

Cooling Down the Hysteria About Global Warming

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by Rich Enthoven

Recently, NASA released its annual report on global temperatures and reported that 2018 was the fourth hottest year on record, surpassed only by three recent years. This claim was accompanied by dire predictions of climate change and for immediate action to dramatically curtail CO2 emissions around the globe. Like every concerned citizen read this report with interest. I also read it as an informed and trained climate analyst – and I can tell that there are some serious problems with the report and its conclusions.

For starters, I can assure my readers that I am not a climate change “denier.” No one doubts the climate changed when it experienced the Ice Age that ended 12,000 years ago. I have read enough scientific literature to believe the well documented view that the planet experienced the Medieval Warm Period (950 – 1250 AD) and Little Ice Age (1550 – 1850 AD) when global temperatures changed materially. I have also read enough scientific literature to understand that solar and ocean cycles affect global climate.

NASA is now reporting significant changes to the global temperature. According to NASA (and others) the entire globe experienced a persistent warming trend in the early part of the 20th century (1911 – 1940). Then, this trend reversed, and the globe cooled until the 1970's.[1] Now, NASA is reporting that the global temperature increased .31° C in the last 10 years and that this trend is different than the .31° C increase NASA reports for the 1930's[2]. But, a closer look at the data and methods used by NASA should make any reader skeptical of their results.

GLOBAL LAND-OCEAN TEMPERATURE INDEX

Data source: NASA's Goddard Institute for Space Studies (GISS). Credit: NASA/GISS



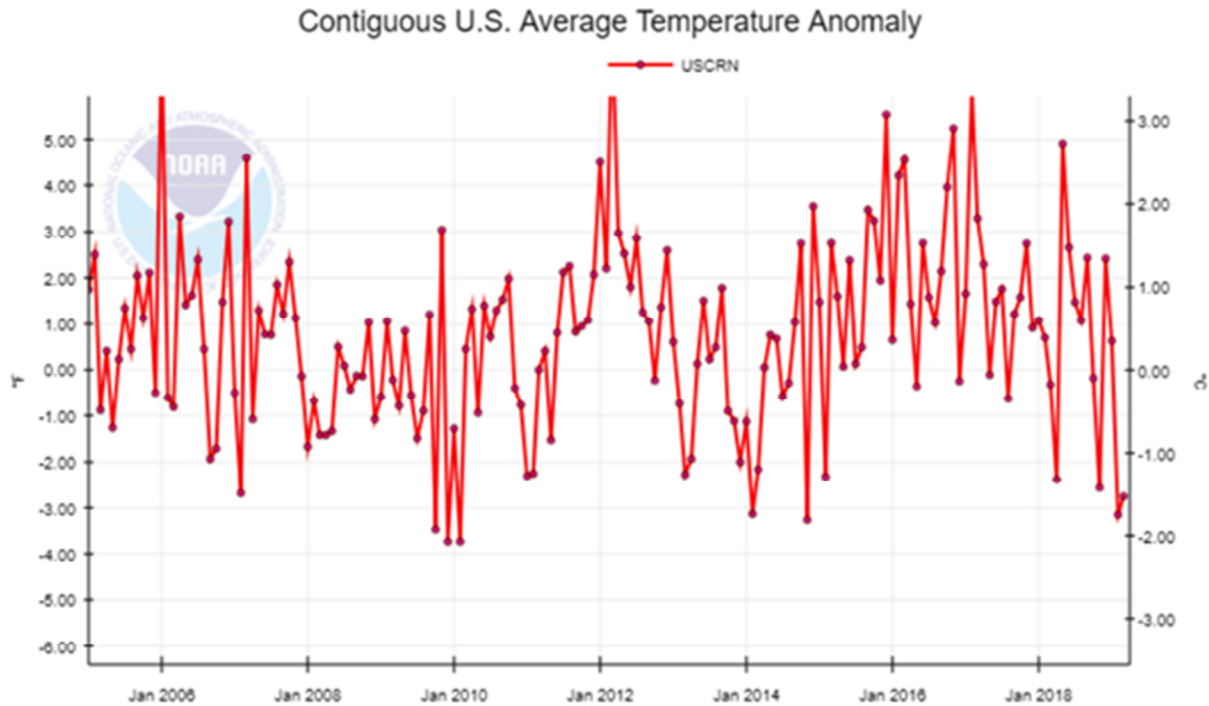
Land Temperatures

It turns out, that over long periods of time it is actually quite difficult to measure temperature changes from climate consistently. The problems arise from changes in measurement technology (mercury bulbs then, semiconductors now) and changes in the sites surrounding the measurement locations. A good way to think about this problem is to consider Dallas Love Field Airport where average temperatures have been reported monthly since 1940. During that time Love Field transformed from a tiny airport near a small city[3] – to large urban airport with 200 daily flights. These changes have generated massive heat at the airport. It is no wonder that the reported temperatures at Love Field have trended up by approximately 2.9 ° F since 1940. [4]

