DEXTRAS ENVIRONMENTAL ENGINEERING LP

ATMOSPHERIC CLIMATE TESTING SIMULATOR©

Introduction

During the past twenty years, it has become readily apparent that the actual scientific link between atmospheric temperature increases and CO2 concentration has never been put to the test in a standard laboratory fashion. Rather, the entire greenhouse gas theory is founded on purely mathematical *algorithmic* models that have, so far, proven to be completely unreliable. These theoretical models cannot even confirm the actual field data that is currently on the official record, let alone predict the future. This does happen in science from time to time and when it does, the only rational approach is to go back to first principles and re-create the known physical parameters in a controlled laboratory environment that closely *simulates* the behavior of the entire system. In this way, the net effect of changes to certain parameters (like CO2 concentration) on the system output temperatures can be measured directly. The numerical results of same, one way or the other, will bring a much needed closure to the whole issue and there will be no need to adjust the data to suit the "favored outcome"[1]. The purpose of this ACTS design is to do exactly that.

First and foremost the entire issue itself should be put in its proper perspective. The current CO2 content of the atmosphere is usually quoted as 400 parts per million (ppm). This number sounds large but in reality, it's a mere .04 PERCENT of the total atmospheric volume. To fully appreciate how small that is, one need only compare it to the concentration of the other noble gases in the atmosphere namely: Nitrogen – 79% (790,000 ppm) , Oxygen – 20% (200,000 ppm) and Argon - .9% (90,000 ppm). When expressed in consistent units, it should come as no surprise that most lay people would intuitively know, by simple common sense, that it is highly unlikely that even if you doubled the CO2 content to say, .08%, the chance of it having any kind of serious effect on the temperature of the earth (or its atmosphere) is extremely remote. However, common sense is a good start but it's not sufficient. What we need to do now is to examine the problem from the point of view of compliance with known axiomatic "equations of state" that form the basis and govern the science of, thermodynamics.

Fortunately for us, the fundamental lab work (and subsequent analysis that followed) has already been done for us by two giants of science, Robert Boyle and James Prescott Joule. First is the well known Boyle's ideal gas law, namely: PV = nRT. Every single cubic meter of air in the atmosphere must comply with this equation of state where P is pressure, V is volume, n is the number of moles, R is a gas constant and T is temperature. Assuming the solar heat input is constant (a big assumption that needs to be verified) and at any given level in the atmosphere, P, V and R are effectively constant and so doubling CO2 content will increase n (the number of moles) but as we have seen above, its concentration is so small to begin with that its effect on "T" will be extremely small, if any. It is interesting to note here that actual temperature measurements of air throughout the troposphere from satellites since 1960 show no significant increase despite a 30% increase in CO2 concentration during this same 60 year period. This is a good indicator that we are on the right track but it's not quite good enough.

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[1] See "Big trouble in the Tropical Troposphere" by John Robson, Aug. 27, 2021

Relative to our atmospheric application of Boyle's gas law, there are two basic questions that arise namely: does it make any difference if our "air" is a mixture of gases (albeit only 2) as opposed to a single *ideal* gas and, assuming it does not, what about the energy conservation aspect of the entire system. This is where Mr. Joule comes in.

James Prescott Joule was a Manchester brewer who's primary interest was to discover the actual link between heat and work so he could optimize the energy consumption of his brewery kettle. He designed and built, in his own shop, a mixing tank apparatus to do exactly that on numerous fluids and gases, one of which was atmospheric air. This latter part was not considered that important in 1840 but it is important now for our purposes because what he found was that air behaved exactly like any other ideal gas in both the confined case (with adiabatic walls) and the free expansion. Of these two cases, the free expansion is the most relevant because it is a direct reflection of what our atmosphere experiences at all times. What Joule discovered was that he was unable to detect any change in temperature in a free expansion of air. (Using more modern measuring equipment, scientists later discovered that a *decrease* in temperature occurs but it is very small.) This then revealed a fundamental axiom of thermodynamics namely: *there is no work done on the system as a whole in a free expansion*. This answers the first part of the question with a resounding no, it doesn't make any difference that our air is not an ideal gas and, the free expansion aspect simplifies the *simulation* of same considerably.

