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THE COUNCIL OF AUSTRALIAN GOVERNMENTS
INQUIRY ON BUSHFIRE MITIGATION AND MANAGEMENT

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Dear Sir / Madam

I write as a Member of several Learned Societies to express our concerns. I also write as a country person who has experienced and witnessed the loss and hardship wrought on rural communities, and therefrom the economic loss to the Nation, by wrong policy and practice at the Departmental and Governmental level in this area.

Australia has provided world leadership in efficient national economic management, and, it is a pity if we do not provide the best model in this area of bushfires too.

My Learned Society colleagues and I are most concerned that these recent serious Australian bushfires are not subsumed as a natural event of inevitable proportions due to anthropogenic global warming, when it lies within our powers to minimise them now as in the past. In fact, with new technologies of communications, Elvis style water delivery, and many others, it is in fact possible to control fires BETTER than ever before.

The most important and most overlooked link in the chain of success is the long term knowledge and contribution of farmers and graziers, who know from generations of experience exactly what is needed to minimise the risks. Sadly these people have been ignored or denigrated at the Departmental and Governmental level for too long

A general change of attitude is needed by the Depts and Govts and should include extensive apologies at all levels and in all areas to these people as the starting point for building new relationships.

Reduction of fuel load is a key to success, and this means not just vastly more pre fire season burning and load reduction but grazing of farm animals to reduce loads, as well as extensive programs of manicuring sites that are grassed or covered, as a matter of course not the exception.

Firstly then, I would now like to draw to the attention of this Inquiry the outstanding submission of Mr Charles Slade to the recent House of Representatives Select Committee Bushfire Inquiry of 2003 which relates also to many of the points I have raised.

Mr Slade, like many other professionals who have discerned the truth in these matters, has suffered serious professional repercussions, as a result of simply speaking the truth. His incisive evidence follows

In conclusion Australia has a valuable contribution to make to knowledge and practice in this area and the analysis of Slade, Baliunas and Foster provides a basis for some real progress.

Foremost the great untapped resource we have in Australia is the wealth of knowledge and wisdom of farmers and rural communities in safeguarding their natural resources.

The work of this Inquiry is critical, because not only many lives and many millions of dollars of loss in bushfires, but the parameters of future theory and litigation rely on evidence such as this. And it is true to say, that these issues are not only of national significance but international as well.

With thanks for your attention to this submission.

Please do not hesitate to contact me should you require further information. (I would appreciate a copy of any Inquiry Report)

Yours Faithfully

SIGNED

Mrs Nola M. McCallum

SLADE, Mr Charles Edmond Rolfe (Private Capacity)

CHAIR-Welcome. Would you like to add anything about the capacity in which you appear today?

Mr Slade-I appear in a private capacity but I am a reporter for Channel Nine News. On a couple of occasions and during one full week I had to cover these bushfires. I formed various impressions of what was going on that upset and distressed me.

CHAIR-We thank you for being able to appear before us this morning. We do not have a submission from you. You were here earlier when I read the aspects in respect to evidence and this inquiry. Would you like to start by outlining your experiences that you would like to pass on to the committee and then we will have a few questions.

Mr Slade-I recall it was early January, I was sent off to one of the first bushfires down near Bairnsdale. We flew down in a helicopter, refuelled and then went to film what was, according to the first the DSE press release, a fairly serious and dangerous fire that was threatening various businesses and communities. We went down there in good faith. It actually took us quite a while flying around to find this supposedly significant and dangerous fire. We stayed in the air for about an hour, filming aerials. We landed; I recall I went and did an interview with a DSE gentleman at an incident centre in Bairnsdale. We flew back and did what we have to do quite often: I did a story but did inform my newsroom that I thought this was quite a lot of ado about not a lot, but if they wanted a story they could have it.

The next morning I came in to work; I started at 7 a.m. My chief of staff said, 'Can you just check out what is happening down there to see if we need to go down again.' I said, 'On the evidence I saw yesterday, I am fairly sure we don't have to but I will do that.' I have a lot of experience in the media-I have been in this business for 23 years-so instead of ringing media people, who are generally referred to as spin doctors with various organisations, I try to talk to people on the ground. So I rang local police stations and CFA unions who said, 'No, everything pretty calm.' I told my chief of staff that my impressions yesterday had been confirmed by people on the ground that morning.

About 10 minutes later there was an urgent public address system call for me to go to the desk, and the chief of staff handed me another quite alarmist press release from DSE. This would have been about 7.45 in the morning. He just said to me, 'You had better get down there.' I said, 'I think we should take this with a grain of salt,' but I was sent down there. We flew down fixed-wing at some expense and we got to the airport. We were met by the DSE people, who said, 'Listen, it is a bit of a problem. The terrain is a bit inaccessible. I am sorry, we cannot get you in there, but we will take you in just to give you a media briefing.' I could not get any fresh pictures and could not get anywhere near what was going on. We went in and did an interview with a gentleman-I forget his name. Standing next to him was-forgive me for referring to them as this but I deal with them every day-a spin doctor. I was given an interview and told we could not get any pictures and that we would have to go back to the airport and it was suggested that perhaps we could use the pictures we had got the day before.

There was a bit of a hiatus and our camera crews went off across the road to get some coffees. I said to this woman, 'Can I have a word with you, please,' and she said, 'Why?' and I said, 'I am just a bit concerned that what you were telling us yesterday and particularly what you are telling us today bears absolutely no relation to what is going on down here. While I am happy to do my job and I know we all have to play this game, I am finding this particular incident a bit beyond the pale.' She was very defensive, but I pushed her. I said, 'What is going on?' She eventually confided in me. She said, 'We are caught up in a huge'-and this was her term-- political battle that is going on between DSE, Parks Victoria and the CFA about bushfire management. It is about who is responsible for what and who gets credit for what, but, most importantly,' she said, 'it is all to do with funding.' I said, 'I think you are playing a very dangerous game. With what has happened in the last two days you are certainly insulting my intelligence. I do not appreciate it and I think you should be very careful about what you do.'

So we flew back to Melbourne. I was told-this is the way it works-that I had to file a story, and I did. Occasionally when I am protesting about a story that I do not think is genuine, I do not file in what we call a piece to camera; I do not brand it. So I did not, but I filed a story that night, the nature of which was that the big threat the day before had become a bigger threat that morning but the situation had been saved and DSE had triumphed.

This is how I was to learn things were going to develop from there on, because the way these things work is that, when they start managing an operation like this, they know that, for instance, DSE headquarters in Melbourne can pump out a press release early in the morning that has fairly alarming information in it. It is, unfortunately, very often duly regurgitated on early radio by people who are not there; they are at desks in Melbourne talking about things that are happening hundreds of kilometres away and taking them at face value-which happens, I find, far too often. Once that information has been repeated on a couple of radio stations, it may be picked up by a TV breakfast program.-If something is said often enough it becomes true, and they know this and this is how it works.

