



THE HON DANNA VALE MP
FEDERAL MEMBER FOR HUGHES

15 July 2010

Senator the Hon Kim Carr
Minister for Innovation, Industry, Science and Research
Parliament House
CANBERRA ACT 2600

Dear Minister,

Re: CSIRO April 2010 Response to My Letters of 15, 16 & 26 March 2010

Thank you for your letter of 29 April 2010, which arrived while I was overseas. I am appreciative of the attention you are giving to the issues raised.

As you are aware, taxpayers, through their State and Federal governments, are providing billions of dollars in subsidies to 'green' initiatives. Also, as a consequence of government prescriptions regarding the use of renewable and low carbon electricity, households and businesses, small and large, are paying more for their electricity and gas, with further steep increases likely.

Consequently, the issue of whether a mooted doubling of atmospheric CO₂ would cause a barely perceptible increase in average global temperature of 0.2°C to 0.5°C spread over the next century (para. 14 of my letter of 16 March), or an increase in the range of 3.0°C to over 6.0°C is of the greatest importance to government policy decisions.

It is now a tested and accepted scientific fact that comparisons of the major Global Climate Models' (GCM) estimates of historical changes in precipitation with the historical record shows they underestimate changes in precipitation by a factor of around four. Consequently the predictions of future changes in Australia's rainfall and food production, on which the Garnaut Report was based, are seriously compromised.

As the responsible Minister I trust that you will draw these scientific facts to the attention of the Australian people and their elected representatives. We are on the threshold of a Federal election and climate policies with their accompanying spending commitments are being formulated. Accordingly, I respectfully suggest it is imperative that you act on this matter with all haste.

Paltridge et al. estimated (see Fig. 10 of their paper) that a doubling of CO₂ with no feedback effects would increase global near surface temperatures by around 0.8°C. They further estimated that the consequential changes in virtual atmospheric water

vapour in the major GCMs, as they are currently configured, would provide strong positive feedback and double the increase in global near surface temperatures to around 1.7°C. They also estimated that reconfiguring the major GCMs, so that the consequential changes in virtual atmospheric water vapour were compliant with their empirical discovery, would provide negative feedback and so halve the predicted increase in global near surface temperatures to around 0.4°C.

Paltridge et al. had gone to considerable trouble to ensure and to demonstrate that their analysis was based on radiosonde humidity data for periods, geographic regions and altitudes where it could be relied upon. My questions (Nos 1 to 8) relating to the Paltridge et al. empirical discovery were aimed at gaining an understanding of why the CSIRO viewed the radiosonde data used by Paltridge et al. as being unreliable.

In its response the CSIRO was unable to express a definitive view on the reliability of the empirical discovery made by Paltridge et al., but did note the need for further analysis and funding for that analysis.

It was pointed out in my letter to you of 14 December 2009 that when challenged GCM-scientists have a near perfect comeback. "The typical GCM-scientist's response it seems is an unapologetic and arrogant demand for more money from governments so that their GCM's predictive capability can be improved."

Nonetheless, I would be grateful if you would give consideration to having the CSIRO prepare a scope of work and costing for a study that would allow the CSIRO to take a definitive view on the reliability of the empirical discovery made by Paltridge et al.

On reading Wentz et al. you will see that over the then 20-year period for which satellite data was available, evaporation, precipitation and atmospheric water vapour repeatedly increased and also decreased by about the same percentage (6.5%) per 1°C increase or decrease in temperature. The virtual water cycle in a Global Climate Model (GCM) configured in this way would provide negative feedback. In contrast the major GCMs are configured in such a way that the percentage increases and decreases in evaporation and precipitation are only around a quarter (1.7%) of the percentage increases and decreases in atmospheric water vapour (6.5%) per 1°C increase or decrease in temperature. The virtual water cycles in the major GCMs, as they are currently configured, therefore provide positive feedback.

The CSIRO's responses to my questions, relating to the empirical discovery made by Wentz et al. which is discussed above, are at times confused (see below). However, there seems to be a vague concern that 20-years of repeated increases and decreases of similar magnitude is not long enough.

I would greatly appreciate it if you, as the responsible Minister, could take a personal interest in finding out from the CSIRO just how many more years of data their climate scientists are likely to require before they amend their GCM, so that it is compliant with the above tested and accepted empirical discovery made by Wentz et al. Wentz et al. studied a 20-year period ending in 2006, so there should by now be an additional 4 -years of data available.

MATTERS RELATED TO THE EMPIRICAL DISCOVERIES MADE BY WENTZ ET AL.

Matter A

In their response to Question 10 the CSIRO refers to three hypotheses made by Wentz et al. The CSIRO goes on to assert "It would be irresponsible and imprudent, therefore, to reconfigure CSIRO's GCM on the basis of these (or other) unproven hypotheses." This assertion is so confused it is grossly misleading. As shown below the CSIRO is being asked to reconfigure its GCM on the basis of tested and accepted empirical data.

