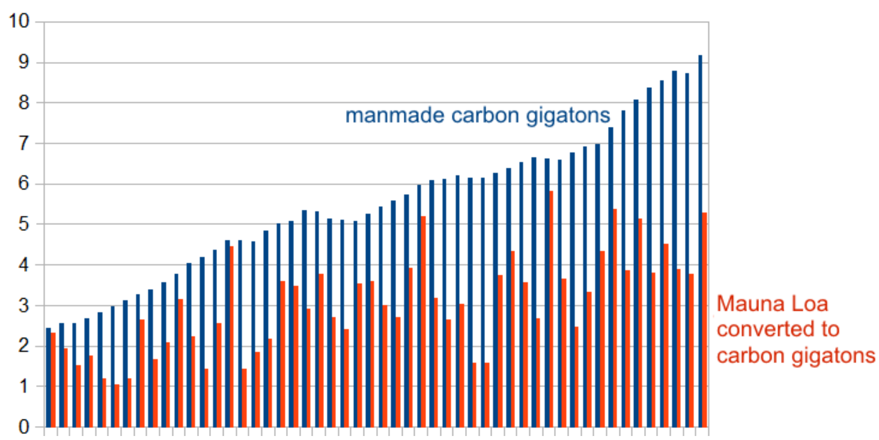
Mauna Loa vs Manmade Emissions

Alan Siddons

Principle of method.

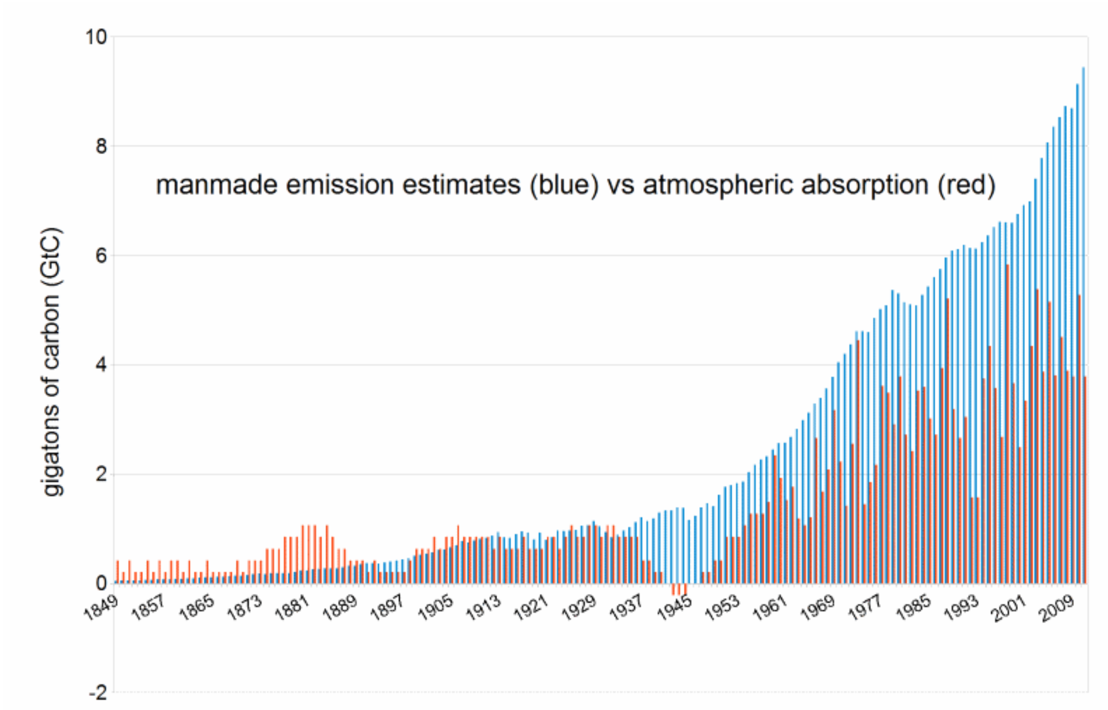
First you take Mauna Loa's CO_2 record for a certain year. Then you convert its ppm value to its carbon content in gigatons (GtC). And then you find the DIFFERENCE between that weight and the weight the year before. You proceed year by year this way, recording the differences in weight. Next you get a corresponding list of yearly global manmade emissions (in gigatons of carbon) and compare it to the Mauna Loa record of weight differences. Now you're comparing apples to apples, weight to weight. And this is the result.



