

The Lack of Science in Kyoto: A Solution for a Non-Existent Problem

Tim Ball

Environmental Consultant, 205-27 Songhees Road, Victoria, BC V9A-7M6
Email: timothyball@shaw.ca

■ Introduction

The Kyoto Protocol is a political solution to a non-existent problem without scientific justification. Not surprisingly, economists, politicians and the general public are split on the possible cost and social impact, but that completely misses the point. Most are unaware that the scientific theory and evidence do not support implementing the Accord. People don't know the theories involved or the limited and contradictory evidence. Special interest groups, who only provide selected information to support their agenda, further confuse them. Like many environmental issues people have very definite views based on very little or incorrect information. Those who take the moral high ground beat down scientists who raise questions. Rational scientific discussion is blocked by emotional appeals and threats of impending doom unless there is action. Scientists are branded as skeptics when they pursue the scientific method of challenging and testing theories. In short, science is prevented from being science.

Mark Twain said, "There is something fascinating about science. One gets such wholesale returns of conjecture out of such trifling investment of facts." A humorous statement, but unfair because it is how science works. Very few people understand the scientific method succinctly explained by Thomas Kuhn in his book on the nature of scientific revolutions. Scientists hypothesize, that is they make assumptions and speculate on outcomes then other scientists challenge the theory by questioning the assumptions, logic and evidence.

■ Global Warming

The Kyoto Accord focuses on just one small part of the larger issue of the global warming theory. Examination of the Accord requires an understanding of the limitations of that theory. Problems of the science behind Kyoto are only understood in a larger context.

The global warming theory due to human production of carbon dioxide followed a period when the theory of global cooling predicted another ice age. The consensus for cooling was no more accurate than the consensus for warming. Unfortunately, consensus is not a scientific fact. In the late 1980s global temperature trend appeared to shift to warming. A theory proposed that increasing carbon dioxide from human sources was the problem. The theory was accepted without challenge and rapidly became fact. As Richard Lindzen said the consensus was reached before the research had even begun. So far the evidence rarely presented to the public shows that the warming theory is incorrect.

There is no doubt the world has warmed. Temperatures have risen since the 1680s, reached a peak in the 1940s and has cooled since then, as satellite data shows. The global warming discussion is about the unsupportable claim that 20th century warming is due to increases in atmospheric carbon dioxide from human sources. What explains the warming if it isn't carbon dioxide? Solar physicists and many other experts report the warming correlates with changes in the sun, not carbon dioxide. Long-term biologic and geologic evidence also shows the sun as the major cause of temperature change.

Some argue that the science doesn't matter because we should reduce production of carbon dioxide from fossil fuels. This is known as the Precautionary Principle, that you should act anyway. The problem is that science can speculate on impending doom forever, but society has to set priorities and cannot afford to deal with every speculative concern. What society needs to set the right priorities is to know all the facts; unfortunately in most cases this is not happening.

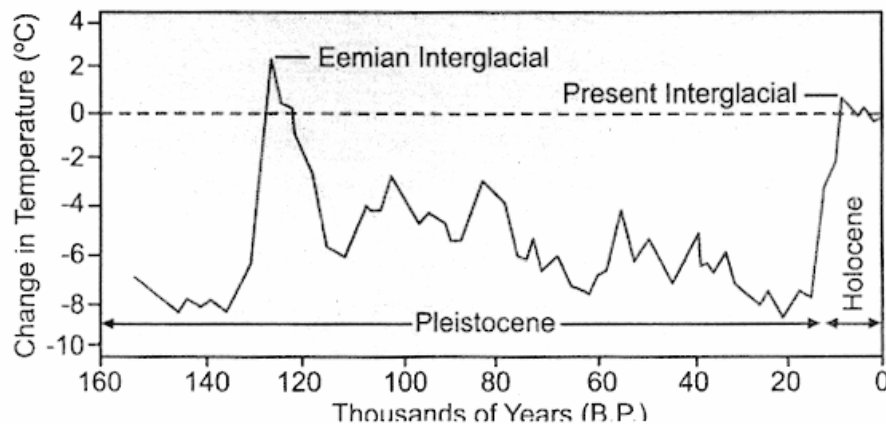
There are some very good reasons to reduce consumption of fossil fuels: it's a finite resource, it produces pollution in concentrated urban areas, it will save money in the long term. Climate change is simply the worst reason for urging the reduction or for confirming Kyoto.