I was not involved in the bushfires for about the next 10 days, but I know my colleagues were-not just from us but from all sorts of radio and TV stations. The coverage of this bushfire emergency got increasingly alarmist, but there were, certainly from our point of view, absolutely no pictures to support that. Nobody was getting anywhere near this crisis up in the high country. During that time I had to go, as I recall, to two media conferences held by DSE in Melbourne, where there was a particular gentleman who was handling all their briefings. I was getting increasingly offended by the way that the media was being manipulated. At one stage, the concerns of the communities up here about the lack of back-burning were being raised and these were being dismissed and ridiculed. I then started making comments at work about the possibility that we were being sucked into portraying a situation in a way that was not necessarily accurate. Those comments angered my superiors, and I got a few browbeatings for being a cynic. I was told that this was what was going on and this is how we should cover it. About 10 days into this process, I said, 'With all due respect, I do not think at this stage that this is the biggest bushfire in 100 years,' as DSE by then had dubbed it. I said, 'I think it is the biggest back-burn in living memory.'

Anyhow, despite this I was then dispatched-it was about the third week of this process, I suppose; it was late January or early February-to go up to the Ovens incident control centre. I went quite reluctantly and expressed my concern at work-I said that I did not want to be a party

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to this farrago anymore. But once again, with the way the business works, I was ordered to go so I did. I got up there and found much the same thing going on: the whole thing was being incredibly carefully controlled around this incident control centre. I have never had the experience, covering these things before, of the media being so totally controlled and denied access to fire fronts. In the five days I was up there, the only flames we got to film were where we were taken, under careful escort by media people, to, places where DSE or CFA would put on a little back-burn, a staged back-burn. That was it.

But those of us up there at that time and those who had been up there the previous week were under enormous pressure from Melbourne newsrooms-be they newspaper, radio or television-to send them graphic pictures of this giant terrifying bushfire that was ravaging north-eastern Victoria. Of course, we could not get the pictures because we could not get access, and they seemed to be handling this bushfire in fairly remote, inaccessible areas. I also told my newsroom when I was up there-and once again I was accused of being cynical-"This has become not only the biggest back-burn in history, but it has become "Save a town a day," because, each day, DSE would seem to nominate a community that was under enormous threat and, to and behold, by that evening that community had been saved and this was another triumph for DSE.

This went on for several weeks and it became an issue between me and my employers. It also became an issue between me and some of the other members of the media, because they were happily-and, I thought, perhaps naively, perhaps gullibly-regurgitating information. A reasonable amount of the reporting from the north-east of Victoria was people regurgitating information that was fed to them by their newsrooms in Melbourne, which was information fed to them by DSE, so the whole thing became a self-serving vicious circle. This, as I say, caused me significant distress and I tried very hard, for my self-respect and reputation, to tell the story as accurately as I could up there, although this did cause some issue with my employers, who felt that I was perhaps not treating this as seriously as I should be and not as seriously as the rest of the media were. I said: `That is for the simple reason that I think you guys are all being given the wrong impression down there. We are being led up the garden path. There is more going on here than meets the eye. There is some other sort of agenda and I find it very uncomfortable.'

I remember there was a day very late in the piece when I was interviewing a DSE person at Dvens and I was talking about the fact that during that week they were forecasting a front to go through with, as we call it, welcome rain. When I interviewed this gentleman, with the media minder ever present behind him, I was told, `Oh no, it is a very, very weak front-if it does get here-and we have no information it is going to be containing any rain, so we wouldn't want you broadcasting that.' That was another cause of concern for me. I ultimately discovered, from a source I cannot mention, that in those areas up in the north-east the weather forecasts were being doctored-that is the politest term I can think of--to maintain the level of fear, the level of concern, the level of threat, and to play down the prospects of any relief. That was the final straw for me. I thought that was quite unbelievable.

Anyhow, I was sufficiently angered and distressed by this entire experience that when I got home, after talking to my wife, who tried to talk me out of it, I wrote a three-page effective letter of resignation, outlining the information that I am giving to you now about what had gone on and, in the broader sense, how the media had been manipulated-by DSE particularly--to present a particular set of circumstances which I thought was clearly at odds with what was actually happening. I formed the impression during this time-this was my personal impression,

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just from what I had to do-that somebody somewhere had made a decision, because of the lack of back-burning over recent years, to let this be actually a huge back-burn, doing a lot of work that should have been done but dressing it up as a bushfire crisis and a heroic effort to save townships and people.

Sitting here now, I am reasonably firmly convinced that, were this committee or someone else able to access documentation, conversations or email at high levels in DSE, Parks Victoria or CFA, you might find some information pertaining to how this whole situation back in mid-January and early February was managed, engineered, massaged or whatever it may be. What distressed me at the time-and distresses me in retrospect-if that is what happened, is that it was a very high-risk strategy which caused, as you see here today and in the other hearings, a great many people a great deal of distress. In my opinion, the people who may have done this are not taking responsibility for what may have happened. But, as I say, I say that as somebody who has reasonable experience in this industry, and it caused me great distress, and it has obviously caused many other people a great deal of distress.

CHAIR-Thank you very much for that. From the people you have spoken to and from what you observed, is it your view that, particularly in the early stages, rather than the authorities involved adopting a 'let's get the bushfires out' mentality, they adopted more of a 'let's have a bushfire and see how we can manage it' mentality?

Mr Slade-I think a situation occurred which was capitalised on. It was about in the middle of this time period in Victoria that the Canberra disaster happened. I do not know, but I think that may have in some way encouraged or fortified the policy that was being followed down here to, in one sense, avoid a similar catastrophe, while being aware that a similar catastrophe would occur unless an awful lot of back-burning was done, with priority for lives and assets in the process. It would seem they said, 'For God's sake, we do not want anybody to get killed and it looks terrible when houses get burned down but, apart from them, let this thing run its course.' That is the very strong impression that I formed of how this was handled and how this whole thing was managed out of offices in Melbourne, be they political or bureaucratic.

CHAIR-Given what you have said and observed, would you accept that ultimately it was a pretty major bushfire? It managed to grow into a fairly major bushfire. There is no question about that at the end of the day.

Mr Slade-In the end a lot of land was burned, a lot of stock was lost and a lot of people were given a terrible experience. But, as I say, I formed the impression that it was a high-risk strategy to catch up on a lot of work that had not been done.

Ms PANOPOULOS-I am particularly interested in what you have had to say, because most of it covers incident control centres in my electorate. I am sure that it is no comfort to you to know that a few other people, including myself, were given the run-around and the spin by these incident control centres. During approximately what time period were you covering the fires in north-east Victoria?

Mr Slade-I do not have my notes with me, but I think it was early January down in Bairnsdale and it was about a week or ten days later that these lightning strikes occurred. I was in Melbourne for the first week or ten days of this growing crisis, albeit having to do the odd

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press conference with DSE in Melbourne. Then I was sent up to Ovens, as I recall, in late January or early February. We found ourselves in really quite an extraordinary situation, where journalists in the field were actually having information and even scripts taken from DSE press releases dictated to them from production desks and newsrooms in Melbourne. At the other end, the people in the field were given so little access and so little information that there was little choice in reporting this story except to report it, the way DSE wanted it reported.