To clarify again, this plot compares the carbon weight of human emissions to *differences* in the atmosphere's carbon weight; it covers 1959 to 2010. For example, in 1959 the CO_2 reading worked out to be 315.97 ppm, which translates to 673.02 GtC. Since the previous year's value was 670.74 GtC, this marks a 2.28 gigaton difference, as indicated by the first red column. And so on.

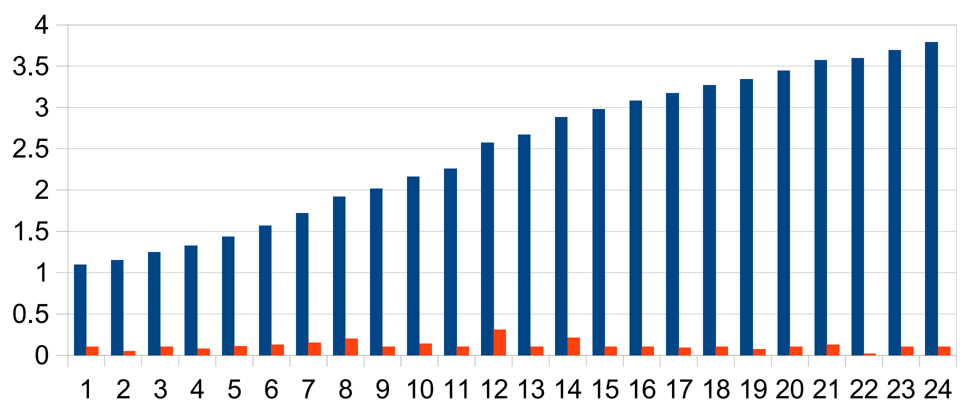
The *average* Mauna Loa carbon difference works out to be about 56% of manmade carbon, but the individual values which compose this average are all over the place, appearing to have no firm connection to human emissions. Nevertheless, it's clear that as (purportedly) human emissions climb so does the apparent ability of the Earth to relocate them into carbon sinks, for the atmosphere keeps failing to acquire those emissions by a large proportion. They have to have gone somewhere else.

In addition, when you include values for earlier times, using estimates for both atmospheric carbon and human emissions, you see at least a rough kind of correspondence in most of the reconstructed section.



Notice, though, how presumably “accumulating" CO_2 goes negative at one point: it falls below zero. As soon as Charles Keeling’s CO_2 measuring system enters the picture, however, seemingly random spikes appear.

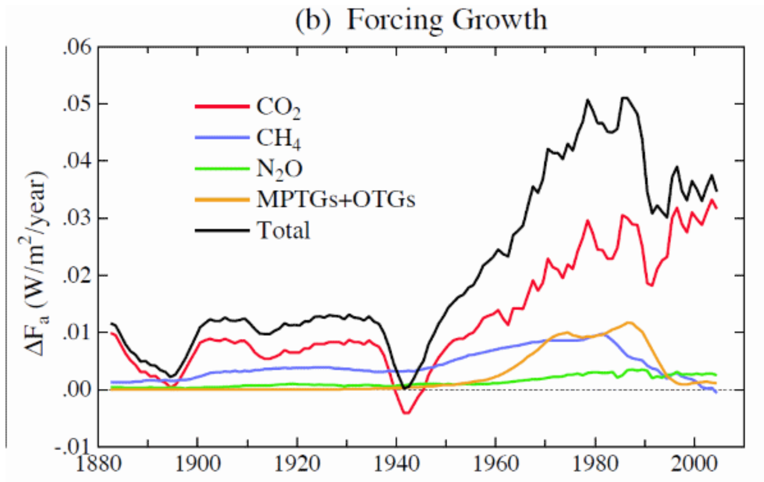
To get your bearings, here's what a more or less steady increase of something would look like. Blue columns represent the trend itself, red the difference between each column.



