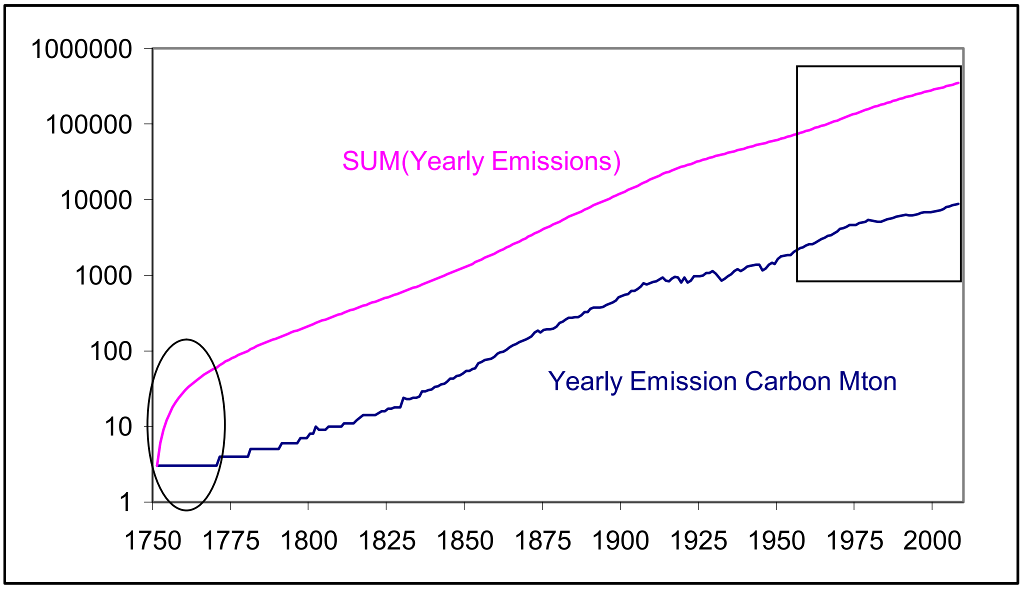
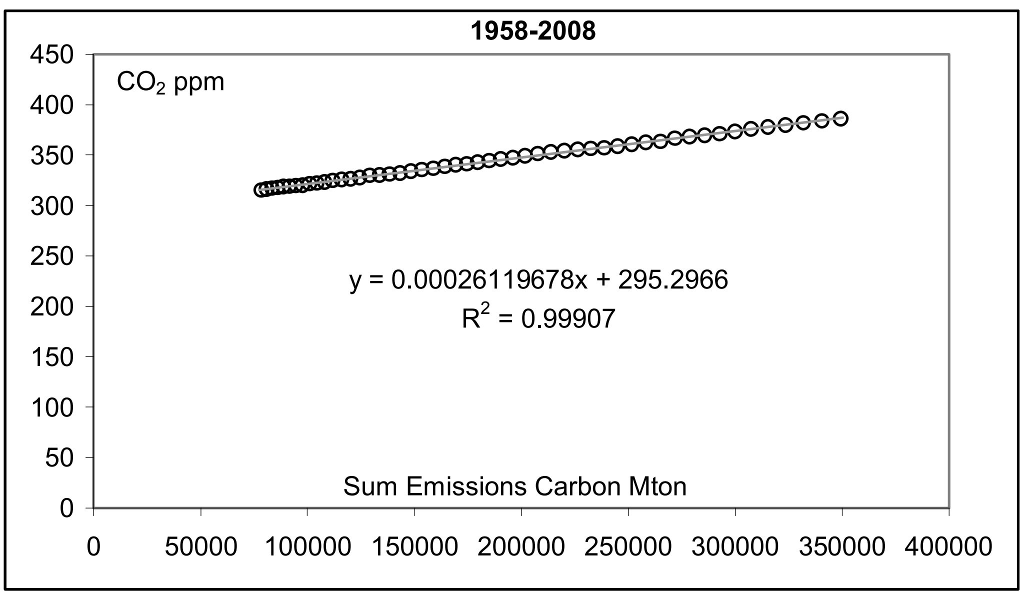
Using http://cdiac.ornl.gov/trends/emis/tre_glob.htm:

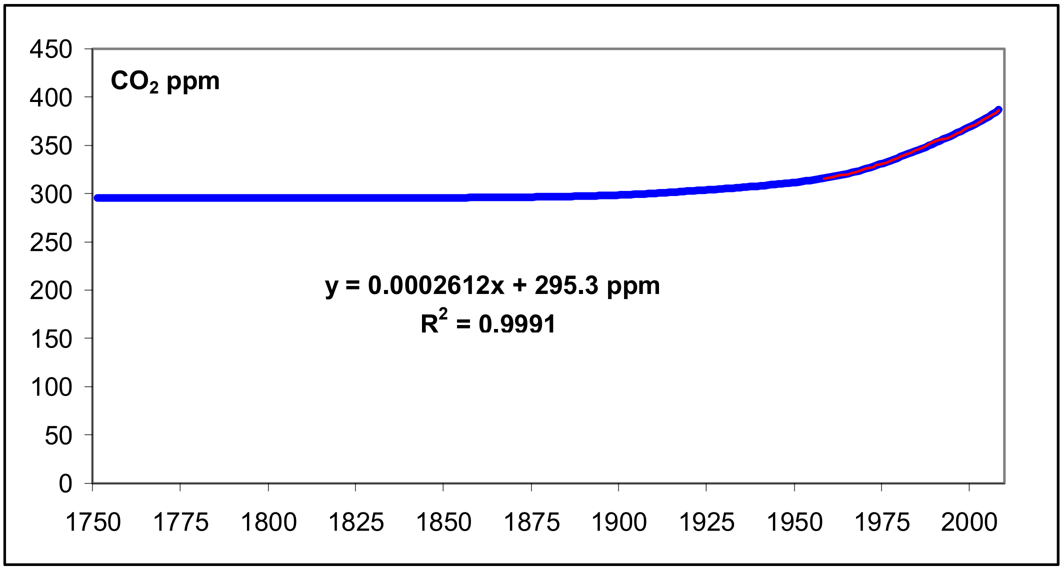


Apart from the first 20 years, there seems to be a decent exponential growth. Now if we assume that ***all*** the emissions stay in the atmosphere, which is most likely wrong, we might try to convert the emission amounts into a CO_2 ppm. Since 1958 [the box] we have data for CO_2. There seems to be a tight linear fit (R^2 = 0.9991):



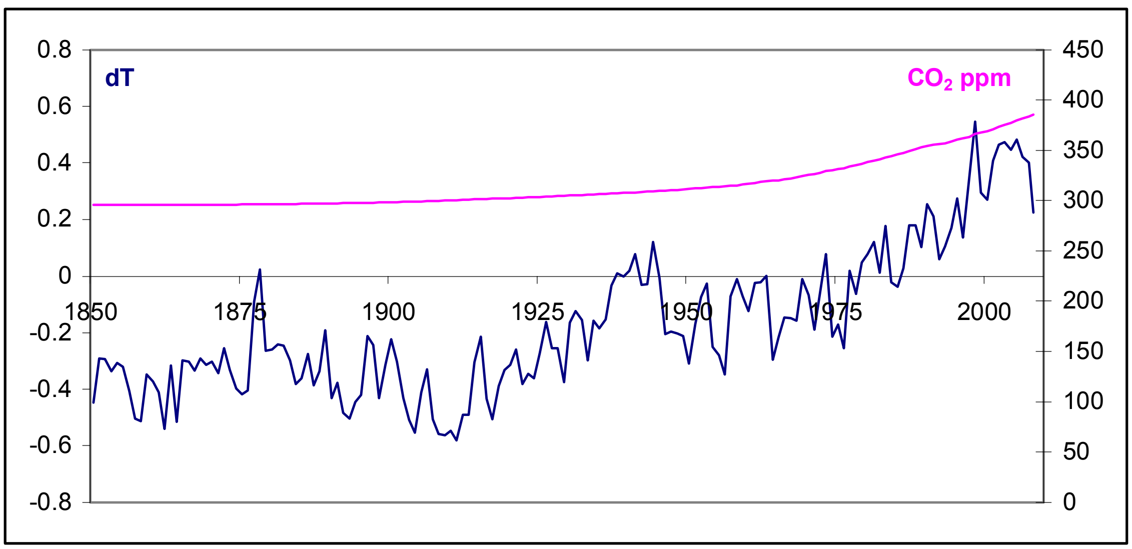
Since we don't have anything better we'll assume that this relation is valid at all times.

