Comments on Climate Models

The point of this page is clearly that James Hansen's claim (in testimony to Congress) of being able to predict the future trends of climate was bogus. He did pretty much just what you said above.

If some of what I said made sense, maybe this will also:

GCMs (Global Circulation Models) simulate **weather** on short time scales. They are used to simulate **climate** by running them for extended virtual times (10s to 100s of years). The problem with this is that the weather has been known to be a chaotic system since **Lorenz** tried modeling it in the 1960s. It was Lorenz's observations that got the whole field of chaos theory started.

So, while you may be simulating **a** climate by an extended GCM run, you won't be simulating **the** climate, except by a fabulously unlikely chance. (And you wouldn't know it, anyway.) The "Climate Science Community" ignores this problem. Really, the only way you can show predictability is by demonstrated predictive skill — something that has, to date, completely eluded climate models.

This assumes the models are correct. Unfortunately, there is a lot we still don't know about weather, including a lot of the feedbacks. As many of these as the modelers can think of are put in as **parameterizations**, which bias the model in the direction the modelers think the effect goes. There are enough of these parameters that the model can be made to do pretty much anything you want.

However, this **still** isn't enough — too many models of future climate (in parallel universes, I guess) just noodle along in a drunkard's walk kind of way. To get really dramatic results, the modeler's **routinely** (link) assume that CO_2 is growing at 1%/year. It's easy to look at the **data** (link) and see that CO_2 has been growing at ~0.4%/year for the last 50 years.

Mathematical Aside:
CO_2 concentration in 1958.21 = 315.71 ppm
CO_2 concentration in 2009.21 = 388.78 ppm (click on "raw data" in above link)
This data follows closely an exponential curve with a yearly increase of r = 0.41% and a doubling time of 170 years. (doubling time, tau = (2009-1958)*log(2)/log(388.78/315.71); 1+r = 2^(1/tau) for a rough estimate from the endpoints — a least squares fit to the whole curve gives essentially the same result.)

To put this in perspective, 0.4%/year growth doubles every 170 years — 1%/year growth doubles every 70 years. Currently, the Earth is on the slow track — how many times have you heard that in the media? How many times have you heard that "CO_2 is growing faster than expected"? (What, they expected it to grow **less** than 0.4%/year? After 50 years, why would you expect anything different? What brain-dead excuse for a scientist came up with that?)

Do you find this convincing? If somebody had this quality of analysis on an experimental aircraft, would you say "Great!" and climb in?

Rutan wouldn't; I wouldn't; You wouldn't, unless you were a fool.

But you expect me to say; "Sure! Let's make major changes in the global economy (and suppress freedom, to boot)! Why not? What could go wrong?"

It's up to those who promote CAGW to make their case. They haven't even come close, scientifically — that's why they resort to fraud, bullying and politics.

August 4, 2012 at 7:16 am

Discussion on "Urban Heat Island" effect:

KR
August 2, 2012 at 9:42 am · Reply
…
BEST used a completely different technique … based upon known correlation of temperature anomalies – and they found no significant UHI effect.

Well, the main reason BEST "found no significant UHI effect" is that their **New Mathematical Framework** for analyzing temperature records doesn't allow any change in a record to be identified as UHI.

Look at equations 1 and 2 (page 7 on the **Berkeley Earth Temperature Averaging Process** documentation). BEST only acknowledges three components to any temperature record: The location effect, the weather effect, and the global temperature component. Of these three, only the global temperature component is allowed to move, on average — the other two are *defined* to be stationary; that is, they average to zero over sufficient space and time.

Urban areas grow over long periods of time (decades) — hence their effects also grow over decadal periods. The reason BEST *"finds no significant UHI effect"* is that they have, from the very start, *defined* it to be Global Warming.

The whole BEST project is mathematically bogus, and nothing but planned propaganda.

To be blunt, Urban Heat Islands as a distortion of global temperatures are a dead, dead horse, and it's very sad to see people continuing to beat it.

UHIs may have a trivial effect on the actual Global Temperature Average, but **they have a major effect** on the locations where many thermometers used to try to measure Global Temperature are sited. It is an unavoidable conclusion that, therefore, many of those thermometer records are corrupted by UHI effects.

The dead horse, I think, is the faked models the CAGW crowd has been trying to ride.

December 22, 2010 at 4:39 am

John Brookes:
December 22nd, 2010 at 12:47 am

Speedy, I think you'll find that rather than runaway greenhouse, most alarmists are concerned about a rise of about 2+ degrees, back to a pre-ice-age earth. You don't have to go back a billion years to have an ice-free earth.

To get to a period 2 deg C warmer than today, you only need to go back 2000 years to the **Roman Warm Period**. In fact, it has been over 2 deg warmer than today at least 3 times in the **last 10,000 years**.