■ Problems with Global Warming Theory

A brief summary of the scientific situation is necessary before some detailed analysis.

- All speculations of warming are based on the questionable assumption that atmospheric carbon dioxide will double.
- All speculations are made by computer models that have been quantitatively and qualitatively wrong in every single case to date.
- The earth's atmosphere doesn't work like a greenhouse; it's an inappropriate analogy.
- The computer models are global yet we have insufficient data for at least 85% of the world at the surface, and virtually none for the atmosphere. Environment Canada records are valid from 1948 to the present.
- All input data to the computer models, from global temperatures to amounts of carbon moving through the atmospheric system are, at best, crude estimates.
- Solar energy is assumed to be constant, yet solar physicist's show how approximately 97 percent of temperature change is explained by changes in the sun.
- Computer models assume total atmospheric water vapour is constant with no justification, yet it is 97 percent of the greenhouse gases by volume.
- Carbon dioxide is less than 3 percent of the greenhouse effect.
- The original global warming hypothesis said if you increase carbon dioxide temperature would rise, *ceteris paribus* (all else being equal). This eliminates feedback mechanisms, which is convenient because the computer models can't cope with most of them. Ice core records show correlating trends between carbon dioxide and temperature, but the temperature changes before carbon dioxide, not the other way round.
- The evidence doesn't fit the theory. In the 20th century global temperatures increased most from 1900 to 1940 when human production of carbon dioxide was low. Global temperature declined from 1940 to 1980 while human production of carbon dioxide increased the most. In the last 6 years carbon dioxide and methane levels have levelled and even declined slightly.
- The computer models can't incorporate clouds; this means they do not simulate atmospheric conditions at all.

- The early computer models created large-scale atmospheric systems that don't exist in reality.
- The most recent computer models produce completely contradictory results using the same data.
- Computer models are so insensitive they are unable to deal with regions as large as the Mediterranean or the Prairies of Canada.
- The 'predictions' of global warming presented to the public by the Intergovernmental Panel on Climate Change (IPCC) are not just the output of climate models. The IPCC presented a report on carbon dioxide in late 1999. Their early reports worked on only one scenario and concluded that carbon dioxide from human sources would reach 18 billion tons by 2100. The latest report works from 40 factors in 4 scenarios, and concludes that carbon dioxide increases from human sources may range from 4.3 billion tons to 36.7 billion tons. Of course, the media only reported the worst-case scenario. IPCC state that "There can be no best guess - the future is inherently unpredictable and views will differ on which of the scenarios could be more likely." This comes from the group who made frightening unsubstantiated speculations that were rapidly converted to predictions by a sensationalist media. Atmospheric scientist Richard Lindzen, a member of the IPCC described this as children's exercises.
- Extensive research shows high correlation between most of the temperature variations of ice cores and sea sediments with changing orbit, tilt and precession in sun/earth relationships; the Milankovitch Effect. Every year, solar energy reaching earth varies with these changes - explaining about 75% of long-term temperature variation. Most of the temperature variations in the following graph correlate with the changes determined by the Milankovitch Effect. Carbon dioxide follows somewhat the same pattern but the temperature changes first, not as prevailing wisdom argues.



These models are of some value in the laboratory where only scientific responsibility is required, but even here they fail miserably. However, when they are used to determine public policy they are worse than inadequate. As Henry Stommel explained, "Without adequate models, we just make political statements."

■ The Age of Speculation

It's called the Age of Information, although the Age of Misinformation is better, and Age of Speculation is best. Will Rogers' comment that "Everything I know I read in the newspapers" was only about the written word, now we live in a world of virtual reality in which all forms of communication are doctored. The researcher who discovered Russian missiles in Cuba and other valuable information said he would not trust any visual imagery today because it can be manipulated without detection. In Marshall McLuhan's words "The medium is the message." Public knowledge comes from the media through a lethal sequence where scientific speculation becomes prediction and fact. Special interest groups then amplify the distortions, usually by adding emotional messages that give them the moral high ground. Virtual reality is an oxymoron but applies in a world of speculation, exaggeration, and illusion.

Y2K speculation was a fitting end to the 20th century and a start to the 21st century. It was unsubstantiated speculation that became impending doom and forced governments to spend needless millions. Those who forced the spending, those that benefited, and governments all claimed nothing happened because of their actions, a position invalidated by their own words. They predicted most serious problems in developing countries, but those countries took no action, and nothing happened. How much more good for society if the money was spent for health and education? This should serve as an example of the challenge and need to start the new millennium by calming the hysteria, establishing sensible priorities, and dealing with real issues.

Global warming is a more bizarre example of speculation becoming fact. In the 1970s, global cooling was the impending doom because the temperature declined from 1940 to 1980. Ponte wrote,

It is cold fact: the global cooling presents humankind with the most important social, political, and adaptive challenge we have had to deal with for ten thousand years. Your stake in the decisions we make concerning it is of ultimate importance; the survival of ourselves, our children, our species.

Facts are always cold but all you have to change is the word cooling to warming and precisely the same threats are made about warming.

Simple trend analysis turned when temperatures appeared to rise in the 1990s and a similar linear trend but with opposite slope now applies. How can they both bring disaster? The simple answer is that whenever there is change some gain and some lose. The historic record shows that the northern hemisphere is better off with warmer temperatures. Environment Canada concedes that Canada is better off - so what is the greatest threat?

■ **Effect of Global Warming on the Icecaps**

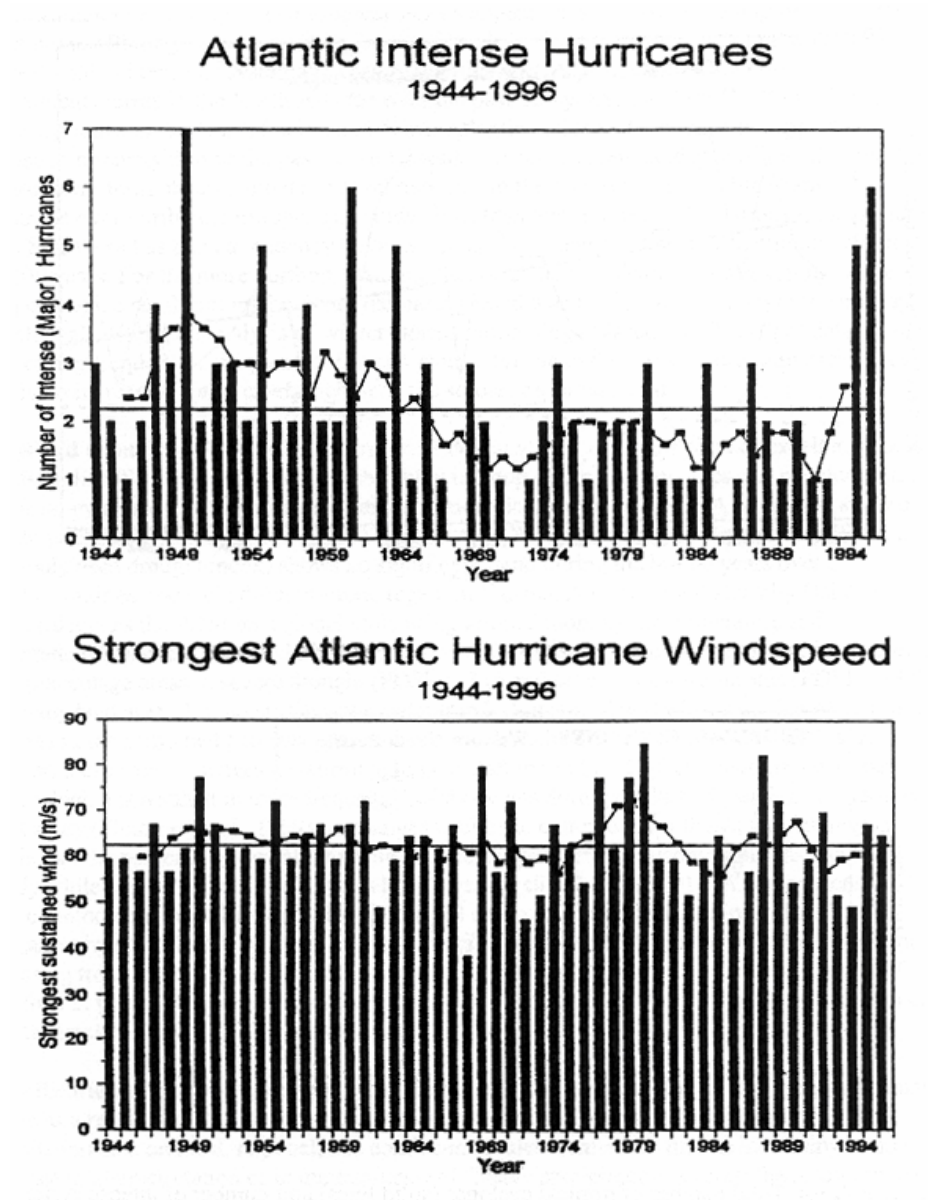
Few people can identify the potential damage of warming. Most people, including experts, point to melting icecaps and rising sea levels as the major threat. They don't realize this is speculation based on illogical assumptions.