We can then calculate yearly values of CO_2 and compare with observed:



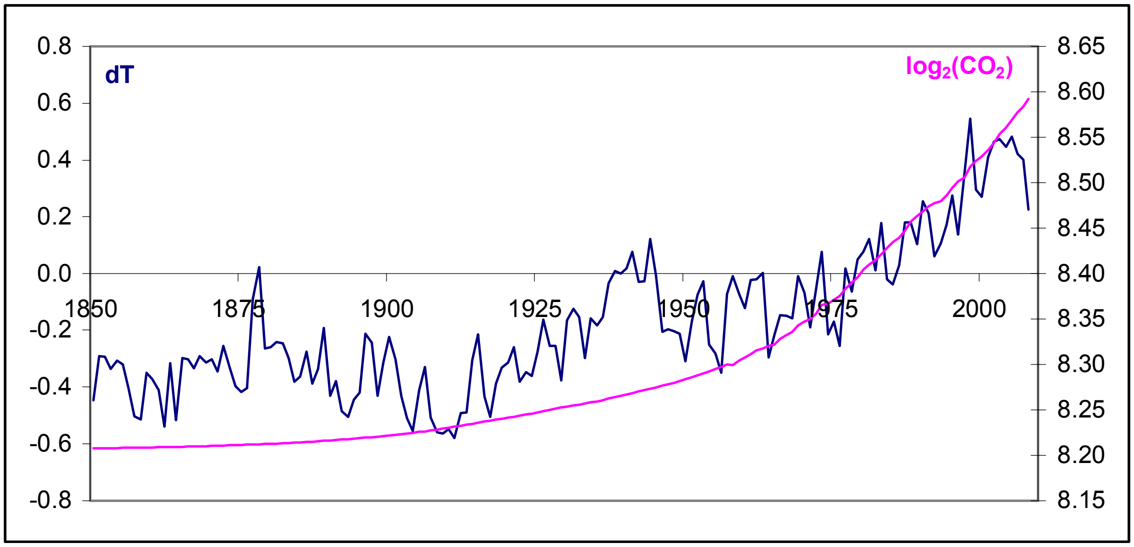
The blue is calculated from the emissions and the thin red curve is observed CO_2.

We can now plot dT and CO_2 on the same graph. I let the software choose the scaling:

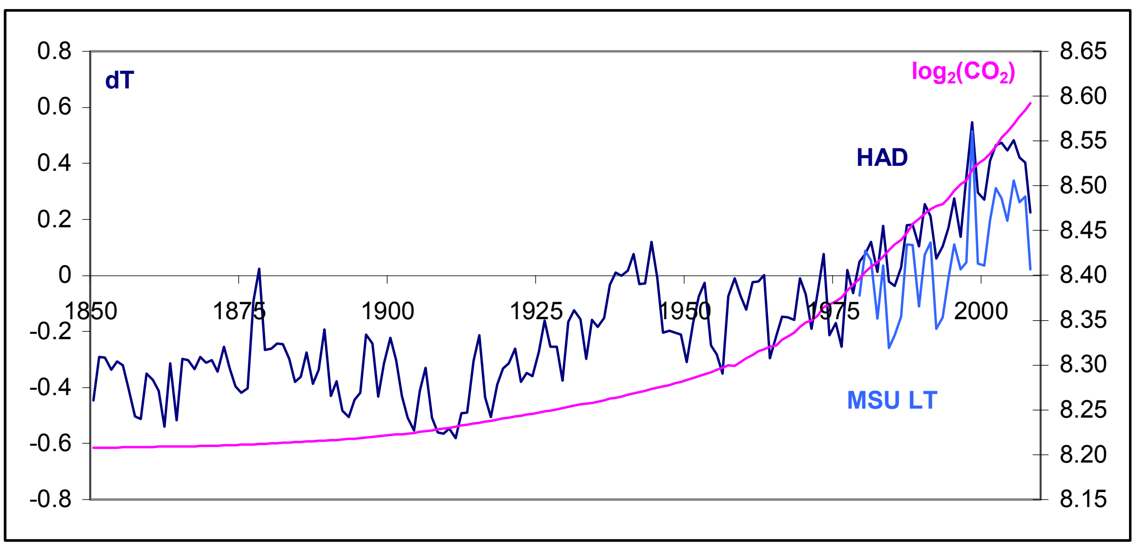


But we all know that we should use the logarithm of CO_2, so we then just do that [and let the software choose the scaling].

That gives us the Figure on the next page:



Now, the Hadley data is not the only temperature series we have. As in the original D'Aleo and Tammy graphs, there is also the MSU LT (Lower Troposphere) data back to 1979. We plot that as well [in light blue]:

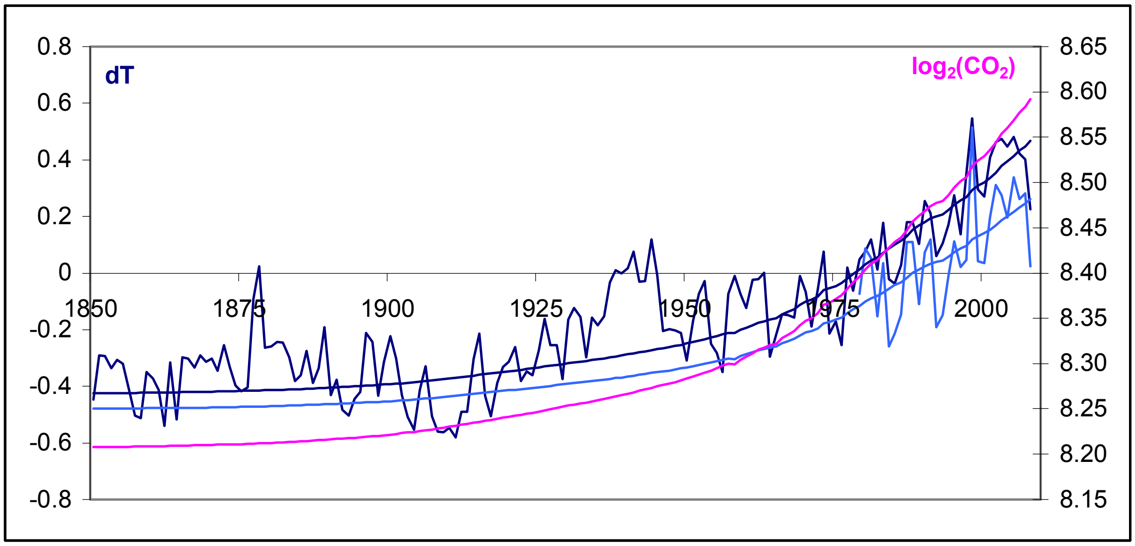


It is clear from the graph that here are different dT sensitivities for the two series [maybe not surprising as they refer to different layers of the atmosphere].

