

Opposition to the HB2020

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Members of the Joint Committee on Carbon Reduction:

I am opposed to this bill because it proposes to reduce fossil fuel use and somehow change the climate. This is a bad policy because both goals cannot be achieved at the same time. It is the secondary goal of changing the climate that is divisive and elusive precisely because the supporting science is weak and the politics are in opposition to the scientific method, which I will explain.

Secondly, there are predictable market distortions that will result if this becomes law. In the northeast section of our country we have an example in the Regional Greenhouse Gas Initiative (RGGI), which became effective in 2008. The Wikipedia entry describes the legislation and results in glowing terms—describing how the CO₂ has been reduced in the participating states at the same time the GDP has increased. Some facts that are missing from the Wikipedia entry:

- Energy-intensive businesses left the RGGI states, leaving workers behind to look for new jobs.
- The cost of the carbon allowances was passed on to the end-users.
- Coal plants were shut down at the same time as natural gas plants were constructed and brought online. Some of this is the result of legislation, but the primary driver is the surge in availability of lower-cost natural gas. This was the result of implementing horizontal drilling and hydraulic fracturing technology—not government intervention.
- The state of New Jersey pulled out of the RGGI agreement, which lowered the overall CO₂ output of the remaining RGGI states. The initial basis was not corrected to account for New Jersey's share.
- Power producers purchased power on the grid from other producers in other states, so CO₂ was produced in other neighboring states.

In my written testimony I am submitting a copy of a report by the CATO Institute (1), which will give you a very good perspective on what you can expect to happen in Oregon if you make this bill into law.

Getting back to the discussion on the weak hypothesis for catastrophic climate change; it is clear that the earth has been warming in recent history. There has been a general warming trend since we came out of the last ice age, and there has been an increase in the rate of warming since the industrial revolution. What is not clear is if humans are having a measureable impact on the climate at the present time, nor can it be shown that humans are the primary, or even secondary cause of increasing temperature. I am open to the possibility that there could be a human component to the observed warming. However, as I will show below, there is no data that can separate human contributions from natural variation.

The popular anthropogenic global warming (AGW) hypothesis states that that; by burning fossil fuels we humans increase the rate that CO₂ is added to the atmosphere, which reduces the amount of energy radiated out to space every day, causing a general warming process. The physical principle behind this is that CO₂ has the capacity to absorb infrared energy, thus “trapping heat” in the atmosphere. Some even hypothesize that once a certain threshold of CO₂ has been reached, there will be an irreversible upset, causing a runaway heating condition.

A hypothesis must be falsifiable—meaning one must question whether there is there a way to prove it wrong. In science, we set out to disprove our theories, and when we can’t disprove them, only then we can say that this must be explaining something about our observed reality. We should take this into all aspects of our lives. When you think something is true, try as hard as you can to disprove it. Then can you get at the truth, and not fool yourself.

The scientific method has no part in consensus. A hypothesis is either supported by the data or it isn’t.

There are a number of problems with the popular hypothesis which are documented in the scientific literature, but often ignored by the popular media. In fact, there is a web reference with links to over 1350 papers in the scientific literature that, in one way or another falsify the AGW hypothesis here: <http://www.populartechnology.net/2009/10/peer-reviewed-papers-supporting.html>

I want to present some of the facts that illustrate the weakness in the popular AGW hypothesis.

1. The earth has spent most of the last 450,000 years as an ice ball. We are fortunate to be living in one of the brief warm periods. Ice core data indicates that it was warmer during the last interglacial period about 100,000 years ago (2). But humans during that time did not burn fossil fuels and thus add CO₂ to the atmosphere. Could it be that natural variability is a bigger driver of the climate than anthropogenic CO₂ additions?
2. In more recent times the earth experienced the Medieval Warm Period (800-1300AD). Proxy data for this time period indicates that the earth was warmer during that period than it is now (3). Prior to the Medieval Warm Period there was the Roman Warm Period, where again it was warmer than now. Obviously these warm periods were not driven by humans. Could our hypothesis be wrong?
3. Ice core data shows us a captured record of atmospheric CO₂ along with a proxy for temperature. The data shows us that CO₂ lags temperature. When temperature rises, CO₂ rises, but the increase in CO₂ is ~800 years behind the temperature increase (4). When temperature decreases, atmospheric CO₂ also decreases, but again the decline in CO₂ concentration is separated by hundreds of years. Obviously, the data shows that CO₂ does not drive temperature change, but temperature drives changes in CO₂—or something else altogether. It is more likely that warming temperatures caused CO₂ to come out of solution in the oceans and plant life, and the reverse during cooling periods. Could it be that we are so focused on CO₂ that we are

