Temperature and CO2 Trends
(from C2ES)

The NY TImes has a thoughtful appraisal of the warming plateau — the fact that global temperatures rose until about fifteen years ago and have wobbled around the same level since then. I think the Times has it about right, but I’d like to point to a less obvious reason why the plateau should not make us doubt the reality of climate change. The *Times* points out that the climate system is still dominated by natural variability, which can obscure longer trends, that it’s a lot warmer than it was fifty years ago, and that scientists are hard at work trying to figure out where the missing heat is going (maybe the deep ocean).

All of that is true, but there’s a more subtle reason why the warming plateau shouldn’t change our mind about climate change. We can’t just ask whether the plateau is consistent with models of global warming; we also have to ask if it’s consistent with a world *without* climate change. Unless it favors one view more than the other, the plateau doesn’t matter in terms of our belief in global warming.

To simply a bit, let’s say we have two hypotheses:

The “climate change’ hypothesis CO2 concentrations correlate with global temperature. Deviations from the trend are due to natural variability.

The “no climate change” hypothesis. The global temperature has been static since 1900. Deviations from the 1900 temperature norm are due to natural variability.

Here’s the point: both hypotheses have to rely on natural variability (or unexplained factors) to explain the plateau, so neither hypothesis gains ground against the other. The climate change hypothesis predicts that the world would probably have gotten a bit warmer during the fifteen year period. The “no climate change” hypothesis predicts that the world probably have gotten cooler, reverting toward the 1900 temperature norm. *We haven’t observed either outcome.* So our assessment of the relative likelihood of the two hypotheses shouldn’t be changed: the fifteen year plateau is completely uninformative about the choice between these hypotheses. Whatever you thought about reality of climate change anyway, the fifteen-year plateau shouldn’t make any difference at all to your conclusion.

This is a bit of an oversimplification. In particular, the plateau temperatures are further away from the 1900 norm (by about .6 º C) than from predicted warming (about .1º). This makes the “climate change” hypothesis more likely than the alternative since it doesn’t have to assume as much natural variability to explain the plateau. In any event, it seems hard to look at the graph and still think that climate isn’t changing or that it’s not related to CO2.

(Hat tip to the Reverend Thomas Bayes for suggesting this line of argument.)