Looking at the **Vostok ice core**, we see that every interglacial period in the last 440,000 years was *at least* 2 deg warmer than today.

Yep, "unprecedented" all right — warmests can't imagine what could be causing the current warming, so it must be AGW. This is known as "argument from ignorance".

@ John Brookes:

I might add to my post #65, that adding CO2 slows down the radiative transfer of energy for a very small portion of the spectrum — CO2's absorption lines.

A line of inquiry that might interest you, John, is the Hurst coefficient. This is a property of a time series that indicates whether the series has "memory" and what it does with it: Does it tend to revert to the mean (negative feedback), run from the mean (positive feedback) or have no memory at all (random walk). It can also be used to partially validate models; Or, in the case of climate models, to **invalidate them.** When you find that the model outputs have completely different values of the coefficient than the historical data you can be assured that the model is not "modeling" the real system.

Estimates of the Hurst Coefficient for historical and paleontological temperature series indicate that the climate system is dominated by negative feedback at most scales.

Modeling – what the data actually shows:

Some ways to challenge those who think nothing else counts except CO2:

1) Solar cycle length correlation to global temps (seems to be related to the geomagnetic field — the Sun's effect on Earth's magnetic shield — but can be reconstructed from historical data): **Solar Activity and Climate**

Since we're just had a very long cycle (#23), the prediction is for continuing and increasing cooling. The Warmistis claim that this correlation has been recently (1970+) broken, but that took some serious **manipulation** of the data (also, see **here**, **here**, and **here**). Regardless, the amount of cooling predicted by this correlation will be impossible to hide, as the CAGW alarmists are finding out. (People freezing to death in the UK, while the MET proclaims "the hottest year ever" doesn't help their credibility.)

2) CO2 models are "politically fit" to the data, and don't stand up to logic or the many peer-reviewed studies done before the current "1000's and 1000's of years" meme had taken hold. **Here** and **here** are good reviews of the state of the real science and knowledge vs. the models. The conclusion that the data really supports? Humans might be responsible for 5% of the CO2 in the air, but it will be very difficult to impossible to advance that to 10-15%. Response time of the atmosphere (up or down) is ~ 5-10 years, not 100s to 1000s.

3) The entire claim for cutting Human emissions of CO2 is based on the supposed predictive ability of the AGW hypothesis and the models representing it. We've all see how "good" the models are at predicting the last several year's climate (NOT!), but peer-reviewed studies have shown that the AGW models have **no predictive skill** that is distinguishable from chance (also, see **here**). The warnings are therefore politically motivated and scientifically bogus.

4) What about CO2? How much have Humans actually affected it? CO2 concentration in the atmosphere has been increasing by 0.5% per year for 50 years (**Mauna Loa data**). This implies CO2 concentrations will double in about 140 years. At the same time, Human **CO2 output** tripled. There is no evidence that Human emissions have had any effect on the rate of atmospheric increase.

How much effect does a doubling of CO2 have? The **direct calculation** of the effect of doubling CO2 shows an energy increase of 3.7 W/m^2 at the ground. **NOAA's estimate** of total greenhouse effect — 35 deg C for 150 W/m^2 — implies a climate sensitivity of 0.233 deg C/W/m^2, or 0.86 deg C per CO2 doubling.

So, the current state of the science is that CO2 is on track to double in 140 years, and that will cause less than 1 deg C of warming. Everything else is rank speculation, or "projections" from computer models that have shown no predictive skill.

The alarmists are driven by politics, not science or data.

What is meant by correlation?

If a perfect correlation between temperature and CO2 existed, that still wouldn't prove increasing CO2 caused the temperature to increase. For example, moving the needle on my speedometer doesn't cause the car to go faster despite a perfect observed correlation between the two.

Climate Change according to Real Data:

Just a year ago (2010), a scientist at NCAR published a study that proclaimed that "the decade of the 2000's had the largest *ratio* of high temperature records to low temperature records ever! (In the US.)

Yep, that was true. Check out **this graph**, however, and you'll see that it was also a deliberate deception. Sure enough, the *ratio* is the highest of all decades since the 1880s — but the 1930s had 6 *times as many* high temperature records as the 2000s. (These, BTY, are *unbroken* records.)

So (as of 2009) the 1930s had 6 times as many unbroken high temperature records as the 2000s — but the NCAR author tried to fool the unwary into believing that the 2000s somehow beat the 1930s for high temperature records, by only talking about ratios.

When unbroken, all-time temperature extremes were compiled by Univ. of Colo Climatologist Dr. Richard Keen, he found that **50% of the all-time temperature records** (per state) were set in the 1930s alone. Only 29% of the all-time high records have been set since 1950, and a trivial number in the 2000s.