Ms PANOPOULOS-Do you feel comfortable telling us which news services essentially used DSE press releases as their own scripts?

Mr Slade-Nobody was reporting them as scoops. Everybody, basically, was predominantly getting a single line of information. As I say, when it grows from radio to TV to newspapers it becomes-what is the expression I am looking for?

CHAIR-Self-fulfilling.

Mr Slade-Yes, but it becomes accepted knowledge that this is what is happening, because everybody is saying it. The fact that it came from one source-

Ms PANOPOULOS-It is like the emperor who had lovely clothes.

Mr Slade-Yes.

Ms PANOPOULOS-Did you ever raise any of your concerns with anyone from DSE?

Mr Slade-On day 2 I did, and I was given a rather frank answer which at the time I kept in the back of my mind and mentioned to various people at work. This is the first time I am saying it publicly. There is a huge political battle going on between DSE, Parks Victoria and CFA which is to do with responsibilities, to do with credit and mostly to do with funding.

Ms PANOPOULOS-After day 2, did you receive any media releases from the so-called spin doctors regarding the volunteer firefighters? We have heard in some evidence of significant amounts of money given by the state government to have these big thank you and celebratory functions. Did media outlets receive releases on those?

Mr Slade-After the process?

Ms PANOPOULOS-Yes.

Mr Slade-Oh, yes. We were all coming back up to Beechworth and Bright and doing various celebratory and congratulatory staged media occasions. Once again, because I did not go back up, I observed these at a distance with some degree of what I like to call scepticism, which I think is a journalistic virtue; my colleagues call it cynicism, which they do not think is a virtue.

Ms PANOPOULOS-You will fit very well into the north-east if you have a healthy bit of scepticism!

Mr HAWKER-Mr Slade, thank you very much for that-it was quite devastating. You mentioned your concern about the doctoring of weather reports and you gave one example about trying to maintain fear when a possible rain front was coming through. Have you had any further evidence to back up that quite serious concern you raised?

Mr Slade-At the risk of disappointing the committee and because of the necessity of protecting a source, I cannot tell you anything more, but the information I received shocked me. It was said on the basis of strictest confidentiality and I am sorry but I cannot really enlarge on it. But it confirmed a suspicion I had while I was up there that there was a disconnect between information being pushed out in Melbourne and the information actually up here at the fire front.

Mr HAWKER-You have talked about the management, the stage management almost, of a very high-risk strategy-the 'biggest back-burn in history' and the 'save a town a day' type of thing. You mentioned the fact that you are a very experienced reporter of public affairs, and I think we all have a lot of respect for your reports. In your experience, would you say, on the basis of what you have said so far, that this is the sort of material that requires a royal commission to extract the truth?

Mr Slade-I chatted to you earlier about what your powers were and I gather that state governments and bureaucrats are declining to give evidence to you. I assume you are talking about what the process is to ensure that happens and to ensure that you can access the documentation that I think must have flown around those organisations, at high levels at that time. I have absolutely no doubt that in the meantime I-along with my reputation--am going to be castigated. But I think that is the only way you are going to access this information, because I became aware, in a variety of ways that I have outlined to you, that something strange was going on at very high levels in politics and bureaucracy. I do not think anyone really wants to talk about it. At the end of the day, to protect that situation, people such as the lady who gave evidence here earlier have been devastated and I do not know what recompense they are ever going to get, because for them to get recompense somebody is going to have to admit responsibility. I cannot produce the proof, but there was certainly enough personal anecdotal evidence, to me, to support what I am saying to you today.

Mr HAWKER-So it could be that more than just a parliamentary inquiry is required; it could be that we need a judicial inquiry or a royal commission?

Mr Slade-I would take your advice on that because you would know better what powers you need to access that sort of information. I would love to admit that I am wrong, but I have never been involved in a story that involved so many spin doctors and media minders. It was astonishing. They seemed to be coming out of the woodwork everywhere and pushing a particular line. They were very careful with the people you were occasionally allowed to interview and what they were allowed to say. You could not go anywhere without being escorted and that was quite extraordinary.

Mr McARTHUR-I have been involved in a number of inquiries like this and I have to say at this inquiry is unusual in that we have received over 450 high-quality submissions and the public hearings, such as this one in Omeo, have been very well attended by members of the public. I observe, however, that there are no submissions from the state governments of Victoria, New South Wales or the ACT and there are no submissions by Parks Victoria, DSE or the CFA. I

...yonder if there is any correlation between the sort of evidence you are putting before the committee and the attitude of those authorities and those governments, in that they do not wish to enter into any discussion on the recent bushfires.

Mr Slade-I think you can draw your own conclusions, as I have. I think they are not unrelated and not coincidental.

Mr SCHULTZ-Mr Slade, correct me if I have got this wrong, but you have just told us that the media was manipulated by the drip-feeding of carefully contrived stories, which, it would appear, gave inaccurate descriptions in some detail as to what was actually occurring at the fire fronts: in other words, the public were deliberately deceived by the DSE and the CFA spin doctors, as they have been described. Would that be an accurate overview of your view?

Mr Slade-I would use the word 'embroidered'. You can see a benign thing in that, because if what I am outlining here was in fact taking place obviously it was a high-risk strategy. They had to keep the people in the town being saved that day and the people who lived nearby-in Swifts Creek or wherever it may have been-on alert. They had to maintain, for several weeks, this level of fear and alarm and a sense of imminent danger, because that would help them carry on with what I think they were doing in the background. So communities were encouraged to be alert and alarmed for several weeks while this scenario was, I believe, being played out. Obviously it would have been dangerous if they had not embroidered it and people had relaxed or become complacent. So I think it was a two-part strategy. You can look at it benignly in that sense, but obviously it also caused a lot of people a great deal of distress and alarm. When I was present there I could tell that everybody was on edge about what was happening.

Mr SCHULTZ-Would you agree that what you are saying paints a very serious picture in terms of the way in which your colleagues in the media have been deliberately manipulated-like chooks being fed wheat-at the expense of their professional commitment to inquire [into](#) and undertake a story professionally at arms length from any influence by outside agencies?

Mr Slade-Sadly, this is not an isolated incident. You gentlemen would know as well as anybody that these incidents happened on an almost daily basis. I would say that half of all news generated by radio, television or newspapers these days comes off press releases. Press releases are put out by people who want a particular situation to be covered in a particular way. But this, I think, was the most glaring example, in terms of what was at stake, that I have ever come across.

CHAIR-You mentioned that you felt there was an internal exercise within the Victorian government going on between Parks Victoria, DSE and CFA. Which of those departments do you believe was doing the most to take control of firefighting and related activities?

Mr Slade-There is no doubt in my mind: it was DSE, and it was all about money.

CHAIR-Thank you very much for your evidence today. We appreciate it. I know that in the position you hold it is not often easy to come forward, but we certainly have the aim of getting right to the nub of the evidence right around the country as far as the most recent fires are concerned. Your evidence will be useful in that sense, and we very much appreciate it.

Mr Slade-I hope it helps, and I would love to be wrong.

Likewise I wish to draw to your attention some very insightful analysis by retired Australian scientist Bob Foster, who has much expertise in the area of the Media role.

The examples he cites probably speak for themselves, and it is not hard to imagine a situation where a "let it burn" mentality dominates for what is (wrongly) believed to be good reasons.

Bushfire response is of course a multi tiered phenomenon relying on accepted beliefs and values from the scientific to the social, the professional to the community.

2. ADVICE FROM THE MEDIA

2.1 Editorial comment

In Melbourne, *The Age* is positioned at the quality end of the daily print media. An editorial of **30/3/2001** is unequivocal in its indignation. It has the heading "America puts itself before the Earth" and subheading "The refusal of the United States to ratify the Kyoto protocol is selfish and irresponsible"; and it tells us that:

Global warming is not some vague threat to be faced in the future, but a phenomenon that is affecting the world now. We are witnessing now retreating glaciers, thinning polar ice and more frequent weather-related natural disasters. Late last year a report by 2500 of the world's leading scientists said that if the burning of fossil fuels and the emission of man-made chemicals was not reduced the Earth's temperatures could rise even faster than previously predicted.

A second editorial on **3/4/2001** develops the theme. It is entitled "We should not abandon Kyoto" with a subheading "Following the US in its scrapping of greenhouse targets is short-sighted and self-defeating". It too makes the crucial point:

The problem of global warming is real and apparent, and it will not go away. The only way of stopping it becoming worse is by an international consensus to reduce the emissions that are causing it.

The right/wrong distinction can't be much more clear-cut than that, can it? There are no shades of grey here.

2.2 Alarmist press reports

Mina Gerhardsen, in Norway's *Dagbladet* of **24/7/2001** (by a picture of Mr Bush), says:

Every week 1100 people are killed by climate disasters. The experts agree that these are caused by human made climate change.

and

Yesterday a massive rainfall in Pakistan had catastrophic consequences. Ninety-one people were killed and many hurt. The destructive weather was caused by human made climate change.

Mining the same lode but taking the long view, Bianca Jagger of *The Observer*, in her piece of **22/7/2001** entitled "America the unbeautiful: if President Bush refuses to change himself, we must do it for him", goes further:

Is Bush aware that we face a life-threatening outcome if Kyoto is not ratified? If we were to follow his advice, we would become the only species on earth to spend our last days monitoring our own extinction.

The report from the UN Intergovernmental Panel on Climate Change (IPCC) is described as the most comprehensive study on the subject to date and warns of large-scale and irreversible climate changes, of devastating droughts, floods, violent storms in addition to the spread of cholera and malaria. Earth's temperature could rise by as much as 5.8 degrees C over the next 100 years.

..... if Bush is successful in sabotaging attempts to stop global warming, he will condemn us all to catastrophe. We do not have much time left.

But it is not only well-meaning but scientifically-illiterate members of the Fourth Estate who are on this case.

My submission addresses the broad ambit of the terms of reference of this Inquiry but a particular term of reference that is fundamental to my submission is long term climate conditions. Therefore I also wish to include herewith a most succinct analysis of these factors by the American Scientist Sallie Baliunas, which offers a good foundation for the deliberations of this Inquiry on the matter of long term climate conditions.

I have included this Baliunas material because it is such a concise and complete refutation of so much IPCC, CSIRO, Bureau of Meteorology and Australian Departmental contexting for climate and bushfires.

The Kyoto Protocol and Global Warming

Sallie Baliunas

• The Lavoisier Group Inc
May 2002



The Kyoto Protocol and Global Warming

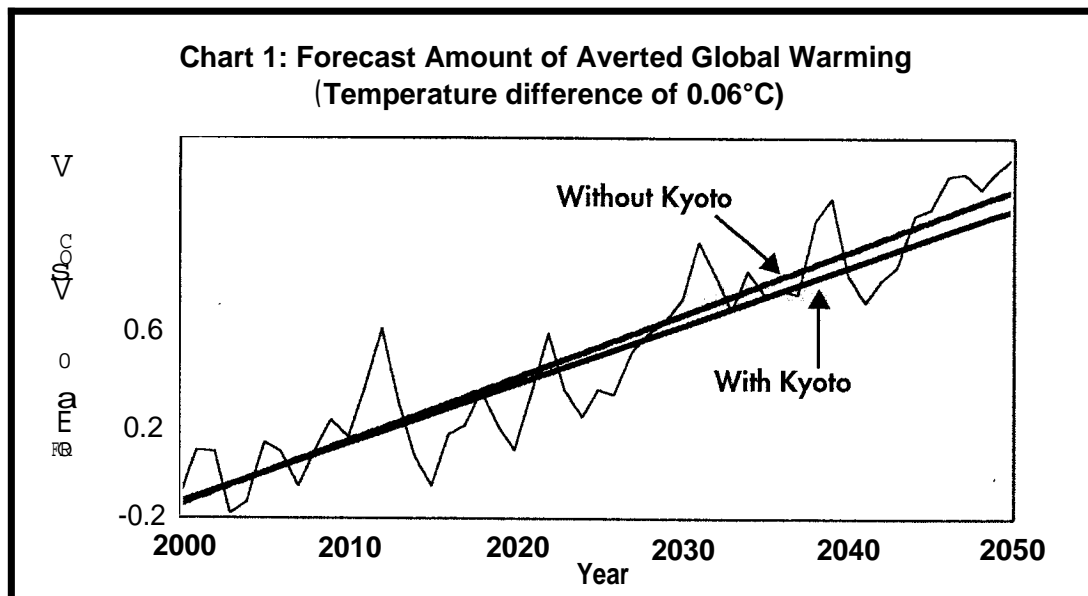
MORE than one million years ago, the early tool-making hominid species *Homo erectus* controlled fire as a means for bettering the chances of the species' survival. *Homo sapiens*, the modern successor of *Homo erectus*, continues in the hominid legacy of attempting to control, and thereby outlast, the havoc of nature. Early use of fire meant protection from harsh weather and predators, besides safer food. The evolution from fire to fossil fuels to nuclear energy is a path of improving human health and welfare arising from efficient and effective access to energy. One trade-off is that energy use by humans has always produced local environmental change, for example, in the form of human artifacts on the landscape, or removal of trees from large areas for wood burning, or region-wide noxious air pollution from coal burning. On the other hand, the ready availability of energy that produces wealth through the free-market system provides ways to ameliorate or minimize environmental damage from energy use.