One can now cherry pick one over the other depending on what one wants to show. We could also determine by a least-square-fit the two sensitivities using the same time interval [1979-2008]. We find:

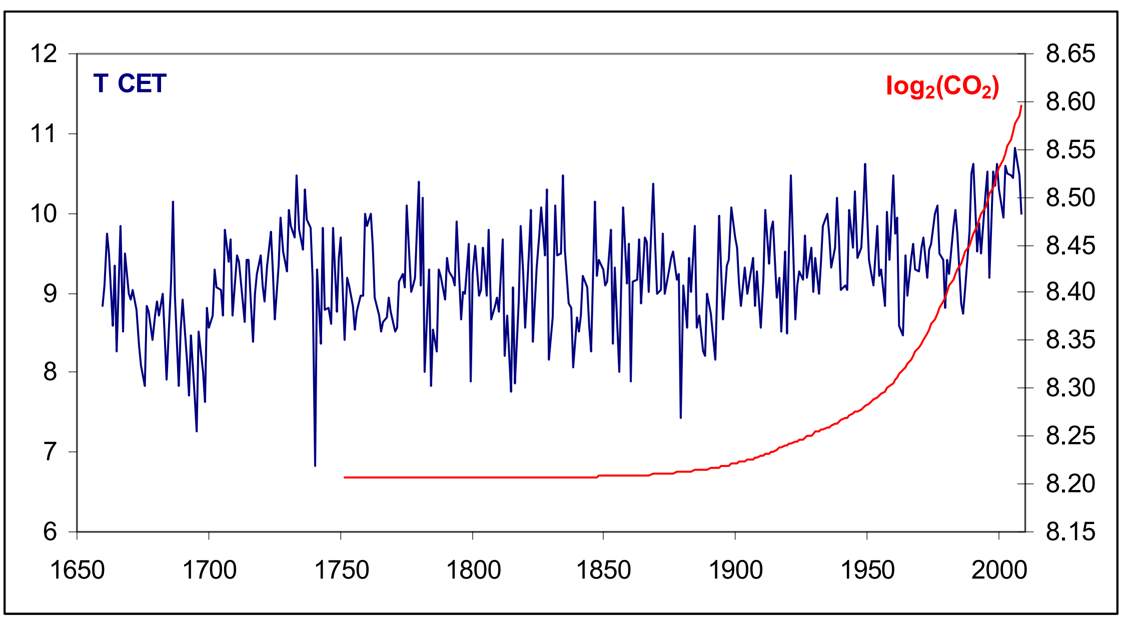
$dT = 2.3204 \log_2(CO_2 \text{ ppm}) - 19.470$	HAD	$R^2 = 0.65$
$dT = 1.9280 \log_2(CO_2 \text{ ppm}) - 16.304$	MSU LT	$R^2 = 0.38$

For illustration [I'm not sure if it makes sense, but let's do it anyway], we can apply these relations and calculate dT from CO_2 for the whole time since 1850. The result is shown as the smooth [dark and light blue] curves:

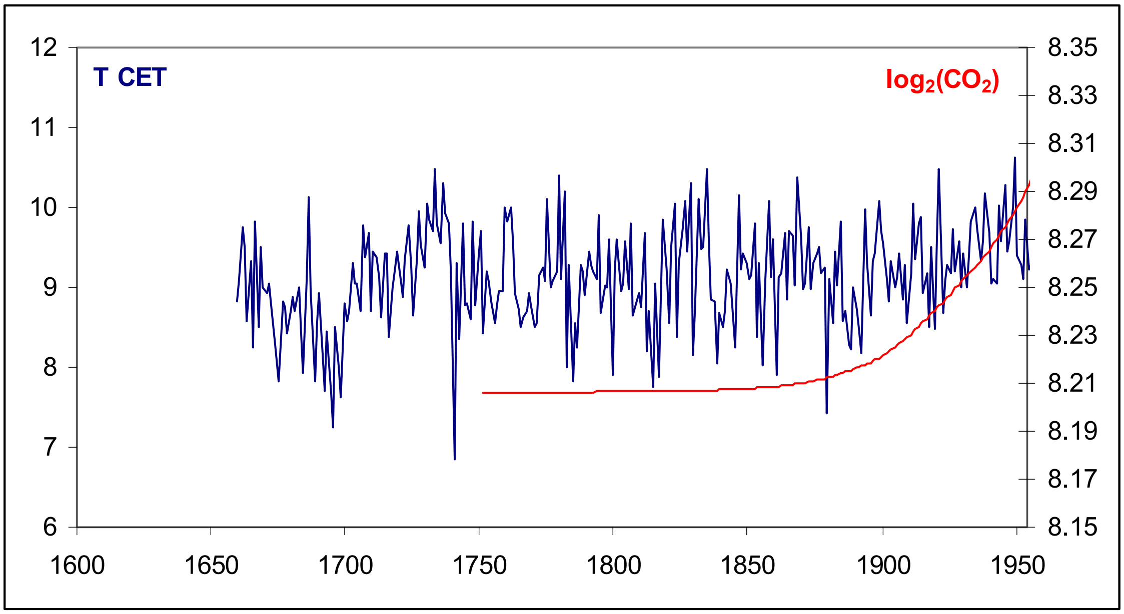


Interpretation is up to the beholder, especially that the [calculated] anomalies at present are quite different, even if you slide the smooth light blue curve up to agree with the smooth dark blue curve on the left, to compensate for different reference intervals. The above is the ***whole*** truth as it should [or to be gentler: *could*] have been presented.

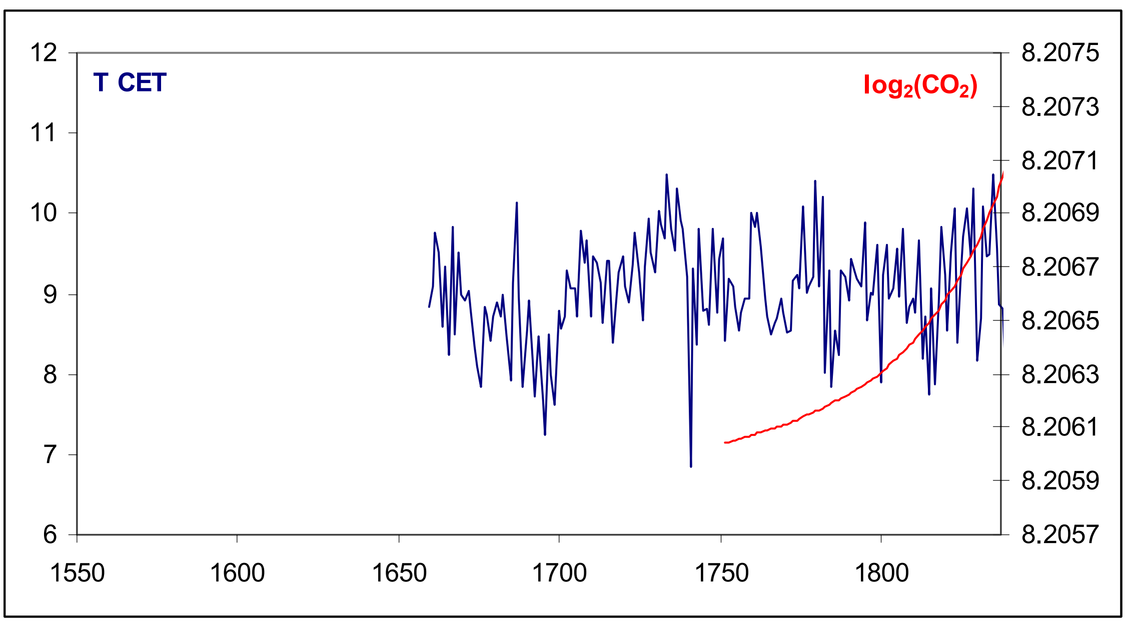
We have temperature records going further back, although they are not global, so they might be a different kettle of fish, but let's use them anyway. Here is the Central England Temperature [CET] record and CO_2:



Note how closely the temperature follows CO_2 over the last 30 years. But wait! Imagine people in 1954 had wondered why temperature back then had also been rising since the 1920s, and had had the idea [going back to Arrhenius (1896), after all] that CO_2 was to blame, and that they would plot temperature versus $\log_2 CO_2$. Their graph would have looked like this [they might have argued about the scaling, but they would have found one that fitted]:

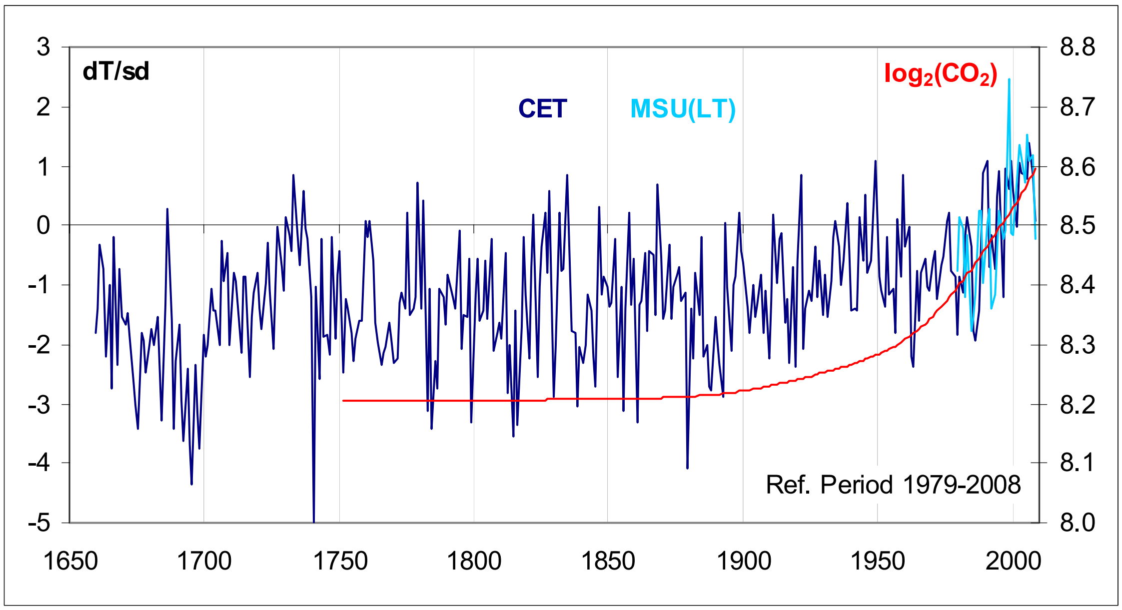


But, the temperature was also rising during 1815-1835, so back then, they may have argued over this Figure:



But, back in 1736 they might have noticed the rapid rise in temperature since 1700, and… Ah, well, we don't have the CO_2 record, so maybe that was a solar effect…

Since CET is regional and therefore tends to have larger fluctuations, one might try to normalize CET and [the presumably good satellite global record] MSU to the same reference period [1979-2008; part of 2008 estimated] and to divide the result by the standard deviation [over that same interval]. For what it is worth, one can then plot both on the same graph and compare with CO_2:



The scale of the CO_2 record was here adjusted [cherry picked, if you will, for visual effect] to match that of the combined CET/MSU record [over the time where we have MSU data]. Not too surprisingly, the 1998 'el Niño' was much more prominent in the MSU data. Here is the recent part of the plot: