My perspective on Climate Alarmism

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First - am I a "Climate Scientist" ?

While I do have some status as a person with expertise in energy efficiency, climate-responsive design, mathematical modelling and process simulation, the short answer to the above question is "No".

A slightly longer answer might be:

"NO - AND NEITHER IS ANY OTHER INDIVIDUAL PERSON".

Climate is a vast and complex subject - it goes in a thousand directions. It has been estimated that there are more than 100 scientific and technical disciplines that have a bearing on climate. Did I accept this estimate without questioning it? No. I started compiling my own list of relevant disciplines. I stopped counting when I got to 84 ....

No one person is likely to be an expert in more than four of these disciplines.

It is noteworthy that a large number of the highly qualified people who write about climate and are sceptical about climate alarmism, tend to avoid self-ascription as a "climate scientist", because they know enough to know that there is a great deal they don't know.

My perception is that "climate scientist" is a term more regularly used by the alarmist side of the argument.

My original reasons for being sceptical:

The Modelling

Anthropogenic Global Warming, or AGW, first came to light back in the early 1980s, when climate researchers began to notice a small but steady increase in global mean temperatures. It was posited that this could be due to the activities of humans. This was perhaps reasonable initially, since humans have certainly had a major impact on the environment over the last two centuries or so.

However, subsequent steps in the research took an unfortunate turn. Two straight lines, eg a rising temperature and rising CO_2 level. Possible correlation. It was then assumed that the CO_2 was causing the rising temperature. This was a major error, one that ALL researchers should have been aware of. Correlation does NOT necessarily imply causation. There is a causal relationship between blood alcohol levels and car accidents, yes. In temperate climates there is a correlation between ice-cream consumption and incidences of drowning. Does ice-cream have a component the inhibits staying afloat? No. The two are co-related with another phenomenon - warm weather.

As a post-graduate student in the early 1970s, I learned that it is very dangerous to assume cause and effect. Many phenomena can appear to be related, and may actually BE related, but an assumption of cause and effect does not always follow. It is important to test the data, to ensure that the same correlations cannot be obtained from other phenomena less related, or possibly completely unrelated. Under the principles of statistical analysis, cause (coefficient of determination) can only be suspected if the value is 0.98 (98%) or more, but all too often even a value of 98% turns out to be incorrect.

One of the best object-lessons in this regard occurred with the spina bifida research of the early 1970s. There was a very high coefficient of determination with potato blight. Everyone was

delighted; it is a terrible affliction. Pregnant women, couples starting families, started avoiding potatoes like the plague. The conclusions of the research were wrong. Spina bifida is a genetic defect. No link to potatoes.

CO_2 and temperature is probably correlated, in that a period of warming results in elevated near-surface temperatures in the oceans, which constitute about 70% of the surface of the earth. Warm water can contain less CO_2 than cold water, so there is an increase in out-gassing from tropical oceans.

The original basis for climate alarmism above was "rise in CO_2 = rise in temperature". When I first looked at the graphical display of this phenomenon, I was struck by the glaring absence of any indication of cycles. I have modelled a range of phenomena, mostly in the fields of construction rates, demographics, and gravity modelling. In most cases, these were concerned with conscious human activities. Cyclical patterns were apparent in all of these. So how could cycles be absent from matters concerning climate? Climate is all about cycles, summer / winter / wet / dry....

The source of recent climate alarmism is the output from climate models, mostly in the form of GCMs (general circulation models). These were developed by people already convinced that the temperature was rising (possibly correct) but equally convinced that the cause was CO_2 (very unlikely to be correct). Within a comparatively short space of time, these people were receiving substantial financial support to develop these models, and all other possible reasons for the observed trends were discounted.

Models are abstractions or simplifications of the real world. They may be physical, statistical, mathematical or graphical, simple or complex, based on simple logic or complex algorithms. The only valid test of a model is, does it produce output that matches observed phenomena? If it does, then it MAY have validity, although it is rarely proved that the whole basis and construction of the model is correct. On the other hand, if it produces output that does NOT match observed phenomena, then it MUST be wrong !

Since 1998, the output of the GCMs has indicated an upward trend in temperature, because they have, hard-wired into them, the assumption that rise in CO_2 results in a rise in temperature. In reality, 1998 was a 'peak' year with regard to mean global temperatures. Actual observations since that time have levelled off and are now trending slightly downward. During the same period, atmospheric CO_2 has increased by around 18%.

The GCMs are wrong.

More recently, I have researched the actual construction of the GCMs, but I found (to my surprise) that this is not easy to do, since very little of the core functions and assumptions built into these models have been released. This is unusual. Scientific principles require that model design, program code and data is made available so that any competent person can review the material and repeat the process.

However, one astonishing fact was revealed. Climate models are based on data on grid rectangles of the earth's surface, eg it is a flat earth, not a rotating ovoid sphere. One explanation for this was that the trigonometry was "too difficult to incorporate in models".

Whaaat !! This "too difficult maths" has been enabling seamen to find their way around the world for centuries !!!

Recent revelations on "Climate Modelling"

The are a large number of climate models, and recent times have shown that few if any have shown any skill in modelling the climate. Some of the authors of these models have blamed this on the lack of "resolution" eg the grid squares for the data are too large. The usual "solution" seems to be "we need a bigger computers".

A number of highly competent people have developed single lines of code that accurately replicate the output of climate models. (Note that this does NOT mean that the codes, large or small, actually replicate climate.)

The following was recently presented by Willis Eschenbach (qv at WUWT):

$$T_1 = T_0 + \lambda \ \Delta F_1 \ (1 - a) + \Delta T_0 \ a \qquad (eqn. 1)$$

Translation:
This year's temperature (T1) is equal to last years temperature (T0) plus climate sensitivity (λ) times this year's forcing change (∆F1) times (one minus the lag factor) (1-a) plus last year's temperature change (∆T0) times the same lag factor (a).

The formula accurately replicates the output from the following climate models:

- The GISSE climate model
- CM2.1 climate model
- GDFL model
- The "Forster" data (average of 19 models)
- "Otto" (modification of Forster)

Do you need a supercomputer to do this?

No. It can be done on a spreadsheet. Actually, you don't even need that - just a half-decent scientific calculator costing about $A10 ....

Urban Heat Islands

The raw (or allegedly raw) surface temperature data used in the GCMs is filtered to exclude locations where 'heat island' effects occur, eg the measured temperature is influenced by location, eg proximity to paved roads, vehicle and aircraft movement, dense construction, air-conditioning and heating exhausts etc. No problem. I know about heat islands. But the exclusions in the data were apparently only made for measuring stations within or in close proximity to centres of population of 16,000 or more. My own work and observations indicate that heat island effects can occur in centres much smaller, eg as little as 250 persons.

Also, the number of terrestrial measuring stations has dropped over time, from a peak of over 5,500 stations in the late 1960s to less than 5000 in 1990, and a further much more substantial drop to less than 2,000 stations by the year 2000, which also coincides with a significant rise in measured mean temperatures. Since most of the losses were rural stations, the implication is that the apparent rise in temperature could simply be explained by the increasing proportion of stations with a heat island effect.

There is no apparent assessment of other possible measurement errors, such as measurements taken at sea from ships. Failure to follow the correct procedure in measurement from ships is far more likely to result in higher than actual temperatures being recorded. If you ask someone who has worked on ships about this, they laugh and say the job was usually done incorrectly, and was often a sort of punishment job like cleaning out the "heads".

Also apparently ignored are effects such as the demise of the Soviet Union on surface records. A large land mass, and therefore a large number of weather stations. A centrally-planned economy. Fuel allocations determined by winter mean temperatures, which are therefore open to being 'tweaked'. Following the events of 1991, and discounting effects such as the failure to maintain measuring equipment, there was no longer any incentive to alter measurements, and, it appears, winter mean temperatures went up.

There is also evidence that relocation of measuring stations in the US (by a cash-strapped agency) is likely to have resulted in a 'warming' trend due to new locations being nearer to buildings (to cut down on trenches and/or overhead lines for data cabling), and closer to buildings and paved surfaces for ease of access.