In its response the CSIRO has demonstrated an inability on the part of its climate scientists to distinguish between separate empirical discoveries made by Wentz et al. and an inability to distinguish between empirical data and theoretical hypotheses.

The empirical data, and in particular a perusal of the charts in Wentz et al. (Fig. 2) makes apparent the fact that in the real world evaporation, precipitation and atmospheric water vapour not only increase, but also decrease by about the same percentage and this interannual relationship is proved repeatedly over the 20-year period of the study. In contrast the major GCMs typically show virtual evaporation and virtual precipitation repeatedly increasing and decreasing by around a quarter of the percentage increases and decreases in virtual atmospheric water vapour. This is clear empirical evidence of a most serious structural flaw, common to all the major GCMs.

For the benefit of the CSIRO's climate scientists, it is emphasised that the repeated increases and decreases in real world evaporation, precipitation and atmospheric water vapour by a similar percentage is not a 'hypothesis', it is an empirical fact which has been tested and accepted.

Wentz et al. made two empirical discoveries. The first related to decadal trend increases in evaporation, precipitation and atmospheric water vapour. The second is discussed above.

Hypothesis 1

Wentz et al. noted that 2-decades may not be long enough to allow extrapolation of their first empirical discovery, namely the decadal trend increases, and made some hypotheses about why this might be the case.

However, in respect of their second empirical discovery Wentz et al. argued that 2-decades "may indeed be long enough to indicate the observed scaling relationships will continue on a longer time scale."

Hypothesis 2

In respect of both their first and second empirical discoveries Wentz et al. noted that while the "consistency of the results suggested otherwise, there may be errors in the satellite retrievals. Well the climate science community has now had over 3-years to find any errors that would invalidate the second empirical discovery made by Wentz et al., but none have been found.

*(e.g. estimates of evaporation and precipitation derived from different data sets and using different methodologies were similar.)

Hypothesis 3

Wentz et al. also speculated that all the major GCMs "have in common a compensating error" and made some hypotheses about what this might be.

Required Action

The CSIRO should immediately reconfigure its GCM on the basis of tested and accepted empirical data, as set out in the second empirical discovery made by Wentz et al.

It will be a greater scientific and indeed a public scandal if the CSIRO's GCM is not reconfigured and the senior scientists in the CSIRO continue to support a GCM that has been shown by empirical data to be structurally unsound.

Matter B

In respect of Question 13, the CSIRO asks (item 'iv') "What is meant by the global weather system slowing down?"

Wikipedia describes weather as follows:- "Common weather phenomena include wind, cloud, rain, snow, fog and dust storms. Less common events include natural disasters such as tornadoes, hurricanes, typhoons and ice storms. Almost all familiar weather phenomena occur in the troposphere." We can also make special mention of the monsoons, which are major rain producing sub-systems of the global weather system. Because the store of water vapour in the atmosphere is relatively small, being around 30 mm of water equivalent, compared to the annual precipitation of around 1,000 mm, precipitation matches evaporation over extended periods of time.

For the example given in my letter of 16 March the average time taken for the global weather system to transport moisture laden air from the points of evaporation to the points of precipitation would have to increase by around 25% (10.5-days to 13-days). The water cycle involves the transport of very large volumes of water vapour laden air from the points of evaporation to the points of precipitation by vertical and horizontal winds. If these winds do not slow down (or speed up) as global temperatures increase (or decrease), then precipitation and evaporation will increase (or decrease) by the same percentage as atmospheric water vapour increases (or decreases).

Question:- Excluding the polar regions, where there are very low amounts of atmospheric water vapour, is the CSIRO aware of any major sub-systems of the global weather system, which do not transport water vapour?

The CSIRO says "To our knowledge, CSIRO has not asserted that a warming trend will cause the global weather system to slow down."

It is undoubtedly true that the CSIRO has not stated explicitly that a warming trend will cause the global weather system to slow down, because any scientist or lay person with even a smattering of knowledge about the global weather system would know that this was rubbish science.

Indeed, in the final paragraph of their paper, Wentz et al. recognised the fact that the major GCMs all slow down the virtual global weather system as the virtual temperature increases and posed the question "Will warming really bring a decrease in global winds?"

Matter C

In their answer to Question 11 the CSIRO was not able to cite any empirical evidence which supports their decision to configure their GCM in such a way that the global water cycle is constrained so that percentage increases and decreases in evaporation per 1°C increase or decrease in temperature are only **one quarter** of the percentage increases and decreases in atmospheric water vapour.

Hypothesis 4

The best that the CSIRO could do was to hypothesise that the global water cycle is in some way constrained by the atmospheric energy balance and not the availability of water vapour.

