

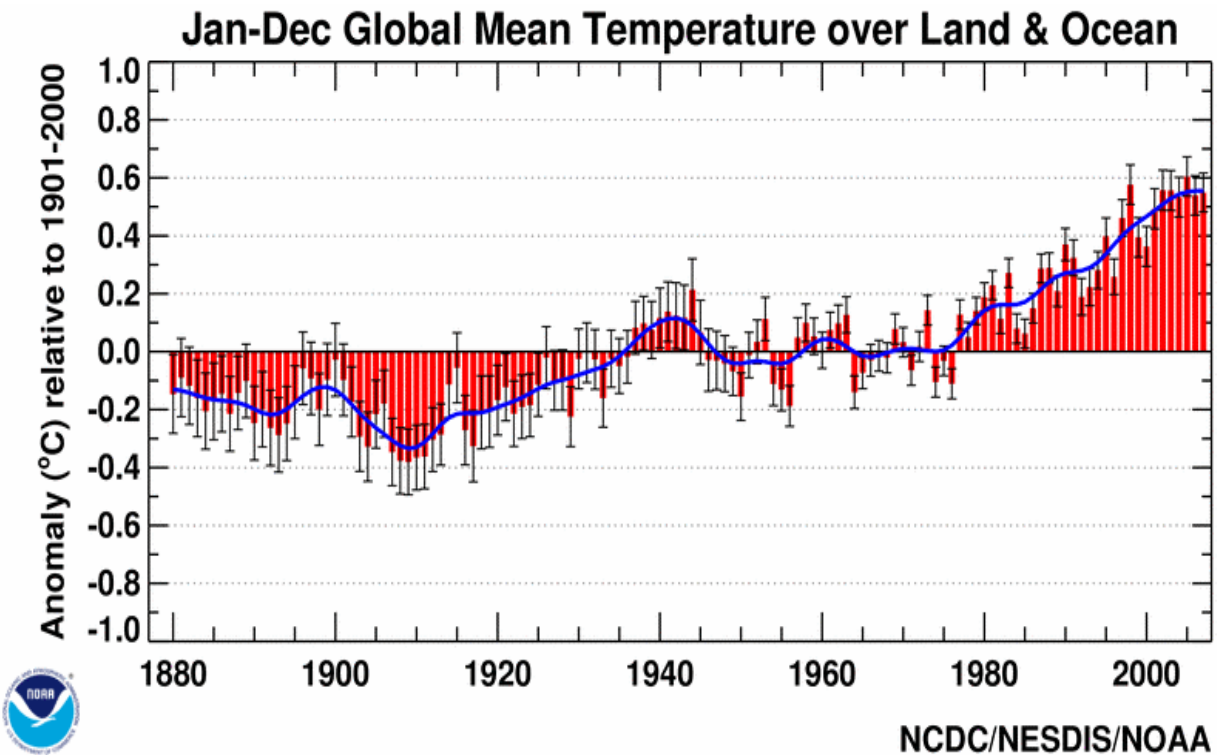
Global Warmists and Fun with Statistics

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We now know most “global warming” data is suspect. But if *all* the data were completely accurate, one should still question how Global Warmists (short for Warming Alarmists) *depict* data to manipulate opinion. The purpose of this paper is to show how those trying to convince you of something can “play with the pictures” to tell stories that have not really happened.

