

From: Martin Durkin
Sent: 25 April 2007 11:52
To: Bob Ward

Bob Ward and his mates say they do not wish to censor or to curtail free speech, but they call for the film to be banned. This is a contemptible, weasel-worded attempt to gag scientific criticism, and it won't work.

I am flabbergasted that their excuse for suppressing the film is 'adequate quality control' when it comes to the reporting of science. Look at the mountains of absurd nonsense pedalled in the name of 'man made climate change'. How many of these people complained when Hurricane Katrina was blamed on global warming? Or the Asian tsunami? Where were they then? For the record, I am an extremely experienced TV producer with a particularly strong track record in science documentaries (I blush as I write this). The film was commissioned by Dr Hamish Mykura, the head of specialist factual programming at Channel Four who happens to have a Ph.D. in environmental science.

Nor do the global warmers want a 'balanced debate'. As the global warming zealots often say these days, 'the time for debate is over', and 'there is no longer room for doubt'. Their response to the film has been a co-ordinated campaign to persuade people to complain to Ofcom, to sanction the makers of the film and to try to prevent its distribution on DVD. That is a despicable way to carry on a debate. The theory of global warming is so firmly entrenched not because there's solid science to back it up but because it reflects perfectly the soft-left, soft-green leanings of a highly influential slice of the Western middle class. It is also a funding gravy-train for scientists, many of whom have built their careers and staked their reputations on global warming. I sympathise with them. The theory is clearly wrong. An expanded DVD version of the film will be on sale shortly at a shop near you.

From: Bob Ward
Sent: 25 April 2007 13:48
To: Martin Durkin

The signatories of the letter simply seek for Martin to correct the major misrepresentations contained in his programme before it is distributed on DVD. Seven of these major misrepresentations in summary are:

- 1) It misrepresented a graph of global average temperature published in 1995 and failed to acknowledge the most up-to-date analysis that shows none of the large-scale surface temperature reconstructions indicate medieval temperatures were as warm as in the last few decades.
- 2) It failed to mention the effect of aerosols in causing a slight cooling the average temperature in the northern hemisphere between 1940 and 1976.

- 3) It wrongly claimed that climate models are inconsistent with the data for trends in global average temperature in the lower atmosphere.
- 4) It wrongly claimed that volcanoes produce far more carbon dioxide than human activities, even though the published scientific literature shows that this is completely untrue.
- 5) It wrongly claimed that a paper by Caillon and co-authors suggests that the recent rise in carbon dioxide concentrations must have followed the recent rise in global average temperature, when the authors' paper states the opposite.
- 6) It wrongly presented Carl Wunsch's views to be that he believes carbon dioxide emissions from humans cannot be responsible for the recent rise in global average temperature, when in fact he is on record as stating that he thinks the opposite.
- 7) It wrongly claimed that solar activity explains the recent rise in temperature, when the up-to-date published scientific literature suggests that it doesn't.

Perhaps Martin could go through each of these misrepresentations and justify his apparent refusal to correct them?

From: Martin Durkin
Sent: 25 April 2007 15:34
To: Bob Ward

(1) Bob doesn't like me using a graph depicting the temperature record of the past 1,000 years, which, he says has been 'superseded'. The problem with my graph (which was published by the IPCC and used to be regarded as the standard account) is that it clearly shows a very warm period (what climatologists call the Medieval Warm Period) followed by a relative cold period (what they call the Little Ice Age), from which, it appears, we have for the past two or three hundred years, been making a slow, welcome recovery. All in all it's not very alarming.

So the global warming fraternity replaced this inconvenient graph by another - the famous 'Hockey Stick' (called so because it looks like one). Far more dramatic. But then two researchers (McIntyre & McKittrick - look it up on the net) examined the computer algorithm used to produce the famous Hockey stick, and discovered it was very good indeed at producing Hockey Stick shapes. They fed the thing random data many times over and found that, bingo, it always popped out a hockey stick. Their critique (which was extensive) was subsequently confirmed in the independent Wegman Report (led by the prominent statistician Professor Edward Wegman) which again I urge readers to look up for themselves on the net. Wegman also criticised the way a small group of Hockey Stick researchers were swapping the same methodological techniques and datasets to

come up with numerous studies which were essentially the same one, but purported to be supporting one another.

The record of temperature change over the past 1,000 years used in the film is far more reliable and tallies far better with historical accounts of this period.

(2) Every record of 20th Century temperature change presents Bob Ward with the same problem. The temperature went up radically from around 1905 to 1940, it fell from the 1940s to the early 70s, it rose in the 80s and 90s and it's done nothing spectacular either way for a decade. The postwar cooling is especially embarrassing. The postwar economic boom was a big deal - lots of CO₂. So why did temperatures go down?

The global warmers do a little shrug of the shoulders and suggest that maybe it was SO₂ (pollution from factories). But they say it awkwardly because they know it makes no sense. All reliable accounts of SO₂ has levels steadily increasing, from the late 19th Century till at least 1990. We had dirty industrial production before WWII and dirty industrial production after WWII. Why did the temperature go up in phase one and down in phase two? Why did the temperature go up in the 1980s? China is now the world's biggest producer of SO₂. The amount produced by China has increased 27 percent since 2000. Why aren't we freezing cold?

Here's a thought. Perhaps the temperature change in the 20th century has nothing to do with CO₂ and SO₂. Perhaps it is connected with the fact that solar activity increased from the beginning of the 20th Century until the 1940s, fell back till the 1970s and then rose again.

(3) He says the temperature rise in the troposphere is consistent with surface temperatures. He quotes as his source Professor John Christy, who is one of the leading scientists in the world on this topic. All I can say is, Prof Christy had a very different story to tell when we interviewed him in his labs in Alabama. According to classic global warming theory, the rate of temperature rise should be greater in the troposphere than at the surface. The observations we have from satellites and weather balloons consistently indicate the opposite.