If Mauna Loa's trend is due to the atmosphere absorbing increased human emissions, then, we'd expect differences between columns to be somewhat uniform. Instead, Mauna Loa's differences vary from about 1 to nearly 6 GtC. Meanwhile during this timespan, differences in manmade emissions varied by mere fractions, the greatest difference being 0.44 GtC.

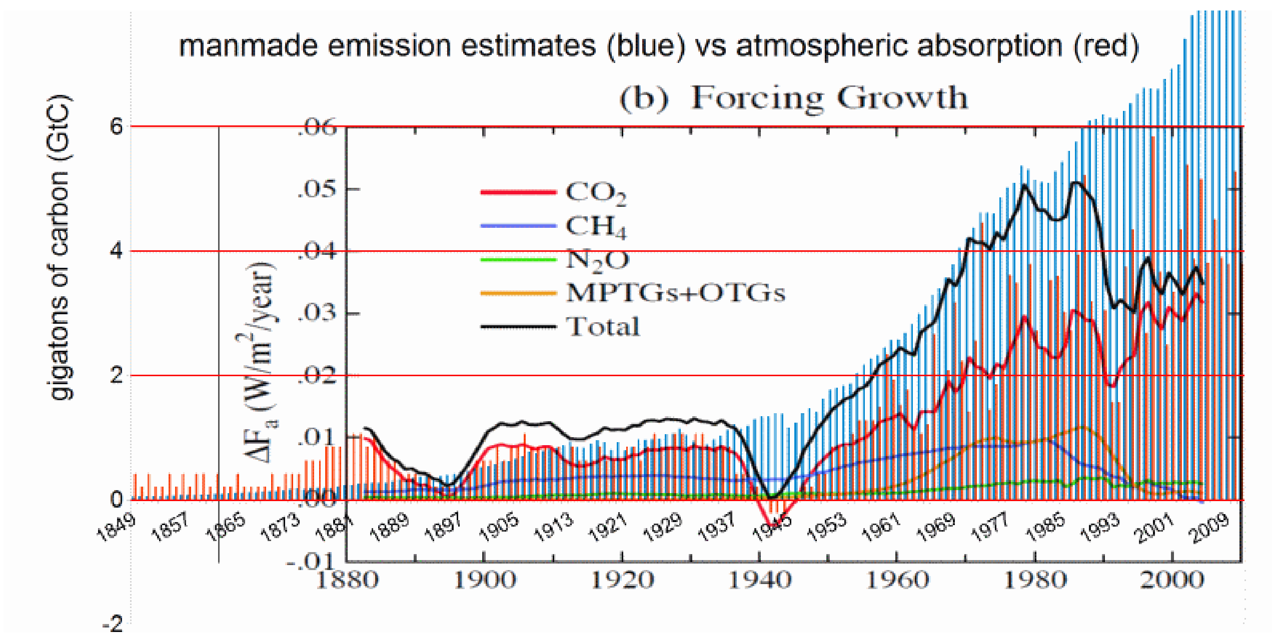
All of which raises a question: Is Mauna Loa measuring anthropogenic CO_2 – or something else?

Of equal interest, perhaps, is that climate scientist James Hansen employs a difference of weight method himself.



This chart is from *[Climate simulations for 1880-2003](#)*.

Hansen's chart designates the Y axis as CO_2's radiative forcing factor on a watt per square meter basis. Thus, for instance, .04 indicates 4 W/m² of forcing over the span of 100 years. So observe that this radiative forcing factor falls below zero in the 1940s. Rather odd. But if you still can't see a weight-difference method in use, this might help.



This is Hansen's chart superimposed on mine. He may be working with a slightly different data set, and smoothing out the profile to conceal its jaggedness, but his CO_2 pattern is the same.

What he calls a .02 watt per square meter forcing per year, however, in reality represents a 2 gigaton difference of carbon in the atmosphere. By the same token, 4 gigatons equals .04 watts per square meter of forcing per year. And so on.

In other words... well, let's just say that Hansen's chart is questionable — unless indeed **1** gigaton of carbon in the atmosphere really does induce **1** W/m² of radiative forcing in **1**00 years. What a queer coincidence that would be! But somehow I doubt it.

March 2016