With widespread industrialization, human use of coal, oil and natural gas has become the centrepiece in an international debate about a global environmental impact, viz., global warming, its causes and its future course. Currently, fossil fuels provide around 84 per cent of energy consumed in the United States, and roughly 80 per cent of the energy produced world-wide. The clash between fossil fuel use that emits carbon dioxide to the air, and the risk of deleterious global warming, is embodied in the Kyoto Protocol and its attendant series of international negotiations.

On scientific, economic and political grounds the Kyoto Protocol as a means to control the risk of global warming from fossil-fuel burning, while improving the human condition, is flawed.

What Would Kyoto Do?

Projections of future energy use, applied to the most advanced computer simulations of climate, have yielded wide-ranging forecasts of future temperature increases from a continuing increase of carbon dioxide concentration in the air. These have been compiled by the United Nations' Intergovernmental Panel on Climate Change (IPCC). The middle-range forecast of their estimates of future warming, based on expected growth in fossil fuel use without any curbs, is for a 1 degree Celsius increase between now and 2050 [Chart 1]. A climate simulation including the effect of the as yet unimplemented Kyoto Protocol, negotiated in 1997 and calling for a world-wide 5 per cent cut in carbon dioxide emissions from 1990 levels, would reduce that increase approximately to 0.94°C-an insignificant 0.06°C averted temperature increase [Chart 1].



To achieve the carbon dioxide emission cuts by 2012 as required under the Kyoto agreement, the United States would have to slash its projected energy use at that time by about 25 per cent. Why, if the US is required to lower its emissions so greatly, are the ultimate future temperature forecasts so pessimistic, in terms of avoided global warming? Because countries such as China, India and Mexico are

exempt from making emission cuts, and China alone will become the world's leading emitter of carbon dioxide in a few years.

Most economic studies indicate that the cost of the carbon dioxide emission cuts to the US would amount to \$100 billion to \$400 billion per year. Replacing the fossil fuels on which our economy relies has no simple answer. One major reason why the Kyoto Protocol's mandates are so costly is that energy policy considerations have been constrained by political, cultural and social influences. For example, substantially expanding the number of nuclear power plants and reducing the number of coal plants would enable future energy growth needs and the carbon dioxide emission reductions to be met simultaneously. But no nuclear power plants have been built in the US in over 20 years, owing to non-technical barriers. Further, renewable energy sources such as wind and solar power have been discussed to distraction as potentially meeting energy growth and carbon dioxide emission cuts in the US. Both wind and solar power facilities are boutique energy resources because they are dilute and intermittent sources of energy. While they may be cost-effective in limited locales, they are unreliable for large-scale electricity generation. Also, often overlooked is the enormous environmental footprint that wind and solar farms would require. For example, to replace a conventional 1000 megawatt coal plant that spans tens of acres would require an isolated, uninhabited (and therefore pristine) area with correct meteorological conditions of roughly 400 square miles and over 2,000 wind turbines, plus the associated imprint of high-power transmission lines, roads, etc. Solar panel farms would produce environmental blight and degradation over a similarly sized landscape.

The Kyoto Protocol also has the potential to worsen international relations. The struggling economies of the world rely on the US to maintain stability, provide aid and economic opportunity as a trading partner. While the developing nations are exempt from making carbon dioxide cuts, the severe economic impact on the US overwhelmingly reduces both opportunity and hope for developing economies. Thus, the punishment to the US economy as a result of severe energy restrictions will do little to lower the air's carbon dioxide concentration, but will devastate opportunities for developing economies.

What Does Science Say?

There is a tension between an economic catastrophe occurring because of the implementation of the Kyoto Protocol on the one hand, and the likelihood of an environmental catastrophe resulting from a failure to act on the other. The former is certain; the latter extremely speculative.

What are the scientific facts concerning human global warming effects? The facts in scientific agreement are:

As a result of human use of coal, oil and natural gas, the air's carbon dioxide content (along with other human-produced greenhouse gases such as methane) is increasing.

The greenhouse gases absorb infrared radiation, and, as a result, should retain some energy near the surface of the earth that would otherwise escape to space.

Based on current ideas about how climate should work, the surface temperature and low layer of air (at a height of roughly one to five miles) should warm in response to the addition of the small amount of energy arising from the air's increased carbon dioxide content.

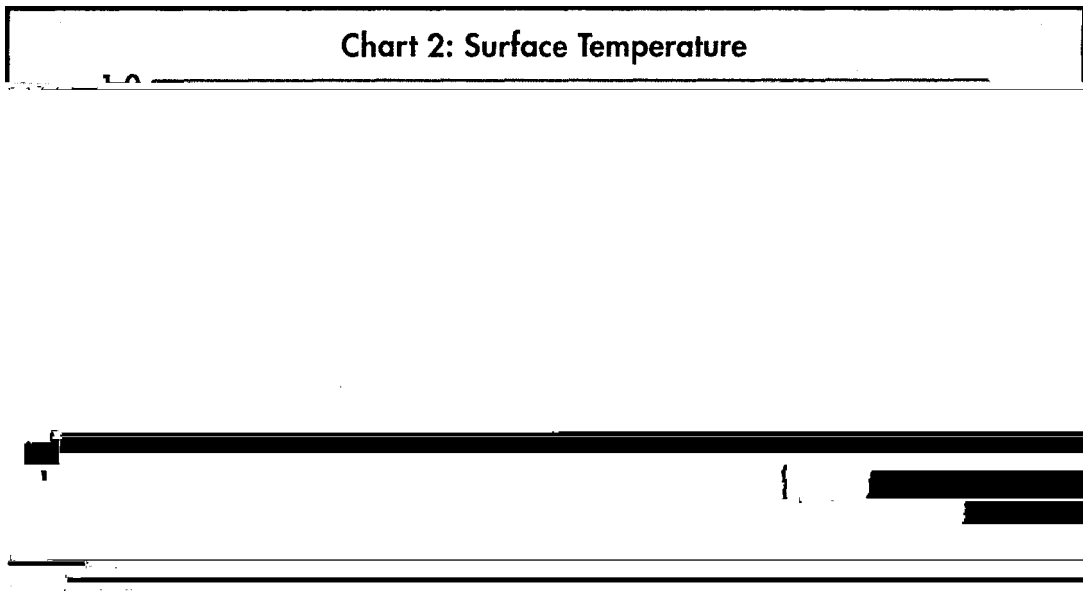
Carbon dioxide at current or at a dramatically increased concentration in the air is not a toxic pollutant-carbon dioxide is essential to life on earth, because vegetation requires it.

The main greenhouse effect is natural and is caused by water vapour and clouds (that is, water droplets and ice crystals in clouds). But the impacts of upper level moisture and clouds-the dominant greenhouse factors-are greatly uncertain. Hence, although sophisticated computer simulations of the impacts of increased carbon dioxide concentration in the air can be calculated, the reliability of the results rests on the validation of the computer simulations. However, the uncertainties of clouds and water vapour, besides other important factors like sea-ice changes in climate simulations, are at least ten times greater than the effect of the variable being tracked, that is, the effect of doubling the carbon dioxide in the air's carbon dioxide level.