As noted in Matter A above (Hypothesis 3) Wentz et al. speculated that all the major GCMs "have in common a compensating error". Hypothesis 4 is a prime suspect to be such a common error.

Most of us had thought that the practice in science of having a hypothesis, unsupported by empirical data, take precedence over an empirical discovery which has been subjected to extensive testing and found to be correct, had ceased centuries ago.

Question:- When are the senior scientists in the CSIRO going to insist that the climate scientists adopt modern scientific practice?

It is extremely important that this is done quickly. Once the CSIRO's GCM has been configured in such a way that percentage increases and decreases in evaporation, per 1°C increase or decrease in temperature, are similar to the increases and decreases in atmospheric water vapour, the predicted increase in global warming due to man made CO₂ will be a small fraction of the GCM's current prediction.

Government policies will then be very much improved, since they will be formulated in response to new predictions made by a GCM which has had one of its serious structural flaws corrected.

Matter D

In respect of Question 14 the CSIRO did not offer an answer.

However, the CSIRO did say that it was not clear to the CSIRO where the following estimate came from. The estimate was that a rise in temperature of 3°C to 6°C, should it occur, would require 15 to 30 Watts per square metre (W/sqm) of energy to be transferred mainly from the oceans to the atmosphere.

The answer is as follows:- Wentz et al. showed that each of evaporation, precipitation and atmospheric water vapour increase by a similar percentage, being around 6.5% per 1°C rise in global temperature.

Therefore evaporation will increase by around 20% (3 x 6.5%) to 40% (6 x 6.5%) and the amount of energy transferred from mainly the oceans to the atmosphere, as latent heat of vapourisation, which is currently around 78 W/sqm, would have to increase by around 15 W/sqm (78 x 20%) to 30 W/sqm (78 x 40%).

The increase in energy thus transferred from the earth's surface to the atmosphere is far greater than the increase in back radiation from the atmosphere to the earth's surface caused by the increase in atmospheric water vapour. Therefore the real world water cycle provides strong negative feedback. In contrast the major GCMs have been configured in such a way that their virtual water cycles provide positive feedback.

When the water vapour subsequently rises higher in the troposphere it cools and condenses and the latent heat of vapourisation it carries is released as sensible heat and largely radiates into space, thus cooling not just the earth's surface but planet earth.

COMMENTS ON THE CSIRO'S "GENERAL POINTS"

In sub-paragraph 1 the CSIRO says I asserted that for the period prior to 2007 the CSIRO developed and managed its GCM jointly with the Bureau of Meteorology. I have checked my letters of 15, 16 and 26 March 2010 and cannot find any such assertion.

This is a pedantic issue, but nonetheless I would appreciate it if the CSIRO could provide the relevant quote on which it bases its claim. It may be that the CSIRO has misinterpreted one of the comments in my letters and if so I should like to provide a clarification.

In sub-paragraph 2 the CSIRO says I asserted that the CSIRO GCM has been unchanged for the last 25-years. I have checked my letters of 15, 16 and 26 March 2010 and cannot find any such assertion.

I would appreciate it if the CSIRO could provide the relevant quote on which it bases its claim. It may be that the CSIRO has misinterpreted one of the comments in my letters and if so I should like to provide a clarification.

Also in sub-paragraph 2 the CSIRO says I asserted that only the CSIRO's GCM was used to provide the climate projections that underpin Chapters 4 and 5 of the Garnaut Report. I have checked my letters of 15, 16 and 26 March 2010 and cannot find any such assertion.

Again, I would appreciate it if the CSIRO could provide the relevant quote on which it bases its claim. It may be that the CSIRO has misinterpreted one of the comments in my letters and if so I should like to provide a clarification.

Global Warming

In its Response the CSIRO goes to some length to show that global warming has been taking place. This is not the issue.

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I have not and am not arguing that global warming is or is not taking place. Indeed I assert that man made emissions of CO2 do contribute to global warming, but have much less effect than the major GCMs predict.

The Use of Historical Data to Validate GCMs

In its Response the CSIRO emphasises that it's GCM and the major GCMs are able to replicate historical changes in near surface temperatures. Such replication is a necessary but not a sufficient reason to trust predictions made by these GCMs.

However, tested and accepted empirical data published by Wentz et al. shows that unless the structural flaws present at the time of their study have been corrected, when the current joint CSIRO-BOM GCM is tested by checking to see if it can replicate changes in historical evaporation and precipitation over the now more than 20-years for which satellite data is available, it underestimates evaporation and precipitation by a factor of around four. Such a gross failure is intolerable and is a sufficient reason to throw out any predictions made by the joint CSIRO-BOM GCM or indeed predictions made by any of the major GCMs.

Yours faithfully,



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PS: After the next election is called further correspondence on this issue may be forwarded to me care of PO Box 443, Gympie NSW 2227.