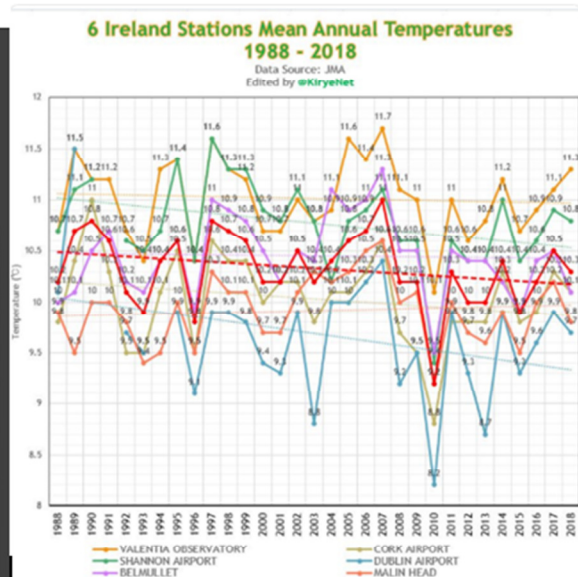
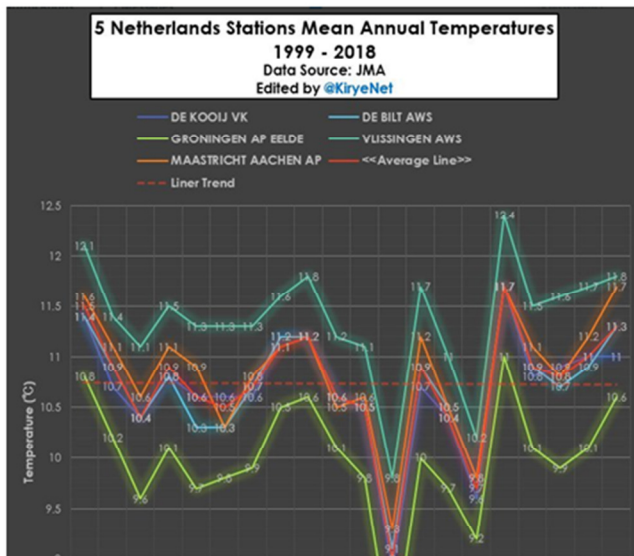


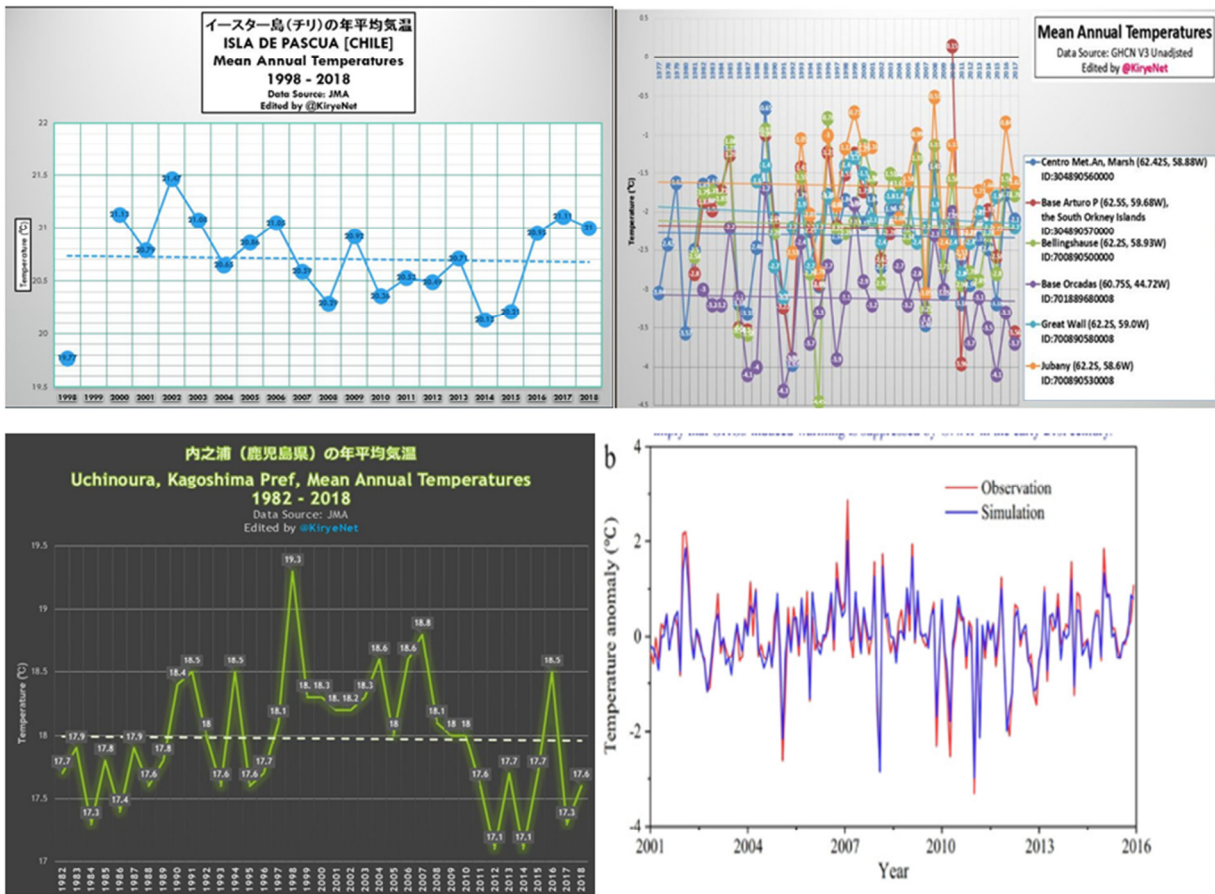
But, when we look at the temperatures in Centerville, TX – much less affected by land use changes – we see the opposite trend. The average reported temperature in Centerville has been on a declining trend and now averages (on trend) .3 °F less than it was in 1940.[5]