(4) Hurray, Bob's got one right. I wrongly said that volcanoes emit more CO₂ than humans. He'll be pleased to see I've corrected that in the DVD version. But I find people are still surprised when I tell them that oceans, for example, produce around 80 gigatons of CO₂ a year, compared to around 7 gigatons from humans. The point here is nothing more than to emphasise that CO₂ is natural (people often refer to CO₂ as if CO₂ is produced only by humans and is a pollutant).

(5) The ice core data is frequently cited by global warmers as proof that their theory is true. In Earth's climate record, CO₂ and temperature seem to move together. What they conveniently fail to mention is that the order is the wrong way round. The temperature goes up, then a few hundred years or more later, so does CO₂. The reason is that the oceans both emit and suck in CO₂, and the emit more when it's warmer, and suck in more

when it's cooler, but it takes centuries to warm up and cool down the oceans. The film clearly states, more than once, that human emissions of CO₂ have risen in the 20 Century. The question is, is CO₂ a 'climate driver'? As evidence that it is, the ice cores are frequently cited. Wrongly. They show nothing of the kind.

(6) Carl Wunsch was not invited to be interviewed for his views on anthropogenic CO₂, but on oceanography, an area in which he is qualified to speak. And everything he said can be found in any textbook on oceanography. His views were most certainly not distorted.

(7) Bob Wade's deep attachment to global warming theory means he has to argue, absurdly, that variations in solar activity have little or nothing to do with climate change on earth. This is a sad day for Reason. If he would like a recent treatment of the subject I recommend "The Chilling Stars" by Nigel Calder and Prof Henrick Svensmark. Bob Wade and others have staked their reputations on man made global warming being true. Some have built whole careers on it. I feel very sorry for them.

From: Bob Ward

Sent: 26 April 2007 10:26

To: Martin Durkin

I am grateful to Martin for attempting to justify the misrepresentations in his programme. Unfortunately he still has not acknowledged all of the mistakes.

1) The graph attributed to the Intergovernmental Panel on Climate Change (IPCC) in his programme appears to have been published in 1990. But the programme wrongly stated that it showed global average temperatures from 900 AD up to today, rather than up to 1975 as the IPCC's graph stated. Claiming that the graph included temperatures for the last 32 years was a major misrepresentation.

The IPCC labelled its graph as schematic recognising that 17 years ago there was limited evidence about temperatures before systematic measurements began in the 19th century. But since 1990 there have been numerous reconstructions of surface temperatures using 'proxy' records such as tree rings. All of the graphs of these reconstructions for the last 1,000 years show a so-called 'hockey stick' shape, with a long 'handle' of more or less steady global temperatures up to about the 18th century, and then a blade corresponding to the recent warming. Following controversy over one of these hockey stick graphs, the United States National Academy of Sciences carried out an authoritative and detailed review of all the work. The review concluded that "none of the large-scale surface temperature reconstructions show medieval temperatures as warm as the last few decades of the 20th century". The programme ignored this review and all of the evidence that was considered by it.

2) The first broadcast of the programme presented a graph of "world temperatures" erroneously attributed to NASA. In subsequent broadcasts, the attribution was removed

and the graph purportedly showed world temperatures between 1880 and about 1990. It showed a marked drop in temperature between 1940 and 1976. But no graph of global average temperature from a reputable source shows this sort of drop in temperature over this period.

The programme's graph may have shown temperatures from the northern hemisphere or more likely from North America, which show a cooling over that 35-year period due to the effect of industrial aerosols. This can be seen on the graphs produced by NASA at <http://data.giss.nasa.gov/gistemp/graphs/>. The programme completely ignored this fact and Martin dismisses it. But he also ignores the fact that the temperature record also shows short-term drops after major volcanic eruptions, such as that of Mount Pinatubo in 1991, because they emit ash and aerosols into the atmosphere that scatter and reflect sunlight.

Industrial aerosols have the same impact. I do not know where Martin is getting his information from, but the published record of sulphate aerosols show that they increased sharply between 1945 and about 1989, after which they declined rapidly. Global emissions of sulphate aerosols are much less today than they were in the 1970s. Meanwhile greenhouse gas concentrations have continued to mount, which answers his question about "why aren't we freezing cold?".

3) The programme claimed that the record of temperature rise in the lowermost atmosphere (troposphere) is inconsistent with climate models showing the impact of rising greenhouse gas emissions. But this misrepresents the most up-to-date review of the evidence by the US Climate Change Science Programme last year. This review, which was co-authored by John Christy (who appeared on the programme), concluded that "given the range of model results and the overlap between them and the available observations, there is no conflict between observed changes and the results of climate models". The programme failed to present the most up-to-date evidence.

4) How gracious of Martin to admit that the programme was completely wrong about how much carbon dioxide is emitted by volcanoes. But now he's promoting another misrepresentation of the science, with inaccurate figures for the role of the oceans. In fact, the scientific evidence shows that the oceans release about 367 gigatonnes of carbon dioxide each year, but absorb about 374 gigatonnes. Therefore, the oceans remove about 7 gigatonnes of carbon dioxide from the atmosphere each year, while human activities add about 22 gigatonnes. Martin is wrong about the science on this issue as well.

5) The programme showed a graph that was attributed to a scientific paper by Nicolas Caillon and co-authors, showing how carbon dioxide levels in the atmosphere had risen after the initiation of the Termination III deglaciation event about 240,000 years ago. Carbon dioxide levels did not start to rise until about 800 years after deglaciation began, and similar time lags have been recorded for other deglaciation events. But Caillon did not conclude, as the programme wrongly claims, that this proves the recent rise in carbon dioxide must be the result of, rather than the cause of, the recent warming. His paper actually states that "the situation at Termination III differs from the recent anthropogenic

CO2 increase", noting that "the recent CO2 increase has clearly been imposed first". And it points out that the release of carbon dioxide at the beginning of deglaciation events amplified the initial warming caused by fluctuations in the Earth's orbit around the Sun.

Caillon's conclusion is not surprising. The last deglaciation occurred about 12,000 years ago, whereas carbon dioxide levels only started to rise in the 18th century, coincidentally when the start of industrialisation led to widespread burning of coal. On this issue as well, the programme misrepresented the science.

6) In an article published in another newspaper shortly after the programme was first broadcast, Carl Wunsch wrote the following: "In the part of The Great Climate Change Swindle [sic] where I am describing the fact that the ocean tends to expel carbon dioxide where it is warm, and to absorb it where it is cold, my intent was to explain that warming the ocean could be dangerous - because it is such a gigantic reservoir of carbon. By its placement in the film, it appears that I am saying that since carbon dioxide exists in the ocean in such large quantities, human influence must not be very important - diametrically opposite to the point I was making - which is that global warming is both real and threatening."

Clearly, Professor Wunsch feels that the programme misrepresented his views.

7) As entertaining as the book by Nigel Calder and Henrik Svensmark might be, it is not really a substitute for scientific papers published in peer-reviewed journals. The programme showed a graph from a paper by Professor Svensmark and a co-author that was published in 1997. The graph purported to show a close match between the length of sunspot cycles and temperature since 1860. But the graph in the programme, as it does in the paper, has no record for the length of sunspot cycles after about 1976. If the programme had included more up-to-date evidence, it would have shown that sunspot cycle length has not really changed since 1976 while temperature has continued to climb. Thus the apparent correspondence between sunspot length and temperature does not occur over the past 30 years.

In any case, sunspot cycle length is not a particularly good measure of the amount of heat energy reaching the Earth, which is what influences global temperature. This has been measured directly by satellites since 1978, and the record shows that variations in the Sun's energy have been too small to have contributed appreciably to the accelerated warming over the past 30 years.

And I am afraid that this last point rather means that the central premise of the programme, that solar activity rather than greenhouse gas emissions are responsible for the recent warming, is like a house of cards that completely collapses when the errors in the science are removed.

From: Bob Ward
Sent: 27 April 2007 08:55
To: Martin Durkin

I am conscious that it is almost 24 hours since I sent my response to you. Are you planning to add anything further, or have you accepted that all of the misrepresentations I have outlined did occur in your programme?

From: Martin Durkin
Sent: 27 April 2007 09:37
To: Bob Ward

Not on your Nelly. I have plenty to say. Despite the fact that I'm running a company employing 50 people and making several other TV series, I wouldn't dream of letting Wade's hogwash go unchallenged. Stay tuned.

From: Bob Ward
Sent: 27 April 2007 10:23
To: Martin Durkin

That's good to hear. One small thing: I know attention to detail is not your strong point, but do you think you could manage to get my surname right in future? It's only four letters, so it shouldn't be hard!

From: Martin Durkin
Sent: 27 April 2007 10:26
To: Bob Ward

Four letters. Hmm.

From: Martin Durkin
Sent: 30 April 2007 11:41
To: Bob Ward

(1) The earth's temperature record over the past 1,000 is a serious matter of contention.

But Bob is one who is misleading here. On the labelling point, on a scale of 1,000 years with the attendant error bars, we followed the example of the IPCC. Late 20th Century is 'now'.

The real question is which graph to use (ie. what the temperature was). Bob would like us to use the so-called 'Hockey Stick'. But instead we used the graph which is regarded by

climatiologists outside the global warming fraternity as the most authoritative, standard account (Professor Lamb's, as used in the first IPCC report). This shows a Medieval Warm Period (as warm or warmer than today, Bob can chose), followed by the Little Ice Age, from which we are now, it appears, making a slow, welcome recovery. And that's why Bob's alarming Hockey Stick graph is vital to the global warmers. Without it, the current warming appears neither unusual nor worrying. So let's have a look at the Hockey Stick. First McIntyre and McKittrick showed that the statistical method used to create the graph were dodgy (it always produced hockey stick shapes, even when fed random data), and that the underlying proxy data (bristlecone pines) were widely known to be unreliable. Then there was an independent enquiry into the matter led by Professor Edward Wegman. Wegman not only agreed with M&M's devastating critique, but also dismissed the other 'Hockey-Stick' look-alikes: "It is clear that many of the proxies are re-used in most of the papers. It is not surprising that the papers would obtain similar results and so cannot really claim to be independent verifications."

What does Bob have to say about this? Bob doesn't mention M&M or Wegman, but cites a US NAS report which, he says, exonerates the 'Hockey Stick'. That's odd. Because the chairman of that report, Dr Gerald North was asked, under oath, before a US House Committee: "Dr North, do you dispute the conclusions or the methodology of Dr Wegman's report?" to which North replied, "No, we don't. We don't disagree with their criticism. In fact pretty much the same thing is said in our report." So go and check out McIntyre & McKittrick, and Wegman, for yourself. (For those interested I will post the relevant web addresses on our web-site greatglobalwarmingswindle.com)

In short, the Hockey Stick is not good science, and the present period in earth's climate history is far from out of the ordinary.

(2) As regards the postwar cooling, again, Bob is very wrong. Bob says "no graph of global average temperature from a reputable source shows this sort of drop in temperature over this period". Our graph came from NASA (Hansen and Lebedeff 1988), which does indeed show the indicated drop in global temperatures from 1940 to the late 1960s (approximately 0.15 deg C) with an even greater decline of about 0.5 deg C in temperatures north of 23N. Hansen and Lebedeff 1987 shows an even greater decline in Arctic temperatures (approximately 1.4 deg C in the same period.)

In the film there were three graphs depicting the temperature record in the 20th Century. They all show a marked postwar cooling, as does the IPCC's own record of the 20th Century, and every other 20th Century global temperature record Bob might care to cite. He is stuck with it. The question is, why did it happen? Why, during the biggest explosion of industrial activity ever witnessed, did the temperature go down?

Bob says it was aerosols, and quotes an economist, David Stern. Bob says aerosols increased sharply between 1945 and 1989. In fact, aerosol emissions have increased steadily since the beginning the 20th Century (see for example Lefohn et al, 1999). Why did increasing SO₂ not have a cooling effect before the war? Why does the postwar cooling end in the early 70s, while, according to Bob, aerosols were still 'increasing

sharply' up until 1989? And what has happened with aerosols since then? Bob says they fell sharply. Oh really? The IPCC AR4 Second Draft stated that, while emissions in Europe and the US had declined in the 1990s, they had increased in Asia and that the "net result of these combined regional reductions and increases leads to uncertainty in whether the global SO₂ has increased or decreased since the 1980s". In short, Bob's account of a recent "rapid" aerosol decline is unfounded. The SO₂ story doesn't fit, any better than the CO₂ story does. Neither gives a convincing explanation of temperature change in the 20th Century.

(3) It is Bob, yet again, who is guilty of misrepresentation. If greenhouse gas (of which CO₂ is a minor one) were causing the warming, then according to all the models, the rate of warming should be higher in the troposphere than at the earth's surface. In our film Professors Christy and Lindzen, both highly qualified in this area, say that it is not. Bob says that the US CCSP report last year resolves this key problem for global warming theory. But it does not. I quote the report: "A potentially serious inconsistency [between model results and observations] has been identified in the tropics."

I cannot emphasise this strongly enough. The theory of greenhouse-led, man made global warming, is not consistent with observed data in the real world.

(4) My figures on CO₂ emissions come from the IPCC.

(5) Bob repeatedly claims that the film says that the recent rise in CO₂ was caused, not by humans but by a rise in temperatures. I don't know how many times I have to say this. NO IT DOESN'T. Watch the film. It says the recent rise in CO₂ was largely the result of an increase in human emissions. Everyone agrees. The question is, does that have any significant effect on the climate?

When you ask global warmers this question, they almost invariably refer to the ice core data which they say proves that CO₂ variation drives climate change. But the ice core data does nothing of the sort. In the ice core data, changes in temperature clearly precede (not follow) changes in CO₂. In fact increasing rising CO₂ often accompanies decreasing temperatures, contrary to a famous claim by Al Gore. What is there in this simple logic which is eluding Bob? Cancer does not cause smoking. The misrepresentation of the ice core data by the global warmers is a shocking distortion of the truth (I refer readers to our web-site for references).

(6) I've answered this. In the film Wunsch says basic things about the oceans which can be found in any schoolbook.

(7) The Sun

Bob's rejection of solar activity as a cause of climate variation is bizarrely obstinate. There are many peer-reviewed, published studies which show a compelling connection between solar activity and climate. For the tip of the iceberg, I urge readers to look at: Perry (2007) Jour. Advances in Space Research; Jiang et al (2005) Geology; Stager et al

(2005) Jour. Paleolimnol; Soon (2005) Geophysical Research Letters; Veizer (2005) Geoscience Canada; Maasch et al (2005) Geografiska Annaler. But for a good old compelling book on the subject, read Nigel Calder's The Manic Sun.

Scientists researching the evident link between the sun and earth's climate disagree about the mediating factors involved (sun-spots by the way are merely one proxy measure of solar activity) but to dismiss this research summarily as a reflection is foolish and irrational.

Bob's attack on my 'misrepresentations and errors' is no more than an attempt to stop people from speaking out against the theory of man made global warming. Since making this film I have experienced a little of the slander and intimidation thrown at people who dare to disagree. It is very unpleasant.

From: Bob Ward
Sent: 01 May 2007 16:04
To: Martin Durkin

Martin, your attempts to justify the misrepresentations in your programme are unconvincing.

1) The graph in your programme was attributed to the IPCC. In fact it appears to have been taken from the IPCC First Assessment Report, published in 1990. This in turn seems to have been taken from a report by the United States National Academies of Science in 1975, and based on a similar graph published in 1966 by Hubert Lamb. To describe Lamb's diagram, which is more than 40 years old, as "regarded by climatologists outside the global warming fraternity as the most authoritative, standard account", is patently ludicrous - how could it possibly be if it does not include temperatures since 1966, or any of the numerous scientific studies that have been carried out in the last four decades? Martin's programme completely misrepresented the IPCC's diagram by labelling the end of the graph as "now", rather than 1975 or 1966.

Martin has now attempted to divert attention from his misrepresentation of the IPCC graph by drawing in the 'hockey stick' controversy. It is true that there has been some criticism of the methods and conclusions appearing in two scientific papers by Michael Mann and co-authors that were published in 1998 and 1999. The United States National Academy of Sciences (NAS) set up a committee to carry out a review of the controversy. Its conclusion was that the basic finding of these papers, that the Northern Hemisphere was warmer during the last few decades of the 20th century than during any comparable period during over the preceding millennium, was "plausible". But it pointed out that there are substantial uncertainties in quantifying large-scale surface temperature changes prior to about AD 1600, and there was "less confidence" about the conclusion of the paper by Mann and co-authors in 1999 that "the 1990s are likely the warmest decade, and 1998 the warmest year, in at least a millennium".

Nevertheless, the NAS report also stressed that there have been a number of other large-scale temperature reconstructions. It concluded that "none of the large-scale surface temperature reconstructions show medieval temperatures as warm as the last few decades of the 20th century".

