Mr. Scott Morrison MP
Suite 102, Level 1
30 The Kingsway
Cronulla, NSW, 2230

5 September 2012

Dear Mr. Morrison,

I write to you as my local Federal Member. Thank you for asking your colleague the Hon Greg Hunt MP to make further representations on my behalf.

Please thank the Hon Greg Hunt MP for his representations to the Hon Tony Burke MP and through him to the Hon Greg Combet MP.

Please forward this letter to the Hon Greg Combet MP, Minister for Climate Change and Energy Efficiency and Minister for Industry and Innovation.
I also wish to express my thanks to the Hon Greg Combet for the information provided in his letter of August 2012 to the Hon Greg Hunt MP.

In the discussions below I refer in particular to the second dot point in Minister Combet's letter, the research paper by Durack et al. (2012) entitled "*Ocean Salinities Reveal Strong Global Water Cycle Intensification During 1950 to 2000*" and educational material for the public posted on the NASA web site:-
(**http://earthobservatory.nasa.gov/Features/EnergyBalance/page5.php**).
For your convenience I have attached a copy of the most relevant NASA web pages.

As noted by the Department of Climate Change and Energy Efficiency, Durack et al. found that over the 50-years from 1950 to 2000 evaporation and precipitation (E-P) increased by 4% and surface temperature increased by 0.5°C. Thus E-P responds to global warming by increasing at the rate of 8% per degree. Durack et al. further noted that "*This rate of change is consistent with many other independent observational estimates...*"

The Department also notes that on the virtual planets **previously** simulated by current generation global climate models (GCM) the virtual E-P responds to global warming by increasing at the rate of only 4% per degree.

NASA estimates that at present evaporation cools the earth's surface by 85 watts per square metre (85 W/sqm).

This means that on the real planet earth previously predicted global warming of say 3°C in response to a mooted doubling of CO_2 would increase evaporative cooling of the surface by 20 W/sqm (3° x 8% x 85).

However, on the virtual planet earths previously simulated by the GCMs, predicted global warming of say 3°C in response to a doubling of virtual CO_2 would have increased virtual evaporative cooling of the surface by only 10 W/sqm (3° x 4% x 85).

It is generally accepted that a mooted doubling of CO_2 would increase downward or back radiation from the atmosphere to the surface by around 3.5 W/sqm.

The say 3°C increase in the virtual surface temperature predicted by the GCMs is therefore attributable to two virtual unnatural climate forcings. The first is 3.5 W/sqm of virtual back radiation due to man made emissions of CO_2. The second is the 'missing' 10 W/sqm of virtual evaporative cooling due to the GCMs' misrepresentation of the E-P response to climate warming. This gives total virtual unnatural climate forcings of 13.5 W/sqm.

We see therefore that the effect on predicted surface warming of the previously underestimated increase in virtual evaporative cooling is around three times the magnitude of the effect due to the increase in greenhouse back radiation at the surface from a doubling of virtual CO_2.

Therefore we can roughly estimate that in the real world a mooted doubling of CO_2 is likely to cause a temperature increase of around 0.8°C, being a quarter of 3°C.

Clearly the CSIRO would be well aware of this implication of the research findings published by Durack et al.

I presume, perhaps incorrectly, that the CSIRO has at the very least done some 'what if?' simulations by reconfiguring their GCM(s) to simulate a planet in which virtual E-P responds to global warming by increasing at the rate of 8% per degree. No doubt the CSIRO has briefed or is preparing to brief the government on the results of any such simulations.

Request

I would be grateful if Minister Combet could advise me as to whether the CSIRO has done some GCM simulations or other estimates for the case where the virtual E-P response is around 8% per degree and if so, what was the predicted increase in global temperature for a say doubling of virtual CO_2.

Yours sincerely

L. B. Cummings

Mr. L. B. Cummings MBA (UNSW), BE (UNSW)

ATTACHED NASA EDUCATIONAL INFORMATION FOR THE PUBLIC

NASA Estimates
NASA estimates that the total solar energy that strikes planet earth is 340 watts per square metre (W/sqm).

Therefore the numerical values in the surface energy balance schematic below are as follows:-

Solar energy absorbed	48%	163 W/sqm
Evaporative cooling	**25%**	**85 W/sqm**
Net thermal radiation	17%	58 W/sqm
Convective cooling	5%	17 W/sqm

Net thermal radiation of 58 W/sqm is the difference between the cooling upward thermal radiation leaving the surface of 398 W/sqm and the downward thermal back radiation transferring energy from the atmosphere to the surface of 340 W/sqm.