As a result of this urban heat effect, scientists around the world have been identifying (or constructing) ‘pristine’ weather monitoring stations to get a clearer look at temperature changes. These stations are located in areas where urban development has not occurred and is not expected. These locations do not show any meaningful change in reported land temperatures. The best data comes from the National Oceanic and Atmospheric Administration (NOAA) which set up 114 rural temperature monitoring stations in the US in 2002 (USCRN). When we look at these, we see no persistent increase in US temperatures.[6] In fact, 2018 was .3°F colder than the first two years measured. February and March 2019 combined to be the coldest two-month period (temperature anomaly) ever recorded by the USCRN.



And it is not just the US rural temperatures that are stable – all around the globe, temperature growth is eliminated once land use changes are eliminated. Shown below are temperature graphs from rural areas in Netherlands, Ireland, Chile, Antarctica, Japan[7], and China[8].





Further calling into question the global land temperature data used by NASA are climate scientists themselves. Seventeen leading climate scientists (including scientists at NOAA) recently co-authored a paper calling for a new network of global weather stations in which they lamented the “imperfect measurements and ubiquitous changes in measurement networks and techniques.”[9]

Even these efforts to measure temperature change may not be enough – even the ‘pristine’ USCRN temperature measurement locations continue to be biased towards warmer temperatures from land use changes. For example, a parking area and road was built next to the USCRN weather station[10] at the University of Rhode Island leading to a .34 ° C increase in measured temperatures at that location.[11][12]