A scientist simply took the total ice volume of Greenland and Antarctica converted it to water and added it to existing sea levels, which raised sea-level by 25 meters. It wouldn't work like that in reality.

Put an ice cube in a glass and fill it with water. Ask people what happens when the ice melts. Most assume the water will spill out of the glass. Others believe there is no change in water level because the melt water has the same displacement as the ice cube. In fact, the water level goes down because water expands when it freezes. Antarctica and Greenland icecaps are already in the oceans. For example, melt the Greenland cap and you will have a few very small islands ringing an ocean basin 3000m deep. Ice sheets formed during the Ice Age 20,000 years ago did change sea level because they formed on land.

Stories of icebergs calving off from Antarctica were a timely opportunity for supporters of Kyoto to emphasize such events as evidence of climate change. "Scientists astonished at speed of ice-shelf collapse," shouted a Times Colonist headline of March 20, 2002 about a partial breakup of the Larsen B ice shelf on the eastern side of the Antarctic Peninsula. "The speed of the collapse astonished scientists who believe it is evidence of man-made global warming." The statement was contradicted later. "Climatologists are unsure why the peninsula is warming so quickly – and why other areas of Antarctica appear to be cooling." It is strange how warming is certain, but cooling uncertain.

The rest of Antarctica has been cooling and ice accumulating as a later Times-Colonist article reported. One local scientist claimed, "Some might try and argue that ice-sheet breakups are a normal occurrence." Well, they are! The same is true of predictions for increased storminess intensities.



Larger icebergs also result from colder conditions and growing ice sheets. Ice accumulating in the interior, as reported from most of Antarctica, pushes out to the edge. This didn't prevent Britain's environment minister saying "There have been a series of major ice sheet collapses over the past 10 or so years as a

result of global warming. It is not possible to say that such collapses are proof of global warming, but they are consistent with a warmer world.” No, they’re not.

The minister’s statement is typical from politicians who don’t know what they’re talking about. Unfortunately, too many scientists are part of the problem. Economics are part of the problem with Kyoto, but the real problem is the credibility of science. When politicians masquerade as scientists and scientists as politicians’ - truth is the victim.

■ **How Accurate are Computer Models?**

Current predictions for global warming are actually speculations based solely on computer models called General Circulation Models (GCMs) that simply don’t work. More and more evidence shows the inaccuracy of the models and the overall lack of knowledge and understanding of climate and its mechanisms. Yet other agencies are forced to plan according to the 'expert' opinion. As one agronomist wrote:

Specific agronomic predictions are found to depend critically on the details of the projected climate change. Uncertainties in the specification of the doubled CO₂ climate by the GCMs, particularly with respect to precipitation, dictate that agricultural predictions derived from them at this time must be regarded as only illustrative of the impact assessment method.

Models are actually comprised of many grossly simplified mathematical formulas each representing different parts of the ocean and atmospheric systems. Results from each formula are plugged into other formulae and then blended for a final single figure - average annual global temperature. The trouble is that the interactions, and interconnections can’t represent the real world because they are not known. Put numbers in a computer model and you will always get a result, but here it is meaningless: GIGO, garbage in, garbage out.

Philosopher of science Karl Popper developed the doctrine of falsibility that holds that “our belief in any particular natural law cannot have a safer basis than our unsuccessful critical attempts to refute it.” One test of falsibility is the accuracy of predictions. A simple definition of science is the ability to predict, so a good test of the models is to measure their predictions. Douglas Hoyt, a renowned climatologist, produced what he called “A Greenhouse Warming Scorecard.” He measured 35 computer predictions against the actual outcome with disturbing results. There were 28 wrong predictions, 5 marginally correct and 2 with indeterminate results.

At a conference in Edmonton in 1989 to study the impact of climate change on the Canadian Prairies, Schlesinger set the stage with a paper on climate models. A modeller himself, he had taken the five biggest and most complex models and run them using the same data. He argued that the results were significant because they all predicted global warming. There are two problems with his conclusion. First, the models are all programmed to show an increase in temperature with an increase in carbon dioxide. Second, the results varied considerably in large regions between models. For example, some models showed dramatic warming in North America, others dramatic cooling and others no change. The problem has not changed. Two of the latest model predictions, one American and one British, show completely different results. None of these results are surprising considering the inadequate database on which the models are constructed, the lack of understanding of the mechanisms of climate change, the exclusion of major components of the system and the inability to deal with feedback mechanisms.

Professor Weaver of the University of Victoria wonders why predictions of climate models are challenged when they are based on the laws of physics, yet “predictions are made on the outlandish costs associated with the ratification of Kyoto.” All predictions of global warming are based on climate models and have all been wrong. If based on the laws of physics, predictions would be accurate. If we understood the physics of climate we would have 100% accurate weather forecasts following Weaver’s logic. A simple definition of science is the ability to predict; weather and climate forecasts fail the test. Scientific responsibility is required in the laboratory, but predicting impending doom using these models requires social responsibility.

■ Carbon Dioxide and Global Warming

Has the world warmed? Yes, between 1680 and 1940 temperatures increased as part of natural variability, not human activity. Human produced carbon dioxide is identified as the current culprit, but none of the evidence supports this proposition. Indeed, the facts don’t fit the theory. Human activities add about 6 gigatons of carbon (Gt C) (1 gigaton = 1 billion tons) to the atmosphere each year. However, we remove 3 gigatons, through farming (they should get paid for the service), leaving a net addition of 3 gigatons.

It is estimated that the atmosphere holds 750Gt C: the ocean surface 1,000 Gt C: vegetation, soils, and plant debris 2,200 Gt C; and the intermediate and deep ocean 38,000 Gt C. All these figures are very crude estimates and a 1% error in any of these estimates is greater than the estimated human contributions. For example, some experts give the atmospheric figure as 770 Gt C, a 20 Gt difference. Measurement of carbon dioxide input and output of the

vast boreal forest only began about five years ago, therefore its impact is not yet known.

Lack of correlation between carbon dioxide levels and temperature change is more troubling. Ice core records actually show temperature changing before the carbon dioxide level changes. From 1900 to 1940, global temperature rose before meaningful increases in human produced carbon dioxide. From 1940 to 1980, when human production increased most, the temperature went down.

Whatever the exact figures, human contribution to the global carbon cycle is miniscule and within the error factor of any part of the carbon cycle. But that's not the biggest problem. Water vapour is 97 percent of the greenhouse gases by volume, carbon dioxide less than 3 percent, yet water vapour is ignored. A likely explanation is that the climate computer models can't include clouds.

Unbelievably, the computer models also effectively ignore the sun, however, studies show high correlation between solar changes and global temperature variation. Climate changes significantly in short time spans all the time. Just 20,000 years ago half North America was covered with a vast ice sheet. 9000 years ago and again 1000 years ago the world was warmer than today and warmer than present predictions. What caused these warmings? It wasn't carbon dioxide.

■ Science, Politics and the Media

Science advances by speculation, or more correctly, hypothesis. A scientist hypothesizes that if certain assumptions are made the following events might occur. The theory is then subjected to testing, usually over many years, and if it holds up becomes a law. For example, Newton's original work was presented as his theory of gravity, but today we refer to his Laws of Gravity. Interestingly, Einstein's theory of relativity is still that even though he introduced it in 1912. At some point, it will be confirmed as a law, adjusted according to research findings, or rejected. Sadly, all that changed when science is prevented from being science, especially in environmental research.

The science or evidence doesn't bear examination. People don't ask the right questions and are easily manipulated by scientific experts. I don't know of a qualified science journalist in Canada. Environmental groups are masters of manipulation and play on fears. What is going on, if the science is not justified?

European countries pushed Kyoto as an environmental issue, but the real objective was a carbon tax to raise production costs in North America to offset a cheap energy trade advantage. European carbon dioxide reduction targets are easily achieved. France is over 80 percent nuclear, Britain at least 65

percent, and Germany has nuclear power, but was also closed inefficient coal burning plants in East Germany. Debate about the economic impact in Canada is purely academic. Whatever the figure, it places us at a trade disadvantage, especially if done unilaterally. Global warming is a magnificent moral shield against opponents of the Protocol, or those who dare to question the science.

