

Blame The Sun

By Ian Clark

Kyoto and climate change have at last become election issues. And why not? Many people in the more wealthy parts of the world consider climate warming our greatest environmental threat, with new extremes in weather and damage to fragile ecosystems wrought by our CO₂ emissions. Our Environmental Minister tells us that the science of Kyoto is 'solid' and 'settled', and that we must accept to spend billions of dollars on attempts to stop global climate change. Most of us endorse policies that improve air quality. We also embrace technologies that improve fuel efficiencies. However, the Kyoto Protocol is being sold, not for these reasonable objectives, but on the pretence that we can thwart an impending climate disaster. Nothing could be further from the truth.

CO₂'s skyward trajectory during the industrial era does indeed appear alarming. Moreover, this rise has occurred during a period of global warming that has delivered us from four centuries known as the Little Ice Age. Both temperature and CO₂ seem to ascend in unison like the twin contrails of the Space Shuttle, leading the public, and even many scientists, to conclude that increasing CO₂ is driving temperatures higher.

Yet, too few observers have considered the possibility that we have the science backwards- that temperature rise is driven by factors unrelated to human activity, and that CO₂ is following in the wake. Blaming ourselves as the Machiavellian hand wreaking climate disaster satisfies a sense of collective guilt, and also engenders the anthropocentric view that humans are so powerful that our actions are a major global climate determinant. The collary to this has even greater appeal- all we need to do is tweak CO₂ emissions and we can turn it around and 'stop climate change'.

The problem with this hypothesis is that it is undoubtedly wrong- we haven't affected global climate, never have and never could. Furthermore, there is no chance that we will effect measureable climate changes with Kyoto or any other accord, or with technologies we can deploy in the foreseeable future.

Many scientists know this and some are even brave enough to say so publicly. Other scientists recognize that the politically correct view of human-caused climate change is largely unfounded but remain loyal to the cause because this is their source of research funding. Others stay quiet because they believe that cutting greenhouse gas emissions will have the side benefit of reducing air pollution (it may or may not, depending on the application). Or because they believe that reducing consumption is generally good for our moral well-being.

However, there are many enormously expensive and environmentally dangerous initiatives being promoted to reduce CO₂ emissions in the name of Kyoto: the twisted logic of subsidizing ethanol production (with collateral environmental damage from pesticides and fertilizers) and 'sequestering' power plant CO₂ emissions deep

underground are just two of them. And the trading of green credits will most certainly benefit lawyers and corporations' bottom lines, but not the environment.

To appreciate the mistake that is Kyoto, one must first understand what really drives climate.

Weighing in at more than 10,000 parts per million and taking gold, silver and bronze medals as the principal greenhouse gas in our atmosphere, is naturally occurring water vapour, the stuff that gives us clouds, rain and snow. Were it not for water vapour, Earth's temperature would be about 30 degrees colder than it is today. At 360 parts per million, CO₂ is only a very minor player in the greenhouse gas Olympics. So increasing its concentration by 32%, as has happened since the beginning of the industrial era, or even doubling it by the year 2100 (a highly unlikely proposition) will do little to raise temperatures. In fact, the correlation between CO₂ levels and temperature rise over the past century is actually quite poor, as it fails to capture the distinctive cooling trend of the 1960s and 1970s when greenhouse gases were increasing at the highest rate in recent history.

But what about ice core studies that Kyoto supporters cite as 'proof' that CO₂ rise directly results in temperature increase over long time periods? Studies by paleo-climate researchers reveal that, while CO₂ and temperature do indeed rise and fall in close unison over much of the record, temperature increases actually preceded CO₂ rise by as much as 800 years or more.

So where do the dire predictions of increases of three to four degrees come from?

Computers are used to simulate climate and predict warming by increased CO₂, based on the fundamental laws of physics. However, the amount of warming they determine from predicted CO₂ rises doesn't warm the simulated atmosphere much at all. They predict measureable warming only by presuming that an increase in CO₂ will trigger a much greater increase in water vapour, and that the water vapour will raise global temperatures. While this implicates CO₂ as a prominent indirect climate driver, it remains a theoretical and untested hypothesis. Lacking confidence in the veracity of the CO₂ climate link, it seems absurd to spend billions of dollars on a scheme to reduce the rate of CO₂ increase in the hopes that it will ameliorate global temperature rise.

