

## **Observations from the Anthropocene: This is for all the lonely people**

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“During 2015, the average temperature across global land and ocean surfaces was 1.62 degrees F (0.90 degrees C) above the 20th century average . . . surpassing the previous record set last year by 0.29 degrees F (0.16degrees C) and marking the fourth time a global temperature record has been set this century. This is also the largest margin by which the annual global temperature record has been broken.” – National Oceanic and Atmospheric Administration, January, 2016

Climate researchers were sure that 2015 would go into the record books based on what happened in 1998, when a major El Nino event led to record high global average temperatures. That record stood until 2005, which was not a year of an El Nino event. Nor were 2010 or 2014, which were also record breaking years.

As an aside, an El Nino occurs when trade winds in the sub-tropic eastern Pacific weaken, allowing sea surface temperatures to increase, so that heat energy stored deep in the ocean can discharge to the atmosphere and then can disrupt weather patterns from Southeast Asia to the Western Atlantic. A strong El Nino releases a vast amount of energy.

Now, 0.9 degree C may not sound like much until you translate it into the amount of energy it takes to make that increase - about 4.5 exaJoules or the entire energy consumption of the US . . . for 3.6 million years. Also, the increase is just for the temperature of the earth's surface. Scientists estimate that the oceans have absorbed 90 percent of the heat energy produced by global warming since the mid-20th century so the amount of heat the Earth's oceans have absorbed is TEN times that amount.

If you wonder where the heat driving the 2015-16 El Nino came from, look no further.

As I wrote last summer, when the Earth was about 8 degrees C cooler than today, Westborough was under a mile or two of ice. Do you want to hazard a guess what things will be like when the earth is even 4 degrees warmer than the mid-20th century, which is the current projection for 2100?

“Look, if anybody still wants to dispute the science around climate change, have at it. You'll be pretty lonely, because you'll be debating our military, most of America's business leaders, the majority of the American people, almost the entire scientific community, and 200 nations around

the world who agree it's a problem and intend to solve it." - President Barack Obama, January 12, 2016

I have been surprised that the columns I have written on global warming have not produced that much feedback, even though, to my surprise, they were published in more than just the Westborough News. In the months since I started writing, I have had only a few people contact me directly.

A couple of them were in the President's "lonely" category and they made their opinions of me very clear, starting with terms such as "ignorant," "deluded," "stupid," and going down from there. Curiously, they have even accused me of having my head in the sand, which is weird since I am not the one denying what is going on here.

I expect further apoplexy about this column and repetition of arguments such as temperatures are not increasing, the data are all faked, that this is a conspiracy among climate researchers to get more money, CO2 has nothing to do with warming, it's all natural, it's the sun, that I am alarmist, ad infinitum.

They have claimed bias and that a balanced point of view is not being published; however, science isn't about equal time. It's about the data and if the data support your ideas, then they win the day (and by the way, I am not stopping the paper from publishing any viewpoint other than my own).

There are still a few atmospheric scientists who are contrarians. An example is Richard Lindzen, formerly of MIT and now a paid consultant for the libertarian think tank, the Cato Institute. Lindzen predicted that temperatures would never exceed natural variability of 0.1 degree give or take 0.3 degrees. As we can see, we are way beyond that now. Still Lindzen insists that the climate models and data are wrong.

Lindzen no longer publishes any research. His last paper was rejected by the National Academy of Sciences because he cherry-picked the data. Instead, he writes op-eds for the Wall Street Journal which claim that trying to address climate change will devastate our economy.

I am sure you can find medical doctors who still think germs don't cause disease or smoking doesn't cause lung cancer. Like Lindzen, they represent a tiny minority.

"Climate change poses another significant challenge for the United States and the world at large. As greenhouse gas emissions increase, sea levels are rising, average global temperatures are increasing, and severe weather patterns are accelerating. These changes . . . will devastate homes, land, and infrastructure. These effects are threat multipliers that will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions – conditions that can enable terrorist activity and other forms of violence" - U.S. Department of Defense Quadrennial Defense Review 2014

If I am an alarmist, I am in good company.