taken just we insure our houses and buildings against damage we know will occur. But the various deficiencies in the dangerous warming thesis suggest any risk that might exist from higher temperatures could be well handled by preventative action by businesses and individuals.

ⁱ Of course, the elimination of the carbon tax will reduce costs but with direct action plan capped at \$3.4 billion over four years it raises doubts as to whether the 5% reduction in emissions will be achieved. That plan was outlined in an article published in the AFR on 3 September, 2013 by the then Shadow Minister for Climate Action, Greg Hunt. He said this could include “programs to support the uptake of solar energy and the revegetation of our land” and “may be a mix of energy efficiency, cleaning up waste coal mine gas, cleaning up power stations, and landfill gas. It may be reforestation of marginal lands or revegetation or improvement of soil carbon”. It appears that it will also include government funding of incentives to encourage the private sector to invest in projects designed to reduce emissions, with bids invited for such projects and the lowest cost bids receiving some funding.

ⁱⁱ The assessment that the initial or “transient” increase in temperatures is “extremely unlikely” to be greater than 3 degrees if governments take no countervailing action is an improvement on the conclusion in the 2007 report that it was “very likely” temperatures would reach up to 3.5 degrees. It arguably removes the need for urgent government action.

ⁱⁱⁱ For example, the United Nations program, AGENDA 21 was established at the UN 1992 Earth Summit in Rio at which Chairman Maurice Strong said from the chair “*Isn't the only hope for the planet that the industrialised civilizations collapse? Isn't it our responsibility to bring that about?*” Representatives of the Keating Government voted for its implementation at the Earth Summit, known as the Rio Declaration in 1992. It was also subsequently supported by the Howard Government and progressively implemented to different degrees by subsequent federal and state governments and municipal councils of all political persuasions. Agenda 21 does not officially form part of the policies of either major party but has the objective of having the environment regulated by an international body. It includes a blueprint for forcing populations to live in high density “human settlements” and for abolishing private property rights.

^{iv} The Garnaut Climate Change Review Final Report, 30 September 2008

^v *Australia's Low Pollution Future: The Economics of Climate Change Mitigation*, 30 Oct 08.

^{vi} Garnaut Report p249

^{vii} Ditto p565

^{viii} “Climate folly before failure”, Alan Wood, *The Australian*, 1 Oct 09.

^{ix} The graph shows an increase in the level of radiation of only about 3 watts per square metre – from 29 to about 32 watts

^x This analysis comes from an online calculator of energy in the atmosphere (MODTRAN) and, as indicated, it provides an internationally accepted standard for atmospheric calculation.

^{xi} By way of background, it should be noted that CO₂ emissions into the atmosphere are continuously exchanged with sources and sinks in the ocean and on land. That is, there are various sources of emission and absorption. In fact, the overall CO₂ imbalance is only 1-2 per cent of the annual atmosphere-land-ocean exchanges of CO₂. In the ocean CO₂ is absorbed and dissociated in water and it is also removed by ocean plant life, like phytoplankton. The amount of CO₂ exchanged (absorbed or emitted) with the oceans varies with water temperature: the higher the water temperature, the less CO₂ is absorbed or the more is emitted and conversely for a lower water temperature. Also, the behavior of oceans varies. There is absorption taking place in the North and South of the Atlantic and Pacific oceans whereas the tropical oceans are emitters of CO₂. Overall, the oceans are net emitters of CO₂. For the land the sources of CO₂ emissions are plant decay and fossil fuel usage. The sinks are plants that with photosynthesis absorb CO₂, with the extent of absorption by forests being very high: they are net absorbers of course.

^{xii} Including from El Ninos.

^{xiii} For example, a 10 minute 1 degree fluctuation that increased the temperature would give a 0.5 degree increase in the average calculated by the maximum and minimum method whereas it would only give an increase of 0.01 degree in the average calculated by taking temperatures every 30 minutes.

^{xiv} As ocean temperatures are measured in a quite different manner, this means there are additional systematic uncertainties when land and ocean temperatures are combined to give a global temperature.

^{xv} The 2007 IPCC report predicted an increase in average global sea levels to 2100 ranging between 18 and 59 cms (about 2 feet). The satellite measurements of sea levels from 1994 show an increase of about 3mm a year or 20cms by 2100.

^{xvi} Canada's North West passage has in fact been navigated in periods when fossil fuel usage was low

^{xvii} According to the IPCC, this estimate of 1.6 watts explains the temperature increase since 1750.