RI Kingston 1 USCRN Weather Station in 2002



RI Kingston 1 USCRN Weather Station in 2014



Ocean and Satellite Temperature Measurement

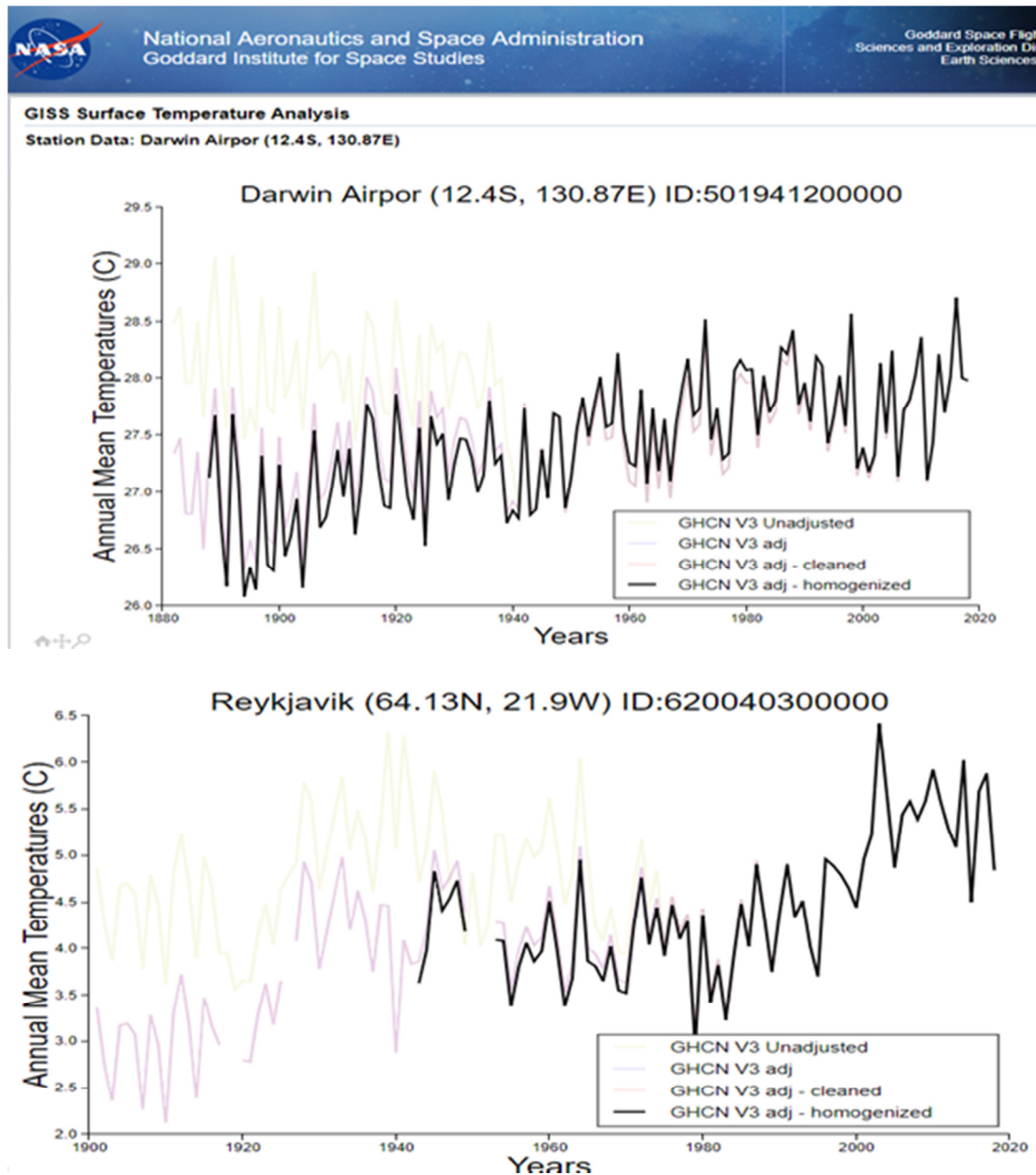
The NASA global temperature estimate also relies heavily on estimates of temperatures in the ocean and air above it. Ocean temperatures have been measured over the years with highly inconsistent methods (buckets off ships; water flowing through ship engine rooms; buoys; and lately, satellites). In addition to technology changes, there are short term annual ocean cycles such as the well-publicized El Nino/La Nina and long term (multi decade) cycles such as the Pacific (and Atlantic) Decadal Oscillations which affect ocean temperatures at many depths over decades. A recent report out of UC San Diego described the problem “Determining changes in the average temperature of the entire world’s ocean has proven to be a nearly impossible task due to the distribution of different water masses.”[13]

Respected climate scientists are tackling the ocean measurement challenge and come up with results very different than the NASA report. Satellite measurements from University of Alabama show atmosphere temperatures over the ocean increasing since 1980 (end of the last cooling period per NASA) but only at .13 ° C per decade.[14] Both major satellite measurement groups report temperatures are lower now than they were in 1998, although by different amounts.[15] Harvard University oceanographer Carl Wunsch estimated the average temperature of the ocean grew by .02 degrees during 1994 – 2013.[16] Scripps Institute of Oceanography recently estimated the ocean temperature growth at .1 ° C total over the last 50 years. The science and history of measuring ocean temperatures is far from ‘settled’ and there are plenty of credible estimates that ocean temperatures are not changing rapidly or at anywhere near the rate that NASA is estimating.

Back to the NASA Temperature Estimate

To come up with their global temperature assessments, NASA faces all these problems and more. For starters, there is very little reliable global scale land data before 1940, and there are still shortages of reliable data in many parts of the world. (Africa, Middle East). Most of the historical data has been affected by land use changes and measurement technology changes. As they have tried to deal with these problems, NASA has dramatically changed the locations and methods that they use to assess temperatures over the last several decades.[17] Some observers question whether the new locations and technologies have the same pattern as the old ones would have had.

Not only have they adjusted the locations they take land measurements from, NASA adjusts the data that goes into their estimates[18]. Here are examples from the NASA website for Darwin Airport, Australia and Reykjavik, Iceland that show the liberal data changes adopted by NASA.[19]



Readers should note several problematic elements of these graphs:

- 1) The unadjusted data does not indicate warming at these locations over the last 80 years.
- 2) The unadjusted data is shown in such a faint outline that its hard to see. Why would NASA present it this way?
- 3) As NASA changed each data set, they made the past appear cooler – the “adjusted, cleaned” data is cooler than the “unadjusted” data – and the “homogenized” data is cooler still. A cooler past allows NASA to claim current temperatures are dramatically higher.