Perhaps the worst defect, is that all the GCMs contain “positive feedback”. They assume that an increase in man-made CO_2 in the atmosphere will result in an increase in other 'greenhouse' phenomena such as water vapour, so that the effect of the original CO_2 on temperature is doubled or tripled. Positive feedback is a very rare phenomenon in nature. If it was a common feature of climate, then human-produced CO_2 would be the least of our problems.

Further reasons for being sceptical:

Back radiation and the "tropical hot-spot"

Until comparatively recently, most climate models have been thermally based, eg they model conduction. The sun provides heat to the earth, which is then radiated back into space. Incoming radiation is short-wave, out-going is largely long-wave. Back radiation is posited when this long-wave re-radiation meets molecules in the atmosphere that absorb and re-emit radiation, some of which is re-radiated downwards. One molecule assumed to be significant in this regard is CO_2. Setting aside for the moment that CO_2 is a mere 400 parts per million by volume in the atmosphere, some back-radiation could be occurring. However, several popular representations of the earth's energy balance are vastly over-estimating the size of this. This must be so, simply because back radiation here at 19°S would already have starting rendering this location uninhabitable, whereas in actuality, neither summer nor winter temperatures here show any increase since around 1996.

It is common knowledge that cloud (eg water vapour) does inhibit the loss of heat from the surface, and that water vapour itself in any form is a "greenhouse" gas, but the sign of the effect, eg whether it is net positive or net negative, is poorly understood. The most recent evidence suggests that it is net negative.

Conduction alone actually explains very little in the context of climate. As any competent tropical building designer knows, convection (which includes wind) is highly significant. Here, 60% of the airflow is coming off the West Pacific Ocean. Evaporation is also important. A "hot" day, say 36°C+ with 60% RH and airflow, is much more comfortable than 29°C, 90%+RH and no airflow. That is why we use fans ....

Another issue is the "tropical hotspot". The existence of this is (or was) fundamental to supporting the climate alarmist meme and the climate modelling on which it is based. The problem is that neither satellite measurements nor EIGHT MILLION radio-sonde balloons have been able to detect it. It isn't there.

The concept of the earth's energy balance being "out of balance" and resulting in warming is so strong in the minds of its supporters that some have posited that the surplus heat is still here, somehow hiding in the deep oceans, beyond the reach of the Argo diving buoys.

Differences in deep ocean temperatures on which this claim is based are usually expressed in joules, eg units of energy. One kilojoule per second (1000 watts) is approximately the amount of solar radiation received by one square meter of the earth in full daylight. Using the joule as a unit of measurement of water temperatures is intentionally misleading, because the differences result in big numbers. If these numbers are converted to temperature, the "differences" are less than alarming, eg changes in ocean heat content and temperature, for the world’s oceans are, for 0 – 700m: 10^22 Joules = 0.0105°C; 0 – 2000m: 10^22 Joules = 0.0036°C.

There remains the question as to how this heat managed to evade detection on the way down, and how it could "get down there" anyway. Anyone with a knowledge of thermodynamics knows that this is impossible.

The simplistic thermal balance sheet is missing a large number of relevant factors, including convection, water cycle, and the amount of incoming energy being absorbed by flora and fauna.

“The science is settled”

Cracks have appeared, world-wide, in the whole meme of climate alarmism. There is no “consensus”, and it is certainly not the case that “the science is settled”.

These 'cracks' include, but are not limited to, the following:

- Global temperatures have not increased for 16 years and counting.
- CO_2 is a greenhouse gas, but a fairly mild one. The amount of human-produced CO_2 in the atmosphere has increased, but not by an order of magnitude, and has in the past been much higher. There is also evidence that the alleged increases are exaggerated. At the current rate of CO_2 increase [2 ppm/yr] it will take 200 years for CO_2 to double and produce a mere 0.5-1.6C warming, which is nothing to worry about and net beneficial.
- CO_2 is not a pollutant as such: plants need atmospheric CO_2 to grow. And the more CO_2available, the better it grows. Many peer-reviewed scientific papers have demonstrated that CO^2 is greening the planet, one noting an 11% increase in green cover over arid areas due to CO^2 fertilization over the past 30 years.
- The oceans are a much greater container of CO_2 than the atmosphere, and have buffering functions that maintain balance.
- Core sampling indicates that in the past, CO_2 rises after temperature, not before.
- Observed temperatures have NOT risen since 1998 – they have fallen. That year may well be a peak year of a long 30 year cycle following the end of the Mini-Ice Age, and lower temperatures can be expected to last for another 20-30 years.
- It is estimated that the amount of CO_2 in the atmosphere that is man-made is around 4.5%. (Australia produces about 1.4% of this. So – the amount of 'bad' CO_2 that we are concerned with (if the alarmist creed is correct), is 0.00063%. Totally insignificant.)
- There is no evidence that climate extremes (cyclones, floods, drought) have increased in severity or frequency in recent years, and considerable evidence that the incidence of extremes has diminished. Cost of remedial work should not be substituted for incidence. Queensland has numerous settlements, built over the last 150+ years, and located in places that, with the benefit of hindsight, were unwise. New York has several hundred years of records detailing extreme weather events, has brought about changes that make the effects of these worse, and done very little work to mitigate these effects.
- The UN IPCC SREX report concluded that there is no evidence that warming is increasing extreme weather, droughts, floods, hurricanes, etc. and no evidence of a human fingerprint on such extremes. In fact, the data show such extremes have decreased.
- Sea levels have risen slightly since the end of the "Little Ice Age", and continue to rise and fall according to natural cycles. Catastrophic sea level rise predictions are a product of flawed modelling, not actual measurements. According to the NOAA 2012 sea level budget, sea levels are rising at a mere 1.1-1.3 mm/yr, less than 5 inches (125mm) per century, less than the average rate of rise over the past 18,000 years. Other papers indicate there is no evidence of an anthropogenic influence on sea levels, and no evidence of any acceleration of sea level rise over the 20th century.

Follow the money

Over the past decade, the amount of money being spent on alarmist-based research has amounted to around $US10 billion per annum, while the amount invested in exploring possible alternative views is negligible. There is a massive vested interest.

I do not necessarily regard this vested interest as a conspiracy, although it is apparent that there are many agencies, organisations and individuals who wish to see humanity decimated, and survivors returned to a primitive subsistence state (not including themselves presumably).

The "Climategate" revelations (released emails) indicated that there is a cadre in "climate science" that has been very active in attempting to crush dissent from the meme.

Scientists, academics, professionals, and business people may have financial and family commitments that prevent them from expressing scepticism on this matter, as it may well affect their income and prospects.

I am fortunate in this regard - I no longer need to "watch my back". Does my scepticism affect my income from consultancy work? Apparently not. I have clients who have told me they contacted me BECAUSE they had been warned that I was "one of those climate sceptics" or something similar.

I have an idea who the source of the comment might be, but I can't sue for defamation as the statement is true.

I can't sue for malicious damage if the effect has been the opposite of damage :-)

Carbon Trading

The push towards a Carbon Tax and Carbon Trading has up until recently been gathering pace, in spite of recent revelations, and the now obvious defects in the science of anthropogenic global warming, on which it is largely based.

It is estimated that if carbon trading grows into a commodity market, it could grow to become the biggest, perhaps with an annual turnover of +/-$US33 trillion. Rather staggering for something that may well be based on a fallacy.

On the other hand, this market has recently taken a hammering. It has collapsed in the US. The largest market (Europe) has recently seen a massive drop in the value of credits, amid wide-spread evidence of fraud and rorting, a decline in industrial output, and major concerns about the cost of energy to struggling consumers. The Australian government decided to join the European carbon market, and assumed a rise in the value of a carbon credit to $23 per tonne and beyond. In Europe the price recently was $3 a tonne, and apparently, there are no buyers. The market is dead, and the European parliament has failed to vote for measures to bring about its revival.

Renewable Energy

I have worked on renewable energy projects. They can be useful in single dwelling or small community situations, but only with low-voltage, easy to maintain systems where reticulated power is unavailable. On a macro scale, it is now abundantly obvious that they cannot work.

Subsidised roof-top photo-voltaic panels have greatly increased the cost of formerly low-cost power to consumers. The poor, who cannot afford to install these items, are now subsidising the more affluent, who can. This has to be a recipe for social conflict, even in a relatively easy-going country like Australia.