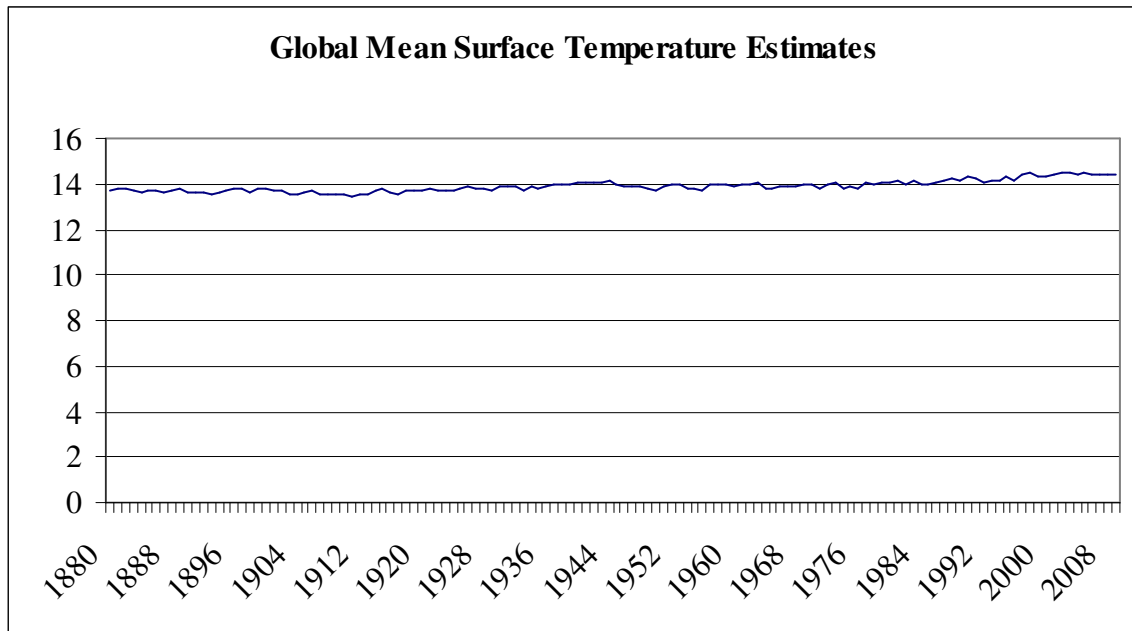
Darrell Huff’s wonderful little book, How to Lie with Statistics, should be required reading. One of his major points is that one can purposely mislead readers through the graphical depiction of statistics. The format, scale, and even colors may tell a story that appears stronger than facts can support.

Below is a typical chart used to demonstrate the evils of global warming and its tsunami-like increases in temperature.



Note the scale on the chart: it *measures only one degree* of Celsius in each direction. Over the course of 130 years the world’s average temperature bounced from its lowest level to its highest by all of 0.9 degrees. If one simply moves from the data’s beginning to end, the difference turns out to be only about 0.6 of one degree. Clearly we must spend trillions of dollars to prevent such massive changes!

Over the course of a year and across the globe, temperatures vary much more. One can experience temperatures that range from below zero to well over 45 degrees Celsius. Wouldn't that be a better scale to use for such a chart? However, using that scale you would notice little movement in 130 years. For the entire 20th century, the average annual surface temperature was 13.9 degrees Celsius. Using a more appropriate scale creates much less dramatic results than NOAA uses to alarm you, and pry money out of your pocket:



But Warmists would quickly tell us that this depiction is not dramatic! True. They might also point out that small differences in temperature *might* have dramatic impacts on our lives. They are welcome to prove this using reasonable science and honest depictions of data.