The NASA has “adjusted, cleaned, and homogenized” the data from these locations along with thousands of others to make up the data set that NASA uses. They then add data from satellites and use data grid methodology to come up with a final temperature change result.

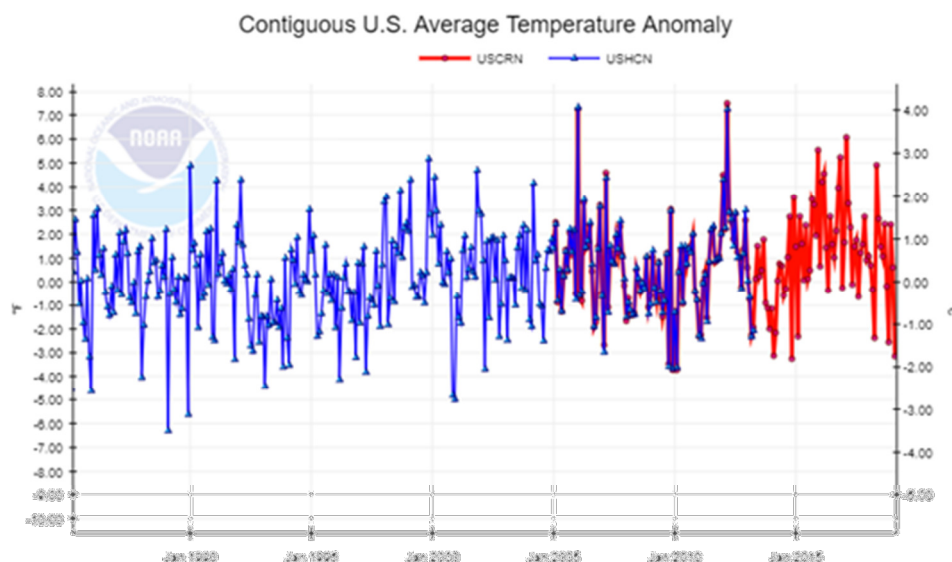
Needless to say, the NASA changes have been the subject of considerable debate – within the climate scientist community, the climate “skeptic” community, and even NASA itself.[20] The “unadjusted” raw data has been adjusted meaningfully over the years as NASA recalculates.[21] The satellite measurements are very controversial according to Zeke Hausfather, climate researcher at Berkeley Earth – “If you don’t like adjustments, you really shouldn’t use the satellite record.”[22] A major problem is that the average adjustments between raw and final data average strongly in one direction – the adjustments tend to cool the past – which makes the present temperatures seem warmer by comparison.[23] NASA itself is apparently unhappy with their current formulas and plans to release version four of their “adjustments” soon.[24]