Responding to the NCAR study's deceptive analysis, Keen concludes: "The bottom line is that if one wishes to express climate change by the varying number of temperature extremes, there has been no climate change for over 100 years.

Why Climate Models are Not Believable:

1) The climate has been always changing; We can guess at some of the reasons, but others are unknown.

2) Anyone who claims to have a correct theory, needs to prove it. A good start would be to demonstrate that the theory has predictive skill. So far, AGW has no demonstrated predictive skill. Warmists have brushed off the spectacular failures of AGW models to predict climate a year ahead as unimportant, and not indicative of their skill at predicting decades ahead — this also needs to be proven. (The claim that failure should be taken as proof of ability is bizarre, to say the least.)

3) The proponents of the AGW hypothesis have been caught manipulating data, conspiring to destroy raw data and illegally keep it from critics, attempting to suppress debate, etc. This does not give one a warm feeling about their honesty, motives, or objectivity. Certainly, they don't seem like people you should trust to make important decisions without oversight.

It is not up to the critics of AGW to prove it wrong. (They, after all, are not advocating for global tyranny and surrender of liberty to unelected authorities.) It is, instead, up to the proponents of CAGW to prove their case. So far, they have only proven their dishonesty.

For an interesting look at what is done to the data to mold it to the pre-determined result required by AGW, take a look at this **graph** and **site** (courtesy of Cohenite). I already knew the data "adjustments" were bogus, since there is no other way to explain why a perfectly-sited station would have its raw data adjusted upwards to match a site

which has many spurious heat sources corrupting its data, but Data Analytics' site shows just how bad the manipulation really is.

Climate Models and Prediction:

[Comment Link:](#)

February 7, 2011 at 2:44 pm

Manwichstick (@125):

Many climate models have done a great job of of predicting various aspects of the 20th century climate up until today.

Actually, current climate models are not quite as good as just assuming that whatever the average behavior of the past is, it will continue. (See **here** for a quantitative analysis.)

It is not too strong a characterization of current climate models to say that they have no demonstrated predictive skill that is better than chance. Hence, any future crisis predicted by these models is simply a guess.

I could guess that an Extinction Level Event asteroid strike will occur within 25 years, and therefore **all** of Mankind's resources should be diverted to space colonization and space defense. Before turning the world's economy and societies upside down to accommodate this, however, many people would like to see some evidence beyond my guess. I could reply that no one can prove my guess is wrong, and therefore everyone has to do what I say — but, while true, that probably wouldn't get much support.

There are, in fact, an infinite number of possible crises that could be guessed at — which should we respond to? By choosing a randomly guessed crisis to address, we have a nearly 100% chance of responding to a crisis that doesn't happen. Why not respond to events that occur or can be reliably predicted? That way we minimize the chance of wasting our resources on false alarms, and being unable to adequately respond when a real crisis occurs.

There is another level here: Even if we had climate models that were 100% correct, that is, models without any arbitrary parameters, that modeled everything from first principles (certainly not the current situation), they **still** might be unable to predict the future climate. There is much evidence that weather phenomena has a significant chaotic component (and, by extension, climate — since climate is simply a sequence of weather events).

One characteristic of chaotic systems is that they are extremely sensitive to initial conditions — a trivial change in initial conditions eventually results in a completely different outcome. Examples of chaotic systems are weakly coupled pendulums and all but a handful of multi-body gravitational problems. This is why you can't show that the Solar system is stable (a problem that bothered Newton enormously) — there is a non-zero chance that the Earth will sometime be ejected from the solar system, for example.

The first scientist to numerically model climate, Edward Lorenz, coined the term **"Butterfly Effect"** to illustrate the problem: If you have a perfect model of the climate, and your knowledge of the initial conditions to start it are exact except for the flap of a single butterfly's wing, then the model will eventually diverge completely from reality.

Of course, our knowledge of the climate at any one time is very approximate, and hence the best models diverge rapidly from reality. Currently, climate models are unable to model climate even one year in advance — see the wildly inaccurate predictions of the UK's MET about the last 3 winters.

If there is no evidence to believe that climate models will ever be able to predict the weather or climate beyond a short time horizon, what use are they? The original purpose of Global Circulation Models (GCMs) is to help us understand the climate. For example, if a GCM run shows the same kind of kinks in the jet stream that result in

arctic cold fronts at moderate latitudes, then that is evidence that the model is working *like the climate*, even if it can't predict it long term. The model can be examined for measurable precursors to the kinking that, if verified, could help forecasters extent their prediction horizons.

It is, however, unequivocally **wrong** to claim that GCMs can predict the climate for years ahead, when there is literally **no** evidence that they can do so.