The other results of his experiments, as we all know now, were of extreme importance and literally took the scientific community by storm at the time. We know it now as the familiar mechanical equivalent of heat, namely: it takes 4.2 kJoules of work to raise the temperature of 1kg of water, 1^0C. It proved, beyond the shadow of a doubt, that all energy is *conserved* and can never be destroyed. It is merely transformed from one medium (work) to another medium (heat) and vice versa. It paved the way for the discovery of the three laws of thermodynamics as we know them today but for our purposes, only the equation of state of the first law will suffice to answer the second question, namely:

$$\Delta U(\text{change in internal energy}) = W(\text{external work added}) + Q(\text{heat added})$$

In our atmosphere, Q is the heat added by solar radiation but W=0 because there are no Julian *paddles* adding external work and so, U=Q. This confirms the obvious statement that the only real temperature *driver* of the entire thermodynamic system is the sun. Everything else is merely a *reactant*, an important distinction. What it also tells us, is that if we should add or subtract some external work (and we will), then we can account for this equivalent heat input or output in standard fashion and ON BOTH SIDES OF THE CO2 LEDGER of course.

In light of all of the above, we can now begin the design of our Atmospheric Climate Testing Simulator, the results of which are shown on the attached General Concept Plan (ACTS 100). The basic idea goes something like this: Imagine for a moment a 6m dia. dot stuck on the surface of the earth that contains a standard temperature gauge 1.5m above the surface, is surrounded by a *standard atmosphere* as shown and is heated by a solar *reactor* whose solar intensity is 340 watts/m2 at the top of the ozone layer some 21 km away. Note that the remaining 100 km of the upper atmosphere is left out of the model for the time being because only the bottom 20 km below the ozone layer has any meaningful effect on climate. Also keep in mind that the actual heat transfer interaction between the earth's crust and the atmosphere is a mere 3 to 5m ! It is constant below that level for some 100m and then starts to climb by heat transfer from the earth's core which of course has nothing to do with atmospheric climate at all.

What this ACTS is designed to do is to replicate precisely this condition but laying the entire light beam and the atmosphere that goes with it on its side. Using an equivalent solar reactor and glass partitions, atmospheric pressures and temperatures can then be duplicated mechanically using standard vacuum and refrigeration methods. By attaching the very same temperature gauge to a miniature (6m dia.> 5m) globe that spins at the same rate (15 deg./hr), then our gauge should *see/feel* the very same atmosphere that our imaginary 6m dia. dot does and react accordingly. Extrapolating to the total atmosphere is then straight forward because it is merely the integration of millions upon millions of 6m dia. dots all parallel to one another and behaving in precisely the same way. Once a steady state has been achieved, then the net RELATIVE effect of increasing CO2 content can be measured directly (see procedure). The only thing that is not totally duplicated is vertical mixing of gases above the 1.6 km (1 mile) level. That may not be significant because most of the serious mixing occurs below that level in any event. However, partitioning at the 1 mile limit will prove conclusively whether the greenhouse gas effect is real or imagined because we are literally creating a glass *ceiling* and so, if there is no significant effect on Td and Tn temperatures in this confined artificial set up, then the whole theory is bogus. Our guess is that it will not affect temperature because the concentration is simply too low and a greenhouse doesn't work that way no matter where the ceiling is. A greenhouse holds its heat because the soil in the greenhouse absorbs the solar heat and the walls of the greenhouse hold it in. It's got nothing to do with CO2 concentration even at 5x concentration let alone 2x or 3x which this design will either confirm or DENY ! This kind of hard data from a controlled experiment in real time, has been and always will be, the final litmus test of any scientific hypothesis including this one. It's no different for us than it was for all of our scientific ancestors like Galileo, Newton, Boyle, Joule, Faraday and yes, even Einstein. Remember that Einstein's general relativity theory was never accepted until he could demonstrate, by actual measurement, how gravity can bend light during an eclipse.

Finally and as stated earlier, we have assumed that the solar heat input has remained constant but what if it wasn't ? There are only two possible cases to account for, namely: the sun itself is simply pumping out more radioactive energy (watts/m2) or, the quantum is the same but our radioactive shield (the magnetosphere) is getting weaker and allowing more of the extremely damaging *nuclear* portion of the total radiation (beta and gamma rays) to get through. If it's large enough, it will eventually overwhelm the ozone layer and end up on earth. Our ACTS design can accommodate both these scenarios and give us real time outputs to match. It is the prime reason why our solar reactor has been oversized and includes spent nuclear fuel. Running these additional tests will bring much needed closure to the whole subject.

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