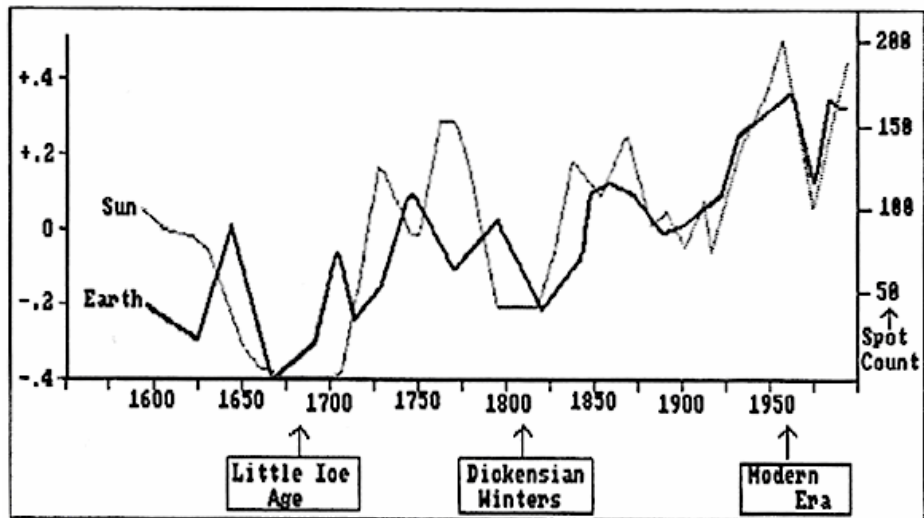
Our knowledge about the world is extremely limited and certainly inadequate as the basis for the types of 'predictions' touted in the media, but because this determines the prevailing wisdom it forces inappropriate public policy. The public must learn that the media is strictly a business and has no social interest, despite the moralizing of its unsigned editorials.

Reporters who monitor scientific publications frequently pick out articles with sensationalist potential; ones that hypothesize an impending catastrophe. Sometimes the disaster is a natural event with potential to cause loss of life. Media articles usually include many of the conditional words, like "could" "may" or "possibly," but those aren't what remain with the reader. What they remember are the headlines that transform the hypothesis into a prediction.

Environmentalists, many with the best of intentions, take these predictions as fact and use them to advance their cause. Environmental groups constantly make reference to scientific proof of global warming due to human actions without understanding what most scientists are actually saying. The testing of the hypothesis has still not occurred, but in the public mind it is a law, thus giving proponents of the idea great leverage. Scientists who raise questions about the science are quickly branded as lackeys of the energy companies. Environment Canada has officially accepted the theory as law, which seriously limits attempts to raise scientific challenges. Other government departments are forced to work and plan from that position. Often their own investigations find serious problems with the science, as I discovered when working with Energy, Mines, and Resources.

A major difficulty is that the Kyoto Accord diverts the focus. It is concerned with only one very small possible cause of climate change, carbon dioxide and even narrower than that the human contribution of carbon dioxide. Major problems exist within the entire concept climate change and the cause of warming and cooling. There are so many other potential causes that it is scientific nonsense to assume only one is at issue. The Government of Canada prepares for warming when cooling is more likely scenario because of much larger and longer term causes of climate change, namely, the sun/earth relationships, energy output from the sun, scenario and ocean influences. Logic dictates we should prepare for cooling. If we prepare for warming and it cools we are unprepared and cannot adopt techniques and technologies from north of us because there is no farmer farming there. If we prepare for cooling and it warms we simply adapt and adopt techniques already in use to the south.

Evidence for cooling is more plausible because it deals with the major cause of climate change, the sun. The graph shows the relationship between the warming (dark line) since the 1680s and solar irradiation (light line). Despite this the government and other agencies continue to claim the science is certain, that we know what is causing climate change and that we have to introduce Draconian measures to stop climate change.



■ Conclusion

Fervent belief in a theory doesn't make it right, as Immunologist Peter Medawar said, "I cannot give any scientist of any age better advice than this, the intensity of conviction that a hypothesis is true has no bearing on whether it is true or not."