ignoring natural drivers in our changing climate?

4. Proxy data of CO₂ through geologic specimens show that atmospheric levels of CO₂ have been much higher than the present period, even when temperatures have been much lower than we are experiencing now (5). How can this be reconciled with the AGW hypothesis? How can prior levels of CO₂ be higher than now and yet the climate was much colder? This is completely counter to the AGW hypothesis. Could it be that natural forces are more powerful influences than the concentrations of CO₂?
5. If we look at recent history, we see from the data that there was a warming period in the late 1800's and again between 1910 and 1940. Note that the rate of warming was about the same as it was at the end of the last century (Figure 1). If the present rate of warming is "alarming", what do we say about the earlier periods when consumption of fossil fuels was tiny by comparison? Figure 2 illustrates this clearly. The warming and cooling trends in the arctic region is naturally more pronounced than in the populated parts of the world, and is shown here to illustrate that large spikes in arctic temperatures cannot be correlated with additional CO₂ in the atmosphere from burning fossil fuels. Could the natural variation in the climate be overwhelming any human component? And why, since our fossil fuel consumption rate increased beginning in the 1950's, did the temperature signal flatten out between 1960 and 1980? If the hypothesis was unfalsifiable, the temperature should have continued to increase.

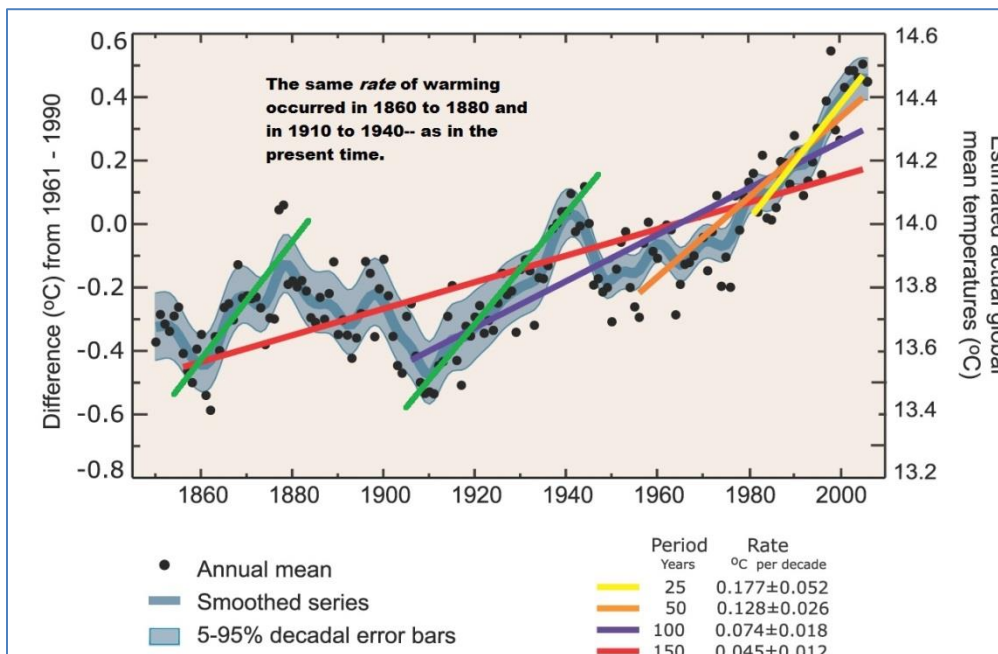


Figure 1. Adapted from the IPCC Fourth Assessment Report, Working Group 1 Physical Science Basis, Chapter 3, 2007. Annotations in green are added by this author. The green lines indicate that the same rate of warming which is now allegedly "alarming" has occurred in recent, recorded history.