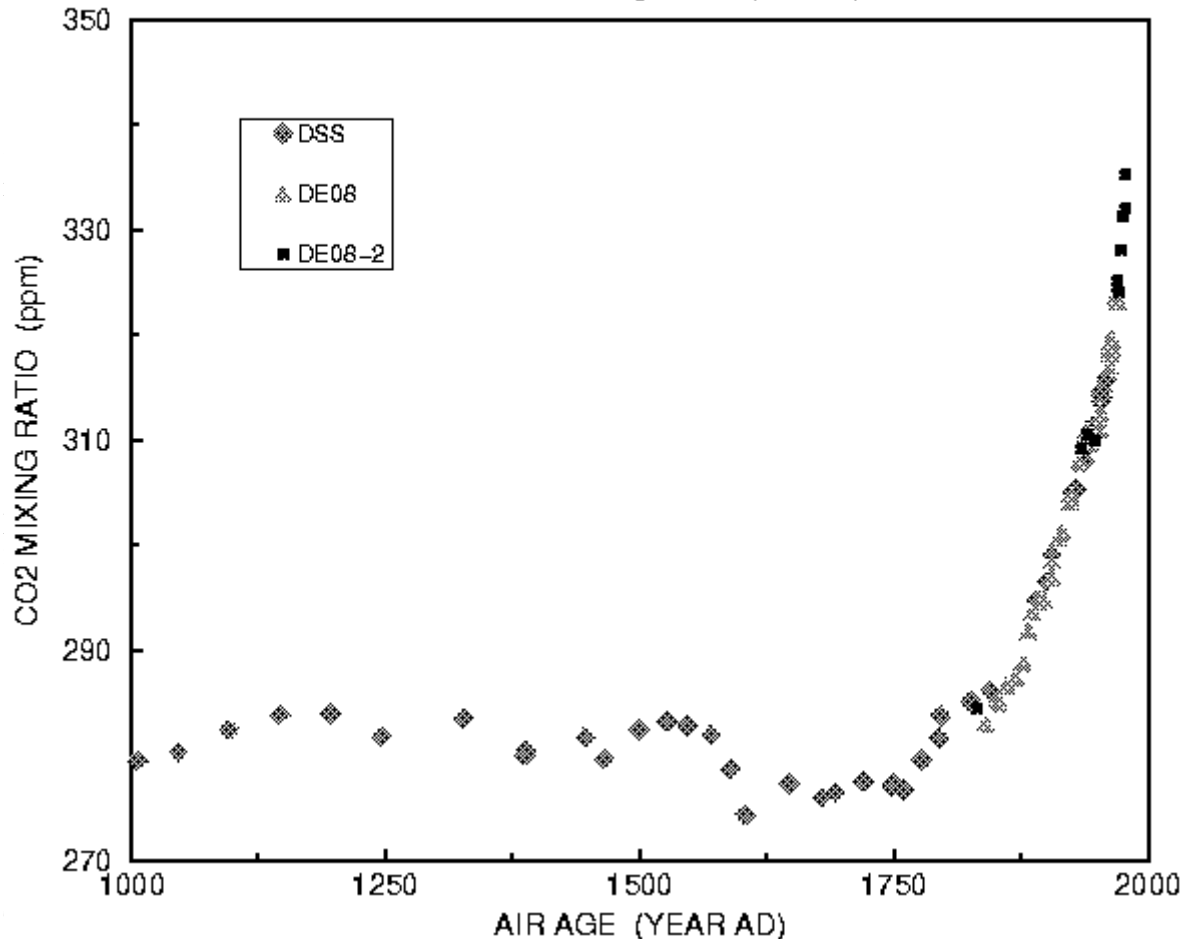
What could cause temperature to swing by as much as 0.6 of one degree Celsius? What could drive politicians to demand new laws and taxes? (Actually, it takes little to drive politicians to demand new laws or taxes.)

The Warmists feel these “large” temperature swings are the result of massive buildups of CO₂ in the atmosphere. Therefore we should spend trillions of dollars, euros, and yuan to fix the problem. (Regretfully, they mostly want to spend dollars—your dollars.)

The next chart is one of the most famous depictions of the buildup of CO₂ over the past 1,000 years. Look what modern man has done in 250 years: CO₂ increased by 60 parts per *MILLION* since the American Revolution. (George Bush *must* have had a relative involved.)

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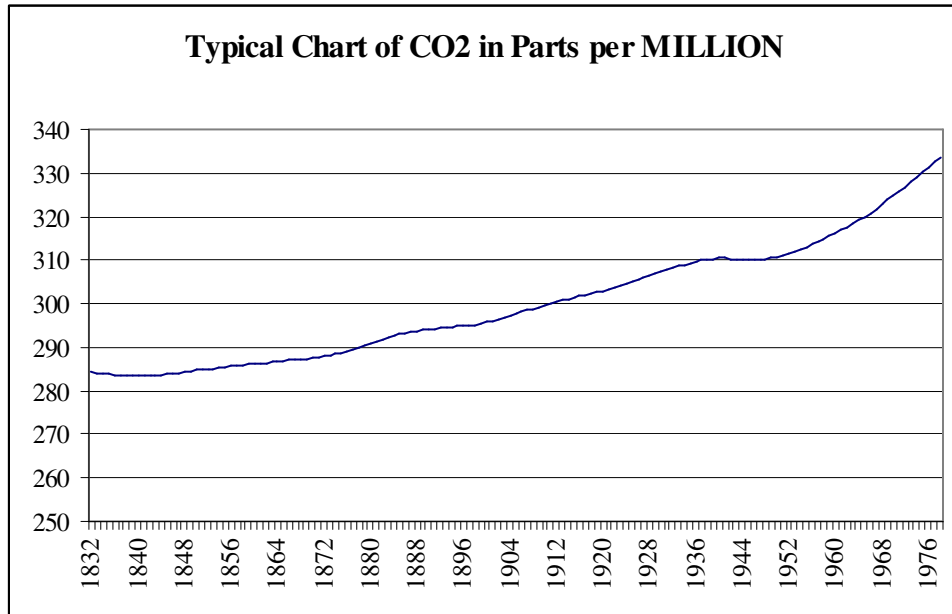
Source: Etheridge et al. (CSIRO)