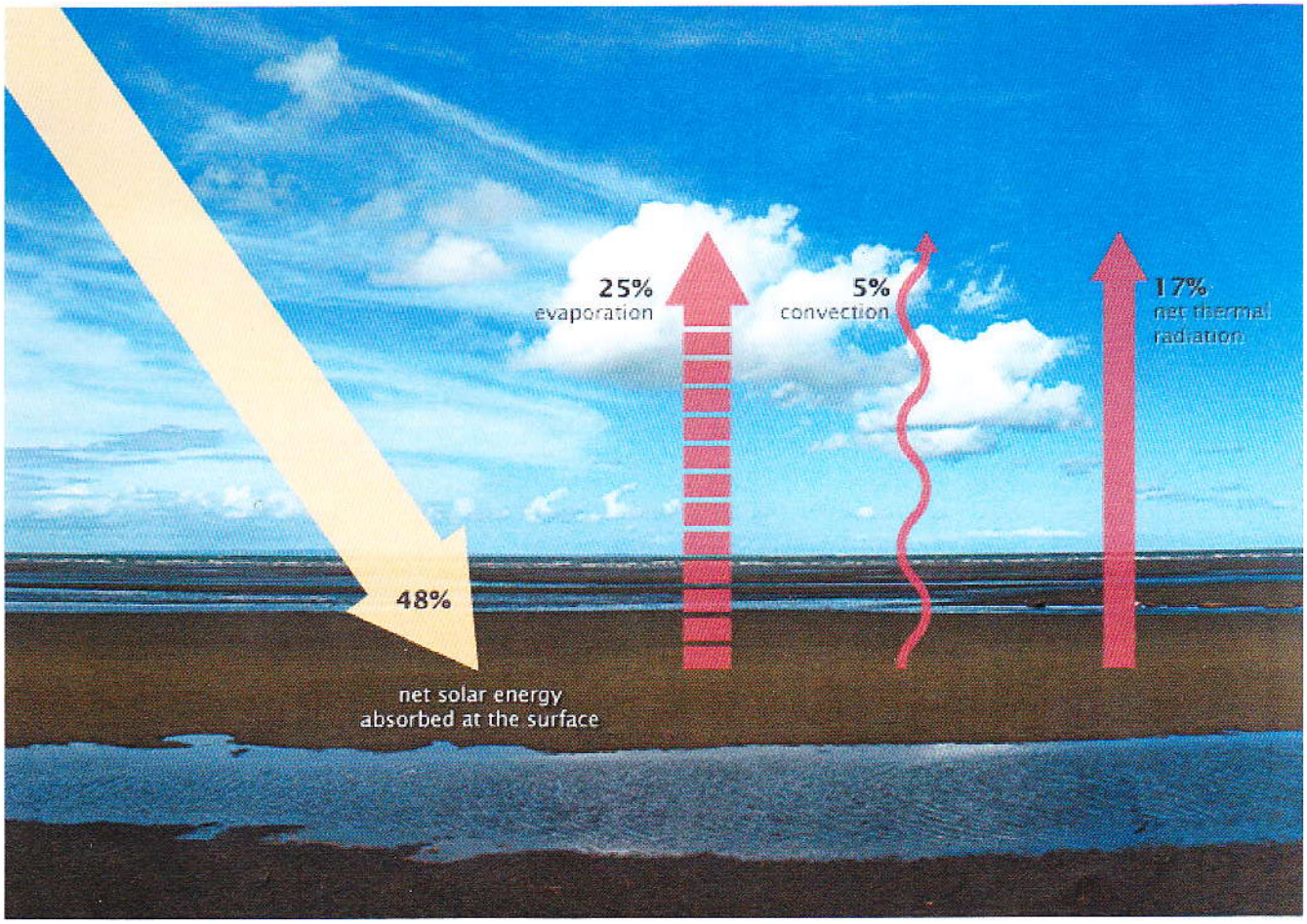
http://earthobservatory.nasa.gov/Features/EnergyBalance/page5.php

NASA Earth Observatory

Surface Energy Budget

To understand how the Earth's climate system balances the energy budget, we have to consider processes occurring at the three levels: the surface of the Earth, where most solar heating takes place; the edge of Earth's atmosphere, where sunlight enters the system; and the atmosphere in between. At each level, the amount of incoming and outgoing energy, or net flux, must be equal.

Remember that about 29 percent of incoming sunlight is reflected back to space by bright particles in the atmosphere or bright ground surfaces, which leaves about 71 percent to be absorbed by the atmosphere (23 percent) and the land (48 percent). For the energy budget at Earth's surface to balance, processes on the ground must get rid of the 48 percent of incoming solar energy that the ocean and land surfaces absorb. Energy leaves the surface through three processes: evaporation, convection, and emission of thermal infrared energy.



The surface absorbs about 48% of incoming sunlight. Three processes remove an equivalent amount of energy from the Earth's surface: evaporation (25%), convection (5%), and thermal infrared radiation, or heat (net 17%). (NASA illustration by Robert Simmon. Photograph ©2006 **Cyron.**)

5/9/12