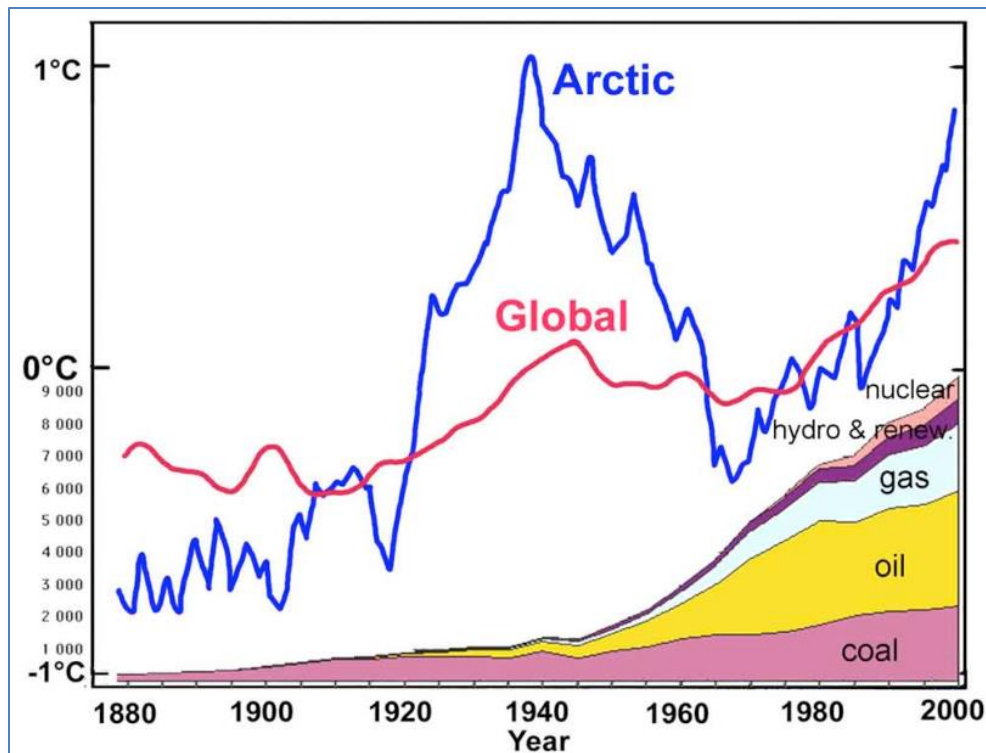


Figure 2. From Reference (6). Why was there a spike in temperature between 1910 and 1950, before we started burning fossil fuels in large amounts? Why is it that when we started consuming fossil fuels at an increasing rate beginning in 1950 was there not an increase in temperature?

6. If the hypothesis were correct, we should find that warming occurs first in the upper atmosphere, about 8-12km above the tropics (7). This part of the atmosphere is cold, but should be less cold if CO₂ is trapping heat like it is supposed to. We have weather balloon data from this part of the atmosphere going back to the 1960s so we have temperature records which preceded the increased warming rate observed beginning in the late 1970s. However, there is no “hot spot” appearing in the later data above the tropics as predicted by the AGW theory. This fact drives a stake into the very heart of the AGW hypothesis. You may not have heard about this “missing hot spot” issue before. If there actually was data supporting this key component of the hypothesis, one would see numerous scientific journal articles and press releases for the general media.
7. Another indication of a weak hypothesis is an over-reliance on models. Scientists around the world have spent millions of our taxes on supercomputers and software to try to predict what future temperatures will be if we could reduce atmospheric CO₂, or if it were to double. This modeling work has been ongoing since the 1980s. So far, these models have failed miserably to predict the lack of warming between the 1998 and 2015 El Nino cycles (Figure 3), (8). These models allow scientists to attempt any “what if” scenario they want—change CO₂, water vapor, solar irradiation, and so on. All of them have failed to predict the present trend. I submit that

the natural forces changing our climate far overpower the tiny influence of anthropogenic CO₂ and these model failures unwittingly falsify the AGW hypothesis.