Assuming the data is correct (a big assumption that a leading Warmist recently discredited), there are some simple graphic points to note:

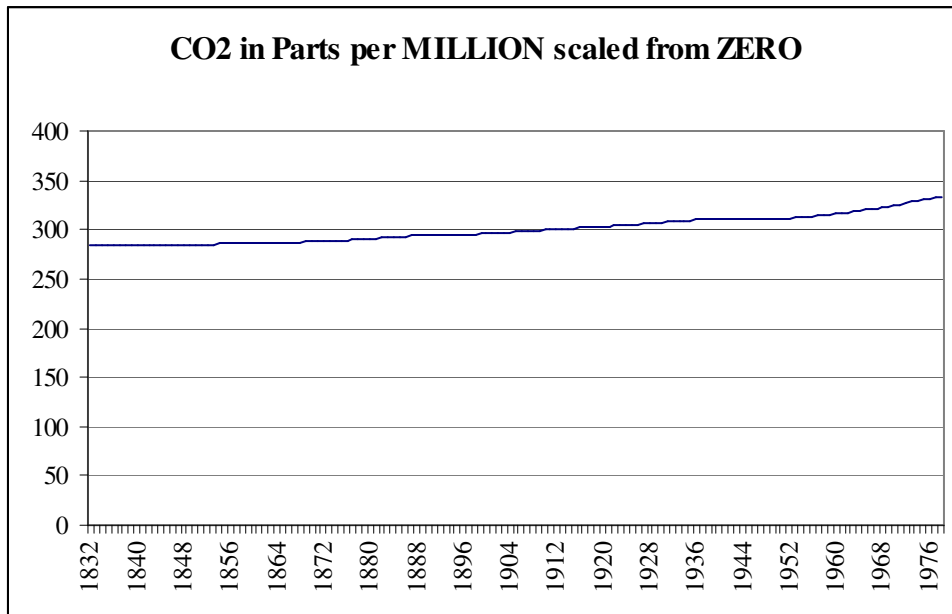
- Why start the scale at 270 parts per million rather than zero? Why end it at 350? Why use 80 parts per million rather than a scale running from zero to one million? Is the goal to make a small increase appear more dramatic?
- We are talking about a concentration in the atmosphere measured in parts per *MILLION*. If we were measuring parts per hundred, or even per thousand the concentration of CO₂ would not even reach one.
- So from 1750 to 2000, or 250 years, CO₂ concentrations increased from about 275 to about 335 parts per million. A *massive* increase of 60 parts PER MILLION in 250 years. One can quickly understand the cause for concern. So what if the real numbers aren't very big; we can make them *look* big by picking the right graph.

One of the Warmist's most popular data sets is CO₂ concentration from 1832 to 1978, also provided by Ethridge, et al; normally depicted in a chart like this:



CO₂ increased by 49.4 parts per MILLION in 148 years; but on this scale (250 to 340 parts per million) it **graphically looks like** the concentration approximately *doubled*. Clever researchers realize most people look quickly at a graph and ignore the scale.

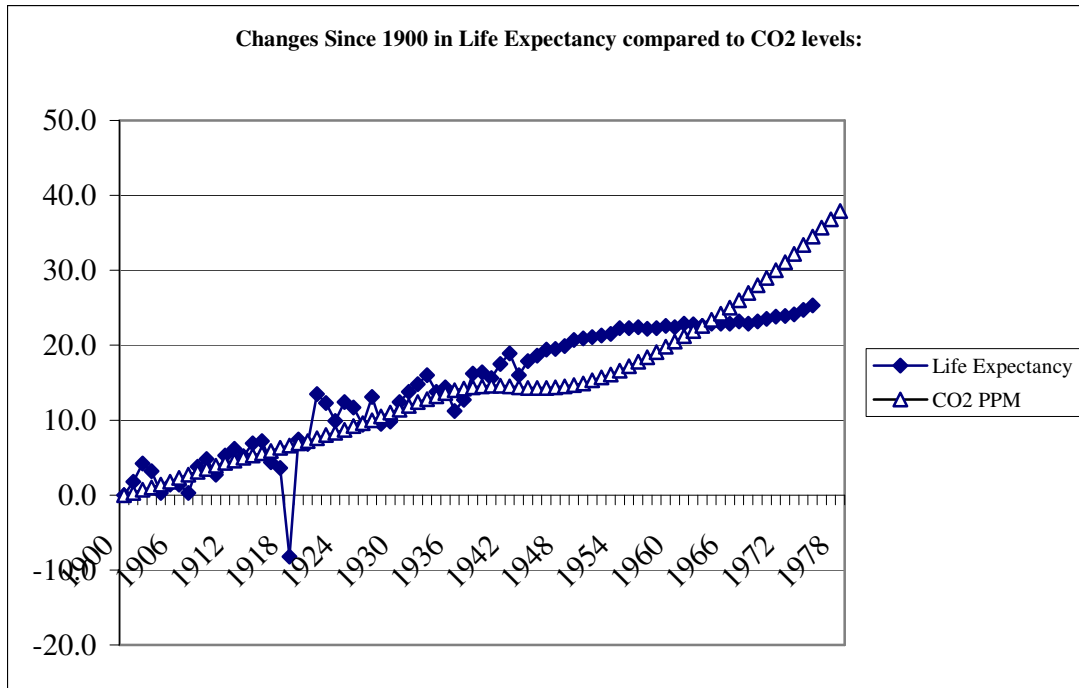
What would happen if we simply start the scale at zero, as we expect in the real world? (We need CO₂ in the atmosphere for plants to grow, but don't really know its optimum level.) The next chart shows the same data with a more realistic scale:



Things don't look so bad. The small increase in CO₂ levels in 146 years is more accurately depicted. Since we measure CO₂ in parts per *million*, a larger scale would be more appropriate; but going beyond this version reveals that changing CO₂ levels are inconsequential.

While necessary for plant life, we don't know the real effect of CO2 levels on human life.

What if a scientist created a hypothesis that increased CO2 levels are *good* for human life? What does data from the twentieth century show? The following chart tracks life expectancy in years (Centers for Disease Control, www.cdc.gov) compared to the level of CO2 in parts per million. To "normalize" the data (a statistical method) we have calculated the *change* in each variable since 1900 so that both sets of data start at zero.



Other than one outlier in the 1920s, these numbers track closely through World War II and follow each other *very* well over the whole period. One could conclude that increased CO2 levels have led to longer life expectancy in the United States.

(For the statistically inclined these two data sets have a very strong "correlation". The "coefficient of determination", or R² is a very strong .78 on a scale of 0 to 1, with 1 denoting perfect correlation. To prove his point, a clever researcher might arbitrarily stop at 1960, when most of the gains in life expectancy had occurred and we began to spend health care dollars like drunken sailors. From 1900 to 1960 the R² is an even stronger .85. Biased researchers like the Warmists would conclude: pump *more* CO2 into the atmosphere to *increase* our life spans and Al Gore could have another Noble prize.)

To be honest, this statistic indicates relationship, not necessarily causality. Often there is some third variable that impacts both of the measured effects. Twentieth century industrial society improved our diets, sanitation, and other factors that lead to longer, healthier lives. As China and India strive to bring such benefits to their people, one can better understand why they resist elite western ideas to turn back the economic clock based on unproven Warmist theory.

Of late, we have learned to doubt the accuracy of the Warmists' data and their scientific method. The point of this pamphlet is to remind people not only to challenge experts' data, but also look closely at how people portray information they use to manipulate you.