2) Your graph does not appear in the paper by Hansen and Lebedeff in 1988. You should admit that it is taken from the paper by Arthur Robinson and co-authors, which was published in 'Medical Sentinel' in 1998. That paper claims the graph incorporates data from three papers by James Hansen and co-authors in 1987, 1988 and 1996. Your programme's graph shows a much larger cooling between 1940 and 1976 than occurs in any of the papers by Hansen and co-authors. You should make clear the source and not falsely claim that it was published by NASA or James Hansen and co-authors.

Although you have purported to draw upon the work of James Hansen, it is clear that you have chosen to ignore his other findings. In a paper in 1998, for instance, he wrote that the "present climate forcing by anthropogenic aerosols, the direct effect plus the impact on clouds, is probably large and negative", and he noted that "[m]ost of the current direct and indirect aerosol forcing must have been introduced during the era of rapid fossil fuel growth, 1950-75". This is now widely acknowledged, and your programme's failure to even mention aerosols is a significant misrepresentation of the state of knowledge.

Martin has then tried to cast doubt on the trends in aerosol emissions. As the paper by David Stern and the report of the United States Pacific Northwest National Laboratory show, global sulphate emissions declined after 1980. His quote from the IPCC Fourth Assessment Report, published a few weeks ago, is also erroneous. It actually states that "[t]wo recent emission inventory studies support data from ice cores and suggest that global anthropogenic sulphate emissions decreased over the 1980 to 2000 period" (see Technical Summary, page 29). Martin is contradicted by the scientific evidence, but just won't admit it.

3) Martin continues to assert wrongly that there is a discrepancy between models and global measurements of temperature changes in the lower atmosphere. I can only highlight yet again the conclusion of the review by the United States Climate Change Programme, which John Christy co-authored: "Given the range of model results and the overlap between them and the available observations, there is no conflict between observed changes and the results from climate models".

Martin then tries to change his argument to one about model results and measurements in the tropics only. There is indeed a discrepancy at present. But the report of which Christy is a co-author concluded that the most likely explanation was "because non-climatic influences remaining in some or all of the observed tropospheric data sets lead to biased long-term trends".

Much as he wants to dodge and weave on this issue, he should not ignore the conclusions of climate researchers.

4) After admitting that the programme was wrong to claim that volcanoes produce more carbon dioxide than the burning of fossil fuels, Martin has made a similarly erroneous claim that the oceans make a net larger contribution to concentrations of the gas in the atmosphere. He is simply wrong, but just won't admit it. The IPCC Fourth Assessment Report (see Chapter 7, Table 7.1, page 516) states that on average between 2000 and 2005, the oceans absorbed about 8.8 gigatonnes of carbon dioxide more than they released each year, while emissions from human activities added 28.8 gigatonnes to the atmosphere annually.

5) I am glad that Martin now agrees with me that the steady rise in atmospheric concentrations of greenhouse gases since the start of industrialisation has been preceding the increase in global average temperature. His argument seems to be that the two rises are coincidental because a paper by Nicolas Caillon and co-authors showed a time-lag of 800 years between carbon dioxide concentrations increasing and the initiation of the Termination III deglaciation event in Antarctica about 240,000 years ago. But his programme clearly misrepresents the conclusions of the paper by Caillon, which pointed out that the temperature rise during Termination III occurred over a period of about 5000 years and that "[t]he sequence of events during this Termination is fully consistent with CO₂ participating in the latter ~4200 years of the warming".

6) Carl Wunsch's accusation that his views on the effect of human greenhouse gas emissions were misrepresented by the programme remains unanswered by Martin.

7) On solar activity, Martin has now misrepresented my views. None of my statements have been a "rejection of solar activity as a cause of climate variation". I have pointed out that climate models only successfully reproduce the pattern of global temperature change when they include all natural and man-made factors, including solar activity and greenhouse gas emissions, among others. But Martin's central premise, that the recent rise in global average temperature is solely due to changes in solar activity, just doesn't fit the evidence. Direct satellite measurements of the Sun's energy show that it has not increased significantly since 1978. Martin cannot escape that fact.

In conclusion, the major misrepresentations in Martin's programme remain unjustified and he refuses to even acknowledge all but one of them. He has mis-cited the findings and interpretations of research, used papers that are out-of-date and misrepresented the views of researchers. The problem appears to be that Martin has not really made a programme about the science of climate change. Instead he has made a programme about his own narrow ideological views, and he has tried desperately to shoe-horn the scientific evidence in to make it fit. The trouble is that the evidence just does not fit his views.

From: Martin Durkin
Sent: 02 May 2007 15:44
To: Bob Ward

(1) The Hockey Stick is no diversion. It is a central bit of evidence in Al Gore's film, and the IPCC advertised it (or used to until it became too embarrassing) on the front page of its reports. It has been a central pillar of the global warming theory. And it is wrong. Bob cites the NAS, but NAS concludes only that the earth is warmer now than in the last 400 years (ie. since the Little Ice Age - NOT the last 1,000 years) and the authors have conceded that their review of the Hockey Stick study was relatively cursory. Wegman produced the really thorough analysis (Wegman, who is chair of the US National Academy of Sciences Committee on Theoretical and Applied Statistics). I conducted a lengthy interview with Prof Wegman in Washington, which I will post on our web-site. He concluded that McIntyre & McKittrick's demolition of the Hockey Stick was solid. (I beg readers to look up the relevant papers themselves). Bob then refers to other similar studies - these sons of Hockey sticks were also condemned by Wegman (see previous exchange).

So what graph should we use? The last one used by the IPCC before the Hockey Stick was Lamb's famous graph.