Efficient alternative energy sources remain illusive. Solar power requires sunlight (obviously) and base-load storage has yet to be a reality. Wind farms are far less efficient than claimed, expensive, and have adverse health effects due to low frequency noise. Tidal generation is expensive and generally unacceptable on environmental grounds. Hydro-electric systems require large containments, and dams, even where viable and/or required for water supply security are generally opposed on environmental grounds. Bio-fuel is a possible, but a long way from being a substitute. Ethanol fuel requires radical re-design of engines, has a lower octane rating, and currently (in Australia) 3 units of conventional energy are required to produce 1 unit of ethanol energy. It is now

opposed in may areas due to its effect on basic food prices for humans and animals

On the other hand, there is increasing evidence that gas extraction through the “fracking” process could extend the use of fossil fuels for decades, possibly centuries. There may be hazards involved, but some of these are being exaggerated by opponents. Poland alone may have enough resources in this regard to power the whole of Europe for decades.

Electric and hybrid vehicles have a huge environmental footprint in production, and all-electric vehicles require grid power for charging. The power has to come from somewhere.

Hydrogen power is tempting, and cost-effective methods of recovering hydrogen from water have been developed. But hydrogen is hazardous – it is difficult to envisage a storage system being devised where an explosion cannot occur when two hydrogen-fuelled vehicles collide with each other.

Nuclear power is still extremely hazardous, relatively easy to divert to destructive or terrorist ends, and there appears to be insufficient uranium in the world to allow a switch to this form of base power. The cost of building nuclear power stations is massive. The energy alone required to build one takes the full output of a large power station. Even if the problems above could be solved, construction could only progress incrementally, not exponentially. Thorium reactors may be a preferable long-term prospect.

In the absence of salvation from a technological breakthrough, we will need all the fossil fuel we have left, and we will need to use it wisely.

This is NOT the time to curtail investment in efficient fossil fuel production and use.

Caveat

None of the foregoing is intended to suggest that climate is static, or that nothing needs to be done about the risks that natural climate change and events have presented in the past and will continue to present in the future.

We have had some major natural events in recent years in Australia occasioning significant damage and loss. None have been "unprecedented". Some may have become worse because of short-sighted administrative decisions, eg "locking up" forests and other rural estate, such that fuel load is not cleared, builds up, and the consequent inevitable fires are more severe.

We need to start doing something about places that regularly flood, and have been flooding for the last 200 years to our certain knowledge. We don't need to make the cost of this worse by factoring in alarmist predictions of sea level rise. It would be enough to factor in about 125mm. Most competent engineers and designers do that anyway. It doesn't take much in the way of random events to affect stormwater flow, eg cars piling up under a bridge or against a culvert, uprooted trees blocking an open drain.

Many people, myself included, have worked for decades in the promotion of cost-effective resilience to cyclonic winds. Progress has been made, and continues to be made. Every landfall of a cyclone is studied by JCU Cyclone Testing Station and associated agencies. We find out where defects remain, and within a short space of time, amendments are made to construction standards.

Again, competent engineers and designers always go maybe 10% above the design wind speed. It is often less costly to "go the extra" than it costs to calculate what the extra cost is :-)

In any event, construction work is difficult to supervise, no one is perfect, and mistakes are easily made.

I certainly do not disbelieve in "climate change" as such. Climate changes and will always change.

The problem we currently have in Queensland is not Climate Change but Climate Sameness.

Our climate is mostly benign. Except when it isn't.

We have enough work to do trying to correct the errors of the past, and develop resilience for the future, without diverting resources to useless measures based on unfounded alarmism.

A publication, *Global Landscape of Climate Finance 2013* of the Climate Policy Initiative [http://climatepolicyinitiative.org], estimates that global climate finance flows have levelled at USD 359 billion**,** or around USD 1 billion per day.

Just think about that for a moment ... 1 billion a day. For addressing a "problem" that very likely does not exist, and if it does exist, is beyond the capacity of humans to influence it in any event.

We could do a lot with 1 billion a day. Providing the whole of humanity (rather than the privileged few) with safe drinking water for a start.