Finally, in the absence of any counterpoising or magnifying responses in the climate system, the global average rise in temperature is roughly 1 °C (2°F) or less at equilibrium for a doubling of the air's carbon dioxide concentration. That is so meagre a warming for so profound a change in the air's carbon dioxide content, that it is within the order of climate's natural variability.

The Limits to Computer Simulations

One key question that deserves an answer at the start of the debate is the following: What has been the response of the climate thus far to the small amount of energy added by humans from increased carbon dioxide in the air? To prove the reliability of their future forecasts, computer simulations need verification by how they have reproduced past temperature change. Two major records of temperature to be considered are near the surface and in the lower atmosphere.



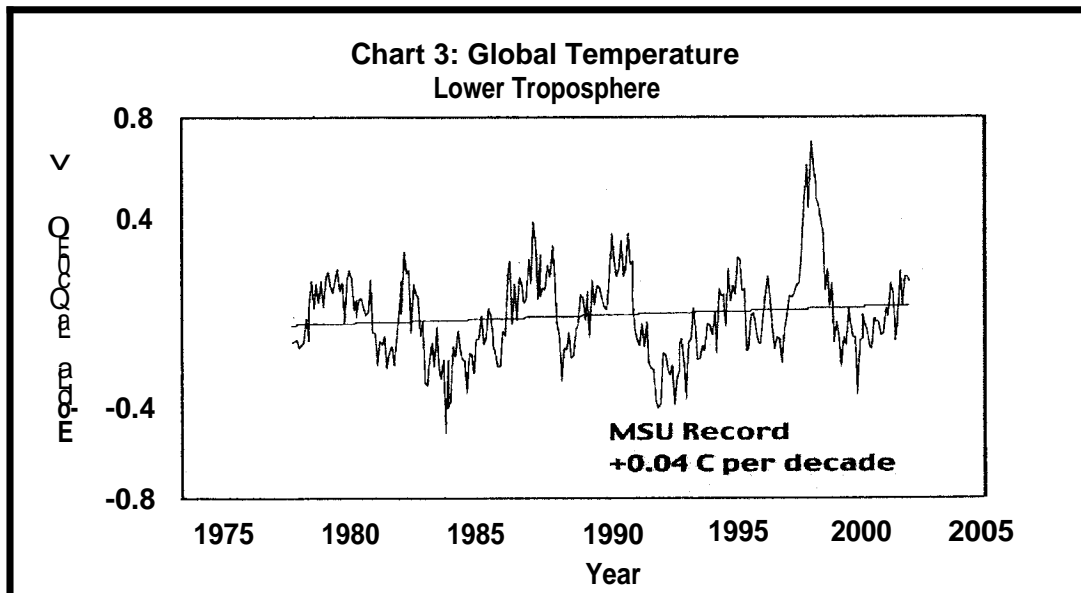
In the twentieth century, the global average surface temperature rose about 0.5 °C [Chart 2]. At first glance the warming seems attributable to human fossil fuel use, which increased sharply in the twentieth century. But a closer look at the twentieth-century temperature shows three distinct trends:

First, a strong warming, trend of about 0.5°C began in the late nineteenth century and peaked around 1940. Then, oddly, there was a cooling trend from 1940 until the late 1970s. And the third phase of the surface record shows a modest warming trend from the late 1970s to the present. Yet about 80 per cent of the carbon dioxide from human activities was added to the air after 1940, and so the air's increased carbon dioxide content cannot account for the first substantial warming trend, which appeared before 1940. Then, as the air's carbon dioxide content increased most rapidly, temperatures dropped for nearly 40 years. Since the 1970s, they have risen again. The early twentieth-century warming had to be largely natural. Human effects at most amount to about 0.1°C per decade-the maximum amount of the warming trend seen since the late 1970s. How does the observed surface warming trend in recent decades-assuming it is all anthropogenic- compare to the results of the computer simulations?

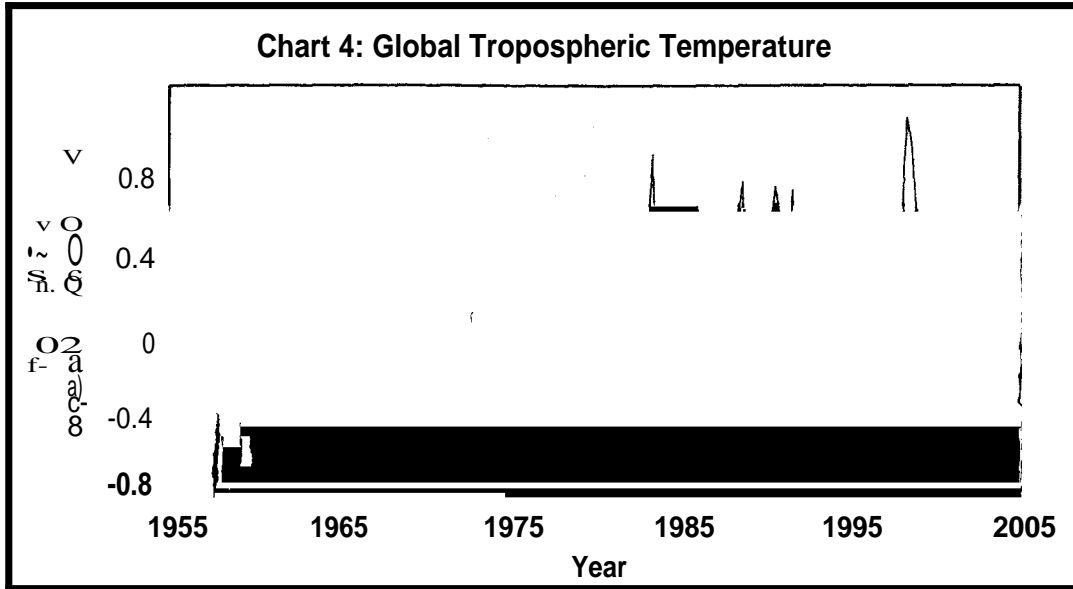
First, climate simulations predict that a smooth, linear rise of at least twice the observed trend should already be occurring, and should continue through the next century. If the warming trend has been observed to be, at most, 0.1°C per decade from human activities, then over 10 decades the forecasts are exaggerating the future warming, and should be adjusted downward to, at most, 1°C warming by 2100. This amount of warming would be very similar to natural variability, which man has dealt with for thousands of years. That warmth may return the climate to conditions seen in the early centuries of the second millennium, from about 800 to 1200 CE, when widespread warming is indicated by numerous proxies of climate, such as glaciers, pollen ' posits, boreholes, ice cores, coral, tree growth plus sea and lake floor sediments. The Medieval Climate Optimum saw a human response in the settling of Greenland, Iceland, travel by the Vikings to Newfoundland, higher crop yields and generally rising life spans.