Other Indicators of Global Temperatures

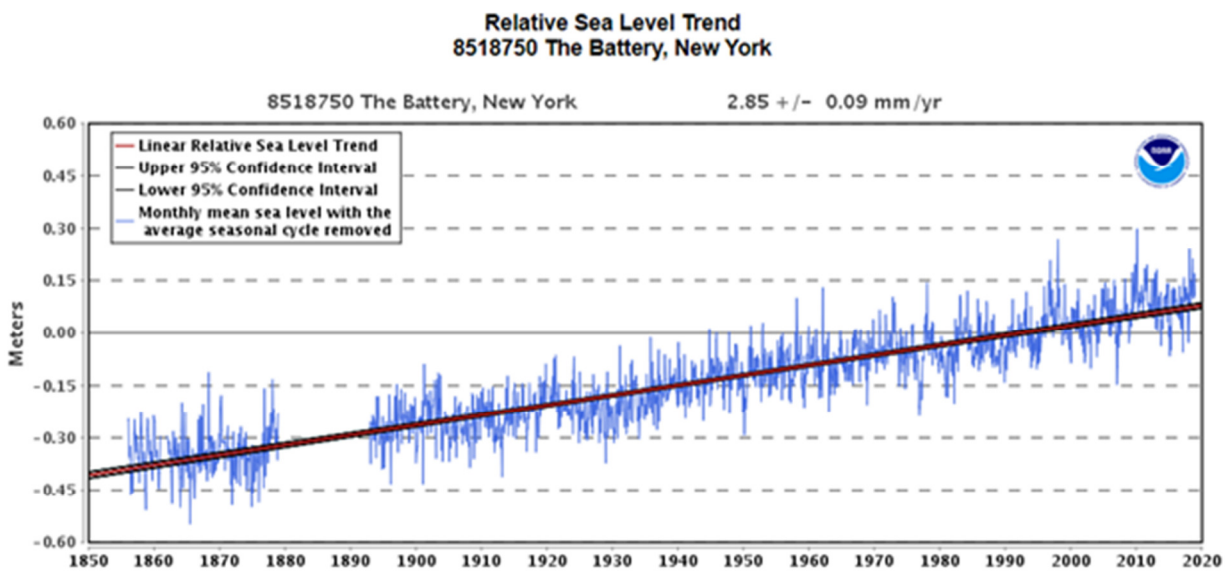
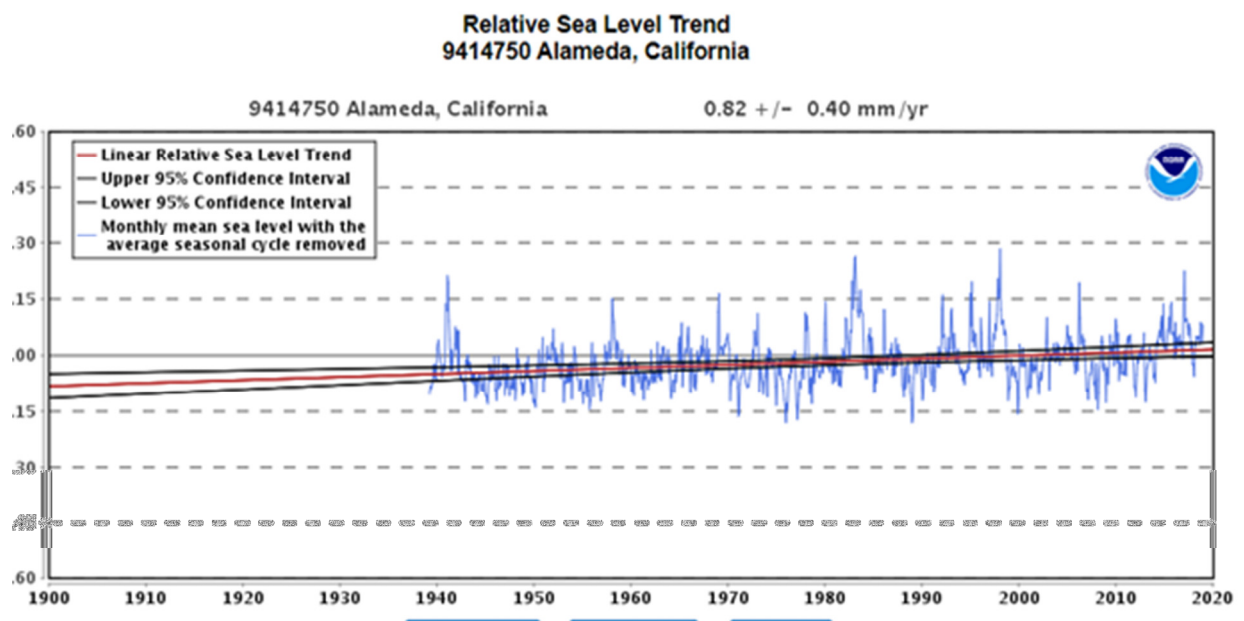
The debate about the temperatures adjustments and estimates used by NASA can quickly get in to mathematical manipulations that are well beyond the level of this article. Scientists are arguing about changes in the global temperature that are on the order of one percent of one degree centigrade. Fortunately, we can look at a variety of other climate indicators in an effort to verify whether temperatures are changing. According to the theory endorsed by NASA, humans have been increasing carbon dioxide (CO₂) in the atmosphere for more than 70 years[25] – and this increased CO₂ has led to demonstrably higher global temperatures which affect major aspects of global climate.

Fortunately for the planet, there is no evidence of change in large scale climate indicators that should be changing with the temperature. Here are some notable examples:

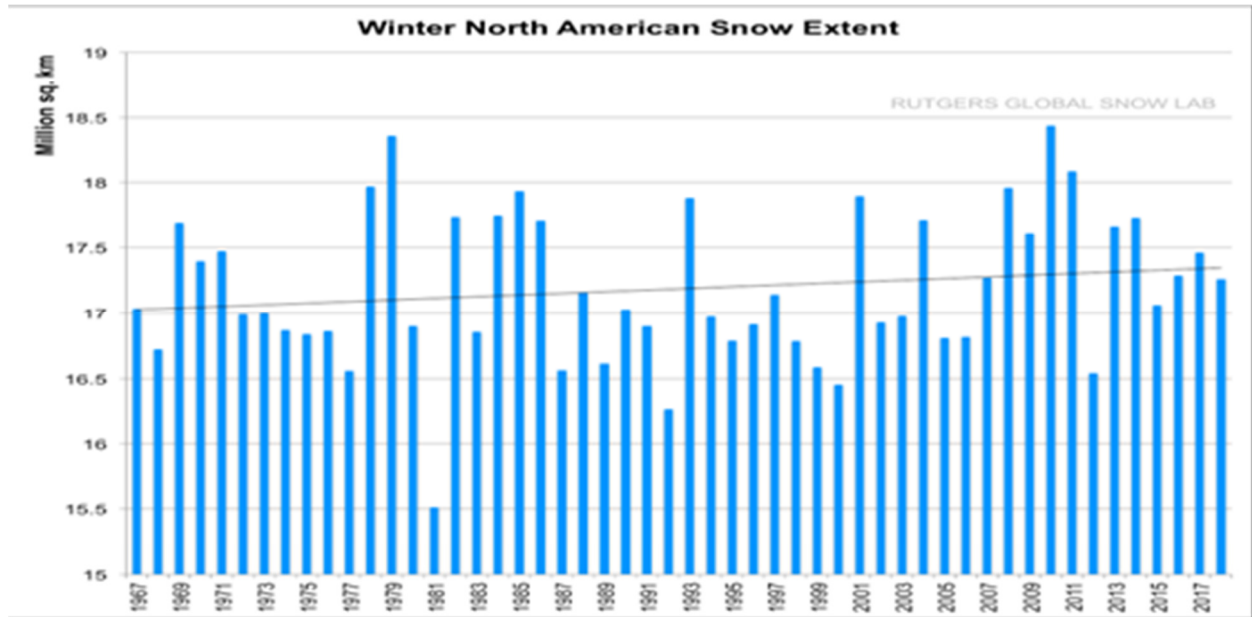
- **US Land Temperatures:** In 1986, James Hansen testified to congress that rising CO₂ levels would cause US temperatures to rise by three to four degrees by 2020. [26] This prediction was spectacularly wrong – US land temperatures have moved at most a fraction of that amount since 1986.[27]



- **Sea Level Rise:** NASA (and later Al Gore) have made it clear that a warmer planet would cause ice to melt and the seas to expand – rising by up to four feet in 2050[28]. An accelerating trend in sea levels would potentially inundate lower elevation cities. But, NOAA data makes it clear that there is no change in the rate of sea level increase since measurements began.[29] If the warming globe would accelerate sea level changes, and we don’t see acceleration – it seems reasonable to suggest the globe isn’t warming.



- **Snowfall:** In 2001, the scientists at IPCC (worlds global authority on climate change) said that rising global temperatures would result in a reduction in snowfall and even the end of skiing industry.[33] However, according to both NOAA and Rutgers University, snowfall has been trending up across the northern hemisphere since 1970. If less snow is expected from higher temperatures – is more snow an indicator of lower temperatures?[34]



These are large scale indicators that should not be subject to much measurement debate. They are not subject to “adjustments.” They all tell me that the NASA report is hopelessly biased in favor of reporting a temperature increase that is not happening.

Motivation for NASA to Report Higher Temperatures

Why would NASA come up with results so different from those of other climate observations? Consider the history of the NASA global temperature estimates. In 1986, James Hansen broadly publicized his global warming theory in testimony before the US Senate. For the next 27 years, Mr. Hansen was the chief scientist at NASA in charge of preparing and presenting those estimates. Is it unreasonable to suggest that the “adjustments” and formulas he used after his Senate testimony were biased with an effort to make his predictions turn out to be correct? How much of the NASA estimate is a simple self-fulfilling prophesy?

It’s not just NASA that is subject to significant pressure which likely introduces bias into their results. Climate scientists may be in the same position as those in other fields (i.e. nutrition, pharmaceuticals, psychology) where the desire to produce a pre-selected result influences the inputs, methods, and findings of their science. Alarming results (“hottest ever!” “disaster predicted” “urgent action needed”) all generate headlines; speaking engagements; trips to climate conferences (IPCC); and additional funding for more research. When scientists find opposite results (“nothing is really changing” “it’s just weather” “random events as usual”) they get no publicity; no funding; and instead are attacked (“pro big oil” “anti-environment” or worst of all, a “climate change denier.”)[35] There are indeed thousands of scientific papers that are at odds with NASA, but they don’t get nearly the media coverage and they are not included in NASA’s estimates.

Summary

It is time for a much more open and fair reporting and debate about global temperatures and climate change. Every time an adverse weather event occurs, we have news media blaming it on climate change that isn't happening. We now have people marching in the streets over a non-existent crisis. All around the globe, trillions of dollars are being spent to avert a perceived global temperature crisis that is not happening. These energies and funds could be spent on far better uses to protect our environment, educate our people, and actually help the planet. We could be spending money on keeping toxins out of our ecosystems; keeping our oceans clean and healthy; improving sustainable farming techniques; expanding and protecting our natural habitats. Its time to take real action to protect and improve our planet – and stop the misplaced worry about climate change.