Bob, like all warmers, wants to extinguish the Medieval Warm Period. This was the time when Vikings colonised Greenland (and called it GREEN-land). This was when Chaucer writes of the wine produced by the vineyards in the North of England). Give up Bob. It was warmer back then.

And let's look beyond 1,000 years. How about the Roman Warm Period, or the very warm Holocene Maximum, or indeed the FOUR PRECEDING INTERGLACIAL PERIODS WHICH (EVEN IN GORE'S FILM IF YOU LOOK CLOSELY) WERE WARMER THAN THE CURRENT ONE. Not even a dubious climate model can spirit these away. Admit it Bob. There's nothing exceptional about today's climate.

(2) Thank-you for accepting that the data on the graph came from Hansen and Lebedeff - their work shows a significant postwar cooling. But let's get to the meat. Bob and I both know there was a distinct cooling of the earth which coincided with the postwar economic boom - all records show this. Why? Aerosols don't explain it. All established records of SO₂ emissions show them increasing during the rapid warming which preceded WWII. After the war, emissions of aerosols were greatest in the northern hemisphere but the cooling was most pronounced in the southern hemisphere. Hmm. He cites a paper by Stern, but the Stern paper states clearly: "Global anthropogenic sulphur emissions increased until the late 1980s. Existing estimates for 1995 and 2000 show a moderate decline from 1990 to 1995 or relative stability throughout the decade."

Stern, an economist, tries amplify the downward trend using econometrics(!). I suggest he contacts the China Meteorological Administration, which says SO₂ output has risen by almost a third since 2000, and is now on a par with US output in 1980.

The postwar cooling does, on the other hand, correlate very nicely with a downturn in solar activity. Now that Bob says he does accept that the sun can affect the earth's climate, perhaps he should look again at this curious link.

(3) Bob tries to dismiss the tropics as just another corner of the globe ('the tropics only'). But what he doesn't know, or isn't saying, is that the largest signal of greenhouse gas impacts in models occurs in the tropical troposphere. This is why the tropics are so important ... this is where the signature is greatest if greenhouse gases are affecting the climate in the way the current models project. So this is the **FIRST** place you would look to find the impact. This has been pointed out as far back as Barnett in 1985.

Yet in the tropics there is less warming aloft than at the surface in the observations (a discrepancy pointed out about as simply as possible in Christy et al. 2007). This is completely at odds with model projections where the magnitude of tropospheric warming is shown to exceed the surface by the largest amount anywhere on the planet.

Greenhouse theory says that in the tropics, the rate of temperature rise should increase strongly with altitude, peaking at around 10 kilometres. The observations show the opposite.

Bob quotes from the summary that "there is no conflict between the observed changes and the results from climate models". I suggest Bob and the author of this summary read the bally report.

(4) My figures too are from the IPCC. We are talking apples and pears. I refer to emissions, you talk about flux. As we stated in the film, oceans both emit and absorb CO₂. At the moment. According to the IPCC they emit around 88 gigatons a year, and they absorb around 90 gigatons a year. What determines how much they emit and how much they absorb depends on the temperature. This helps to explain why, in the ice core studies, CO₂ levels go up hundreds of years after the temperature increases (it takes many years to warm up the oceans). The oceans are the biggest well of CO₂ on the planet (containing 38,000 gigatons of CO₂, compared with 730 gigatons in the atmosphere).

(5) I do NOT agree with you Bob. CO₂ has never driven the earth's climate and there's no good reason to suppose it is now. For about 20 years, Al Gore and others have used the ice core studies to support the idea that temperature and CO₂ are linked. But the only thing the ice cores tell us, is that temperature changes induce changes in atmospheric CO₂. Caillon et al, 2003, for example, shows that increasing temperature preceded increasing CO₂ by hundreds of years. Bob's quote from Caillon (that CO₂ might "participate" in the warming trend, once it's got going) is merely the author's subjective opinion and cannot be deduced from the data. The point is, the CO₂ clearly did not induce the warming trend, and we often see the temperature falling during periods of rising CO₂.

(6) We did not misrepresent Wunsch's views. Wunsch says the oceans emit more CO₂ when they're warm, and absorb more CO₂ when they're cold. You'll find the same thing in a school textbook.

(7) Hurrah! Bob now concedes that there is close correlation between solar activity and the Earth's climate in the 20th Century (a far better correlation, he must surely also concede, than with CO₂), at least, he says, till 1978. This has at least reduced the area of disagreement.

His argument about the size of the variation in heat coming from the sun holds not water. Solar variation is as likely, more likely surely, to induce climate feedbacks (or amplifying effects) as his beloved CO₂. The work of Svensmark et al, for example, clearly show an inverse correlation between solar activity and cloud cover.

Bob, I believe used to be with the Royal Society, who called on journalists not to pay attention to "climate sceptics" (horrid phrase). Well I am one journalist who didn't do as he was told. And my eyes have been opened.

Shame on Bob and his friends.

From: Bob Ward
Sent: 03 May 2007 10:09
To: Martin Durkin

Martin still refuses to acknowledge and justify all of the misrepresentations in his programme and instead continues to attempt to divert attention by making more erroneous claims.

1) Martin has implicitly admitted that his programme misrepresented the IPCC graph. He appears to be sticking with his hilarious claim that a diagram published in 1966 provides the most up-to-date record of global average temperature.

Martin tries to distract from the obvious misrepresentation with his personal account of the 'hockey stick' controversy. Edward Wegman's report reviews the content of just two papers, published in 1998 and 1999. If Martin does not like those two papers, why did his programme not refer to any of the other papers about reconstructions of global average temperature over the past millennium that have been published more recently, rather than sticking with a diagram that is more than 40 years old?

