Global Warming Explained

by Michael Wolf

The problem with today's so-called debate over "Global Warming" is that the debate exists because of an incorrect term. The problem is complicated to understand, and the symptoms are even more difficult. And "global warming" is only one minor symptom, and at that is only a side effect of one of the symptoms - increased levels of greenhouse gases. To understand what the big fuss of the issue is, the underlying problem needs to be examined.

Hundreds of millions of years ago, the earth was a vastly different place. Before life existed on the surface, it existed almost exclusively in the oceans, due in large part to the levels of carbon dioxide, nitrogen, and other chemicals in the atmosphere. These levels made life outside the ocean impossible, at least for life as we know it today. But these chemicals were less incompatible with life on earth in the ocean. And the oceans were teeming with life. These simple organisms, the first life on earth, utilized the dissolved carbon and nitrogen to create themselves and their offspring. These organisms were so plentiful that every drop of ocean water contained billions of organisms, mostly small organisms called plankton. As more and more plankton and more complex life forms came to be, they absorbed bits of carbon, nitrogen, hydrogen, and other chemicals from the ocean water, which in turn came from the atmosphere. And when plankton die, they sink to the bottom of the ocean, taking their carbon, nitrogen, and hydrogen with them, never to return to the atmosphere. Over hundreds of millions of years, these deposits of plankton would be compressed and processed naturally into hydrocarbons and become today's oil deposits.

As the levels of carbon and nitrogen in the atmosphere diminished, the air became suitable for the forms of life that previously dwelled in the ocean. Plants and animals, on an evolutional time scale, crawled out of the water and took root on the land. But the levels of carbon and nitrogen in the atmosphere, while diminished over their initial levels from the creation of the atmosphere, were still very high by today's standards. Plants drank in these chemicals in vast amounts, growing at tremendous rates, so fast that nearly all plant life became gigantic, such as the ancestor to todays' horsetail and fern plants - several hundred feet tall back then. And animals had to keep up with this pace of growth. Thus, the dinosaurs were born. And for hundreds of millions of years, dinosaurs ruled the surface of the earth and even the depths of the ocean, that is, until carbon and nitrogen levels in the ocean no longer supported them.

Back on the surface, things were nice for cold-blooded animals weighing in at several hundred tons, and up. There were no glaciers, no polar ice caps, and little if any snow, anywhere (at the time, Antarctica was still part of Gondwanaland, the single-continent that split into the seven or so we have today.) Water came in the form of rain, lakes, and more often than not - in bogs of immense size likely on the order of the size of many entire countries. And so frequent and vast were these bogs, that many creatures living in those days died in them, including the dinosaurs. And the plants, when they died, formed peat - the mat of dead vegetation that eventually swallows and dries out bogs. And as this peat grew in thickness, it eventually became coal, keeping its share of carbon, nitrogen, and hydrogen from the atmosphere.

The process wherein these chemicals are stored is called sequestration. Sequestering a chemical means it is no longer available to the atmosphere. And if you can imagine a world where both the surface and ocean were so packed with life that organisms had to be stories tall, and there was more than enough plant matter to support their massive size; you can begin to imagine how much carbon, nitrogen, and hydrogen - each of which make up all plant and animal life - was sequestered into oil and coal deposits.

As these chemicals were sequestered, they were of course removed from the atmosphere. Carbon dioxide is a greenhouse gas, called such because while they are transparent to most of the light energy coming to earth from the sun, they are not transparent to infra-red light, also known as heat, which the earth emits after absorbing the light of the sun. Greenhouse gasses reflect this infrared energy back to earth. A good example is a cloudy winter night versus a clear one. Clouds are water vapor, which is a greenhouse gas. On a cloudy night in winter, it is much, much warmer than a clear night because the clouds reflect the heat that radiates from the ground and warm things up. Hundreds of millions of years ago, before the carbon began being removed from the atmosphere and sequestered in what are now oil and coal deposits, the earth's surface was much warmer. So warm was the earth in fact that it was too warm to snow nearly anywhere, ever. Of course there were no snowpacks, and no glaciers; perfect conditions for a cold-blooded animal of tremendous size as they didn't require the sun to warm themselves up to "operational temperature" like today's cold-blooded animals do.

In short, the earth, in those days, was not suitable for mammals - warm blooded animals who keep their young inside them rather than in eggs like dinosaurs did. But over hundreds of millions of years, the carbon and nitrogen levels in atmosphere diminished to the point to allow mammals to begin evolving. Several mass-extinctions also occurred, brought on by an ice age caused by a massive comet striking the earth at what is now the Yucatan pennisula in Mexico. The blast sent a wave of debris into the atmosphere which blocked out the sun's energy, no longer allowing infrared radiation to be bounced back by the greenhouse gases in the atmosphere. Intense cooling caused mass extinction of cold-blooded dinosaurs, and the cold weather also caused mass extinction of plants. And as these plants died, they became buried, their carbon, nitrogen, and hydrogen sequestered as the first of many ice ages encompassed the planet, forever trapping these chemicals in what are now oil, natural gas, and coal deposits.

Once the levels of these chemicals stabilized, relatively speaking, the earth became habitable by larger mammals. Mankind evolved a mere few tens of thousands of years ago. The global climate began to stabilize, with ice ages becoming fewer and less intense. The development of mankind over the past 5-10,000 years was during this more stable time, a time when carbon, nitrogen, and hydrogen levels in the atmosphere were significantly lower than ever in the history of the planet.

But the industrial age began, and mankind discovered oil and coal. It is estimated that we will have extracted all of the oil and coal in a period of about 200 years. In utilizing these fossil fuels, we are restoring the atmosphere to the conditions that existed hundreds of millions of years ago. Initially, this effect - increasing the carbon in the atmosphere - was thought to simply cause an increase in global temperatures. But we are beginning to realize how little we understand about the effects. A process that took hundreds of millions of years is being reversed in a mere 200 years, a fraction of a blink of an eye in comparison to the time it took to sequester these chemicals. This is absolutely unprecedented, and science has no idea what to expect. Such a short time frame does not allow for natural evolution for species of plants and animals to adapt to the changes. Already we are seeing species going extinct

as a result of the rapid climate change. But what's in store for the future is likely far more dire.

Mankind's thirst for oil will likely be the end of the human race, as the planet becomes far too inhospitable. While some may adapt and continue to survive, society certainly will not, for human society is dependent upon a type of climactic stability that is beginning to unravel. As mentioned earlier, the world once was a place where no snow fell, where glaciers did not exist. Yet these are our main sources of fresh water. Imagine for example, if one year, the Sierra Nevada range in California had no snow pack, the source of all drinking water for Southern California. Disaster on a scale previously unknown to mankind would surely ensue as tens of millions of people were suddenly faced with having no drinking water, no water for their crops, crops which in fact feed much of America (Southern California is home to our nation's supply of winter vegetables.)

Global Warming is not myth. Rather, it is a mere side effect of one of the symptoms of the real problem: the vastly accelerated reversal of hundreds of millions of years of atmospheric processing which made Earth suitable for mankind. Can mankind really afford to gamble on this? Can we really afford to continue our addiction to fossil fuels which are nothing more than hundreds of millions of years of stored solar energy, and which our use of represents wholly unsustainable practice? Most certainly, even if we can survive the change in climate and other effects of pumping so much carbon and nitrogen into the atmosphere, fossil fuel use is not sustainable. The threat of annihilation should not be the only reason to stop using fossil fuels and seek alternatives.