Second, and more important, the recent trends in surface warming may not be primarily attributable to human action at all. US leadership in new space instruments and funding-about \$18 billion in the last decade-in global research has yielded critical information indicating a lesser human effect on global climate change than the climate simulations forecast.

The simulations of climate predict that a readily detectable warming both of the surface and of the layer of air above the surface to a few miles altitude-the lower troposphere-must occur with the presence of increased atmospheric carbon dioxide concentration. Records from NASA's microwave sounder units aboard satellites [Chart 3], and validated independently by balloon radiosondes, show an absence of the forecast human-made warming trend. In addition to being validated by a separate instrument, the satellite records of the temperature of the lower troposphere are essentially global, while those at the surface cover a mere fifth of the planet. The troposphere temperature does vary, for example, with the strong El Nino warming pulse of 1997-98, but no meaningful human warming trend is seen over the 21-year span of the record.

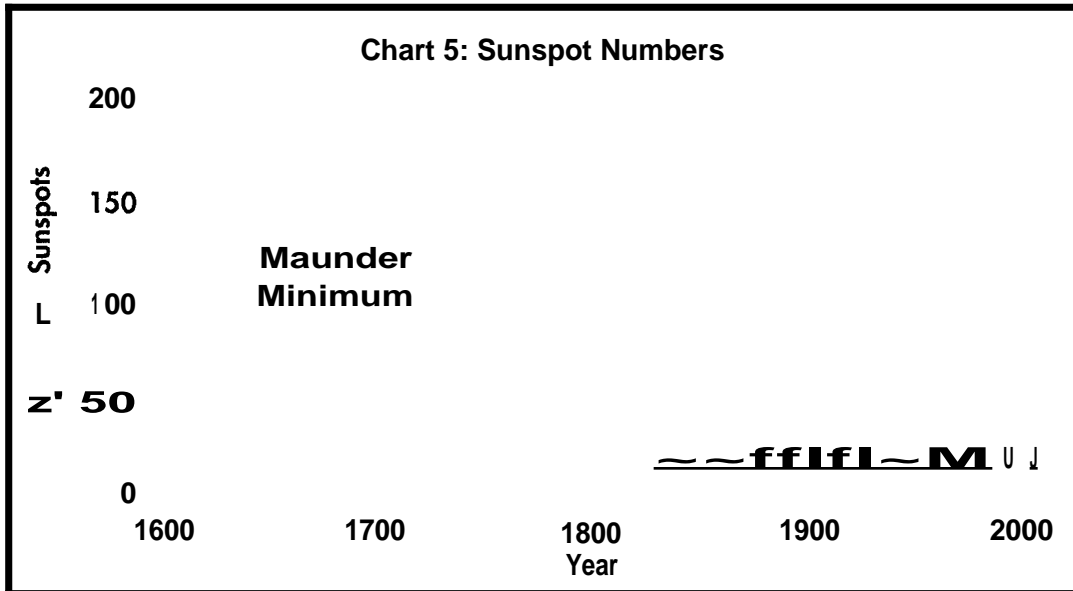


A proposed explanation for the lack of a significant human-made warming trend in the lower troposphere is that human induced global warming is present but masked because soot from sulphur dioxide and other human-made aerosols cool the atmosphere. But that idea of a widespread aerosol shading effect fails the test by the scientific method, because the Southern Hemisphere, which is relatively free of aerosols, shows no long-term warming trend at all. That fact contradicts the models' forecasts of significant human-made global warming and the hypothesis that aerosol pollutants are masking a significant human-made warming trend.



The radiosonde record from balloons also confirms and extends the results of the satellites and finds no trend of warming attributable to human activities going back more than four decades [Chart 4]. Although the radiosonde record lacks the dense spatial coverage of measurements made by satellites, it shows no warming trend in global average temperature that can be attributed to human effects. There is a strong warming in 1976-77—a warming known as the Great Pacific Climate Shift of 1976-77—resulting from a natural, periodic shift in the Pacific, called the Pacific Decadal Oscillation, which is so significant that global average temperatures are affected. Furthermore, the Pacific seems to have shifted, perhaps in 1998-99, back to its pre-1976 phase, which should produce cooler temperatures, especially in Alaska and in the global average.

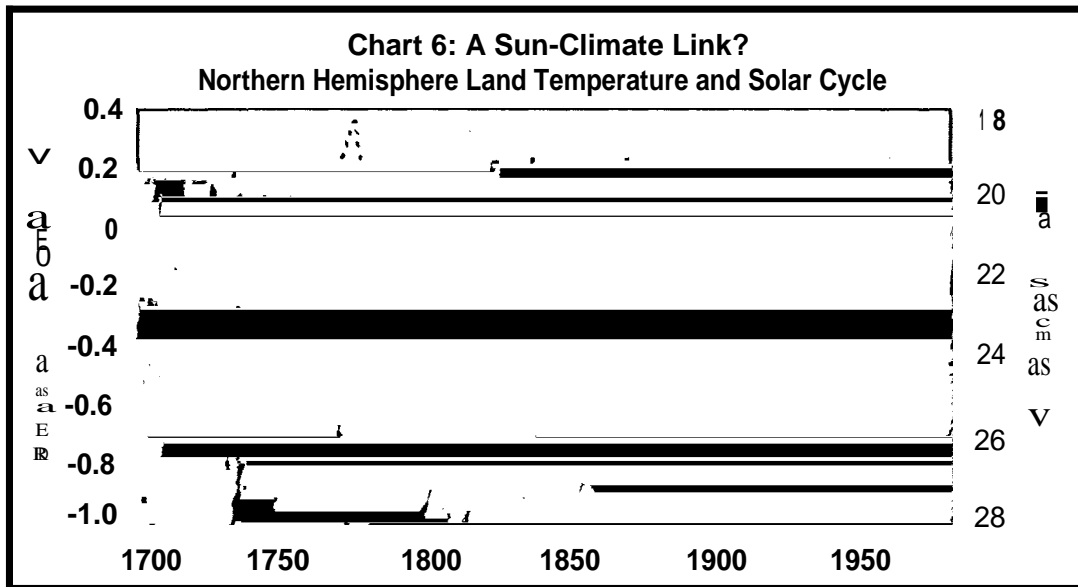
The most reliable data exhibit no evidence for human-made catastrophic warming. When compared to the measurements, the output from computer simulations all forecast exaggerated warming trends for the last four decades, compared to the sensitive lower tropospheric response. The forecasts exaggerate to some degree the warming at the surface, and decidedly in the lower troposphere. Because the models have exaggerated warming trends for the past several decades, the computer results presumably also exaggerate their forecasts of warming for the next century.



The exaggerated trends are not surprising. The computer simulations of climate must track over 5 million parameters relevant to the climate system. To simulate climate change for a period of several decades is a computational task that requires 10,000,000,000,000,000 degrees of freedom. And the simulations require accurate information on the two major, natural greenhouse gas effects-water vapour and clouds, which are uncertain at present.