References

- [1] <https://climate.nasa.gov/vital-signs/global-temperature/>
- [2] Temp anomalies per NASA site: 2018 $+0.82^{\circ}\text{C}$ less 2008 $+0.51^{\circ}\text{C}$ $=+0.31^{\circ}\text{C}$. 1939 -0.03°C – 1929 -0.34°C $=+0.31^{\circ}\text{C}$
- [3] Dallas population 400,000. Love Field had three daily flights. Wikipedia
- [4] Data per [iweather.net](http://weather.net). Authors trend analysis – least squares regression.
- [5] [iweather.net](http://weather.net) Authors trend analysis – least squares regression.
- [6] https://www.ncdc.noaa.gov/temp-and-precip/national-temperature-index/time-series?datasets%5B%5D=uscrn¶meter=anomaly&time_scale=p12&begyear=2004&endyear=2019&month=3 See also <https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2015GL067640> for discussion of this data series. Trend is not significant at any reasonable level of certainty. Measurements themselves are subject to $\pm 0.3^{\circ}\text{C}$ at source.
- [7] Temperatures from Japanese Meteorological Association.
- [8] <https://www.sciencedirect.com/science/article/pii/S0048969718331978>
- [9] Journal of Climatology 3/1/18 – <https://rmets.onlinelibrary.wiley.com/doi/10.1002/joc.5458>
- [10] Data available at: https://www1.ncdc.noaa.gov/pub/data/uscrn/products/monthly01/CRNM0102-RI_Kingston_1_W.txt
- [11] <https://iowacclimate.org/2018/04/09/infrastructure>
- [12] Moose, Wy in Grand Teton National Park is experiencing record park visitors. Are they affecting measured temperatures at the USCRN site there?
- [13] <https://www.sciencedaily.com/releases/2018/01/180103160129.htm>
- [14] https://www.nsstc.uah.edu/climate/2019/february2019/tlt_201902_bar.png Note this is closer to one third of the NASA estimated increase.
- [15] <http://www.drroyspencer.com/2014/10/why-2014-wont-be-the-warmest-year-on-record/>
- [16] <https://www.tandfonline.com/doi/full/10.1080/16000870.2018.1471911>
- [17] <https://data.giss.nasa.gov/gistemp/history/>
- [18] <https://data.giss.nasa.gov/gistemp/history/>
- [19] https://data.giss.nasa.gov/cgi-bin/gistemp/stddata_show.cgi?id=501941200000&dt=1&ds=5
- [20] Sample paper on the debate from Journal of Geophysical Research – “There remain important inconsistencies between surface and satellite records.” <https://pielkeclimatesci.files.wordpress.com/2009/11/r-345.pdf>

<https://wattsupwiththat.com/2019/04/21/cooling-down-the-hysteria-about-global-warming/>

[21] <https://realclimatescience.com/2019/03/nasa-tampering-with-reykjavik-raw-temperature-data/>

[22] <https://www.carbonbrief.org/explainer-how-surface-and-satellite-temperature-records-compare>

[23] <https://data.giss.nasa.gov/gistemp/history/>

[24] <https://data.giss.nasa.gov/gistemp/>

[25] CO2 has risen from 315 ppm to 380 ppm per Mauna Loa Observation 1960 – 2018.

[26] <https://reason.com/archives/2016/06/17/climate-change-prediction-fail/print>).

[27] https://www.ncdc.noaa.gov/temp-and-precip/national-temperature-index/time-series?datasets%5B%5D=uscrn¶meter=anomaly&time_scale=p12&begyear=2004&endyear=2019&month=2.

[28] <https://www.nytimes.com/1988/06/24/us/global-warming-has-begun-expert-tells-senate.html?/pagewanted=all>

[29] NOAA Tides & Currents –

https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=9414750

[30] US Hurricanes: <https://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-17-0184.1>

[31] Global Cyclone activity: <https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2011GL047711>

[32] http://appinsys.com/globalwarming/gw_4ce_glaciers.htm

<https://www.the-cryosphere-discuss.net/tc-2018-22/tc-2018-22.pdf>

https://www.researchgate.net/publication/312185500_High_sensitivity_of_North_Iceland_Trollaskagi_debris-free_glaciers_to_climatic_change_from_the_Little_Ice_Age_to_the_present

[33] <https://www.theguardian.com/environment/2001/jan/23/globalwarming.climatechange>

[34] In 2019, Mother Nature is making this point emphatically with at or near record snowfall and cold temperatures across North America and Europe.

[35] Prof. Ross McKittrick

http://www.rossmckitrick.com/uploads/4/8/0/8/4808045/gatekeeping_chapter.pdf and Judith Curry are well known commentators on this phenomenon.

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