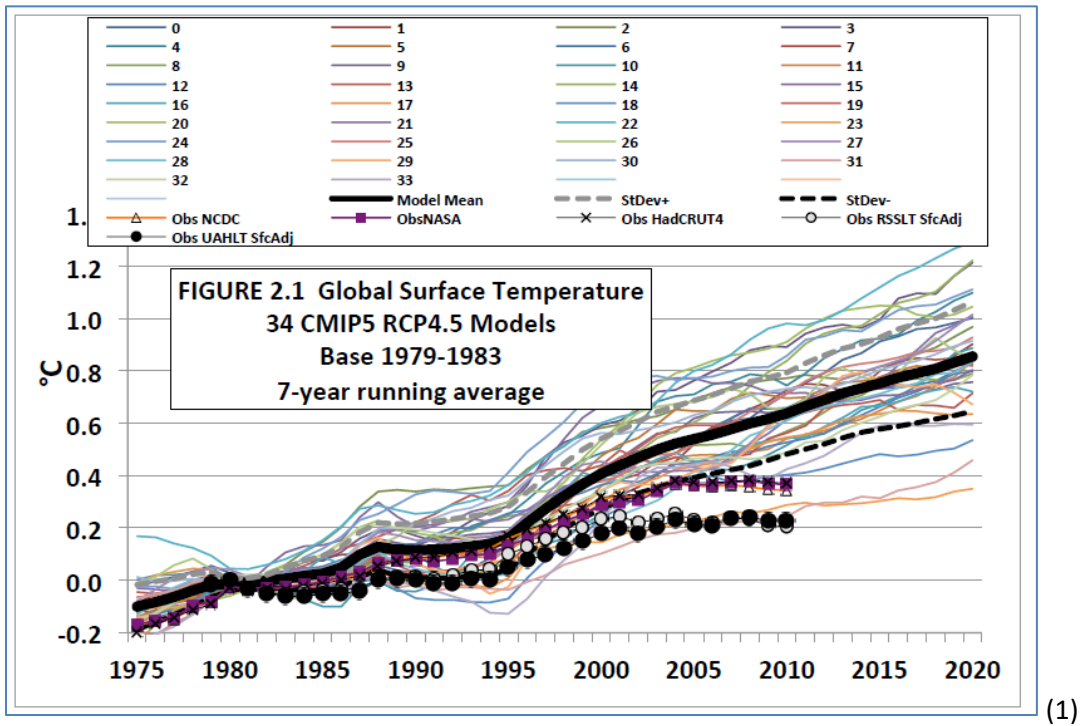


Figure 3. Comparison of IPCC models to several land, sea and satellite data from Reference (8). The traces in the legend with "Obs" in the description are data records. The heavy black line is the average of all the models. Note the flat trend in the actual data between 2000 and 2010 and the divergence of the model curves.

Each of these facts causes the AGW hypothesis to break down. This is not an exhaustive list, but these are well documented in climate science literature, which I have referenced. Taken collectively, the AGW hypothesis is so weak that it makes no sense for Oregon to craft public policy that portends to change global climate.

If you want to work towards reducing fossil fuel consumption, consider this: Oregonians get 42.9% of their electricity from hydroelectric sources and another 8.8% from wind and nuclear. We are already one of the greenest states in the nation, with nearly 50% of our electricity coming from non-fossil fuel sources. The state could substantially reduce fossil fuel consumption in transportation for example, by moving towards plug-in hybrid vehicles. I am sure there are creative people in our state leadership who can find ways to reduce fossil fuel use with a reasonable return on investment. I encourage the legislature to work towards that end. No resolution is required for this, only common-sense governance.

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