His references to "the time when Vikings colonised Greenland" and "when Chaucer writes of the wine produced by the vineyards in the North of England" sound awfully scientific, but shows a lack of understanding about the difference between local and global climate. Proxy measurements suggest temperatures in a small number of locations where higher at some point in the last 1000 years than they are today. That is why the report by the US National Academy of Sciences concluded that "[p]resently available

proxy evidence indicates that temperatures at many, but not all, individual locations were higher during the past 25 years than during any period of comparable length since AD 900".

2) Martin misrepresents my previous message, while stubbornly refusing to confirm that source of the graph that was featured in his programme was a paper, published in a medical journal in 1998, the lead author of which runs a website campaigning against the compliance of the United States with the terms of the Kyoto Protocol.

I am glad Martin now appears interested in the effect of aerosols on measurements of surface temperature. It is a shame his programme completely ignored the topic, thus totally misrepresenting the state of scientific knowledge. I do not know where the quote that he attributed to David Stern came from - it certainly does not appear in the 2005 paper by Stern that I mentioned.

3) Martin still tries to hide the fact that his programme wrongly claimed an inconsistency between the data and models of global temperature in the lower atmosphere. He clearly prefers his own 'expert opinion' over that of the scientists, including John Christy, who carried out the authoritative review of this issue by the United States Climate Change Programme. The discrepancies in the tropics are interesting, and are probably due to biases arising from data collection, but they do not change the overall finding for the global troposphere.

4) At least Martin has admitted the programme was wrong to claim that volcanoes today produce more carbon dioxide than human greenhouse gas emissions. The rest of his last response on this point is pure gobbledygook. The scientific evidence shows that the oceans currently absorb more carbon dioxide than they release, which is why they are becoming more acidic.

5) Here at least we find some progress. Martin at last admits that his programme misrepresented the findings of the paper by Nicolas Caillon and co-authors. His justification? The paper's conclusion is "merely the author's subjective opinion and cannot be deduced from the data". Clearly Martin believes his 'expertise' must be greater than that of the scientists who carried out the research!

6) Martin continues to reject Carl Wunsch's clear assertion that the programme misrepresented his views. Martin must believe he has a better grasp than Carl Wunsch of the professor's views!

7) Martin tries rather feebly to misrepresent my views on this issue. But he still has not been able to find any evidence that the rise in global average temperature in the last 30 years has been accompanied by a significant increase in solar activity. The graph in his programme ends the record of sunspot cycle length in the mid-1970s. By refusing to even acknowledge the evidence about solar activity after that date, Martin continues to misrepresent the state of scientific knowledge.

It is clear that Martin has created an ideological straitjacket that requires him to misrepresent the scientific evidence and the work of climate researchers. By refusing to acknowledge and correct the obvious misrepresentations, he displays utter contempt for the evidence, the scientists whose research he misrepresented, and the viewers who might have the misfortune to believe the misrepresentations in his inaccurate and misleading programme.

From: Martin Durkin
Sent: 03 May 2007 12:07
To: Bob Ward

(1) So you think it's a local phenomenon and you want some 'up to date' evidence of a Medieval Warm Period (MWP) and a Little Ice Age (LIA)? Measurements of carbon and oxygen isotopes in stalagmites showed the temperature was higher than today in South Africa by 3C during the MWP, and lower by 1C in the LIA (Tyson et al, 2000); a study of the cultivation of subtropical citrus trees and herbs in China had temperatures 1C higher than today in the MWP, and according to a study of oxygen isotopes in peat cellulose the same region was the coldest for 2000 years during the LIA (Hong et al, 2000); in Argentina during the MWP glaciers retreated and the plains became warm and humid, and during the LIA the glaciers advanced again (Cioccale, 1999); borehole measurements into the Greenland ice sheet indicate a temperature 1C higher than today in the MWP and 1C cooler in the LIA (Dahl-Jensen, 1998); a study of oxygen isotopes in sea floor sediments in the North Atlantic show a 1C rise in the MWP and a 1C fall in the LIA (Keigwin, 1996). And so on, see Dean et al, 2000; and Grove et al, 1994; and Pfister et al, 1998; and Huang et al 1997; and Karlen, 1998.

To quote the great Professor Lamb: "Multifarious evidence of a meteorological nature from historical records, as well as archaeological, botanical, and glaciological evidence in various parts of the world from the Arctic to New Zealand ... has been found to suggest a warmer epoch lasting several centuries between about AD900 or AD1000, and about AD1200 and AD1300."

Bob is leaning heavily on this one NAS study. Can I draw his attention to the remarks of its chairman, Dr North, who is quoted as saying:

"We didn't do any research in this project. We just took a look at the papers that were existing and we tried to draw some kinds of conclusions. We had 12 people around the table, all with very different backgrounds, and we just kind of winged it. That's what you do in this kind of expert panel".

Since Bob claims to be so keen on accuracy, when will he and the IPCC apologise for pedalling the Hockey Stick as solid science all these years?

(2) You say my quote from the IPCC is erroneous. Oh really? The quote is taken from IPCC Fourth Assessment Report chapter 2, page 30, which says in full:

"However, over the same period SO₂ emissions have been increasing significantly from Asia which is estimated to currently emit 17TgSyr⁻¹ (Streets et al., 2003) and from developing countries (e.g., Boucher and Pham, 2002). The net result of these combined regional reductions and increases leads to uncertainty in whether the global SO₂ has increased or decreased since the 1980s (Lefohn et al., 1999; Van Aardenne et al., 2001; Boucher and Pham, 2002)"

You are the stubborn one Bob. The data is from Hansen. You falsely assert that the programme's graph shows a much larger cooling between 1940 and 1976 than in any of the papers by Hansen and Lebedeff. But the decline from the maximum in the early 1940s to the 1960s minimum of 0.17 deg C, is precisely the decline shown in the graphic in the program. You refer to Stern 2005, I refer to Stern, 2006.