Finally, in looking for natural factors influencing the climate, one area of new research is the effect of a changing sun [Chart 5]. The pattern of twentieth-century temperature change shows a strong correlation to the changing energy output of the sun. Although the causes of the sun's changing particle, magnetic and energy outputs are uncertain, as are the responses of the climate to the sun's various changes, the correlation is pronounced [Chart 6]. It explains especially well the early twentieth-century temperature rise, which cannot have much human contribution, because the lower troposphere has not been warming.

Based on the best temperature measurements of the last several decades, the actual response of the climate to the increased carbon dioxide content of the air has shown an insignificant man-made global warming trend. The magnitude of expected human change is especially



constrained by the observed temperature trends of the lower troposphere.

This is good news. It means that the human global warming effect is small and would be slow to develop, affording an opportunity to continue and improve observations and computer simulations of climate. That will serve to define the magnitude of human-made warming better, and allow the development of an effective, and cost-effective response.

Conclusion

Three things can be said about the risk of perilous global warming from human energy use:

1. No catastrophic human-made global warming effects can be found in the best measurements of climate. The alleged impacts haven't occurred. Hurricanes have not increased in the United States over the last half of the twentieth century; key infectious diseases such as malaria have been eradicated in the United States by the health, living and technological advances made in the last century.
2. Energy-use helped accomplish this last advance and it has also fed vast numbers of people while elevating them from poverty. The longevity, health, welfare and productivity of humans have

improved with the use of fossil fuels for energy, and the resulting human wealth has helped produce environmental improvements beneficial to health as well.

3. Carbon dioxide, the primary greenhouse gas produced by burning fossil fuels is not a toxic pollutant. It is essential to life on earth. Plants, including crops, have flourished owing to the aerial fertilization effect of increased carbon dioxide in the air. Agricultural experts estimate a 10 per cent increase in crop growth in recent decades owing to the heightened concentration of carbon dioxide in the air.

The best science offers little justification for the rapid cuts in carbon dioxide mandated by the Kyoto Protocol. Furthermore, the economic consequences come with considerable human and environmental risk, at the cost of no significant climatic improvement in terms of avoided temperature rise by the middle of the twenty-first century, according to the climate simulations.

Given the lack of benefits for the Kyoto Protocol, what then is guiding its international momentum? One strong factor is the philosophy of the Precautionary Principle in environmental regulation. The Precautionary Principle disallows an action that might harm the environment, until the action is certain to be environmentally harmless. That philosophy is antithetical to science in practice, because it sets an impossible goal in proving harmlessness with certainty.

Despite the lack of evidence for catastrophic global warming and its calamities, the temptation to adopt a policy of "doing something" is promoted as needed "insurance" against the possible risk to the earth. That portrayal of insurance as a prudent hedge is wrong on two counts, notwithstanding the scientific lack of detection of significant human-made warming. First, the actuarial notion of insurance is that of a carefully calculated premium paid against a risk known reasonably well in outcome and probability of outcome. In the case of human-made global effects, the risk, premium and outcomes cannot be well-defined. Yet risk calculations have been attempted by averaging the ensemble of results from various computer simulations, none of which yields reliable results.

More important is the second element of the flawed insurance analogy: the notion that buying the Kyoto Protocol is effective insurance-as stated above, the averted temperature resulting from mandated emission cuts will be inconsequential in terms of natural climate variability. The underlying basis for the international negotiations is the Rio Treaty of 1992, which specifically states that concentrations of greenhouse gases in the atmosphere, not emissions, be stabilized. In order to stabilize the air's concentration of greenhouse gases, emissions would have to be cut some 60-80 per cent.

For the next several decades, fossil fuels are the key to improving the human condition. The scientific facts show that the liberation of fossil fuels from their geologic reservoirs and mankind's use of them provide many economic, health and environmental benefits, whereas the environmental catastrophes forecast from their use by critics have yet to be demonstrated.

About the Charts

Chart 1 -Forecast of year-to-year temperature rise from years 2000 to 2050 CE (thin line) assuming an increase in the air's greenhouse *gas* concentration from human activities, based on the Hadley Center's model (UKMO HADCM3 IS92A version). The upper line (thick black, labelled "Without Kyoto") is the linear trend fit to the model's forecast temperature rise, without implementation of the Kyoto Protocol. The lower line (thick black) is the estimate of the impact on temperature with the implementation of the Kyoto Protocol. By the year 2050, around 0.06°C global warming is averted by the implementation of the Kyoto Protocol.

Chart 2 -Surface temperature changes sampled world-wide and analyzed by Cambridge Research Unit (CRU) and NASA-Goddard Institute of Space Studies (GISS). The pattern of twentieth-century temperature change has three distinct phases: an early twentieth-century warming, a mid-century cooling, and a late twentieth-century warming.

Chart 3-Monthly averaged temperatures sampled nearly globally for the lower troposphere (roughly 5,000 to 28,000 feet altitude) from Microwave Sounder Unit (MSU) instruments on board NASA satellites. The large spike of warmth resulted from the temporary natural warming of the Pacific Ocean by the 1997-1998 El Nino event. The linear trend is +0.04°C per decade (data are from <http://www.ghcc.msfc.nasa.gov/temperature/>)

Chart 4-The seasonal average temperature anomaly sampled world-wide for the lower troposphere as measured by radiosonde instruments carried aboard balloons. Although a linear trend of +0.09°C per decade is present if fitted across the entire period of the record, that trend is affected by the presence of the abrupt warming that occurred in 1976-1977, owing to the action of the Pacific Decadal Oscillation (PDO). The trend lines before and after the 1976-1977 Great Pacific Climate Shift indicate no evidence of a significant human-made warming trend (source of data <http://cdiac.esd.ornl.gov/ftp/trends/temp/angell/glob.dat>)

Chart 5-The Sunspot Number, which is representative of the surface area coverage of the sun by strong magnetic fields, is shown from the beginning of telescopic measurements early in the seventeenth century. The average 11-year sunspot cycle is prominent. Changes in the decade-to-decade strength of the sun's surface magnetism are also evident-including the low magnetism of the seventeenth century (a period called the Maunder Minimum, coincident with the coldest century of the last millennium) and the sustained, high magnetism of the latter twentieth century. NASA satellite measurements have shown a strong correlation between brightness of the sun and its surface magnetism, on time scales of decades.

Chart 6-Changes in the sun's magnetism (as evidenced by the changing length of the 22-year, or Hale Polarity Cycle, dotted line) and changes in Northern Hemisphere land temperature (solid line) are closely correlated. The sun's shorter magnetic cycles are more intense, suggesting a brighter sun, than longer cycles. Lags or leads between the two curves that are shorter than twenty years are not significant, owing to the 22-year time frame of the proxy of brightness change. The record of reconstructed Northern Hemisphere land temperature substitutes for global temperature, which is unavailable back to 1700 (S. Baliunas and W. Soon, 1995, *Astrophysical Journal*, 450, 896).