

By Wayne Halm

Introduction

Recently one of the Global Warming guys announced that New York City was going to sink beneath the waves. Actually the guy said that the sea level was going to rise and cover the city - but that was too long for a headline.

The announcement was designed to make Headlines, and it did - but no one really believed it. The announcement also should have drawn a broadside of opposing statements, but it didn't - and that worries me. If no scientist type took the opportunity to blast this guy, maybe there is a reason, maybe the guy is on to something.

I have spent some time in New York and I've seen the hills there. Compared to anything we have in the South of Louisiana, they are virtual mountains. It occurs to me that my house would be minor reef long before the water reached Wall Street. And I just finished paying off the mortgage !!

So now that I have a stake in the Global Warming Game, I decided to look into it. This Article represents some of what I found.

The Bad Guy

Carbon Dioxide, CO₂, is being cast as the bad guy in the Global Warming show. And it is, well sort of, you see it's also one of the good guys. If all of the CO₂ in the atmosphere were to disappear all of the plants would die, they absolutely need the stuff - and it would be Siberia cold everywhere, the greenhouse effect is what makes it so nice down here.

So really it is not the existence of CO₂ in the atmosphere that is the problem, it's the amount of CO₂ that is causing the ruckus. I'm told that basically the more CO₂ in the atmosphere the warmer it gets, the less CO₂ in the atmosphere the colder it gets. I might think that kind of neat if I had not gotten used to things being the way they are.

The Problem

The CO₂ level in the atmosphere is rising, and that is supposed to make it warmer, which causes sea levels to rise flooding New York City (and creating Wayne's Reef in the northern Gulf of Mexico). That is the scenario that defines the problem. Definitely something to be avoided from my point of view.

The Problem with the Problem

However the problem has a couple of problems of it's own hindering admission of it. One, in spite of considerable effort, it hasn't been demonstrated that the planet is getting warmer (it seems like it to me but that may be because I have an inside job now). And two, the costs and consequences are not the same for everyone (while I find the prospect of owning a reef to be fairly frightening, folks further inland may only fear that I will move into their neighborhood).

The acceptance of the problem is further hindered by the only solution set forth to this point - cut back on fossil fuel usage (ie. Stop driving our cars). To get us to do that the problem would have to be clear, immediate, and personally deadly. This problem can't demonstrate any of those properties so the ruckus continues.

Back to the CO₂

There is nothing new about CO₂, it has always been here. I'm told that it spews out of volcanoes, always has and always will. I guess that is true, it had to come from somewhere.

Long long ago, way back, before the Egyptians, before the Dinosaurs, before the Trilobites, even before the Blue-green algae, something like four billion years ago, there were a lot more volcanoes and the air had a lot more CO₂ in it than it does today. You and I would die breathing the air that existed back then. Over those billions of years

The Carbon Cycles

"mega-trillions" of plants and animals have used the carbon out of the CO₂ in the atmosphere to make their stems and skeletons, and released the oxygen back into the air. This pulled the CO₂ levels down to near what they are today - and you and I can breathe the air.

However, not all of the CO₂ "pulled" out of the atmosphere stays out for very long - and all of it could possibly get back. Once the carbon is captured in a plant or animal it enters either the Short Carbon Cycle or the Long Carbon Cycle depending primarily on where the individual plant or animal lives and dies.

When the individual plants and animals die some of their carbon filled carcasses lay around exposed to the atmosphere and rot - releasing CO₂ back into the atmosphere. It's only those whose carcasses are taken away from the atmosphere that really contribute to the long term reduction of atmospheric CO₂ levels.

The Cycles

Basically the carbon is held out of the atmosphere only for the life of the plant or animal plus the time it takes its carcass to decompose or oxidize. It's almost like the oxygen wants its carbon back, and as soon as the living plant or animal stops actively resisting it moves in to reclaim its carbon and become CO₂ again. It's the decomposition time that varies the most and distinguishes the Short Carbon Cycle from the Long Carbon Cycle.

The Short Carbon Cycle

The duration of the Short Carbon Cycle is measured in years. Plants and animals that live on land basically make up this category. They live out their allotted spans and die. Their carcasses then lie on or near the surface, exposed to oxygen that converts most of the carbon back into CO₂ within a few years. The carbon in the carcasses probably passes through several digestive tracks in the process, but it ends up back as CO₂ within a relatively short time. Of note, trees fall into this category.

The Long Carbon Cycle

Fortunately for you and I there are a lot of plants and animals whose carcasses end up out of reach of atmospheric oxygen - namely those that live in the oceans. When these plants and animals die their carbon rich carcasses sink to the bottom, putting thousands of feet of water between them and the atmospheric oxygen that would convert them back into CO₂. This carbon is out of the atmosphere for a long, long time, hundred of millions if not billions of years. It eventually gets covered with sediments and is converted into other things, limestone and oil are two that I have been told about. The important point is that this carbon is out of the atmosphere for very long periods of time.

A Balance?

It is perhaps tempting to say that a balance has been reached between volcanoes putting new CO₂ into the air and sea life taking it out. That would be a mistake. While both affect the level of CO₂ in the atmosphere, no concept of balance exists, most any level of CO₂ is possible.

Some are also tempted to marvel at how the current CO₂ levels in the air are exactly right for humans. This is misplaced admiration, the CO₂ levels were not made for human benefit, they just are - it is the humans who have adapted so well to the CO₂ levels available.

A Leak

The Long Carbon Cycle has developed a leak. Carbon is leaking out of the long term reservoir and back into the atmosphere as CO₂.

This leak is man-made. We are digging fossil fuels out of the ground and burning them to produce the energy we want - and also CO₂.

The recent rise in the CO₂ level in the air has been blamed on this leak. That's probably a pretty fair assumption. We are burning a lot of fossil fuels and putting a lot of CO₂ back into the atmosphere.

The Carbon Cycles

So What's Going to Happen?

It seems that there are four options available for dealing with the rising CO₂ level. I have listed them below in order of most likely to least likely to occur.

Learn to live with it - this is the default, it happens if nothing else is done. My house will become a reef and a lot of much more horrible things will happen, it will not be pretty. But there are a lot of people who think they can live with it, so this is probably what will happen.

Take more CO₂ out of the air - this is the feel good option. It will center around trees and be much praised and played. Tree huggers love it, more trees. Governments with trees love it, they can "play" the trees as carbon sinks in negotiations. But it really will not do much good, trees grow slowly, parts of them die each year reverting back to CO₂, and in relatively few years the whole thing dies and becomes CO₂ again. However they will provide shady spots to sit and watch the water rise.

Use Short Cycle carbon as fuel - this is the Bio-fuel option. This can use Short Cycle carbon to offset some of the growth in Long Cycle carbon leakage. But the leak is simply too large to be plugged by Short Cycle carbon. Still this spreads the fuel options and that is always good.

Stop producing so much CO₂ - this is the conserve energy and the nuclear power option. People like to talk about it - but look around you - it just isn't happening.

Conclusion

The level of CO₂ in the atmosphere is going to continue to rise. If that means that temperatures and sea level are also going to rise, then I need to buy a house boat with a good air conditioner.

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