(3) The theory of global warming is not supported by the observed data - in a very crucial area. This is a profound blow to your theory. I am amazed that you simply find this 'interesting'. It is a reflection of the arrogance of you people.

(4) I know they do. We say in the film they do. And they emit more when they're warm and absorb more when they're cold.

(5) Ha! This is rich. Who misrepresents the ice core data? Warming comes first, then comes a rise in CO₂. You and your chums are stuck with it Bob.

(6) Since Bob is prepared to accept the close correlation between sun-spot cycles and temperature (at least up until the 1970s), can we at last dispense with his pathetically feeble attempt to pin the postwar cooling on SO₂ and at last admit that it was more likely to have been caused by a downturn in solar activity. Would he also acknowledge all the recent research showing that solar activity is currently at an historical high?

From: Bob Ward
Sent: 04 May 2007 10:28
To: Martin Durkin

Oh well, I have tried to get Martin to acknowledge the misrepresentations in his programme, but clearly he is determined not to (except for his erroneous claim about volcanoes).

1) I have very little to add to Martin's last contribution on this point. He highlighted the fact that the NAS report was a review of all of the existing scientific literature, and was not pushing any particular researchers' point of views. But clearly Martin does not like the conclusions reached in the report.

2) Oh dear, I am afraid Martin appears to have been working from an early, but now out of date, confidential draft of Chapter Two that must have been leaked to him. There is no

page 30 in Chapter 2 of the final draft (now published at: <http://ipcc-wg1.ucar.edu/wg1/wg1-report.html>). But on page 160, almost the exact quote used by Martin does appear, updated to include papers that have been published after 2003:

"Emissions of SO₂ from 25 countries in Europe were reduced from approximately 18 TgS yr⁻¹ in 1980 to 4 TgS yr⁻¹ in 2002 (Vestreng et al, 2004). In the USA, the emissions were reduced from about 12 to 8 TgS yr⁻¹ in the period 1980 to 2000 (EPA, 2003). However, over the same period SO₂ emissions have been increasing significantly from Asia, which is estimated to currently emit 17 TgS yr⁻¹ (Streets et al, 2003), and from developing countries in other regions (eg, Lefohn et al, 1999; Van Aardenne et al, 2001; Boucher and Pham, 2002). The most recent study (Stern, 2005) suggests a decrease in global anthropogenic emissions from approximately 73 to 54 TgS yr⁻¹ over the period 1980 to 2000, with NH [Northern Hemisphere] emission [sic] falling from 64 to 43 TgS yr⁻¹ and SH [Southern Hemisphere] emissions increasing from 9 to 11 TgS yr⁻¹. Smith et al (2004) suggested a more modest decrease in global emissions, by some 10 TgS yr⁻¹ over the same period."

Still, it is nice to see that Martin is now interested in aerosol emissions - it is just a shame his programme did not mention them.

The graph in his programme definitely did not appear in the paper by Hansen and Lebedeff in 1988, and I am puzzled that he continues to make such a demonstrably false claim.

And if you go to the list of publications for David Stern's university department (<http://ideas.repec.org/d/derpius.html>), Martin will see that he only published one paper in 2006, with Chunbo Ma, and not only does it not contain the quote he cited in a previous response, it does not even deal with sulphur emissions.

3) Martin makes no further attempt to justify this misrepresentation in his programme.

4) Martin is tying himself up in knots here. In one of his earlier responses he claimed that oceans release more carbon dioxide than human greenhouse gas emissions. Now he appears to be claiming that he never said that!

5) Martin remains in denial about his misrepresentation of the findings of Nicolas Caillon and his co-authors.

6) I do not accept "the close correlation between sun-spot cycles and temperature (at least up until the 1970s)". The graph used in his film contained a number of other faults that I have not had the time and space to explain. But he still has not answered the crucial question: why did the graph in his programme not show sunspot cycle length against global average temperature after the mid-1970s?

I think this might be an appropriate point to draw this exchange to a close. I hope Martin feels that his responses properly reflected his views. I know I found them very revealing!

From: Martin Durkin
Sent: 04 May 2007 11:18
To: Bob Ward

Dearest Bob,

Happily, we have established:

(1) There are many times in the past when the earth was much warmer than it is now. There is a good deal of evidence, which you do not refute, that several hundred years ago it was as warm or warmer than today. This warm period was followed by a cooler one (the Little Ice Age), from which happily, we have been recovering for around 2-300 years.

(2) You have not resolved the contradictions between the temperature record and the real story of CO₂ and SO₂ emissions in the 20th Century. You have also reminded me of the IPCC's known habit of censoring material from its final reports which doesn't fit the global warming story it so keen to promote. The full, shocking story about the IPCC has yet to be told ... a book idea I think.

(3) You live in a strange topsy-turvy world Bob. It's like trying to conduct a rational discussion Through the Looking-glass.

(4) Bob, Bob, Bob. The oceans DO emit more CO₂ than humans do. But they also absorb CO₂ (as we say in the film). And what determines how much is absorbed compared to how much is emitted, is the temperature of the oceans, as we say in the film.

(5) Bob, in all those discussions you've had over the years with people about global warming, how many times have you told people that, according to the ice core data, the correlation between CO₂ is the wrong way round? Neither Caillon, nor you, can deny this.

(6) We showed the graph as published. Solar physicists have now established that the correlation between solar cycles and temperature remain close until around 1985. But then, after that, there is an intense debate, is there not, about the veracity of the surface temperature record (which has not been helped by the reluctance of certain scientists to disclose their core data for scrutiny by other scientists). And how about some other contradictions Bob - like the fact that global mean temperature does not appear to have been rising or falling to any significant extent for the past decade?

Good-bye Bob.