So if not increased atmospheric CO₂, what is driving climate warming?

Not so surprisingly, it's the sun. Scientists have discovered good correlations between trends in the output of the sun and temperature, measured using proxy data from climate indicators such as tree rings and ice cores. These data are not theoretical. They are real climate records that span many time scales. And all point to solar variation as being the primary driver of climate change. Like CO₂, they fit with warming in the first half of the 20th century. However, unlike CO₂, they trace the cooling trend of the 1960s and 1970s, and even the apparent warming of the past two decades. There is even a strong

correlation between solar activity, temperature and cloudiness- the most direct and telling line of evidence for a heliocentric climate.

As the source of most of our planet's energy, it is astounding that more scientists did not suspect the sun to be the driver of today's global warming. We were clearly misled by the apparent temperature-CO2 correlation as well as our lack of appreciation of the variable nature of our home star. Until recent satellite observations showed variations in radiant output from the sun, its output was commonly referred to in textbooks as 'the solar constant'. We know now that it is anything but steady and that the sun is more active today than it has been in centuries. Evidence for this is found in the number of sunspots, a measure of solar activity and a record carefully established since the 1600s when Galileo invented the telescope.

However, linked with increased solar activity is an effect that was largely unknown till recently. Two decades of satellite data have revealed that when the sun is more active, storms on its surface, manifested by sunspots, are accompanied by strong increases in 'solar wind', a continuous stream of charged particles ejected from the outermost layer of the solar atmosphere into space. An increase in solar wind acts to deflect away from the earth an even more energetic form of radiation that is continuously streaming into our solar system from the galaxy. Referred to as 'galactic cosmic rays' (GCR), these high-energy particles cause an electric charge to build up on dust and other small particles in our atmosphere, which in turn causes them to attract water molecules and so form clouds. Of course, clouds, particularly high clouds, reflect a lot of incoming sunlight back into space, which acts to cool the planet. Not surprisingly, there is a strong correlation between temperature and the measured index of cloudiness.

So the total effect of the sun appears to be more significant than previously thought. When the sun is brighter, not only do we experience more direct heating, but the more intense solar wind 'blows' away the incoming GCR which in turn warms the planet through a reduction in cloud cover. Thus, past and recent climate warming can be explained by changes in solar activity. And the data exist to support it.

Which brings us to Nicholas Copernicus. The timid Canon of Warmi, Poland, spent much of his career deconvolving the Earth-centered universe theory, with its wild gyrations in the solar system invented by clergy scientists to account for the observed motions of the planets. Copernicus discovered a much simpler heliocentric universe where the celestial bodies orbited the sun, obeying the established laws of physics.

What was his secret? He looked for a solution to explain what he saw, unencumbered by the Church's constraint that if God created the earth, it must be at the center of the universe. Intimidated by the overpowering forces of political correctness, Copernicus delayed publishing his magnificent work until the very end of his life and received a copy of the printed book for the first time on his deathbed.

In the intended preface to his book, Copernicus wrote: 'Perhaps there will be babblers who, although completely ignorant of mathematics, nevertheless take it upon themselves

to pass judgment on mathematical questions and, badly distorting some passages of Scripture to their purpose, will dare to find fault with my undertaking and censure it. I disregard them even to the extent as despising their criticism as unfounded’.

Much like Copernicus, the many climate experts who have moved away from the clergy science of Kyoto seek with an open mind to understand the real, testable and observable mechanics of climate. These scientists are the vanguard of a modern Copernican revolution that should be encouraged by all thinking Canadians”.

By Ian Clark, professor of Earth Sciences at the University of Ottawa, specializing in paleoclimatology and isotope hydrology.

Included in Clark’s article were several graphs, one showing the correlation of variations in solar activity with change in temperature and with CO₂ concentration in the atmosphere. Temperature correlates very well with solar activity but poorly with CO₂. In another graph sunspot activity shows strong correlation with warm and cold periods over the past 1,000 years.

In a related article someone noted that junk science occurs when facts are distorted, risk is exaggerated and science is warped by politics and ideology to serve another agenda. These political movements are having a profound impact on business and the economy. The author asks: “Why does business seem congenitally incapable of dealing with the growing threat of junk science?... the modern corporation routinely collapses in the face of junk science activists”.