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EXAMINING CLIMATE CHANGE AND THE MEDIA

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

DECEMBER 6, 2006

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ONE HUNDRED NINTH CONGRESS
SECOND SESSION

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C O N T E N T S

EXAMINING CLIMATE CHANGE AND THE MEDIA

WEDNESDAY, DECEMBER 6, 2006

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 9:30 a.m. in room 406, Senate Dirksen Building, the Hon. James M. Inhofe (chairman of the committee) presiding.

Present: Senators Inhofe, Isakson, Bond, Voinovich, Boxer, Thune, Jeffords, Lautenberg.

OPENING STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. The hearing today is the fourth global warming hearing that I have held as Committee Chairman. This time, we are going to examine the media's role in presenting the science of climate change.

I have to say, Senator Boxer, that we had decided to have this fourth hearing before the Republicans lost the majority on that fateful Tuesday. So we are going to go ahead and have this, and I am sure that we will have an opportunity to explore this much more under your chairmanship.

Poorly conceived policy decisions may result from the media's over-hyped reporting. Much of the mainstream media has subverted its role as an objective source of information on climate change into a role of an advocate. We have seen examples of this overwhelmingly one-sided reporting by 60 Minutes reporter Scott Pelley, ABC's Bill Blakemore, CNN's Miles O'Brien, who I believe is here with us today or will be, Time Magazine, the Associated Press, Reuters, just to name a few.

There are three types of climate research: first, the hard science of global warming by climate scientists; second, the computer modelers; and finally, the researchers who study the impacts.

Rather than focus on the hard science of global warming, the media has instead becomes advocates of hyping scientifically unfounded climate alarmism. I am not the only one who believes that. Here are just a few examples of believers. Now these are people who believe, well, first of all let us clarify what the issue is.

I think all of us know that we are going through cycles, and we have throughout recorded history where it gets warmer and gets cooler. We are going through a warmer cycle now, and I have contended, as many scientists have, that this is due to natural causes. But if you don't believe that and believe that it is due to anthropo-

genic gases or manmade gases or methane or CO_2, then you are in that camp. So, some of the people who believe that still believe the media is wrong in the way they have been reporting it.

Mike Hulme, the director of the U.K.-based Tyndall Centre for Climate Change Research, a group that believes humans are the driving force behind global warming, chastised the media and environmentalists last month for choosing to use "the language of fear and terror to scare people."

Hulme noted that he has found himself "increasingly chastised by global warming activists because his public statements have not satisfied the activists' thirst for environmental drama and exaggerated rhetoric."

Second, a report in August 2006 from the U.K.'s Labor-Leaning Institute for Public Policy Research also slammed the media presentation of climate science as—this is what they said; these are people who are believers in the other side of this about manmade global warming—"a quasi-religious register of doom, death, judgment, heaven and hell, using words such as catastrophe, chaos, and havoc."

The report also compared the media's coverage of global warming to "the unreality of Hollywood films." Now these are the believers we are talking about.

In addition, NBC newsman, Tom Brokaw's one-sided 2006 Discovery Channel, his 1-hour program, a global warming documentary, was criticized by a Bloomberg News TV review that noted, "You will find more dissent," referring to the presentation that was made by Tom Brokaw, "You will find more dissent at a North Korean political rally than in this program."

The media often fails to distinguish between predictions and what is actually being observed on the Earth today. We know from an April 23, 2006 article, in the New York Times by Andrew Revkin that "Few scientists agree with the idea that the recent spate of potential Hurricanes, European heat waves, African droughts, and other weather extremes are, in essence, our fault, a result of manmade emission. There is more than enough natural variability in nature to match the difference." Again, we are talking about someone who generally would be on the other side.

The New York Times is essentially saying no recent weather events including Hurricane Katrina is because of manmade global warming, yet most of the media fails to understand this fundamental point and instead focuses on global warming computer model projections of futures as if they were proven fact. This is perhaps the easiest scientific area for the media to exaggerate and serve as advocates for alarmism. Climate modelers project all kinds of scary scenarios. This allows the media to pick and choose which one they want to show and demonstrate and characterize as being true. Hysteria sells, and people are out there doing it.

Clearly, we cannot today somehow disprove catastrophic predictions of our climate in the year 2100, but if the observations of what is happening today are not consistent with what global warming models predict should occur, then what we do know is that our understanding of the globe is incomplete. The fact is the biosphere is extremely complex, and startling discoveries happen every year.

This point was driven home earlier this year when the journal, Nature, reported that trees emit methane. Now this is something that was brand new. They had not used the fact that trees emit methane. Methane is a type of anthropogenic gas, similar to CO_2. If this does affect climate, it would affect climate. Yet, the models didn't even have this. This is a great discovery. Trees are everywhere, and we didn't use this as a basic fact about our planet.

Some portions of this committee are focused on alarmism rather than a responsible path forward on this issue. If your goal is to limit emissions, whether for traditional pollution or CO_2, the only effective way to go about it is the use of cleaner, more efficient technologies that will meet the energy demands of this century and behind.

In the Bush administration, their Asia-Pacific Partnership is on target for this type of an approach. It stresses the sharing of new technology among member nations including three of the world's top 10 emitters who are exempt from Kyoto. We are talking about China, India, and South Korea. China, by the end of 2009, will become the world's largest CO_2 emitter.

What is disappointing is that the President's program gets more positive press in other countries than it does here in the United States.

So the alarmism is not just coming in the media, it is advancing. They are becoming more desperate because former supporters of their views are now changing their position. Former advocates such as David Bellamy, Britain's famed environmental campaigner, was one of the most vocal back in the late 1990s on CO_2 and manmade gases contributing to climate change.

David Bellamy and also Claude Allegre, a French geophysicist and a former Socialist Party leader in France. I don't know anyone else who has this in their credentials. He is a member of both the French and the United States Academies of Science. Allegre now says the cause of warming remains unknown, and alarmism "has become a very lucrative business for some people. In short, their motivation is money."

I agree with Allegre, probably the only thing that I agree with him on, that it is money.

[The prepared statement of Senator Inhofe follows:]

STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Today's hearing is the fourth global warming hearing I have held as committee chairman. We will examine the media's role in presenting the science of climate change. Poorly conceived policy decisions may result from the media's over-hyped reporting. Much of the mainstream media has subverted its role as an objective source of information on climate change into the role of an advocate. We have seen examples of this overwhelmingly one sided reporting by "60 Minutes" reporter Scott Pelley, ABC News's Bill Blakemore, CNN's Miles O'Brien, Time Magazine, the Associated Press and Reuters, to name just a very few outlets.

There are three types of climate research: first, the hard science of global warming by climate scientists, second, the computer modelers, and finally the researchers who study the impacts. Rather than focus on the hard science of global warming, the media has instead become advocates for hyping scientifically unfounded climate alarmism—and I'm not the only one who believes this. Here are just two examples of believers in man-made global warming who have been critical of the media.

First, Mike Hulme, the Director of the U.K. based Tyndall Centre for Climate Change Research—a group that believes humans are the driving force of global warming—chastised the media and environmentalists last month for choosing to use

the "language of fear and terror" to scare the public. Hulme noted that he has found himself "increasingly chastised" by global warming activists because his pubic statements "have not satisfied [the activist] thirst for environmental drama and exaggerated rhetoric."

Second, a report in August 2006 from the UK's Labour-leaning Institute for Public Policy Research also slammed the media presentation of climate science as—and I am quoting again here—"a quasi-religious register of doom, death, judgment, heaven and hell, using words such as 'catastrophe', 'chaos' and 'havoc.'" The report also compared the media's coverage of global warming to "the unreality of Hollywood films."

In addition, former NBC Newsman Tom Brokaw's one sided 2006 Discovery Channel global warming documentary was criticized by a Bloomberg News TV review that noted "You'll find more dissent at a North Korean political rally than in this program" because of its lack of scientific objectivity.

The media often fails to distinguish between predictions and what is actually being observed on the Earth today. We know from an April 23, 2006 article in the New York Times by Andrew Revkin, that "few scientists agree with the idea that the recent spate of potent Hurricanes, European heat waves, African drought and other weather extremes are, in essence, our fault (a result of manmade emissions.) There is more than enough natural variability in nature to mask a direct connection, [scientists] say."

The New York Times is essentially saying, no recent weather events—including Hurricane Katrina—is because of manmade global warming. Yet most of the media fails to understand this fundamental point and instead focus on global warming computer model projections of the future as if they were proven fact. This is perhaps the easiest scientific area for the media to exaggerate and serve as advocates for alarmism. Climate modelers project all kinds of scary scenarios of the future and the media then erroneously presents these scenarios as a scientifically based. But these computer models are not hard science.

Clearly, we cannot today somehow disprove catastrophic predictions of our climate in the year 2100. But if the observations of what is happening today are not consistent with what global warming models predict should occur, than what we do know is that our understanding of the globe is incomplete. The fact is, the biosphere is extremely complex and startling discoveries happen every year. This point was driven home earlier this year when the Journal Nature reported that trees emit methane, a potent greenhouse gas. Trees are everywhere, yet we didn't even know this most basic fact about our planet.

It is unfortunate that so many are focused on alarmism rather than a responsible path forward on this issue. If your goal is to limit emissions, whether of traditional pollution or CO_2, the only effective way to go about it is the use of cleaner, more efficient technologies that will meet the energy demands of this century and beyond.

The Bush administration's Asia-Pacific Partnership is the right type of approach—it stresses the sharing of new technology among member nations including three of the world's top 10 emitters who are exempt from Kyoto—India, South Korea, and China, which in 2009 will become the world's largest CO_2 emitter. What is disappointing is that the President's program gets more positive press in other countries than it does here.

So the alarmism not just continuing in the media, it's advancing. They are becoming more desperate because former supporters of their views are now changing their position. Former advocates such as David Bellamy, Britain's famed environmental campaigner, and Claude Allegre, a French geophysicist and former Socialist Party Leader who is a member of both the French and U.S. Academies of Science. Allegre now says the cause of warming remains unknown and the alarmism "has become a very lucrative business for some people." In short, their motivation is money. And he's right . . . its about money.

Senator INHOFE. Senator Jeffords, what we did was recess the business meeting, at which time as soon as we have 10 people here, we will go back in it for our three nominations. In the meantime, we have started this. We now have one, two, three, four, five, six, seven. We have seven members.

If you would like to be recognized now for your opening statement, feel free to do so.

Senator JEFFORDS. Thank you, Mr. Chairman.

Senator INHOFE. Let me say this before you do. I liked you equally when you were Republican as when you caucused with the

Democrats. In the years we served together in the House and in the Senate and your chairmanship of this committee when I was the Ranking Member, then my chairmanship when you are the Ranking Member, equally enjoyable, and while we differ in our philosophies and our views, you have always been fair. You have been a good personal friend. I just appreciate so much the service that you have rendered to your State and to the country in both the House and the Senate.

Senator JEFFORDS. Well, thank you for those very kind words, Mr. Chairman.

OPENING STATEMENT OF HON. JAMES M. JEFFORDS, U.S. SENATOR FROM THE STATE OF VERMONT

I am going home. As my friend, Robert Frost, once said, "Home is the place where, when you have to go there, they have to take you in."

[Laughter.]

Senator JEFFORDS. My farm is on the west side of Killington Peak in the small village of Shrewsbury, VT. The snow comes early there. I filled the woodshed for the winter already. My snowshoes are hanging on the hook in the shed. Hopefully, I will get to see the birches covered in snow next week. I miss my farm.

Before we part ways, I would like to recognize a few people. Mr. Chairman, I thoroughly enjoyed working with you. Incredibly, when we disagree, it has always been in good spirit and our bond of friendship has carried us through these 5 years. You have been so kind to me in so many ways. Thank you. You have a wonderful staff.

I have many friends on both sides of the dais. I wish you all well. This is one of the best committees in Congress. I hope the years ahead are as productive as I think they have been.

I am happy now to know that Vermont will continue to be represented on this wonderful committee. Senator Sanders will easily fill the shoes of former Chairman Bob Stafford and me. All of Vermont is proud to have him in the Senate.

I have been blessed to have an excellent staff serving me through the years here on the committee. I can't list them all, but there are a few here today. When I mention your names, will you please stand up and wave your hand?

We already miss a few staff that have moved on including Alison Taylor, Geoff Brown, and Malcolm Woolf.

Caroline Ahearn, David Sandretti, Nicole Parisi-Smith, Amanda Fox, Rachel Winnik, and Eric Thu have served me exceptionally well.

Carolyn Dupree, who came with me from the HELP Committee, has been so committed to EPW and to me. She is one of the great ones.

Jo-Ellen Darcy, Catharine Ransom, Margaret Wetherald, Chris Miller, Michael Goo, Mary Frances Repko, and J.C. Sandberg have all had legendary careers to date in the Senate, and I hope they continue.

Cara Cookson from Cabot, VT, has served her home State with great honor.

Diane Derby, another great Vermonter, has been an outstanding spokesperson and advisor to me for many years. She handled committee communications and my own press and was able to make this plain-spoken Senator sound august and intelligent. My hat is off to you, Diane.

Bill Kurtz, my Chief of Staff, my friend, my golf companion, is simply one of the greatest people that has ever served me and the State of Vermont.

Finally, I would like to thank my old pal, Ken Connolly.

[Applause.]

Senator JEFFORDS. Since 1993, he has been with me, and we have had some amazing times together. When Ken started with me those many years ago, he was single. He didn't have three children, and he didn't have any gray hair. I think we can only blame the Senate for the gray hair, not me. Ken helped me put together the greatest EPW staff of all time, and I thank him for that.

As for the topic at hand, global warming, I can only say that I am sorry I was not able to do more to change the minds of the skeptics that remain in our Nation. The climate is warming. It is due to human activity, and only a change in human behavior will ensure that my grandson, Patton Henry Jeffords, will not suffer the consequences.

As I rise from this chair, I do so knowing that its future occupant is a strong and courageous leader.

I salute you, Senator Boxer, for your tireless effort to improve the lot of mankind. I will be watching from my quiet mountain retreat and praying that under your leadership, the committee will continue to be as great tomorrow as it has been in the past.

In parting, I would like to cite one of Robert Frost's refrains, my favorite man:

"Whose woods these are I think I know. His house is in the village, though. He will not see me stopping here to watch his woods fill up with snow.

"The woods are lovely, dark and deep. But I have promises to keep. And miles to go before I sleep. And miles to go before I sleep."

Thank you, Mr. Chairman.

[Applause.]

[The prepared statement of Senator Jeffords follows:]

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Mr. Chairman, I'm going home. As my friend Robert Frost once said, "Home is the place where, when you have to go there, they have to take you in."

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In parting, I would like to cite one last Robert Frost refrain:

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He will not see me stopping here
To watch his woods fill up with snow.
The woods are lovely, dark and deep.
But I have promises to keep
And miles to go before I sleep.
And miles to go before I sleep."

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Jeffords. That was beautiful.

When you were introducing your staff, it occurred to me that so many people and probably the vast majority of the people in this room don't realize how close we have been with our staffs and how often we are in agreement. We went through the Transportation Reauthorization Bill, a really long and arduous thing, and the Water Bill which we unfortunately are losing now. It is not due to this committee. We worked together. Senator Boxer and Senator Jeffords and all of us on this side worked tirelessly and tried to get it done, and our staffs worked closely together.

I just hope people realize that while we do have some subjects where we disagree, we have many more where we were in total agreement during the years that we served together.

Senator BOXER. Mr. Chairman?

Senator INHOFE. Yes, Senator Boxer.

Senator BOXER. Can I have a point of personal privilege just for a moment to respond to our friend's comments?

Senator INHOFE. Of course.

Senator BOXER. First of all, how touched we are with what you said. I totally appreciate the fact that you mentioned how wonderful our Chairman has been to you. He is a good man. I think we have proven the fact that we don't have to agree on everything in order to get along and to respect each other and to work together. I think our Chairman pointed out actually there are some issues in which we can work really closely, and we will do that.

I just want to say you have set the tone for me. I really have two goals for this committee, and I know you share them so I am going to say what they are. One is to protect the health of our families, our children, and the planet. The other is to bring bipartisanship back to this committee in a way that we really, truly reach out to each other because I know we can find common ground. I know that I have found that common ground with the Chairman. I have found that common ground with Senator Thune on certain issues. No one expected we could team up, and we did, and we will find it with others.

I know the members on our side, many new members who are coming, are very excited about the traditions of this committee and to really get things done for the people. We are so lucky with the portfolio that we have. In many ways, yes, some contentious things, but there are a lot of things that we need to do to keep on growing in this country, and the public works side of it certainly enables us to make a contribution.

But Senator Jeffords, you are loved; you are beloved. Your staff has served you magnificently, and it has been my privilege to work with them and with you. I will never forget our friendship and your courage and your dedication.

Thank you.

Senator INHOFE. Just a moment, Senator Isakson, did you have any comments to make along this line before we go to Senator Lautenberg?

Senator ISAKSON. With regard to our distinguished colleague from Vermont, I do have a comment. I think John and I are the two, I won't say youngest but we are certainly the two newest members of the Senate on this committee. I had the privilege of being elected with John in 2004, and I had the privilege of meeting and getting to know Senator Jeffords.

I just want to take this occasion to thank him for the many kindnesses he extended to me as a new member of the Senate, thank him for that which I have learned from him, and remind him that Frost wrote a lot of great poems. One of my favorite lines from Frost's work is "Two roads diverged in a yellow wood, and I took the one less traveled by, and that has made all the difference."

If there is anybody on this committee who is emblematic of taking a different road and making a difference, it certainly is you, and I commend you on your contribution to the committee, your contribution to the Senate, and I wish you a lot of luck in those snowshoes and fireplaces in Vermont.

Senator INHOFE. Thank you, Senator Isakson.

Senator Lautenberg.

Senator LAUTENBERG. Thank you, Mr. Chairman.

I have a special feeling for Vermont and Vermonters since I have owned a little place up there since 1968. My kids and I love the

mountains, the Green Mountains, and the people who inhabit them. They are a particular breed, and they are not unlike the actual character of Vermont: hardy, tough, beautiful, attractive.

Jim Jeffords comes with a line of distinguished Senators who have served here from Vermont on this committee. Bob Stafford and I were good friends. The fact that we are going to be having Senator Sanders with us, that gives me some encouragement that the Vermont influence will not diminish here, and I look at Pat Leahy. The Vermonters have a way of being direct without being offensive.

Fairness has always been a cornerstone of Senator Jeffords' being. We are good pals. We are going to miss the heck out of you. But Jim, if I come up to Vermont, it is not snowshoes; I still like skiing. I hope that we will be able to cross paths along the way. God bless and thank you for the wonderful service you have given to this committee and this country.

Senator JEFFORDS. Thank you.

Senator INHOFE. Thank you, Senator Lautenberg.

Senator Voinovich.

Senator VOINOVICH. I echo the comments of your other colleagues, Jim. You and I have been working together for 8 years. This is my 8th year on the committee. I must say that even though we have had some major differences of opinion, our relationship has been on the highest level, and I want you to know that I respect you for your integrity and for your advocacy on those things that you really believe in and feel are important to your State and to our country.

I think that one of the things that impresses me with this body is that we have people like you who speak from the heart and really care about making a difference. I want you to know that we are going to miss your presence on this committee. I hope you enjoy your retirement and as you look in on this committee's work this year, that you not become too frustrated.

Thank you so much for everything you have done for your State and for our country and for your friendship with me.

Senator JEFFORDS. Thank you.

Senator INHOFE. Thank you, Senator Voinovich.

Senator Thune.

Senator THUNE. Thank you, Mr. Chairman.

I too want to express my appreciation to Senator Jeffords for his service.

You wouldn't remember this, but I do. In 1988, I and somebody I was working for, we went to Vermont and campaigned for your election to the Senate back then. I am not a collector of such things, but I was going through some stuff the other day, and I actually have a Jeffords pin or button I think from that 1988 campaign. In any event, that was a long time ago, and I have only been here a couple of years.

Like Johnny, I appreciate very much your kindness. I think that is something that there just isn't enough of around here. I appreciate the fact that you have always been a gentleman and also that you are a principled individual. That is something too that is important to me. I think people in public life want to accomplish certain things, and I think you can do it in a way, a principled way

but do it with an element of kindness too. I think those are two qualities that you have really embodied in your service here.

So thank you, and I congratulate you. As you retire and go off and do hopefully more fun and pleasant things than battling some of the issues we battle around here, I wish you well. Thank you.

Senator INHOFE. Thank you, Senator Thune.

As I had said earlier, we have recessed our business meeting. We will go back to it as soon as we get 10 people in here to make a quorum.

The nominees are not going to be here, but we have announced who they are. But on the witnesses that are here today, we are going to welcome them and enjoy their opening statements.

Prior to that, I would ask if there are other members who want to make a statement in conjunction with the subject of the hearing today.

Senator Boxer.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. Mr. Chairman, I am glad we are holding a hearing on global warming today. As you alluded to, next year this committee will continue to examine how to contain global warming. We have a big job since out of the 56 biggest emitters of carbon dioxide, American is now No. 1. We are 53d out of the 56 nations in our efforts to contain global warming. So we have a lot of work to do.

I would like to raise a concern that I have about the focus on the media this morning. The free expression of the media is a deeply held valued in this country, and the one thing I would hope we don't want to do is to chill the free expression of the media. I have a concern about focusing a full Senate Committee hearing on whether we agree with the vast spectrum of media outlets when it comes to the presentation of global warming issues. In a free society in what is the greatest democracy in the world, I don't believe it is proper to put pressure on the media to please a particular Senate Committee view, one way or the other.

It is clear that the dissenting views on global warming get plenty of attention in the media, and we have a witness today who will speak to that issue. At the same time, there is a consensus view of scientists, and that view is that global warming is happening and human activities are making a significant contribution. The Bush administration itself says that.

Now there is a serious risk to the world. It is not just the consensus view among leading scientists including 11 National Academies of Science throughout the world including our own; it is a wide consensus view. For example, let us look at the business community.

Lord Brown, CEO of British Petroleum, has said of global warming, "Companies composed of highly skilled and trained people can't live in denial of mounting evidence gathered by hundreds of the most reputable scientists in the world."

Let us look at the CEO of Wal-Mart, Lee Scott, who just said this year, "Global warming is real now, and it must be addressed."

JPMorgan Chase, the fourth largest banking company in the world, has a policy that states, "JPMorgan Chase advocates the reduction of greenhouse gas emissions."

There is even a Pentagon report that says climate change should "be elevated beyond a scientific debate to a national security concern." That is our Pentagon.

And so, I think if you look at both what is being said in the media as well as the broad spectrum of voices on this issue, it seems more than clear that global warming is a serious concern. A consensus has developed that we need to act.

My other sadness with this hearing is again we are arguing over who believes what rather than moving toward solving the problem. What we need to do next is focus our attention on how we can fight this serious threat. I believe that fighting global warming will have many benefits to our society beyond addressing the media issue. We discussed this a little bit at one of our other hearings, Mr. Chairman.

The new technologies we are developing will produce jobs. The alternative fuels we are developing burn cleaner and will aid us with the critical goal of energy independence. Avoiding the dislocation that could be caused by global warming induced floods and other disasters will lead us to a more stable world.

I have great faith in this country, and though we have been slow to address the threat, I am convinced, convinced that we can do what it takes to change course and protect the future for our children and our grandchildren.

Mr. Chairman, this certainly is not going to be the last word, what we do today, but I am glad we are having this hearing because I think it gives us a chance to tell our constituents where we each stand on this question. Through a series of hearings, we are going to call forward people from both sides of the issue. We are going to call on other Senators, Senators in this committee. We are going to call on business leaders. We are going to call on faith-based organizations, many of whom have contacted us and want to work with us, faith-based organizations who believe we have to protect God's planet.

So I think this issue is going to take on, in many ways, a life of its own, and I only hope and I do pray that enough of us on this committee will be able to work together to reach some consensus on beginning to contain global warming.

Thank you.

Senator INHOFE. Thank you, Senator Boxer, for that excellent statement.

On this side, any opening statements, Senator Isakson?

Senator Voinovich?

OPENING STATEMENT OF HON. GEORGE V. VOINOVICH, U.S. SENATOR FROM THE STATE OF OHIO

Senator VOINOVICH. Mr. Chairman, I have been a member of this committee, as I mentioned in my remarks with regard to Senator Jeffords, for 8 years, and I have had a chance to participate in numerous climate change hearings in this committee as well as the Governmental Affairs Committee. When Senator Lieberman was Chairman of that committee, he took that committee and had hear-

ings on global warming and climate change. I have heard vigorous debate on both sides of the issue.

Unfortunately, the media and those involved politically in this issue have raised the rhetoric to such a point that it is difficult for consensus. Far too often, we talk past each other because it doesn't promote or defend a certain agenda and any other point of view that is not orthodox is moot or, worse, unworthy to be heard.

I remember, Mr. Chairman, when we had Michael Crichton here testifying, who wrote the book, State of Fear, and Mr. Crichton discussed the issue of the media's impact on this whole climate change issue. I asked him the question. You remember we had lunch with him afterward, and I said: Are they going to make a movie? Some of his books have been made movies.

He said: You have got be kidding me. There is no way they will make a movie on State of Fear because the perspective that I outline in this book about the media's influence doesn't fit in with what most people in Hollywood think the issue is about.

That is a good example, I think, of how the media does impact upon this.

Then I remember when I first came here, Bjorn Lomborg who is from Denmark, who is a great environmentalist, and who studied Kyoto and came back and said that with the costs involved and the result that we would get from it, really if you look at the money spent on that, you could do far more with the money in terms of bringing potable water to African nations and health and education.

There is no question that the media has had some impact on what we are doing. The reality is that not all climate change skeptics are denialists or ideologues, and those in the environmental movement are not all alarmists. We can learn a lot and achieve more if we listen a little more to each other, and I suspect that is what Americans believe and what they expect us to work together on in terms of this issue.

I think one of the things, Senator Boxer, that has bothered me a bit about this committee is that so often we get together and we discuss some of these issues and because of special interest groups on both sides, because of media interest, we don't listen to each other. I happen to believe that there is a problem, that we have to deal with climate change, OK. The issue is how do we go about dealing with the issue.

I think we also have to become well aware of the fact that what we do also is going to be impacted dramatically by the developing countries. For example, we know that China is building a new coal-fired plant every week, every single week, and many of them lack modern pollution control devices. We are talking about energy for cities like the size of Dallas. Researchers say, for example, that our Great Lakes that I am very interested in, 20 percent of the mercury now is coming from China.

So this is a worldwide problem. I think any time we deal with it, we have to realize that we have a role to play, but we also must recognize that others have a role to play and the more we can engage them in this debate, the better off we are going to be and the better off the world is going to be.

Senator INHOFE. Thank you, Senator Voinovich.

Senator Lautenberg did you have any comments?

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Disappointingly, I may have some comments. Mr. Chairman, I want to start off by putting away the gloves. I am not going to lock the cabinet, but the fact of the matter is we just had one of those moments in the U.S. Senate when our hearts take a lead in our views. I am talking about someone as noble as Jim Jeffords is and how wonderful it is as he leaves this place that we all detail our feelings about how nice it is to work with someone who has such balance.

I don't think the people who are new to come here were elected to cross the bipartisan divide but rather they are here to accomplish something, and we have to get on with that. We have to be frank with one another.

Mr. Chairman, I want to thank you for providing us an opportunity today to prove to the American people or at least inform the American people that we don't think that global warming is really a hoax, that it is real, that is out there in front of us. To ignore it and to dismiss it as a bad joke doesn't, in my view, do the public any good and certainly does not speak well in my view of the Senate or those who are advocating push it away and maybe we will be lucky and it won't come back.

I think everybody knows that I look at the world through my grandchildren's eyes and think about what I would like to see for the future.

But for the last 6 years, the way the Administration has behaved toward the environment I think has negatively affected our world. We just heard from our distinguished friend from Ohio that this is a worldwide problem and that we are concerned now about China building all these plants and disregarding good environmental control. America is purportedly the leader in the world, so it is not for us to point our fingers at other countries and say they are going to do terrible things to the environment unless we lead the way, unless we convey a message that we really are concerned about the environment and it means something to us.

Joined by Exxon, American Petroleum Institute, and others, there has been a misleading of the American people about the threats that global warming poses to our communities and our countries and the continents. The reason people are making movies and writing books focusing on the environment is because major changes in our environment like global warming are happening, and the evidence is so clear in front of us. Think about it.

We have all seen pictures of the polar bears. The mighty polar bears are now reduced to ragged herds, searching, foraging for food. Their environment is being less hospitable to them, and they are out there searching for ways to stay alive. I don't know whether anybody has not ever seen a picture of a polar bear, but I have seen them up there, alive and powerful. Now to see them looking like almost enlarged alley cats is pathetic. Global warming is melting our glaciers, leading to record temperatures, changing our weather, changing the conditions of our oceans. For heavens sake, what does it take to say there is something amiss out there?

The oil companies and the other polluters have borrowed a page from the tobacco industry's playbook: create fake science in order to undermine real science.

But it is time to focus on, if I may borrow the words, an inconvenient truth. Global warming is real. It is caused by man; entirely, perhaps not but significantly, of course.

The Bush administration has spent 6 years avoiding any real action. The Administration has declined to put mandatory caps on carbon emission and opposed the significant improvement of cap and trade standards. They refuse to let California set tailpipe emissions on carbon dioxide for their cars. In the past year alone, politicians, not scientists, have kept NOAA and NASA experts from discussing and releasing their work on global warming. Now when scientists can't tell the public what they have learned, then we will have to rely on the media to uncover the truth.

I plead with those in the media: Speak up for heavens sake. Call it; say it like it is. That is the power of your profession.

The power of science is that it is beholden to no one. It is not Democrat, Republican, or Independent. I am hopeful with a change here and the chairs are going to shift. I have great respect for our Chairman, and I have also, as some might have noticed, some great differences, occasional differences. But the fact of the matter is there is mutual respect because I know that Senator Inhofe ultimately has the same issues in mind as I have, and that is to make our Nation a healthier place, but we see it through different colored glasses. What I want to do and hope that we can is really reduce the threat that global warming brings to my grandchildren, to your grandchildren, and to your grandchildren, so the future generations can look at what we have done to contribute to their well-being and not to destroy reality.

[The prepared statement of Senator Lautenberg follows:]

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Thank you, Mr. Chairman.

I want to first thank Senator Jeffords for his service to Vermont and to our nation. He has worked for safer, smarter transportation, better health care options, and to protect our environment. He has served with distinction. He will be missed in this Committee and the Senate.

Mr. Chairman, now I want to thank you for providing us an opportunity today to prove to you that global warming is not a hoax—it is real. I saw a movie recently called Hoot. It's a story about a boy and his friends who save a group of owls from losing their habitat. I liked Hoot because it tells the truth: the way we behave affects the world. For the last six years, the way the Bush administration has behaved towards the environment has negatively affected our world. Joined by Exxon, the American Petroleum Institute, and others, the administration has misled Americans about the threats global warming poses to our communities, our country, and the continents.

The reason people are making movies and writing books focusing on the environment is because major changes in our environment—like global warming—are happening, and people want to know the truth. The truth is that global warming is no hoax. There is no conspiracy. What you hear, what you read, what you see, is reality. Global warming is melting our glaciers, leading to record temperatures, changing our weather, and changing the conditions of our oceans. The oil companies and other polluters have borrowed a page from the tobacco industry's playbook: creating fake science in order to undermine real science.

But it's time to focus on an inconvenient truth: global warming is real, caused by man, and the Bush administration has spent six years avoiding real action. The administration has declined to put mandatory caps on carbon emissions, opposed a sig-

nificant improvement of CAFE standards, and refused to let California set tailpipe emissions standards on carbon dioxide for their cards. In the past year alone, politicians—not scientists—have kept NOAA's and NASA's experts from discussing and releasing their work on global warming. And when scientists can't tell the public what they've learned, then we will have to rely on the media to uncover the truth.

The power of science is that it's beholden to no one: it is not Democratic or Republican. I am hopeful that, in the aftermath of November's elections, and with a new Congress, America's scientists will be able to tell their own story—and we can use their expert advice and help to reduce global warming.

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Senator Lautenberg. I would now ask that the statements of Senators Thune and Bond be included in the record.

[The prepared statement of Senator Thune was not available at time of print.]

[The prepared statement of Senator Bond follows:]

STATEMENT OF SENATOR CHRISTOPHER S. BOND, U.S. SENATOR FROM THE STATE OF MISSOURI

Thank you Mr. Chairman for holding this hearing on climate change and the media. Certainly, we have heard, and will hear more today, examples of the media's focus on climate change advocates.

What I want to focus on is what the media is not covering, what the media needs to cover and what this committee needs to focus upon if it is serious about considering climate change strategies. That is the human toll current climate change fighting strategies will impose on people, on families, and on workers.

We cannot, I cannot, and I will fight, fighting climate change on the backs of the poor. The weak, the infirm, the vulnerable, are all in the crosshairs of proposals put forward by climate change advocates.

Proposals that cap, ration or tax carbon energy and its waste will raise the cost of our most basic needs—heating, cooling, lighting—that no family, rich or poor, can do without. However, it will be the poor that will suffer most when heating bills go up in the winter. Fixed income seniors will suffer most when air conditioning bills go up in the summer. Families, especially blue-collar, middle class families will suffer most when their bread-winner loses their job.

These are the untold stories, the unreported stories that I challenge the media, and now the committee, to tell. Maybe we should not be surprised that the press is not talking about how current climate change proposals will hurt everyday people, because advocates surely are not talking about it.

"An Inconvenient Truth" runs about 95 minutes. In it you will find about an hour and 20 minutes on global warming and its environmental impacts, 10 minutes of what to do about global warming and about 5 minutes on how much those proposals might cost. Nothing on forcing low-income families to choose between heat and eat.

Read the book "Field Notes from a Catastrophe: Man, Nature and Climate Change" and you'll get chapters on the Golden Toad and the Mountain Ringlet Butterfly. It bills itself as "the most important book about life on Earth in over forty years." But it provides no advice to fixed-income seniors forced to chose between prescription drug medicine and air conditioning their homes in the Summer.

The book "The Weather Makers: How Man is Changing the Climate and What it Means for Life on Earth" does devote 30 of its 300 pages to solutions. But advice on walking, biking and hybrids will hardly meet the needs of blue-collar Midwestern manufacturing workers put out of work by higher energy costs.

It is no surprise that advocates do not want to talk about the severe human toll of their current proposals.

The "Economist" estimates the costs of adequate emissions controls at 1 to 5 percent of global GDP. That works out to between $440 billion and $2.2 trillion. Assuming America's fair at 25 percent would cost us $100 to $500 billion per year.

And who will pay that $100 to $500 billion? You and me and everyone less fortunate than us because every electric utility, every car maker, every maker of a product we can't do without will pass that cost right on to us. We might as well be raising the cost of milk, diapers and prescription drugs.

Do not tell me the costs are bearable because the average cost per family is low. Some groups will say that current proposals are affordable at only $100 per family per year. Of course, they do not say that no one will pay $100—that some will pay less and some will pay a whole lot more.

They cannot tell us whether these nationwide cost figures will impose unbearable disproportionate regional harm—how they may spare the natural gas burning Northeast and West Coast but hit hard the coal burning Midwest.

They cannot tell us whether their plans will impose disproportionate harm on certain blue-collar workers—how they may spare California high-tech and New York finance but will hit hard middle-class workers dependent on power from coal and natural gas, manufacturing, chemical, fertilizer and automotive jobs.

If this committee wants to get past the rhetoric and seriously consider climate change fighting proposals, it must come up with these answers—we must debate these issues.

We need to know what regions of the country, what States, what cities will be affected by proposals. What sectors of the economy, what types of jobs, their locations, who holds them and who will lose them? What types of workers, blue collar, union, are most at risk? What types of people, families, young, old, struggling, will face burdens too high?

General legislation that leaves the details and dirty work to others, like those recently passed at the State level, that abdicate these questions, abdicate our responsibility to pass judgment on these issues, are unacceptable. We have a responsibility to those we may hurt to know more, consider more, and do more.

Some have said that they want to make this committee an environment committee, not an anti-environment committee. We must be an environment committee, but we cannot be an anti-poor committee, an anti-blue collar committee, an anti-family committee. Then we will be able to see if we can work together.

Thank you.

Senator INHOFE. We will ask the witnesses to please come to the table. We have Dr. David Deming from the University of Oklahoma, College of Earth and Energy; Dr. Daniel Schrag, Laboratory of Geochemical Oceanography, Department of Earth and Planetary Sciences, Harvard University; Dr. R.M. Carter, Marine Geophysical Laboratory, James Cook University, Australia; Dr. Naomi Oreskes, director of Science Studies Program, University of California at San Diego and professor, Department of History and Program in Science Studies; and Dan Gainor, The Boone Pickens Free Market Fellow and director, Business & Media Institute.

It is not the purpose of this meeting and while I appreciate very much the comments that are being made, I do have documentation that I would be glad to share with anyone after the meeting on the plight of the polar bears—they are doing quite well—also a long list of scientists who certainly agree on the point that we are going through a warming cycle, but it is not related to manmade emissions.

What I would like to ask you to do, the five panelist members, since we took a little longer on opening is to each one try to confine your remarks to 5 minutes. Your entire statement will be made a part of the record.

I think particularly we might give a little bit longer to Dr. Carter. He came all the way from Australia for this meeting. So we appreciate that very, very much, Dr. Carter.

At any time that we happen to have 10 members here, we will go back to our meeting.

Senator Boxer, I don't think that is going to happen, judging from who isn't here right now. So let me just announce that after the first vote today, we will go to the President's room and have our business meeting at that time if we don't have 10 here, if that is all right.

We will start with you, Dr. Deming, and thank you for being here from the great University of Oklahoma.

STATEMENT OF DAVID DEMING, PH.D., UNIVERSITY OF OKLAHOMA, COLLEGE OF EARTH AND ENERGY

Mr. DEMING. Mr. Chairman, members of the committee, and distinguished guests, thank you for inviting me to testify today.

I am a geologist and geophysicist. I have a Bachelor's Degree in geology from Indiana University and a Ph.D. in geophysics from the University of Utah. My field of specialization in geophysics is temperature and heat flow. In recent years, I have turned my studies to the history and philosophy of science.

In 1995, I published a short paper in the academic journal, Science. In that study, I reviewed how borehole temperature data recorded a warming of about 1 °C in North America over the last 100 to 150 years. The week the article appeared, I was contacted by a reporter for National Public Radio. He offered to interview me but only if I would state that warming was due to human activity. When I refused to do so, he hung up on me.

I had another interesting experience around the time my paper in Science was published. I received an astonishing e-mail from a major researcher in the area of climate change. He said, "We have to get rid of the Medieval Warm Period."

The Medieval Warm Period was a time of unusually warm weather that began around 1000 A.D. and persisted until a cold period known as the Little Ice Age took hold in the 14th Century. Warmer climate brought a remarkable flowering of prosperity, knowledge, and art to Europe during the high Middle Ages. The existence of the Medieval Warm Period had been recognized in the scientific literature for decades, but now it was a major embarrassment to those maintaining that the 20th Century warming was truly anomalist. It had to "be gotten rid of."

In 1769, Joseph Priestley warned that scientists overly attached to a favored hypothesis would not hesitate to "warp the whole course of nature." In 1999, Michael Mann and his colleagues published a reconstruction of past temperature in which the Medieval Warm Period simply vanished. This unique estimate became known as the hockey stick because of the shape of the temperature graph.

Normally in science when you have a novel result that appears to overturn previous work, you have to demonstrate why the earlier work was wrong, but the work of Mann and his colleagues was initially accepted uncritically even though it contradicted the results of more than 100 previous studies. Other researchers have since reaffirmed that the Medieval Warm Period was both warm and global in its extent.

There is an overwhelming bias today in the media regarding the issue of global warming. In the past 2 years, this bias has bloomed into an irrational hysteria. Every natural disaster that occurs is now linked with global warming no matter how tenuous or impossible the connection. As a result, the public has become vastly misinformed on this and other environmental issues.

Earth's climate system is complex and poorly understood, but we do know that throughout human history, warmer temperatures have been associated with more stable climates and increased human health and prosperity. Colder temperatures have been cor-

related with climatic instability, famine, and increased human mortality.

The amount of climatic warming that has taken place in the past 150 years is poorly constrained and its cause, human or natural, is unknown. There is no sound scientific basis for predicting future climate change with any degree of certainty. If the climate does warm, it is likely to be beneficial to humanity rather than harmful. In my opinion, it would be foolish to establish national energy policy on the basis of misinformation and irrational hysteria.

Thank you.

Senator INHOFE. Thank you very much. Thank you, Dr. Deming.

Dr. Schrag.

STATEMENT OF DANIEL SCHRAG, PH.D., LABORATORY FOR GEOCHEMICAL OCEANOGRAPHY, DEPARTMENT OF EARTH AND PLANETARY SCIENCES, HARVARD UNIVERSITY

Mr. SCHRAG. Thank you, Mr. Chairman, and thank you to all the Senators for hearing us today. I am going to depart from my written comments and just speak from them more generally.

First of all, let me say that I think one of the problems with media coverage of climate change is that it is being covered in a very political era where the issue has become quite divided across partisan lines. I think that is very unfortunate. This is really a bipartisan issue. Moreover, I think science reporters are often very concerned about making sure that both sides are discussed as opposed to framing the issue.

I see the issue quite differently. I am an earth scientist who studies the history of the climate on all time scales and also modern climate dynamics. Let me just start a little bit with the way I think this issue should be discussed. I attached some figures that I am going to refer to in these comments.

Let me start with some observations about the climate system, about the atmosphere that are absolutely incontrovertible. There is no serious objection to them at all even by the serious scientific skeptics. Carbon dioxide levels today are the highest they have been for at least the last 650,000 years and that is by direct observation from measuring gas bubbles in ice cores. We can't go further back than that because that is the oldest ice core we have. But indirectly by measuring chemistry of the ocean which tells us something about the ph and therefore the carbon dioxide in the atmosphere, we can say that levels that we are seeing today and levels that we will see this century are higher than they have been for tens of millions of years.

If you look at the Figure 1 that I have attached, you will see this represented where today and relative to the last 650,000 years, the carbon dioxide concentration is far above anything we have ever seen. That is everybody in this room today is seeing an atmosphere unlike any human being ever in the history of the world.

Now the question in front of us is: What is that going to do? We know that this carbon dioxide rises due to burning of fossil fuel primarily with some contribution from deforestation as well. The good news is that the Earth is actually cushioning us a little bit. Only about 60 percent of the CO_2 we emit from burning fossil fuel ends

up in the atmosphere. Some of it is taken up by the ocean. Some of it is taken up by terrestrial plants.

Unfortunately, the natural world can't absorb it fast enough. We are burning fossil fuels too quickly, and the CO_2 is rising faster and faster.

As Senator Voinovich said, the developing countries, in particular China today, are burning more and more coal. Currently about 46 percent of the world's coal is being used in China, and that is contributing more and more. They will soon pass us as the largest emitter of carbon dioxide.

Now the important thing here is then what is this going to do for the climate. We know that carbon dioxide is a greenhouse gas. It absorbs infrared radiation. In fact, in the laboratory, the way we measure carbon dioxide is by its infrared absorption properties. It absorbs heat coming from the surface, acting like a thermal blanket. That is not a controversy. We can look at our neighboring Venus and look at its atmosphere which is almost 100 times thicker and composed almost entirely of carbon dioxide. It is 460 °C at the surface mostly because of carbon dioxide.

The question is: What is a smaller increase in carbon dioxide going to do on the Earth? We have a variety of information about this. We have models, and I think the Chairman has referred to some of the uncertainty in these models. I actually share those concerns about these climate models. Climate models are the best physics, the best observations we have from the last 100 years of observations. We take those models and the best physics we can, incorporate them into a physical model, a computer model that we then try to use to predict the future.

But try to understand it this way, that the carbon dioxide levels today are higher than they have ever been in human history, higher than they have been probably for 30 or 40 million years of Earth history. What that means is it is unreasonable to expect scientists like me to predict exactly what is going to happen when we are taking the Earth into a state that we haven't seen for 30 million years. The expectation that we will be able to predict exactly what is going to happen is unreasonable.

I will say this though; I look at Earth history and try to use climate variations in the past to estimate how sensitive the Earth is to changes in carbon dioxide, and the general rule that I see is that the Earth is always more sensitive than the models whether you are talking about the difference between the last Ice Age and today, and that is Figure 3 here.

If you look at Figure 3, the Northern Hemisphere, when most of North America was covered with ice, where I live in Boston, it was covered with a mile of ice, a very different world. The average temperature difference was 5 °C for the whole world. We are talking about 3 to 5 °C warming this century potentially. That is what some of the models say if we double or triple atmospheric CO_2 this century.

Exactly how this will affect our climate? Very difficult to say, but there is no question that it will be dramatic and significant.

To me, we can look warm climates 40 or 50 million years ago when crocodiles lived up in Greenland, when there were palm trees in Wyoming, sea level was 300 feet higher because there was no

ice anywhere on the planet, a very warm world. We think CO_2 levels were something like two to four times higher than today, a very different world. We are not going to get back to that world in a hundred years—it takes longer for that for the ice to melt—but we are heading that direction. We are returning the atmosphere to a state it hasn't been in since that time.

It is an experiment on the planet. That is the way I think is the right framing of this problem. We are doing an experiment on the planet. It is uncontrolled. We don't know exactly what is going to happen. The question is, it is an insurance question, how much are we going to risk? What is it worth to us? What is the cost of fixing this problem relative to the possibility that we will really do something bad?

Senator INHOFE. Dr. Schrag, will you please wind up now in fairness to the other witnesses?

Mr. SCHRAG. Yes, I will wind up right now, absolutely.

I think the framing of this as an insurance problem is important. Ultimately, we don't buy insurance because we know our house is going to burn down. We do it because we can't afford it if it did burn down.

What it comes down to then is: What is the cost of the premium? What does it cost to fix the problem? I think we heard Senator Bond earlier talk about 1 percent or 4 percent of GDP. I think recently there have been estimates that are much lower than that, 0.4 to 1 percent. The point is that it is actually relatively affordable. As Senator Boxer said, there are actually issues. There are many ways this will actually help our economy and help our national security.

Senator Bond was exactly correct in asking how is this going to affect poor people. How is this going to affect different States? There are solutions, for example, for Ohio which depends heavily on coal.

Senator INHOFE. OK, Dr. Schrag, thank you very much.

Mr. SCHRAG. Thank you.

Senator INHOFE. Dr. Carter coming all the way from the other side of the world, thank you very much.

STATEMENT OF R.M. CARTER, PH.D., MARINE GEOPHYSICAL LABORATORY, JAMES COOK UNIVERSITY, AUSTRALIA

Mr. CARTER. Mr. Chairman, Senators, ladies and gentlemen, I thank you for the invitation to speak to you. I am aware, coming from a long way away, of the privilege that it represents.

I am particularly pleased to meet Senator Boxer for the first time because, unbeknownst to her, we have something in common, and that is a brother-in-law of mine who lives in her electorate. So I just stopped there briefly on the way to Washington, and I wonder why you spend time in Washington rather than that lovely part of California?

Climate change is a complex thing, and human-caused climate change is even more complex. It is important at the outset to appreciate there is no theory of climate in the sense that there is a sense of gravity, a Newtonian theory of gravity, for example.

I like to look at it this way; there are three realities of climate change. The first reality is the reality that Dr. Schrag has just

been speaking about, the science reality, and it is based upon facts and experiment and empirical testing.

The second reality is virtual reality, and you have a very distinguished practitioner of it in the States, Dr. Jim Hansen, and many colleagues who spend their time devising computer models that are so mind-bogglingly complex that ordinary scientists like me can't begin to penetrate them. But the important thing to understand is that they do not produce predictions of future climate. They are virtual realities. They produce imaginary worlds. We learn a huge amount from them, but we do not gain predictions from them.

The third reality is the cause of this hearing, mostly behind me but some gentlemen in front of me, the press. It is the public opinion, the general common view of climate change.

Now those three realities are very different things and two of them are in complete conflict. The two are the science reality where there is vigorous debate as indeed there should be in any mature science or young science, I should say. There is vigorous debate on virtually every aspect of climate change. Yet, in the public arena now, it has become a political issue which is a done deal. Everybody knows the planet is overheating, and we have got to save it.

How did that come about? How is it possible for there to be such a disjunct between the public understanding and the scientific situation? The answer to that has to be the press because the press carry the privilege of informing the public and informing them on climate change. The three players that they should be paying attention to are the Intergovernmental Panel on Climate Change, the IPCC; the non-governmental organizations with an environmental bent like Greenpeace and the World Wildlife Fund; and individual scientists like Dr. Schrag and others. They are the three big sets of voices.

So the press' job then, is to translate what it hears from those people out to the public. The press is failing, and let me tell you why. They are failing to translate the uncertainty of the science. There is huge uncertainty in every aspect of climate science.

The second thing they are failing to do is they are not transmitting many essential facts and especially facts that are relevant to the human influence. Let me give you two because I only have time for two.

The first is that if you look at the ice core evidence, you will discover that yes, changes in carbon dioxide are accompanied by changes in temperature, but you will also discover that the change in temperature precedes the change in carbon dioxide by several hundred years to a thousand or so years. Reflect on that and reflect when you last heard somebody say that they thought lung cancer caused smoking, because that is what you are arguing if you argue on the glacial time scale that changes in carbon dioxide cause temperature changes. It is the other way around.

The second example is—it will come as a surprise to some people in this room—using the official statistics of the Climate Research Unit of the University of East Anglia, which are the statistics that the IPCC use, there has been no increase in global temperature for the last 7 years. Since 1998, global average temperature has remained unchanged, yet over those 7 years, carbon dioxide has been continuing its spiral upwards.

Other things that the press do, briefly, and they are detailed more in my paper to the committee, are they make a great deal of alarmist stories about climate change. We all understand why; it sells newspapers. They play the man and the women, not the ball. It is not the science that gets discussed. It is the motivation or who is paying for the science.

They use what I call couldism, mightism, and perhapsism. Droughts could go up; we might get more storms; and perhaps sea level is going to rise.

They substitute he says/she says type of coverage for assessing complex scientific issues where there are not just two sides to the argument. There are multiple sides to the argument. But a reporter is trained from being knee-high, as far as I can tell, that the way you produce balanced coverage is to get a spokesman on the one hand and a spokesman on the other hand. Climate science is hugely more complicated than that. It requires the reporter to be able to make some judgments of his or her own.

Finally, why am I concerned that this public hysteria—I agree with my colleague, Dr. Deming, on this—on climate change is such a problem? The reason it is a problem is it is diverting our attention from what is a real climate problem, and that is natural climate change, not human-caused climate change. Every experienced person who studies climate over the long haul understands rapid climate changes and especially coolings, can happen in a matter of a few years to a few decades. We do not understand what causes them. We do understand that a rapid cooling is going to be economically far more damaging than a gradual warming.

Therefore, any policy should be based on adaptation to climate change, not on trying to prevent it. Trying to mitigate natural climate change is an exercise in utter futility. You might as well try to stop the clouds scudding across the sky.

Thank you, Mr. Chairman.

Senator INHOFE. Thank you, Dr. Carter. Thank you very much.

Dr. Oreskes.

STATEMENT OF NAOMI ORESKES, PROFESSOR, DEPARTMENT OF HISTORY AND PROGRAM IN SCIENCE STUDIES, UNIVERSITY OF CALIFORNIA, SAN DIEGO

Ms. ORESKES. Thank you very much. It is an honor to have the opportunity to speak to you today about the history of climate history.

I am a professor of history at the University of California, San Diego where I teach and do research on the history of modern science. I hold a Bachelor's of Science in mining geology from the Royal School of Mines, part of the University of London, and a Ph.D., from Stanford University where I completed a graduate special program in geological research and the history of science.

In recent months, the suggestion has been made that concern over anthropogenic global warming is just a fad or a fashion. The history of science clearly shows otherwise. Scientific attention to global warming has lasted over a century, has involved thousands of scientists, and extended across six continents. It has spanned the disciplines of physics, chemistry, meteorology, and oceanography, and included some of the most illustrious and trusted scientists of

the 20th Century, and it has included scientific advisors to numerous U.S. Presidents, both Democratic and Republican.

Let me explain. Scientists have been studying carbon dioxide and climate for a long time. John Tyndall first established in 1859 that carbon dioxide is a greenhouse gas. From this, the great Swedish geochemist Svante Arhenius deduced in the 1890s that carbon dioxide released to the atmosphere from burning fossil fuels could alter Earth's climate.

By the 1930s, British engineer Guy Callendar had compiled empirical evidence that this effect was already discernible.

Callendar's concern was pursued in the United States in the 1950s by the great American physicist Gilbert Plass, a pioneer in upper atmosphere spectroscopy; by geochemist Hans Suess, a pioneer of radiocarbon dating who worked closely with the U.S. Atomic Energy Commission; and by the great oceanographer Roger Revelle, a one-time commander in the U.S. Navy Hydrographic Office.

By the 1960s, Charles David Keeling's systematic measurements demonstrated conclusively that atmospheric CO_2 was indeed rising, work for which he was awarded the National Medal of Science by the Bush administration in 2002.

These basic facts of history are well documented, but what is less well known is that by the mid-1960s, a number of scientific advisory panels had expressed concern about global warming, and this concern was communicated by some of America's most illustrious scientists to Presidents Lyndon Johnson, Richard Nixon, and Jimmy Carter.

One early warning came in 1965 from the Environmental Pollution Board of the President's Science Advisory Committee, which warned that by the year 2000, "There will be about 25 percent more CO_2 in our atmosphere than at present and this will modify the heat balance of the atmosphere to such an extent that marked changes in climate could occur."

Accordingly, President Lyndon Johnson stated in a special message to Congress: "This generation has altered the composition of the atmosphere on a global scale through a steady increase in carbon dioxide from the burning of fossil fuels."

A second warning came in 1966 from the U.S. National Academy of Sciences Panel on Climate and Weather Modification head by geophysicist Gordon MacDonald, who later served on Richard Nixon's Council on Environmental Quality.

In the wake of the Arab oil embargo, Alvin Weinberg, the director of the Oak Ridge National Laboratory, realized that climatological impacts might limit oil production before geology did.

In 1979, the subject was addressed by the JASON Committee, the reclusive group of highly cleared scientists who gather annually to evaluate scientific and technical problems for the U.S. Government and whose members have included some of the most brilliant scientists of our era, including physics Nobel Laureates Hans Bethe and Murray Gell-Mann.

The JASON scientists predicted that atmospheric carbon dioxide might double by the year 2035, resulting in mean global temperature increases of 2 to 3 °C and polar warming of as much as 10 to 12 °C. This report also reached the White House where Frank

Press, Science Advisor to President Carter, asked the National Academy of Sciences for a second opinion. An Academy Committee headed by MIT meteorologist Jule Charney affirmed the JASON conclusion: "If carbon dioxide continues to increase, we find no reason to doubt that climate changes will result and no reason to believe that these changes will be negligible."

It was precisely these concerns that led in 1992 to the U.N. Framework Convention on Climate Change which called for immediate action to reverse the trend of mounting greenhouse gas emissions. One early signatory was U.S. President George H.W. Bush who called on world leaders to translate the written document into "concrete action to protect the planet."

Three months later, the Convention was unanimously ratified by the U.S. Senate. Since then, scientists around the world have worked assiduously to flesh out the details of this broadly affirmed picture.

The purpose of my 2004 study of the scientific literature, published in the peer-reviewed journal, *Science*, was to assess how much disagreement remained in the scientific community about the basic reality of global warming and its human causes. The answer surprised me. Not one scientific paper in the sample disagreed with the consensus position. Scientists, my study showed, are still arguing about the details, but the overall picture is clear. There is a consensus among both the leaders of climate science and the rank and file of active climate researchers.

Now I should acknowledge that one skeptic has challenged my study and others have repeated his claim. This man is a social anthropologist in Liverpool who, to my knowledge, has never published his arguments regarding my study in a peer-reviewed journal. This past October, he admitted that he had made significant mistakes in his criticisms, and he now agrees with my general conclusion about the state of climate science.

In an interview with the Australian Broadcasting Commission, he acknowledged, "I do not think that anyone is questioning that we are in a period of global warming. Neither do I doubt that the overwhelming majority of climatologists is agreed that the current warming period is mostly due to human impact."

The scientific evidence is clear: The predictions made decades ago by Arrhenius, Callendar, Plass, Suess, Revelle, Charney, MacDonald, Weinberg, White, the JASON Committee, and many others have come true.

I thank you very, very much for your time.

Senator INHOFE. Thank you, Dr. Oreskes.

Mr. Gainor.

DAN GAINOR, THE BOONE PICKENS FREE MARKET FELLOW, DIRECTOR, BUSINESS & MEDIA INSTITUTE

Mr. GAINOR. Thank you, Chairman Inhofe, Senators, and ladies and gentlemen.

We are here to discuss the media coverage of the climate change debate, but there is only one problem; there is almost none of that debate actually in the media. Journalists who pledged to be neutral long ago gave up their watchdog roles to become lapdogs for one position. The media became alarmist, claiming the planet is at a

tipping point as if at any moment everything would go over the edge.

An April 2006 issue of Time Magazine pushed readers over that edge with 24 pages of advocacy, claiming, "The debate is over. Global warming is upon us with a vengeance."

CBS's Scott Pelley, who covers the environment, actually compared climate change skeptics with Holocaust deniers and claimed, "There becomes a point in journalism where striving for balance becomes irresponsible."

In an effort to provide balance to that irresponsible comment, let us recall the media's record on climate change. Reporters told us roughly 30 years ago that a similar fate awaited mankind. Then, journalists were convinced we would all freeze to death.

In an April 1975 article entitled The Cooling World, Newsweek advised us that "the Earth's climate seems to be cooling down."

A May 1975 New York Times piece cautioned, "Scientists Ponder Why World's Climate Is Changing: A Major Cooling Widely Considered to be Inevitable."

The Washington Post, U.S. News and World Report, and Science News all chimed in that cool was suddenly very hot. One award-winning piece in Fortune said if the trend continued, it could "affect the whole human occupation of the Earth."

The irony of this scare is that just years before, we had been warned the Earth was warming. In March 1929, the Los Angeles Times told readers, "Most geologists think the world is growing warmer and that it will continue to get warmer."

The New York Times took a similar approach with a headline that said, "America in Longest Warm Spell Since 1776."

And less than 10 years before that, the Times detailed the exploits of Captain Donald MacMillan's Arctic expedition and how "MacMillan Reports Signs of New Ice Age."

In more than 100 years, the major media have warned us of at least four separate climate cataclysms: an ice age, warming, another ice age, and another bout of warming. If you count the current catch-all term of climate change, that would be five separate media predictions. Even by their count, they are 0 for 3.

The hubris that convinces supposedly unbiased journalists they are providing the truth on climate change has led them to criticize America for its stance on the issue including the Kyoto Treaty, but they typically leave out the 95 to nothing vote against Kyoto by this very Senate or the many billions of dollars such an agreement would cost America. This attitude has resulted in a media obsession with Al Gore's film, An Inconvenient Truth. At least 75 TV shows covered Gore or the film in just 3 months this summer, more than three and a half times the length of the movie.

The Today Show's Matt Lauer even lent his status to a SciFi Network program that listed global warming among other potential threats to our species, including asteroids, aliens, and evil robots.

Scientists who dare question the almost religious belief in climate change—and yes, they do exist—are ignored or undermined in news reports as are policymakers and pundits who take similar views. The few journalists who sometimes give another side, like the New York Times' Andrew Revkin, emphasize funding sources

for that side of the debate and rarely bother to question the billions of dollars that go into promoting global warming.

This goes against the basic tenets of journalism to be skeptical of all sides of an issue. It also violates the ethical code of the Society of Professional Journalists which urges the media to "support open exchange of views, even views they find repugnant." That code calls for reporters to "distinguish between advocacy and news reporting."

But that wasn't the media response when Chairman Inhofe read some of our report, Fire and Ice, on the Senate floor in September. Newsweek responded with a roughly 1,000 word clarification of its 1975 global cooling report but added it made this mistake as recently as 1992. Newsweek still claimed "the story wasn't 'wrong' in the journalistic sense of 'inaccurate.'" But at least it owned up to the error after 31 years.

In the New York Times editorial that responded to Senator Inhofe's comments, the Times summarized, "Cooling, warming, we never get right." That is the inconvenient truth.

Thank you.

Senator INHOFE. Thank you very much for the excellent statement.

Without objection, I am going to enter into the record, Dr. Carter, a paper that you wrote called Human-Caused Global Warming because I find it to be very interesting as a supplement to your testimony.

In order to accommodate Senator Boxer, we are going to expand the time for questioning. We will have a first round of 7 minutes and then we will have a round after that of 5 minutes. We are going to try our best, though, to conclude it in 1 hour from now because we have other uses for the room.

Let me start off with the University of Oklahoma which shouldn't surprise too many people.

I would like to have you, Dr. Deming, just repeat and just take a second to do it what you said about your call from the NPR to make sure everybody understands it.

Mr. DEMING. It was the week that my paper in the journal Science, had been published. I came into my office. There was a voice mail there from a reporter from National Public Radio. He said he wanted to talk to me about the paper, and I called him back, very excited. I thought I am going to be on the radio, and it is going to be wonderful, and it will help my career, and I will get all sorts of favorable publicity, and blah, blah, blah.

I called him back, and to my surprise, he focused on the very last sentence in my paper where I said, I made the statement I thought was remarkably uncontroversial. I said the amount of warming that we have observed is within the range of natural variability for the last 10,000 years, and it is impossible to say at this point in time if it is due to human activity or a natural variation.

And he said, did you really mean to say that?

I said, well, of course, I did because I say what I mean.

He said, well. He said, then I guess we have no story. He said, because if you had said it was due to human activity, that is what everyone is interested in.

Then he hung up on me.

Senator INHOFE. That is one of the problems that we have that is very serious.

You also mentioned and as I said in my opening statement, 4 years ago when I became Chairman of this committee, I assumed that it was anthropogenic gases that were causing this because that was all I had seen in the media since IPCC came out and, of course, Michael Mann was the one you heard from more than anything else.

When we started looking at the science, you commented on the hockey stick. Isn't it true that if he had been honest in his portrayal, using a hockey stick for the blades charted at the 20th Century and included Medieval Warming Period, that it would have two blades of approximately the same size?

Mr. DEMING. As I understand the hockey stick, that period of time, the medieval time period is included, but the result they get is different from virtually almost what everyone else has found, and it has subsequently been criticized for having the result as an artifact of the methodology.

As I understand the hockey stick, it is based primarily on tree ring thicknesses which are probably one of the most problematical indicators we have of past temperatures. The area in which I am most familiar, borehole temperatures clearly indicate that there has been a Medieval Warm Period and also that——

Senator INHOFE. And a Little Ice Age, and I think also history, which Dr. Oreskes may want to address.

Mr. DEMING [continuing]. Polar sea maximum when temperatures were even warmer than the Medieval Warm Period about 5,000 years ago. Since that time, which used to be called, by the way, the Climatic Optimum. Before the warming scare, it used to be commonly acknowledged that warm temperatures are beneficial and cold temperatures are detrimental. Since that time, temperature, of course, has been undergoing variation, but it has been more or less systematically declining.

Senator INHOFE. Thank you very much.

Dr. Schrag, I think the only criticism I would have of your presentation is you said it is unfortunate that it has become very political and yet you have made appearance after appearance with Al Gore. I mean Al Gore clearly believes that global warming is his ticket to the White House. You appeared at the premiere of The Day After Tomorrow with not just Al Gore but also have made appearance with MoveOn.org and many of these highly political groups.

If it is unfortunate that it has become political, why are you participating in those politics? Cut it short now.

Mr. SCHRAG. Yes, in the discussion of the movie, The Day After Tomorrow, I felt the movie was so distorted in terms of its climate science, that I welcomed any opportunity to try to explain to the public what was fact and what was fiction. I think if you actually see my comments on that film, you will agree with that.

I welcome the opportunity to appear in any Republican or Democratic forum on this, and I do that regularly at Harvard, briefing.

Senator INHOFE. I appreciate that very much. I would like to have you, for the record, give me some of these comments on the science. My staff should have done this, and I should have been

aware of it, but I would like to see some of the comments that you made concerned the flawed science of that movie.

Mr. SCHRAG. Yes, well, the movie was really preposterous, essentially. The movie suggested that warming would lead to a shutdown of the thermohaline circulation which is actually possible. That part of it was correct. However, it happened in 3 days, and it resulted in a global ice age.

In fact, a shutdown of the thermohaline circulation would have a minor effect on temperatures, probably only in the coastal regions of Northern Europe, and it might only mitigate future warming. It might reduce the impact of future warming. It certainly wouldn't cause a cooling. I would actually suggest that this is one example where certain climate scientists have probably, in my view, this is an unlikely thing to occur.

Senator INHOFE. Thank you very much, very much.

Dr. Carter, I have been a vocal critic of the IPCC for some time, and I actually dedicated one whole 1-hour speech on the floor of the Senate that I am sure no one listened to about the IPCC. Can you tell me your views about the IPCC's credibility and how it can be improved or lack of credibility?

Mr. CARTER. Well, of course, the IPCC started off with great hopes and intentions like most offshore bodies. The problem is today that after it has been going I guess for 15 years or so, it is basically unaccountable to anybody. The sovereign governments that receive its assessment reports use those assessment reports for their own climate policy.

You could reflect on the thought of a sovereign government using an international body to set its next budget. I don't know why it is the governments have decided in this area of the environment that they defer to international advice where in every other part of their national management, of course, they use their own judgment.

There is a lot of very good science in the IPCC volumes, but that is in the volumes. The problem is, as you, I am sure, heard many people say, it is the summary for policymakers.

Senator INHOFE. It is the summary, the political summary.

Mr. CARTER. That is a political document, but that is all that most governments use in setting policy.

Lord Lawson, the former Chancellor of the Exchequer in the United Kingdom, his view on this is that you should just shut the IPCC down. I would like to agree with him, but politically that is clearly not feasible.

So I think you have to do something to make them accountable. I think AP–6, the Asia-Pacific Climate Accord, is the way to go. It is going to have to receive scientific and technical advice. It won't want to set up its own bodies because it is cumbersome and expensive and so on to provide that advice, but it will need an audit body of some sort. I think the IPCC could well contribute to AP–6 advice on climate change, but that then needs to be thoroughly audited by a group of independent scientists and engineers.

Senator INHOFE. Thank you very much.

Senator Boxer, this first round is going to be an 8-minute round, not a 7-minute round.

Professor Oreskes, you have spoken about consensus about climate change, so I want to make sure that I understand what you mean. Is the definition of consensus that No. 1, the globe is warming and No. 2, that man's activities have contributed to that?

Ms. ORESKES. Correct.

Senator INHOFE. All right, I would like to be invited to be part of your consensus because I have said this and I have acknowledged that we are in a period where there has been warming now, as it was pointed out by Dr. Carter, not really since 1998 but generally a warming period.

I have said many times that there are human contributions to this such as the expanded cities, the land use policies, the agriculture, the heat island effect. These things do have an effect. I understand that. My only concern has been CO_2 specifically.

Now I am going to stop right here and wait for the next round of questions in deference to my future Chairman. I want to make sure we get everything covered.

Senator Boxer, 8 minutes.

Senator BOXER. Eight minutes, thank you very much.

A couple of comments, Senator Voinovich, I was very moved by what you said about working together and recognizing China is a threat, and I think I agree with Senator Lautenberg's remarks that the best way to engage other nations is to become a role model and at the same time pulling them along. I hope in the Foreign Relations Committee, maybe we can team up and do some work in reaching out to China because clearly China is going to surpass us in 2009 as the largest emitter of carbon dioxide. I think that is key, and I thank you for bringing it up.

I also think attacking the press doesn't make the truth go away. So you can attack and flail away, but it doesn't work. A lot of politicians and their death rattles turn against the press. It doesn't work at the end of the day. It can be certainly frustrating, but at the end of the day, it is a free press that keeps us strong.

I also think attacking individuals for speaking out at forums is anti-democratic, and I just feel that way, regardless of what forum. That is what differentiates us from others. We don't say to people you can't have an opinion, regardless of what your profession is. I encourage all my people at home, Dr. Carter, and maybe you do too, and I encourage your brother, however he feels on this subject, to speak out, to go to forums to be educated and lead.

Since you, Dan Gainor, you put up the Times, let me put up a series of mainstream press. I want to show you this. I am going to ask Dr. Schrag, because I asked you before if you would read these articles, to comment on whether you think there is anything in these articles that is hysterical, as my Chairman says, hysterical.

The first one is the Tulsa World. We go to Oklahoma, Mr. Chairman. Mr. Chairman, I think you would be interested. Tulsa World, September 26, 2006: Global Warming Reaching Record: Earth's Temperature Highest in Millennia. Researchers say Earth's temperature has climbed to levels not seen in thousands of years; and warming has begun to affect plants, animals, researchers report in Tuesday's issue of proceedings of the National Academies of Sciences.

So that is one. Let us go quickly with these because we have 8 minutes and eight charts. OK, here we go.

Business Week, not your liberal bastion of a magazine: Global Warming Consensus Growing Among Scientists, Governments, Business. We must act fast to combat climate change. This has already sparked efforts to limit CO_2 emissions. Many companies are now preparing for a carbon-constrained world.

They cite a Pentagon report that tells of a plausible scenario in which the conveyor shuts off. They also quote Senator McCain as saying: The facts are there. We have to educate our fellow citizens about climate change.

Let us go to the next one. This is the L.A. Times: Academies Warn of Warming. Science organizations from 11 countries including the United States call for global action against the changing climate.

It goes on to explain that.

Let us go to the next one. Washington Post: Growing Activity of Oceans. This is important because Dr. Deming made a very important point that the oceans are our friend and they sequester the carbon dioxide. But look what is happening to the oceans: Growing acidity of oceans may kill corals.

That is quoted also from a report from the National Center for Atmospheric Research in the National Oceanic and Atmospheric Administration, and that is the Bush administration.

Let us go to the next one. This is the Financial Times: No Need to Become a Sitting Duck; Hurricane Zones: Businesses Can and Should Plan for Events Outside Their Control.

Even the U.S. Pentagon says climate change should be elevated beyond a scientific debate to a national security concern. That is the Pentagon. That is the Bush administration, the current Administration.

This is the New York Times: Yelling Fire on a Hot Planet. Between the poles of real time catastrophe and non-event lies the prevailing scientific view.

Let me repeat that. The New York Times: Between the poles of real time catastrophe and non-event lies the prevailing scientific view. Without big changes in emission rates, global warming from the buildup of greenhouse gases is likely to lead to substantial and largely irreversible transformation of climate, ecosystems, and coastlines.

So talk about the middle position, Dr. Deming, there you go.

The next one, United Press International, CDC, this is important. This is the Bush administration's CDC. This is this month, Mr. Chairman.

Climate Change a Health Threat, December 5: The rising scientific certainty of climate change should mobilize environmental health professionals to take aggressive action, a Center for Disease Control and Prevention director said at a meeting here Monday.

Climate change is perhaps the largest looming public health challenge we face, certainly in the environmental health field, Dr. Howard Frumkin, director of CDC's National Center for Environmental Health.

Given credible indications there is a danger there, we need to act to protect people from that danger. It is standard public health practice, said Frumkin, Bush administration's CDC.

So, Dr. Schrag, in this example, I tried to pull together from all over the country business magazines, the mainstream press, an article from Tulsa. Is there anything in here?

You have read them all because I have asked you because I consider you to be one of this country's leading experts on this. Is there anything in here that you think is hysterical, that is in any way out of the mainstream of scientific thought on this subject?

Mr. SCHRAG. No, Senator Boxer; I actually think that, in general, those articles do a very excellent job describing the general scientific evidence for those various issues.

I would just add that I think the business articles, Business Week and an article you didn't cite, one from the Economist recently that was a cover article—both of these are not typically political journals—they did an excellent job reporting on this partly because they weren't science reporters. They were business reporters, and business reporters have good experience making decisions under uncertainty, and that is what we are dealing with here. Again, it is the risks that we care about.

Senator BOXER. Dr. Deming, I think it was interesting on the NPR story because as a former reporter myself, you tried to get what you consider a balanced view, but I thought what you said was really interesting and worthy of reporting because that last sentence was pretty balanced. You said we are not sure why this is happening, and I think that is important because I thought your position is we absolutely know it has nothing to do with human activity and actually that is not what you said at the end. So I was encouraged by that.

I want to ask you, Dr. Deming, the National Academies of Science of 11 nations including the U.S. National Academies have said climate change is real. It is likely most of the warming in recent decades could be attributed to human activity. Am I right that you do not agree with this conclusion?

Mr. DEMING. What you said, I think, has two parts. You said that, first of all, climate change is real and second that it is due primarily to human activity. I think the first——

Senator BOXER. I didn't say this. The National Academies of 11 nations said this.

Mr. DEMING. Right, I understand.

Senator BOXER. Do you agree with this or not?

Mr. DEMING. Well, I agree with the first part. I don't know of anyone who disagrees with it because climate changes on all time scales.

Senator BOXER. How about the second part?

We all agree climate change is occurring; you are right.

Mr. DEMING. It changes; you are right. Here in Washington, DC, every summer, it gets hotter; in the winter, it gets colder.

Senator BOXER. We are not talking about that. We are talking about, as you know, over time. We understand that.

But I am asking you: Do you agree with the statement, it is likely that most of the warming in recent decades can be attributed to human activity? Do you agree or disagree?

Mr. DEMING. I think it is highly problematical.

Senator BOXER. You don't agree or you do agree?

Mr. DEMING. Well, I don't think my answer would fit into either of those categories because——

Senator BOXER. So you don't disagree with this. You don't disagree with this then. You don't flat-out disagree with this statement of the 11 nations National Academies of Sciences that it is likely that most of the warming in recent decades can be attributed to human activity. You don't flat-out disagree.

Mr. DEMING. Well, let me see if I can phrase my answer in a way that links up.

Senator BOXER. Dr. Deming, please try to help me out here. Do you agree or disagree?

Mr. DEMING. Well, I am trying, but you keep interrupting me.

Senator INHOFE. Senator Boxer, you over your time. We are going to come back to you, and I will give you time to give your answer under my time if that is all right.

Senator BOXER. Yes.

Senator INHOFE. I know that Senator Isakson has to go. Senator Isakson, why don't you go ahead and take what time that you need?

Senator ISAKSON. Thank you, Mr. Chairman.

I want to thank Senator Voinovich for giving me this opportunity to jump in. I have to be on a very important call in 4 minutes, but I have one very important question. I appreciate everything everybody said, but I heard something fascinating and I want to make sure I heard it right.

Dr. Carter, did you say that the ice cores demonstrated that warming preceded the increases in CO_2?

Mr. CARTER. Yes, and that is not controversial. There is no climate scientist that will disagree with that. There are a number of papers in Nature, Science, and other such journals.

Senator ISAKSON. Before you go any further, excuse me for interrupting. I apologize for being rude.

Does anybody disagree with that statement?

Mr. SCHRAG. Well, I would like to say that it is a little bit more complicated than that, unfortunately.

Senator ISAKSON. Most everything is.

Mr. SCHRAG. It is. Unfortunately, I wish it weren't in this case. The bubbles in the ice that trap the CO_2 have actually a different age than the ice that surrounds it, and that is just the nature of the way they form. As a result, there is a big uncertainty on the exact age of those bubbles. It is that the error is a few thousand years. Therefore, it is very difficult to say exactly which. To the best of errors, within the error, they are essentially synchronous.

Now, the important point that I think is misleading about this is that on thousand-year time scales, on many thousand-year time scales, CO_2 is very much connected with, linked to ocean temperature. They go up together, and they go down together. Therefore, talking about one driving the other is silly. They are connected. The ocean warms. It releases carbon dioxide which causes more warming which warms the ocean. It is a cycle. They are connected.

On shorter time scales, this isn't the case, and we are dealing with a shorter time scale.

Senator ISAKSON. Dr. Carter, I cut you off to get that response. Go ahead. I am sorry.

Mr. CARTER. Well, on short time scales, it is the case. Of course, the statements I was making are similar to those that Dr. Schrag was making. They are within scientific error. So the best estimates by the best scientists are that the change in temperature precedes the change in carbon dioxide in the ice cores.

Getting to the short time scale, now that is true in the ice cores. It is also true on the annual temperature cycle. David Deming referred to that, that it gets colder here in the Washington winter as I have noticed, having just come from the Great Barrier Reef, and warmer in summer.

You all know the famous Keeling Curve from Hawaii of CO_2 which goes up like this, and that jiggle-jaggle in it is the annual cycle of CO_2. Now when you compare that, you find again that temperature changes 5 months before carbon dioxide changes. So both on the short time scale and on the large time scale, that is the reality.

But I do not disagree with what Dr. Schrag just said. This is a complex system. It is interacting both ways. But for what it is worth, temperature changes first; carbon dioxide changes second.

Senator ISAKSON. The reason I asked the question is—and I am going to have to go, Mr. Chairman of all the things everybody said, I think your statement, Dr. Carter, and then your response demonstrates that this is a very complex issue of which far too many people have conclusive opinions as to who the villains are, who the contributors are, and what the solution is when, in fact, we need more dialog like we are having today to start identifying those things we can do and recognizing the impracticality, if that is the right word, of some of the things that we really can't do.

I am a businessman. I spent 33 years in the private sector. I have never seen corporate America move as much as it has, particularly over the last 5 to 10 years, in its greening and its conscious effort to make constructive efforts to recognize there are things we can do to better improve our environment. But there continues to be this element of some who have all these absolute beliefs of the absolute solutions to this absolute problem when, in fact, people of your intellect.

I am a politician. I am not a scientist. I was a barely good businessman. But I really think, Mr. Chairman, this has been very helpful today in getting out the information that we all agree with. There are some things that are happening, and there are some things that we can do, but some of the absolute conclusions that become facts because they get repeated over and over again are incontrovertibly not correct. Is that fair, Dr. Carter?

Mr. CARTER. I agree with that sentiment.

Senator ISAKSON. I apologize for making a speech and then leaving, but I have got to be on a conference call in 2 minutes.

Senator INHOFE. Thank you. I am sorry it took so long to get to you, Senator Isakson. Thank you for your contribution.

Senator Lautenberg?

Senator LAUTENBERG. Thanks very much, Mr. Chairman.

I thank each of you for expressing yourself, in some instances way beyond the things that we would expect from the observations

that man makes without instruments, without the calculations that may confirm that something terrible is happening in front of our eyes. That is what concerns me.

One of them is, and I ask this to Dr. Schrag. Are you aware of any reports of government scientists who have had their work on global warming altered or suppressed or been prevented from speaking to the press, or you, Dr. Oreskes? Any evidence that there has been an attempt?

Mr. SCHRAG. I am certainly aware of what was published widely in the press, and I have talked with Dr. James Hansen about his experience at NASA. I think ultimately, he was a prominent enough figure that he was able to overcome that.

Senator LAUTENBERG. To break through.

Mr. SCHRAG. I know other scientists at NOAA of a much smaller reputation who have been prohibited from talking about or mentioning the words, global warming, when they discuss their data on climate science.

Senator LAUTENBERG. Dr. Oreskes?

Ms. ORESKES. Yes, the example that I know about is the example of the Environmental Protection Agency reports that were altered, which was reported on the front page of the New York Times by Andrew Revkin and Kathryn Seelye. I would encourage you to invite people from the Environmental Protection Agency to discuss what was done to their reports.

Senator LAUTENBERG. We don't have any here with us today, but I do hope that in the future, we will hear from Government witnesses.

There is a science writer in the major New Jersey paper. The paper is the Star Ledger, very widely circulated, with the Sunday and the daily in the many hundreds of thousands of readers. She was writing a story on NOAA's GFDL laboratory in Princeton that she, the reporter, was denied permission to interview an important climate scientist named Richard Wetherald.

Should NOAA or any other Government Agency be preventing their scientists from speaking to the press and the public about global warming? Can any of you think of any logical reason to block off that contact with the press?

Ms. ORESKES. If I might respond to that, obviously, no. But if I could add a historical point on that, Professor Wetherald is one of the most important people in the history of climate science because he was one of the pioneers of the development of global climate models. So if you want to understand what climate models can and can't tell us, Professor Wetherald would be one of the best possible people you could talk to about that question.

Senator LAUTENBERG. Do any of you know Dr. Wetherald at all? Do you know his reputation?

Dr. Schrag, do you know who he is?

Mr. SCHRAG. I taught at Princeton for a few years. I lived in Princeton, NJ, for 3½ years and worked closely with people at GFDL. It is a fantastic outfit. I believe they should all be encouraged to speak to the press.

Senator LAUTENBERG. Dr. Carter, in Australia, do they stop?

Mr. CARTER. In the supporting papers, Senator, you will find I have given two examples of that. Of course, they are in Australian

science so they are not primarily of concern to the committee except as an example.

I would respond to your question. Why would an Agency head want to restrict? Did you ask that question.

Senator LAUTENBERG. Yes.

Mr. CARTER. Because that Agency head has a primary responsibility for garnering next year's budget.

Senator LAUTENBERG. That is a very interesting comment. So to withhold truth is an acceptable instrumentality to restrict.

Mr. CARTER. No, I didn't say that was acceptable. What I said is I can understand why that is a pressure on an Agency chief.

Senator LAUTENBERG. Someone of your esteem, sir, when you say you can understand, it means that it is not so bad.

Mr. CARTER. Oh, well, that is not my intention at all. Let me say I think it is very bad, but I can understand why a manager in that situation ends up trying to restrict his staff talking to the press, and that happens the whole time in major Government organizations, scientific organizations, certainly overseas.

Senator LAUTENBERG. Dr. Oreskes or Mr. Gainor?

Mr. GAINOR. I am a huge believer in the First Amendment, and I am a career journalist. So I certainly think that the people in the Agencies, I would love for them to talk to the media.

But I would also at the same time like to challenge the point about Dr. Hansen who ended up on more TV and print media than I think pretty much any of the climate scientists that have been mentioned here today.

Senator LAUTENBERG. He was forced. He was forced into the public eye. He wanted to tell the truth, and they didn't want him to. We have seen redactions around here, EPA reports, Dr. Oreskes, that say don't tell it like it is; tell it like we want you to tell it which is quite different especially coming from a distinguished group of scientists as you are. I would think that at any cost, dear God, tell the truth. Tell it as you see it.

Ms. ORESKES. If I could just say one more thing, if I could respond to something that was in Dr. Carter's written testimony, which was that he raised the question of ad hominem attacks and libel restraints. I would like to make the point that this is issue not only for Government scientists but for academics and others as well.

Since my paper was published in Science magazine in 2004, I have received hate e-mail. I have received threatening phone calls. I have been threatened with lawsuits by people who deny the scientific evidence of climate change. So there has been enormous pressure on academics not to speak up on this issue, and it is not just a matter of Government science. It goes across the board.

Senator LAUTENBERG. Dr. Carter, I had the privilege of visiting Australia on my way to New Zealand, on my way to Antarctica, on my way to the South Pole. My principle mission was to meet with our National Science Foundation people and see what they saw, what they believed was happening.

I don't know at what point, Mr. Chairman, there is a conclusion drawn from things that you feel, humans feel, see, changes in populations of particular species, the diminution of the penguin population and, as I mentioned before, the polar bear population.

It was suggested that former Vice President Al Gore did this film on his way to another chance at the White House. See it before you make that kind of comment and debate it honestly. Go to the public and just say: This is wrong. That is wrong. The fact is that these ice flows are in your imagination, bad dreams for kids and just say seeing what you see is not really so as opposed to a discussion that gets us into relatively minute details which are important in the science world.

But on the other hand, do you deny that there is a fire in the house and discussion the origination of the fire and how high the temperature is going to be before you tell everybody to get out of there? I don't think so.

So, Mr. Chairman, we have to continue to search through these problems, and I appreciate your time.

Senator INHOFE. Thank you, Senator Lautenberg.

Senator Voinovich.

Senator VOINOVICH. Thank you, Mr. Chairman.

As I have mentioned, I have sat through lots of these hearings. Senator Boxer, I understand we have two subcommittees now. One is going to be talking about private contributions to climate change and public contributions to climate change.

The real question for me is: What do we do about it that is practical, that makes a difference?

I would like to read and then have the panel comment on a couple of things. One of the things we have debated here is cap and trade. The European Union introduced a carbon cap and trade system in October 2001 which granted carbon permits to 12,000 powerplants, factories, oil rigs, and refineries. Each permit represented the right to produce a ton of carbon dioxide and could be traded like any other commodity.

The system was supposed to motivate companies to reduce carbon dioxide and sell their extra permits for profit, but according to an article published by Bloomberg England, the carbon trading system has led to huge utility price increases in Europe's two largest economies—Germany, prices up 61 percent; England, up 66 percent. These price jumps were higher than the increase of crude oil traded in the London Stock Exchange, up 46 percent.

The question is: Why hasn't this generated more attention with the mainstream media or is it that it contradicts some of the things that are being proposed in this country in terms of a cap and trade proposal to deal with reducing greenhouse gases?

Again, I want everyone to understand. I believe that we see warming. I am not really sure how much is due to natural causes or to manmade causes, but I believe that manmade causes do impact on it. The issue is what do we do from a responsible policy perspective to deal with the problem?

So that is one thing, and I want to read one other. I would like to one day, Senator Boxer, have an opportunity to let the Administration come in here and talk about what they have done about climate change.

Senator BOXER. They will be on the very first group that we have before us.

Senator VOINOVICH. They joined with China, India, Australia, and South Korea to form the Asia-Pacific Partnership, and I think

personally engaging these nations which have the fastest growing economies and sharing our technology is one of the best way to address the problem of climate change.

During the debate of the 2005 Energy Act, I worked on with Senator Hagle to add a climate change amendment which authorized $2 billion in direct loans, loan guarantees, and other incentives over 5 years for the adoption of technologies that reduce greenhouse gas intensity while directing a Federal effort to implement a national climate change strategy. These funds would be used to develop new technology to limit greenhouse gas intensity and would then be exported to developing nations that are burning fossil fuel at increasing prices or increasing rates.

What role do you see technology transfer and development playing as the United States and the world move forward?

Why does this get so little coverage when we know that if we are ever going to reduce global carbon emissions, that technology development must be the focal point of that strategy?

What it is getting to is the real issue of if you have a problem, how do you go—maybe I was a mayor too long or a Governor. How do you practically deal with these things and invest money and get a return on your investment?

We just talk about the problem and it is getting worse and so on and so forth. But the real issue is: How do we do something about the problem?

Why can't we get more information out about some of these things that people are doing, what works and doesn't work, and come back with some practical recommendations on what it is that we can do here in Congress and what the world can do to impact responsibly on this problem?

Dr. Schrag?

Mr. SCHRAG. Senator Voinovich, I think that is a very good question. I think the question of what to do about climate change, it is about time that we got to that question. While I think that a cap and trade is a good way to start perhaps and it may be politically inevitable in the Congress, what cap and trade does is just let the market decide where the cheapest way to reduce carbon emissions. Markets are wonderful in many cases, but they don't consider certain things like how certain areas will be impacted preferentially to other areas, things that are real decisions that you are going to be faced with.

I think technology is an essential part of the answer. We have to become more energy efficient, that is, do the same things we are doing now but using less energy. We have to develop essentially decarbonizing our fuel sources, and we are not going to be as able to get away from fossil fuels. As you know, coal is an essential part of what drives this country, and it will continue to be for the century. Our Department of Energy is working on ways of reducing carbon emission from coal plants by carbon capture and then storage in geologic repositories. Unfortunately, the funding for that is so low, we need to see test projects done now, so that 10 years from now we can roll it out on a bigger scale.

So the sorts of things that you suggested, I think, are very much in line with what is needed in leadership from this Government.

Ms. ORESKES. May I join in? Thank you.

At the University of California, I teach the history of 20th Century science including the history of the Manhattan Project, and I think there is a useful analogy there. In 1942, the U.S. Government realized it had a big problem, and that problem was the threat that the Nazi Government might build an atomic bomb. In response to that threat, the U.S. Government mobilized the combined resources of physicists, chemists, and engineers across the United States, and from Europe as well, and invested unprecedented amounts of money into the Manhattan Project to create a new technology, a technology that had never existed before to address an immediate, a clear and present danger.

I think there is a useful analogy there. We have a clear and present danger. We pretty much have all agreed upon that today. The question with which I agree 100 percent is what to do about it, and I am in complete agreement with you that the centerpiece of that strategy must be based on technology. So I believe that one thing that the U.S. Congress can do is the same thing that it did in 1942, which is invest money into the engineering resources that will be required to develop those new technologies.

Mr. GAINOR. Senator, you are also trying to get at how to get the word out. Essentially, there are two problems with the media as far as this story goes about some of the things you are talking about. One of them is quite simple; the scare story is an easier one to tell. There is a lot of media group think on this issue, and I thank Senator Boxer for proving my case for me. It is really quite simple.

But the other problem is it is a very technical issue, and trying to get journalists to tell something in detail is also a challenge. It doesn't make good sound bites in the evening news. You will see the morning shows will just give you 5 seconds of a new study that comes out. The media are letting us down because they are trying very heavily on the scare issue, but then the other half of the story, it is just difficult to tell. Only print media are really well equipped to do that, and they are not doing it either.

Mr. DEMING. Senator, perhaps I was napping earlier, but if I just heard your question to the panel, it was what is the responsible thing to do, and it seems to me the responsible thing for us as a society now to do is to encourage more greenhouse gas emissions. I find myself in opposition to some of the other members of the panel here, I think because I have a different perspective. I have the geologic perspective, and I think that is a proper perspective when you are dealing with natural problems.

We know that the natural state of Earth's climate for the past million years is an Ice Age. Ninety percent of the last million years has been spent in an Ice Age during which not only is the climate colder, it is also more variable. We are now in an unusual period. We are in an interglacial period where the climate is warm which is good and it is also relatively stable. The greatest danger that we face right now is moving into another Ice Age.

When the Little Ice Age took hold in Europe at the beginning of the 14th Century, there were massive crop failures. There were famines. People resorted to cannibalism to stay alive. We have never had a famine in the United States of America.

Mr. CARTER. Mr. Chairman, could I just support that? That is indeed the geological perspective. Can I just tease out two dif-

ferences? I spoke of the risks of cooling earlier. There are two different risks. The one that Dr. Deming just talked about is the longer term glacial-interglacial risk. A higher risk at the moment is another Little Ice Age.

You should be aware, Senator Voinovich, that the NASA about 6 months ago issued a statement that they predict over the next couple of decades, we are likely to head into another Little Ice Age. That was supported by a piece of research from the Russian Academy of Sciences. So there are two quite respectable Agencies giving that advice at the moment, that the most likely event over the next 20 years is not continued warming driven by greenhouse gases but cooling driven by lack of solar activity.

Mr. SCHRAG. Excuse me, that is not the consensus.

Mr. CARTER. I didn't say it was the consensus. I said it was advice that had been given.

Mr. SCHRAG. Fair enough.

Senator INHOFE. I am afraid time has expired for this round. We will go ahead and start with our second round of questions.

I agree with Mr. Gainor. Senator Boxer, I appreciate your exhibits that you used because that does make my case. The point I am saying is that we have had such a bias in the media, and that is what this hearing is about, and I think that does pretty well make the case.

Dr. Deming, I would like to ask you what you think of Dr. Oreskes' claim that 100 percent of the scientific consensus is on the global——

Ms. ORESKES. I didn't claim 100 percent.

Senator INHOFE. Let me read your statement here. The answer surprised me. Not one scientific paper in the random sample disagreed with the consensus position.

Ms. ORESKES. In my analysis; I am not saying that there is no one on this Earth.

Senator INHOFE. OK, that is fine. I am asking Dr. Deming.

Mr. DEMING. I read Dr. Oreskes' study. It was published in Science, and I am also under the impression that what she said was 100 percent.

I think there are some problems with the study. I think there are three primary problems. If we have time, I will describe all of them.

First of all, I am 52 years old now, and it is my experience in my life, as probably many people here, that when you get a large group of people, if you get 900 scientists or any group of 1,000 people together, you are not going to get 100 percent agreement on anything. In fact, the only other examples besides Dr. Oreskes' study that I know of, of 100 percent agreement, was the last election in Iraq where Saddam Hussein received 100 percent of the vote. Now, if you believe that was an honest election, perhaps you also believe that Dr. Oreskes' study was valid.

However, I think the fact that she got the results she did should have suggested to her that it was an artifact of her methodology.

Senator INHOFE. Dr. Deming, let me again try to stay within the timeframe here. I said I would let you respond to Senator Boxer's question that she was trying to get a yes or no. What would be your best answer to that question?

Mr. DEMING. I believe she asked me if I agreed with the statement it was likely that the majority of the warming that has been observed is due to human activity, and I guess I would say I disagree.

Senator INHOFE. All right, thank you very much.

Mr. DEMING. Simple answer.

Senator INHOFE. Yes, Dr. Schrag, again getting back to the politics of this, no; I will save that until last here.

Dr. Carter, you commented about some of the things in the past, the cooling periods and the fact that the temperature sometimes or always precedes the release. You guys are smart, and we are not up here, and we don't have the background you have. When I look and see—and I don't think you disagree—that in recent history, the largest discharge of CO_2 took place in the middle forties right after World War II. As I understand, it was something like an 85 percent increase.

Now, that being the case, one would think that would have precipitated a warming period when, in fact, it precipitated a cooling period. Do you agree with this? Would that be a good example to use, Dr. Carter?

Mr. CARTER. That is a correct statement. Whether it is a good example to use is a separate question. The explanation for that then, because the implication under the greenhouse hypothesis, is that because we have had a big burst of carbon dioxide, we should have had warming as a result, and plainly we don't see that. So you can view that as a test of the greenhouse hypothesis, and you can say quite fairly the greenhouse hypothesis fails that test.

But then you may seek other explanations. The explanation that a large number of people have come to and this word, consensus, keeps coming up. I do not believe in the use of consensus of science. Science is not about consensus. But nonetheless, a significant number of scientists have argued that it is due to aerosols in the atmosphere over that time which after the War were also increasing because of industrial activity, and they have the function of reflecting the incoming radiation from the Sun, and therefore they cool the Earth. By happy coincidence, that just explains the temperature curve.

Senator INHOFE. All right, thank you very much.

One real quick yes or no question, Dr. Oreskes, for clarification, in your original Science magazine study, I think you made a correction, and I just want to see if this is right. You claimed that you use the search term, climate change, and found 928 papers, but my understanding is that using that search term, climate change, pulls up almost 12,000 papers and you later published a correction noting that error, is that correct?

Ms. ORESKES. That is correct. It was a typographical error on the part of Science magazine that the word, global, was left out of the original article, and it was corrected shortly thereafter.

Senator INHOFE. Very good; I am coming down toward the end.

I would only like to say, Mr. Gainor, some might say that you are influenced by being a part of the media, a part of the pro-business and anti environment and so forth. Since that accusation comes occasionally, how would you respond to that?

Mr. GAINOR. Well, they say Al Gore has always focused on his carbon footprint, and yet he flies around the world in what even he would say is harmful to the environment. He rides in an SUV and owns several houses. I live in an apartment; I walk to work; and I took Metro most of the way here today and would have finished the trip if it hadn't been for problems there.

You don't have to be in agreement with other members of this committee to be pro-environment, to care about what happens to the Earth. Unfortunately, that is the bias that has crept into the media, that somehow any disagreement means that you are a bad person, and that is patently false.

Senator INHOFE. Thank you very much.

A comment was made by Dr. Schrag, and I appreciate that very much, concerning the lack of science behind the movie that was produced by Al Gore. I would like to read something.

Mr. SCHRAG. Excuse me, that wasn't the movie produced by Al Gore. That was the movie, The Day After Tomorrow.

Senator INHOFE. Oh, The Day After Tomorrow, very good.

I would like to read something here. Dr. Richard Lindzen, who is the Alfred P. Sloan Professor of Atmospheric Science at MIT in an op-ed on June 26 of this year in the Wall Street Journal said, and he was criticizing Al Gore in this case, in the scare tactics and so forth. "A general characteristic of Mr. Gore's approach is to assiduously ignore the fact that the Earth and its climate are dynamic. They are always changing even without any external forcing. To treat all changes as something to fear is bad enough; to do so in order to exploit that fear is much worse."

I believe this has been a political exploitation. I am only sharing that with you and not asking you to respond.

Senator Boxer, before you came in, I read my opening statement which ended with several people who had been very strong believers back in the middle nineties about manmade gases causing global warming. One of them I used was a scientist, Claude Allegre, a French geophysicist. You mentioned several times the Academies of Sciences. He is on both the French and the United States Academies of Sciences, and his quote has been that the "alarmism has become a very lucrative business for some people. In short, their motive is money."

I agree that a lot of the motive is money. I would only say that when you look at the publications and you see, as I mentioned before, the pitiful polar bear stepping on the last ice cube in Time Magazine and be worried; be very worried. Believe me, this is something that sold a lot of copies. We understand that. But then how do you equate that with their headlines back in 1975 that another Ice Age is coming and we are all going to die?

Last, put that chart up. Let us assume that I am wrong on this, that all this stuff is proven, it is all right, and we have to do something. Al Gore enlisted the support of a scientist named Tom Wigley back during the time that he was Vice President, and he said if all countries of the developed world—not China and India, and some of the rest of them—all the developed nations signed onto and complied with the emission requirements of Kyoto, how would that lower the temperature over the next 50 years?

His answer was this chart. This is not my chart. This is Dr. Wigley's chart. He said it could reduce it by as six one hundredths of one degree centigrade. Does anyone want to comment on that?

Mr. SCHRAG. Yes, Mr. Chairman, that is absolutely correct. I don't think anybody who negotiated Kyoto, and by the way, I am not a fan of Kyoto for a variety of other reasons that we don't have to talk about, but Kyoto was viewed as a first step which would be followed by a series of additional steps that would ultimately reduce emissions by a substantial amount more. So showing that Kyoto by itself would only make a small difference is sort of irrelevant to the point because ultimately Kyoto was only viewed as a small step.

Senator INHOFE. Yes; I don't want to interrupt you, but I would say I agree with that. But it aggressively forces a reduction in CO_2, and anything that comes after this would have to be more aggressive. I will go back to some of the financial analyses as to what would happen to this country, this great machine that we call America if, in fact, we were even more aggressive than that.

Now I will let you go ahead and take an extra 2 minutes, Senator Boxer. I have tried to be very accommodating, and you are recognized at this time.

Senator BOXER. Thank you so much.

Where to start? I will start with you, Mr. Gainor, because I understand you worked for the Washington Times.

Mr. GAINOR. Yes, I did, Senator.

Senator BOXER. You know I am shocked that a reporter would really take the position to criticize a free press. I am stunned by it and shocked by it.

Now I have been skewered by that paper many a time, and I fully expect to be skewered by that paper again. You know what? That is the breaks. I don't have a committee hearing talking about how I am skewered by the Washington Times, so let us get over it. It is a free country, and the papers are going to report the truth as they see it.

Then you said, I disproved my own case. I proved my case. What I proved by going through these articles that you seem to shun is that in the vast majority of cases, almost every one, they are quoting reports, they are quoting organizations, they are quoting scientists, and most of all these articles, they are quoting the Bush administration. So how you can argue that that is inappropriate is beyond me.

I just hope that a message goes out from this hearing that we treasure a free press. It may annoy us. Lord knows, it annoys me many times. But we treasure a free press, and I hope that is what goes, whatever they write on their opinion pages. Yesterday, the Wall Street Journal skewered Olympia Snowe and John Rockefeller—it was the day before yesterday—because they had the temerity to write a letter to the big oil company and say: Why are you funding these anti-global warming theories? We think it is time to do something about this rather than deny it.

And talk about big bucks, do you want to talk about the big bucks on the other side? That would take a whole hearing in and of itself.

I want to make sure that Senator Voinovich understands because he hasn't really seen the list of subcommittees. They deal with solutions to the problem, solutions to global warming, including private sector and consumer solutions. Senator Lieberman will work on that, and I am going to be looking at in my subcommittee—and I am sure all of us will do this on the full committee—what the public sector is doing because there have been, I think it is 13 States now that have actually acted. Waiting for us to act, they have decided is just too risky, and they have gotten out there. That means from Governor Schwarznegger, a Republican Governor, to many other Republican and Democratic Governors in the West and all throughout the country. We will hear from them, and that will be exciting.

This is what I would like to do in closing. First, I really want to thank all of you for coming today. You know you are in a tough environment here. There is a lot of tension, and I understand for scientists in particular. The media guy is used to it, but the rest of you are not. So I want to thank the four scientists. I think you have all been just terrific for coming and in your expression of your views.

What I am going to do in my last few minutes here is read you—you have to listen carefully, just the scientists in this one—a list of statements made by various organizations. If you believe that these statements have no reasonable scientific basis, so it is not just a yes or no, Dr. Deming. If you believe that these statements have no reasonable scientific basis, I am asking you to put your hand up. Then at the end, if I have time, I will ask you to explain why.

I am going to start with the U.S. National Academy of Scientists: It can be said with a high level of confidence, that global warming meaning surface temperatures were higher in the last few decades of the 20th Century than during any comparable period during the preceding four centuries.

Does anybody believe these statements have no rationale?

OK, next, 11 National Academies of Sciences: It is likely that most of the warming in recent decades can be attributed to human activities. We urge all nations to take prompt action to reduce the cause of climate change.

Raise your hand.

Mr. DEMING. Could you repeat that?

Senator BOXER. No, you are not being asked.

Mr. DEMING. I am sorry. I don't understand what we are doing here.

Senator BOXER. Just the scientists are being asked a question to respond. I think you would want to raise your hand because you already said you disagreed with it before.

We will go on. The American Geophysical Union, an organization representing more than 45,000 scientists from 140 countries who are experts on Earth and science: Human activities are increasingly altering the Earth's climate.

Raise your hand if you believe that these statements have no rationale, no rationale. Did you raise your hand?

Mr. CARTER. Do they mean global climate or local climate? It is completely ambiguous.

Senator BOXER. We are talking about global warming in this. All of these relate to global warming. I will repeat it again. American Geophysical Union: Human activities are increasingly altering the Earth's climate.

Raise your hand if you don't agree with that statement.

U.S. National Assessment Synthesis Team, a Federal Advisory Committee, the U.S. Global Change Research Program: Humanity's influence on the global climate will grow in the 21st Century.

Ad hoc study group on carbon dioxide and climate report requested by President Carter, delivered to the National Research Council of the National Academy of Scientists: Changes will result and no reason to believe that these changes will be negligible. A wait and see policy may mean waiting until it is too late.

That is what they wrote? Anybody disagree?

Recent statements from industry, Shell Oil: It is a waste of time to debate it. Policymakers have a responsibility to address it.

If you disagree with that, raise your hand.

Mr. CARTER. Address what?

Senator BOXER. Shell Oil, global warming; this is all about global warming climate change. All right, that is interesting.

Next, British Petroleum: Companies composed of highly skilled and trained people can't live in denial of mounting evidence gathered by hundreds of the most reputable scientists in the world.

This is all about global warming and climate change, OK. Wal-Mart: Global warming is real, now, and it must be addressed.

Anybody disagree with that?

Mr. DEMING. I am really lost here as to what you are doing because——

Senator BOXER. I am reading to you——

Mr. DEMING [continuing]. I am supposed to participate, and I don't know if I agree or disagree or if I am being forced into one position or another.

Senator BOXER. Let me repeat what I asked you to do, sir. I hope I am not being unfair. I said if you believe that these statements have no rational scientific basis, please raise your hand. We are in a very big dispute in this committee between——

Mr. CARTER. Mr. Chairman?

Senator BOXER. Let me just finish here. I want your help here. We have a Chairman who says this is all a hoax, all right, and we have right now a member, a senior member here today who believes it is not a hoax.

Senator INHOFE. No, let us be sure and characterize my statement correctly. We are talking about yes, there is increase in temperature. Whether it is the whole globe or not, I would disagree because in the Southern Hemisphere, there doesn't seem to be a change and the last time I checked, that was part of the world.

But the statement that I have made many times before is we recognize there are increases and decreases that have taken place, but do not believe that it is due to the cause that you believe it is in terms of the release of anthropogenic gases. So that is my statement. I don't like to have it shortened.

Senator BOXER. It may be that the press has misquoted you, but that is fair. We are arguing with the press anyway.

The point I am making is, and I will stop here because obviously our witnesses have refused essentially to participate in this, and I think there is a reason. I think that everything I am reading has merit, has a rational basis. Nobody really has disputed that.

I will continue and I won't ask you to participate in this. If you can't do it, I think frankly it says you are not so sure of yourself. That is all I am saying. But bottom line here, we have DuPont saying: We came to the conclusion, the science is compelling and action should be taken.

We have Swiss Re, the 14th largest insurance company saying: Risk of climate change is real. It is here. It is affecting our business today.

We have Fitch Ratings Limited: Global warming is on the radar screen of a lot of financial institutions.

We have AIG, the largest insurance company in the world, saying: Climate change is increasingly recognized as an ongoing significant global environmental problem with potential risk to the global economy and ecology and to human health and well-being. AIG recognizes the scientific consensus that climate change is a reality and is likely in large part the result of human activities that have led to increasing concentration of greenhouse gases in the Earth's atmosphere.

I will conclude here. I am getting close to my time. Goldman Sachs: We support the need for national policy.

So there is consensus, gentlemen and ladies. There is consensus. Now there are a few people on the edges, of course. That is fine. By the way, they should be listened to. I agree with you. That is important that they be listened to and that Dr. Carter and Dr. Deming be listened to. But we can't, as policymakers, it seems to me, turn our backs on the overwhelming scientific evidence and opinion as evidenced in the Bush administration's own statements on this as late as December 6, when the CDC declared that this is a big problem.

I feel very sad that we have spent time attacking the press today. I am glad we didn't just spend all our time doing that. I urge the press, you just do what you think is right. You report the news as you see it, and you can have any opinion you want. Stick it on the opinion page like the Wall Street Journal did.

Senator INHOFE. Thank you, Senator Boxer.

Senator BOXER. I think that is really very key, and I say that as a former journalist.

Thank you.

Senator INHOFE. I believe most of those things have been answered on the question of consensus.

Senator Voinovich.

Senator VOINOVICH. We are talking about global warming, aren't we? We are talking about the media's influence on the issue, and there is no question that because of the media, the American people are more aware of this problem than they would be if the media wasn't involved with all the articles that are being written about climate change and so on and so forth.

The question I have for the panel is this: If we look around the world and we see China and we see India and other developing nations and we know that they are going to be emitting a lot more

of this stuff than they are today, what kind of environment do we have in the media in China, for example, or in India because in all likelihood actions will not be taken by those governments unless there is some public pressure to do something about it?

It is expensive for those business that are emitting and also expensive in terms of the general economy of the countries that they are going to have to allocate more of their GDP to dealing with this problem than they are now dealing with it today. Where are we globally on this issue?

I have talked to Tony Blair about this. He talks about Kyoto; you have sign it. The fact of the matter is that first of all, I think, Dr. Schrag, you pointed out that this is just the beginning and it is not going to really make a big difference if Kyoto goes forward as the first step. The fact of the matter is the countries that have signed aren't even going to make the deadlines that they agreed to sign? So where are we?

Mr. SCHRAG. I think the United States has a key role to play, and I think the lack of progress on the countries meeting their Kyoto obligations is partially a result of the United States not taking a leadership role. We are the technological innovators of the world, and we have a critical role to play.

The good news is the Chinese Government cares about climate change. Colleagues of mine at Harvard are working with top members of the Chinese Government. They are very concerned about the hydrologic changes in China. They worry about a peasant uprising, and they are worried about feeding their people. Therefore, they worry about climate change.

However, their official position is they will follow as long as the U.S. leads, and I think that is very important. I think we have an opportunity to lead here, and we have an opportunity, our American businesses have an opportunity for huge investment opportunity in rebuilding our world's energy infrastructure. That is something that can't be missed. I think if you talk to leaders from GE, they will tell you that there are huge opportunities.

I also want to say that there is a window of opportunity here. We have about 20 years or so when these rapidly developing countries are building powerplants like they are going out of style and accumulating cars and infrastructure. Once they are finished, it will be much more expensive to rebuild it. Therefore, things we do today are going to be much cheaper than waiting 20 years and trying to catch up.

Mr. GAINOR. Senator, you were talking about the state of journalism in other nations. I have had actually a fair amount of contact with Chinese journalists over the last, I guess, 15 years coming into this country. To characterize China's journalist situation as anything other than government-controlled would be inaccurate. When you are talking about what the media will do in that country, it will not put pressure on that government do to anything because it is not a free country. India is different.

But, in general, the American concept of media is relatively unique in the world, the concept which I hugely support, contrary to Senator Boxer's comments, the concept of freedom of the press where American media are supposed to be neutral and supposed to not take a position, not to be advocates for one side or the other.

That is relatively unique to America. If you look around the world, much of what is reported on this issue in other countries is reported by a very activist press that is often politically affiliated. So you can't look at that information without a jaundiced eye.

Mr. SCHRAG. Mr. Gainor, they are supposed to be accurate, not neutral. There is a difference. There is a very important difference there.

Mr. GAINOR. There is a difference. They should always be accurate. But to skew reporting decidedly where you undercut people who say one thing, where you don't report important facts, or you don't report people who actually dare to disagree with your group think, that is not accurate either. That is creating a false painting. You are including lots of important and maybe accurate data, but by what you leave out, you create an inaccurate picture.

Ms. ORESKES. Can I jump in here because we have actually facts about this question of bias and inaccuracy on the coverage of global climate change?

My colleagues at the University of California, Max and Jules Boykoff, did a study of print media coverage of the climate issue, and what they were able to demonstrate was that the press bent over backwards to give space to dissenting opinions and that, in fact, the space that was given to the dissenting opinions, the minority opinions, were actually quite out of proportion to their population in the scientific community. So I think that if the press has been biased here at all, it has been biased in the direction of giving attention to a very small number of people who are outside the mainstream of scientific opinion.

Mr. GAINOR. I will be happy to debate that with a study that I personally did about media coverage of climate change which showed just the opposite in talking about how the networks covered climate change, overwhelming one-sided, including very few experts from the other side, and when they did—with the exception of Bob Jamieson from ABC News who did a good job—almost universally they reported it in a one-sided way.

You can have dueling studies all you want, but the reality is all you have to do is turn on the network news and look how they covered Hurricane Katrina and the linkage of Hurricane Katrina to global warming. I have actually a quote from that, from Good Morning America, where: "Scientists have long warned that global warming could make Hurricanes increasingly destructive. They couldn't prove it until now." They can't prove it even now, but it doesn't stop the networks from reporting it. As much as I am a First Amendment huge believe, these networks—ABC, CBS, and NBC—do use the public airwaves. So it is right that we at least discuss this in the bully pulpit and try to encourage them to do a better job.

Ms. ORESKES. But, again, to bring some facts into this discussion, it is only in the last year or two that the media have really stopped giving a lot of attention to skeptics, contrarians, deniers, whatever you want to call them. But if the media had represented the scientific community in an accurate way, they would have done that probably about 10 years ago.

Senator VOINOVICH. Chairman, I have no further questions.

Senator INHOFE. Thank you.

Mr. CARTER. Mr. Chairman, may I make a final comment regarding some of the things that Senator Boxer said and something Senator Voinovich said?

Senator INHOFE. Yes, you can do it on his time. He has another minute.

Mr. CARTER. The difficulty with the quotations that the Senator was reading to us is that many of them were not from science bodies; they were actually from commercial organizations. That doesn't condemn them outright obviously, but it means they are not being produced by bodies with science credibility. The second problem is because they are chosen quotations, nearly all of them are ambiguous. They may not be ambiguous in full context, but they are ambiguous as quoted.

That brings me to you, Senator Voinovich. When you say we are all here today to talk about global warming. Now, of course, we are, but I am astonished that there has been no attempt by anybody to tease that out. No scientist doubts that climate change happens. No scientist doubts therefore that global warming occurs from time to time.

But what we are actually here today to talk about is not global warming. It is human-caused global warming, and that distinction, pedantic as it may seem, is absolutely critical in the discussion. The press confused that, not I believe by intention but just because that is the way it is, because everybody knows we are talking about global warming, that it means human-caused global warming. Well, it doesn't.

To a scientist, global warming means the temperature is getting warmer. Why it is getting warmer, that is the question. The degree to which the human contribution and nearly all scientists will acknowledge there is a human contribution to that, but the degree of that with respect to natural climate change remains completely unknown and unquantifiable. That is where the argument is.

Ms. ORESKES. May I make a very brief response?

Senator INHOFE. First of all, in fairness to Senator Lautenberg, he is recognized at this time, and I will try to give each one of you a little bit of time when it is over.

Senator LAUTENBERG. I am willing to have comments repeated when Senator Boxer—is she gone? She is finished, OK. I am sorry the comments that are critical of her statements are not being heard by her.

Senator INHOFE. Well, Senator Lautenberg, I have to say that there was an attempt by almost each member of this panel to respond and they were unable to do it. I think it is only fair that you let them. They have come a long ways, particularly Dr. Carter.

Senator LAUTENBERG. Yes, well, we heard. We are pleased that they are here, even though there might be some differing views and a lot of them are contradictory.

Let me start off by asking the panel whether or not, I am sorry to do this, Mr. Chairman, but I feel compelled to. So I will just conclude by saying, wake up America. With all the hysteria, all the fear, all the phony science, could it be that manmade global warming is the greatest hoax ever perpetrated on the American people?

I will end with the comment, the words that I believe it is. Our distinguished Chairman made that speech in July 1903, 2003, I am sorry.

[Laughter.]

Senator LAUTENBERG. I remember in 1903, we weren't worried about global warming.

Senator INHOFE. Since you are correcting your dates there, let me also say I made that on the Senate floor of the Oklahoma State Senate in 1975, referring to the coming Ice Age.

Go ahead.

Senator LAUTENBERG. Let us see, OK. Well, it says 03 here, so I will throw this away.

Now, Dr. Deming, I am not Senator Boxer's clone, I promise. But in keeping with that, can I ask each one of you your view of whether or not this is a bad joke perpetrated on the American people, a hoax?

Mr. DEMING. Global warming?

Senator LAUTENBERG. Yes.

Mr. DEMING. Well, I wouldn't use the same word that Senator Inhofe used. I wouldn't use hoax because hoax implies it is deliberate.

Senator LAUTENBERG. Implies?

Mr. DEMING. Hoax implies it is a deliberate attempt to deceive. Instead, what we are dealing with is a psychological phenomenon. It is a mass delusion.

Earlier, you had mentioned or used the phrase something terrible is happening and fire in the house. We have a lot of problems in this country and worldwide.

Senator LAUTENBERG. You are going to be using more of my time than I am feeling applies here.

Mr. DEMING. Let me.

Senator LAUTENBERG. Well, then we finished with the description of hoax, I think.

Mr. DEMING. OK.

Senator INHOFE. I kind of like mass delusion. That is a good one.

[Laughter.]

Senator LAUTENBERG. Mr. Chairman, no one ever accused you of having a lack of words to describe your views, and I always enjoy them. It is amazing that we can be good friends and be so wrong.

Anyway, Dr. Schrag, a hoax, I can perhaps ask you.

Mr. SCHRAG. A hoax or a mass delusion, I guess if you call it a mass delusion, then I would count myself as among the deluded. The evidence is so clear. Carbon dioxide causes warming. The evidence is absolutely clear that carbon dioxide is higher now than it has been for millions of years of our history.

Earlier I heard the geologist on my right and left, and I am also a geologist, say that the geological thing to do would be to increase greenhouse gas emissions. That is pouring oil on fire. That is really big trouble although we today are in an Ice Age.

We have an ice sheet on Greenland. We have an ice sheet in Antarctica. We were in a bigger Ice Age 20,000 years ago, but we are still in an Ice Age. By warming the Earth as much as we are doing over the next century, we risk destabilizing those ice sheets, and once they start to go, I am not sure anybody can stop them. This

sort of thing, this is very serious and it is an issue of national security.

Senator LAUTENBERG. So you say that it couldn't be a hoax.

Mr. SCHRAG. It is certainly not a hoax.

Senator LAUTENBERG. Dr. Carter.

Mr. CARTER. I mentioned some of the players in this drama earlier, the IPCC, individual scientists, and I can't remember the third one, but there are a lot of them. Amongst that range of players, yes, there are some people who are deliberately perpetrating what they know to be untrue.

Senator LAUTENBERG. Do you think that global warming is a hoax being perpetrated?

Mr. CARTER. I am answering that, Senator Lautenberg. Yes, I think there are some people in the very large group of people that are commenting.

Senator LAUTENBERG. No; I asked, sir, if you think that it is a hoax.

Mr. CARTER. I think that in some cases, people are deliberately spreading misinformation on climate change yes, but that is not everybody and it is a small number of people.

Senator LAUTENBERG. Thank you.

Ms. ORESKES. And some of them are the people who deny it, so we could just say that.

Global warming is not a hoax, and it is not a mass delusion. I am not a psychologist, but if there is a psychological factor involved here, it is denial. We have overwhelming scientific evidence of the changes taking place on our planet, but some of us are reluctant to admit that because it has consequences that we need to deal with.

I am also a geologist, and I worked for several years as an exploration geologist in Australia. I think that the great insight that Roger Revelle had on this issue was his geological insight which is to say that as geologists, we were all trained to believe that humans were insignificant compared to the vastness of geological time and the magnitude of geophysical forces. But what Revelle realized in 1957 was that we had reached a historic moment where that was no longer true and where human activities were having an impact on a planetary scale. We have changed the chemistry of the atmosphere, and there are consequences across the board.

Senator LAUTENBERG. I think you also do not believe that it is a hoax.

Ms. ORESKES. I do not believe that it is a hoax.

[Laughter.]

Senator LAUTENBERG. Mr. Gainor, I was interested that your representation here is not simply as a reporter for the Washington Times.

Mr. GAINOR. Sir, I haven't worked for the Washington Times for more years than I care to count.

Senator LAUTENBERG. Oh, I didn't realize that.

Whose views do you represent?

Mr. GAINOR. I am director of the Business & Media Institute, and that is what it says on the invite. I obviously promote and what I am advocating for, I think, is very clear which is trying to

get more and better journalistic coverage on this issue to do a more balanced job.

Senator LAUTENBERG. OK, and I heard you describe things that you influenced your view in the news. It was that you live in an apartment and you don't drive an SUV, and therefore Al Gore is discredited a——

Mr. GAINOR. No, I am simply saying, Senator, that——

Senator LAUTENBERG. Well, that is what you are saying.

Mr. GAINOR [continuing]. Portraying me as somebody who hates the environment runs counter to that whole media mind set that everyone——

Senator LAUTENBERG. If the ownership of a particular car or type of house is the yardstick by which we measure that, I think you are on weak ground.

Last year, Phil Cooney, a career oil industry lobbyist, then serving as Chief of Staff at the Council of Environmental Quality was caught editing scientific findings on global warming to inject uncertainty where none was intended by the authors. That is a fairly inappropriate thing for the White House to approve, modifying findings of the Federal scientists. When we talk about Government control of the press, Mr. Gainor, and we talk about Government control of information that was produced being redacted or modified before it gets to the public, that is Government control also, is it not?

Mr. GAINOR. All governments control the information that comes out of their agencies.

Senator LAUTENBERG. So then it is all right if China——

Mr. GAINOR. If you try to disagree, you get killed.

Senator LAUTENBERG. Well, since you don't want to get killed, I don't want my grandchildren to get killed, then I don't want people who are affected by climate change to die earlier because the air is unsuitable, et cetera.

Is it correct to say that control by Government is an unacceptable condition and control is represented by massaging the data that is there in reports, repressing it, from a scientist's viewpoint?

Mr. GAINOR. You are asking if the Government Agencies can't modify reports from their own agency. I think you are asking the wrong person, but as far as injecting uncertainties——

Senator LAUTENBERG. Redaction is an acceptable process for making sure that the information that is being given to the public is modified in some way.

Mr. GAINOR. To cite actually a quote from Dr. Schrag, nobody knows what is going to happen about climate change.

Mr. SCHRAG. Exactly; nobody knows exactly what is going to happen.

Mr. GAINOR. The quote I have is nobody knows what is going to happen, specifically.

Senator INHOFE. Senator Lautenberg, your time has expired, and I think we have been fair to everyone.

Senator LAUTENBERG. Well, I think it was 30 seconds.

Senator INHOFE. Well, if you want 30 seconds.

A reminder, well, there is no one here to remind when we are going to have our business meeting.

[Laughter.]

Senator INHOFE. Let me do this. I know you have come from a long ways. We are actually 25 minutes over the time I said that this would come to a conclusion. I hope that hasn't caused an inconvenience to anyone.

I would like to give each one of you another minute, if you would like to, to respond to anything that was said here today. I would remind you that this hearing is not on the science of global warming. We have looked at it. We know that there is a differing opinion. We have had many hearings on this, many speeches on the floor.

But insofar as how it is being reported, if there are any further comments that this distinguished panel, each member, would like to make, I will give you the opportunity to do that at this time. Let us start with you, Mr. Gainor, and work the other way.

Mr. GAINOR. OK, well, first of all, thank you for this opportunity.

I think the big point that gets lost in all of this coverage is that there are competing opinions. You will hear journalists periodically admit to this. Andrew Revkin will talk about the murk or the uncertainties involved in the science. You will hear scientists about it. But somehow or another, we are supposed to view that there is a consensus when, in fact, there isn't.

For the scientists who dare disagree or for the pundits or public policy people who dare disagree, it is the responsibility of the media to do a better job covering that, trying to get that side out because this is a democracy and if we are going to possibly make the right decision on this issue, then we need to do so as well informed as possible.

I think it is the great opportunity for the committee to raise this issue, raise this opportunity for everyone to look at it and say this is not being done right; how can we do it better?

Senator INHOFE. Good, thank you.

Dr. Oreskes.

Ms. ORESKES. Thank you. I have enjoyed being here, and I am thrilled to discover that the U.S. Senate has a sense of humor.

I just want to say that——

Senator INHOFE. I could probably put you in front of some committees who don't.

Ms. ORESKES. Please don't.

I want to just emphasize, as a historian of science, that there is always uncertainty in any science, but the task of the Government, it seems to me, when it makes policy is to base those decisions on the best available scientific information. At this point in time, that information says that global warming is real and caused by human activities.

Now, Mr. Chairman, you raised the point of other causes such as the heat island effect and deforestation. Those are important, and I am in complete agreement with you about those causes. We know that those issues have to be addressed as well. But it is the consensus of our own United States National Academy of Sciences, the most distinguished group of scientists in America if not the world, that most, most, not only just a little bit but most of the observed warming of the last 50 years is likely—and they are careful; they are not alarmist; they are saying the best they can based on what

we know—is likely to have been due to the increase in greenhouse gas concentrations.

Thank you.

Senator INHOFE. Thank you very much.

Dr. Carter?

Mr. CARTER. Senator Inhofe, I would really just like to say thank you for the privilege of participating in this discussion today, and I would like to pay your tribute to your chairmanship, not only today but over the last several years of this committee. I would like people to understand that this committee worldwide has had an impact, and though Senator Inhofe is leaving, it has been instrumental in making sure that some of the other side of the story on climate change remains in the public domain. I think that is an enormous achievement, sir, and I congratulate you for it.

I hope that under Senator Boxer, the committee is going to continue to be looked at worldwide for leadership and advice on this issue of climate change, and I wish you well in seeking a national policy which is an incredibly difficult thing to do, to grapple with this issue.

Last, I commend to you the partnership that you were instrumental in starting, the Asia-Pacific partnership, as one of the ways forward. I think that is a very good solution.

Senator INHOFE. Thank you. I commented about that, and I believe it is too, and that it brings in the undeveloped nations.

Dr. Schrag.

Mr. SCHRAG. Senator Inhofe, thank you.

The idea that in terms of media reporting, there has been a concern that somehow scientists are afraid to speak out if they oppose the consensus view, and I think that is important to address here. I can only address it in a personal sense which is my own career. I am a tenured professor at Harvard, and I owe that success in my career partially to speaking out, going against my community on several hypotheses, and I was able to defend those hypotheses with observations, with calculations that ultimately convinced the community that I was correct. So it was, in fact, the opposition to the consensus view that actually gave me fame and it is why I am here today.

Therefore, I think it is very important to recognize that the motivation for most of the scientific community is not to just follow the party line but, in fact, if you can support those views, you encouraged to speak out because if you do so, you are considered a great hero.

Senator INHOFE. Well, thank you very much, Dr. Schrag?

Dr. Deming.

Mr. DEMING. As I make a final comment, I am kind of in astonishment. We are sitting here at the apex of 10,000 years of human civilization. The United States and the rest of the developed world is the most prosperous, most knowledgeable, most technological society as ever existed on Earth, and we sit here scared to death of something that doesn't even really exist.

Senator Lautenberg talked about something terrible is happening, fire in the house. As far as I know, there isn't a single person anywhere on Earth that has ever been killed by global warming. There is not a single species that has gone extinct. In fact, I

am not aware really of any deleterious effects whatsoever. It is all speculation.

We have on the other hand, throughout the world and in this country, real problems. We have poverty. We have disease. We have things that we could do to really help people. Global warming is human folly.

Senator INHOFE. Thank you very much, Dr. Deming.

Let me thank all five of you for taking the time and for extending the time that you committed to make it here and thank you for your input.

We are adjourned.

[Whereupon, at 12:20 p.m., the committee was adjourned.]

[Additional statements submitted for the record follow:]

STATEMENT OF DAVID DEMING, PH.D., UNIVERSITY OF OKLAHOMA, COLLEGE OF EARTH AND ENERGY

Mr. Chairman, members of the committee, and distinguished guests, thank you for inviting me to testify today. I am a geologist and geophysicist. I have a bachelor's degree in geology from Indiana University, and a Ph.D., in geophysics from the University of Utah. My field of specialization in geophysics is temperature and heat flow. In recent years, I have turned my studies to the history and philosophy of science. In 1995, I published a short paper in the academic journal Science. In that study, I reviewed how borehole temperature data recorded a warming of about 1 °C in North America over the last 100 to 150 years. The week the article appeared, I was contacted by a reporter for National Public Radio. He offered to interview me, but only if I would state that the warming was due to human activity. When I refused to do so, he hung up on me.

I had another interesting experience around the time my paper in Science was published. I received an astonishing email from a major researcher in the area of climate change. He said, "We have to get rid of the Medieval Warm Period."

The Medieval Warm Period (MWP) was a time of unusually warm weather that began around 1000 AD and persisted until a cold period known as the "Little Ice Age" took hold in the 14th century. Warmer climate brought a remarkable flowering of prosperity, knowledge, and art to Europe during the High Middle Ages.

The existence of the MWP had been recognized in the scientific literature for decades. But now it was a major embarrassment to those maintaining that the 20th century warming was truly anomalous. It had to be "gotten rid of."

In 1769, Joseph Priestley warned that scientists overly attached to a favorite hypothesis would not hesitate to "warp the whole course of nature." In 1999, Michael Mann and his colleagues published a reconstruction of past temperature in which the MWP simply vanished. This unique estimate became known as the "hockey stick," because of the shape of the temperature graph.

Normally in science, when you have a novel result that appears to overturn previous work, you have to demonstrate why the earlier work was wrong. But the work of Mann and his colleagues was initially accepted uncritically, even though it contradicted the results of more than 100 previous studies. Other researchers have since reaffirmed that the Medieval Warm Period was both warm and global in its extent.

There is an overwhelming bias today in the media regarding the issue of global warming. In the past 2 years, this bias has bloomed into an irrational hysteria. Every natural disaster that occurs is now linked with global warming, no matter how tenuous or impossible the connection. As a result, the public has become vastly misinformed on this and other environmental issues.

Earth's climate system is complex and poorly understood. But we do know that throughout human history, warmer temperatures have been associated with more stable climates and increased human health and prosperity. Colder temperatures have been correlated with climatic instability, famine, and increased human mortality.

The amount of climatic warming that has taken place in the past 150 years is poorly constrained, and its cause—human or natural—is unknown. There is no sound scientific basis for predicting future climate change with any degree of certainty. If the climate does warm, it is likely to be beneficial to humanity rather than harmful. In my opinion, it would be foolish to establish national energy policy on the basis of misinformation and irrational hysteria.

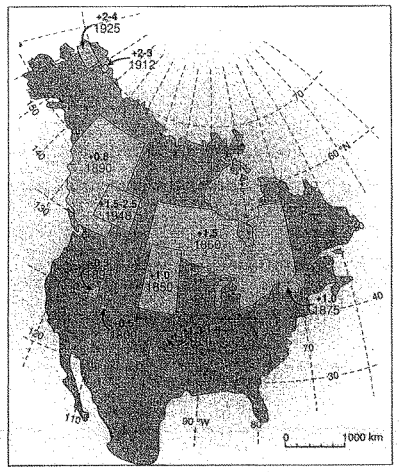
Climatic Warming in North America: Analysis of Borehole Temperatures

David Deming

The primary database that has been used to assess climatic warming over the last 100 to 150 years is the history of surface air temperatures (SATs) as recorded on a daily basis for the purpose of weather forecasting (*1*). Hansen and Lebedeff (*2*) found a mean global increase of ~0.5° to 0.7°C in SAT over the period 1880 to 1985. Similar results were obtained by Ellsaesser *et al.* (*3*) and Jones *et al.* (*4*). However, the observed rise in SAT (~0.5°C) is significantly lower than most predictions of warming resulting from increased concentrations of greenhouse gases in Earth's atmosphere. Theoretical estimates of the mean global rise in SAT above a pre-1765 mean that should have taken place by 1985 range from ~0.6° to 1.2°C with a nominal "best" estimate of ~0.8° to 0.9°C (*5*, *6*).

An obvious explanation for the apparent discrepancy between theoretical predictions and observations is the possibility that a significant portion of the warming may have taken place before the inception of the reliable instrumental record. The global SAT record before about 1870 is sparse to nonexistent; the SAT history of North America can be reliably reconstructed back only to 1880 (*2*). The limitation of the SAT record to reveal climatic trends before the late 1800s is particularly grievous because it is unclear if the modest global warming trend of the last 100 years is a rise above a long-term mean that may be related to increasing concentrations of greenhouse gases, or simply a return to normal temperatures after a cold spell over the last part of the 19th century. Interpretation of SAT trends is ambiguous because the instrumental record is not long enough to determine the long-term mean and thus assess if recent data represent significant departures from it.

Climatic information that is missing from the truncated SAT record may be found in borehole temperature profiles. Changes in ground surface temperature (GST) propagate into the subsurface, exponentially decreasing in amplitude with increasing time and depth. The solid Earth is a low-pass filter that efficiently and continuously filters out daily and seasonal changes in GST while maintaining a running record of the long-term mean and departures from it. If the average GST increases over a period of several years, the normal upward flux of heat in the solid Earth is lessened or even reversed, leading to anomalously high temperatures and an energy imbalance in the upper 100 m or so of the Earth's crust (*7*–*12*).



Average GST changes (in degrees celsius) with respect to the long-term mean in North America and approximate starting dates (see table). Starting dates are uncertain by approximately +25, –50 years, depending on constraints available in individual studies.

Unlike proxy methods for estimating temperature change (such as tree ring thickness, oxygen isotopes, glacier termini, and so forth), changes in subsurface temperature are a direct thermophysical consequence of changes in GST (*7*). Studies to date have shown that changes in SAT tend to be tracked in GST changes (*10*, *13*, *14*), and GST is a valid indicator of climate change (just as sea-surface temperature is), regardless of any inferred relation with SAT.

Although the methodology is conceptually simple, interpretation of borehole temperature profiles may be problematical. Subsurface temperatures that appear to be anomalously warm (or cold) may be the result of a number of causes other than climate. Changes in thermal conductivity and lateral gradients in solar insolation related to factors such as vegetation and topography may produce apparent warmings in the upper sections of boreholes that mimic increases in GST. Even if GST has changed, the change may not be from a change in climate but could simply reflect a change in land use (for example, deforestation). Groundwater flow may also introduce interpretation errors in thermal profiles thought to be purely conductive (*15*).

The possibility of alternative hypotheses implies that it is often difficult to draw unique conclusions concerning GST histories from analysis of borehole temperatures. However, such is usually the case for other types of scientific data: To arrive at unique interpretations, one must carefully consider alternative hypotheses and then reject them as circumstances permit.

Since Lachenbruch and Marshall (*7*) first pointed out the dramatic warming that has taken place on the North Slope of Alaska, there has been a concerted effort to estimate the magnitude and timing of GST changes throughout North America (see table) (*16*). Although individual boreholes have been found that are consistent with a decrease or no significant change in GST, averages inferred from groups of boreholes have all revealed warming trends. A collation of studies to date shows that the average GST increase in the eastern part of the North American continent is ~1.0° to 1.5°C; the average increase in the western half is generally lower (except at high latitudes in Alaska). The inception of warming in the eastern half of North America appears to date from the middle 19th century, whereas the warming in the west appears to start near the beginning of the 20th century or later (see figure).

Because of the inherent ambiguity in interpretation, it has been heretofore problematical to individually attribute GST increases to climatic causes. However, the assembly of the data now shows that it is difficult to argue that the inferred warming is a

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Estimated GST changes in North America

Site	Latitude (°N)	Longitude (°W)	GST change (°C)*	Approximate inception date†	Number of boreholes	Depth (m)	Reference
Eastern and central Canada	45–57	70–105	+1.5	1860	126	~150–3000	(22)
Western Canada	50–69	115–135	+0.8	1890	94	150–1000	(22)
Western Utah	39.5–41.5	112–114	+0.3	1893	6	160	(10)
North Slope, Alaska	68–70	150–156	+2.0–4.0	1925	7	500–800	(17, 23)
Prudhoe Bay, Alaska	70.3	148.6	+2.0–3.0	1912	9	~750	(23, 24)
Southeast Utah	38.5–39.0	110–111	+0.5	1890	9	300–500	(27)
Northern Great Plains, United States	40–50	96–104	+1.0	1850	45	?	(28)
Northeast United States	43.2–45.4	68.5–74.3	+1.0	1875	10	213–710	(25)
Alberta, Canada	51–56	110–120	+1.5–2.5	1948	42	30–220	(26)
North central Oklahoma	36.36	96.70	+1.5–1.5	1700–1835	6	880	(27)

*Above a long-term mean. †Estimated dates should be considered uncertain by at least +25, –50 years.

coincidental collection of spurious effects. The estimated GST changes for North America exhibit latitudinal amplification similar to that predicted by general circulation models and found in Pleistocene and Holocene climate changes (*18*). General circulation models also tend to forecast warmings in North America that generally are higher on the eastern section of the continent, although this pattern is not so certain as latitudinal amplification (*19*). The most parsimonious interpretation of the GST studies as a whole is that they represent a continental-scale climatic warming. Alternative interpretations invoking unwieldy and coincidental collections of phenomena, such as deforestation or changes in precipitation, fail the test of simplicity.

Warming estimated from borehole temperature profiles in North America is consistent with estimates of increases in SATs from 1880 to 1987 made by Hansen and Lebedeff (*2*). The trend of SAT increases for 1880 to 1987 estimated from Hansen and Lebedeff's (*2*) data is 0.9°C for western Canada, 1.0°C for eastern Canada, 0.8°C for the western United States, and 0.5°C for the eastern United States (boxes 6, 7, 15, and 16, respectively, of their model). However, in eastern North America (see figure), where the apparent onset of warming predates the meteorological record, changes in GST (+1.0° to 1.5°C) are significantly higher than increases in SAT (+0.5° to 1.0°C). It is therefore possible that the meteorological record in North America may underestimate the magnitude of warming that has taken place, simply because a significant portion of the warming may have occurred before the reliable SAT record began in the late 19th century.

An objection could be raised that significant 19th-century warming is inconsistent with theoretical predictions of greenhouse scenarios wherein the warming accelerates with time. However, the compounding effect of natural variability must be taken into account (*20*). For example, it may be possible that the latter half of the 19th century was a period of natural warming, whereas the 20th century is a period of natural cooling that has masked the greenhouse signal.

Studies of borehole temperatures provide a relatively good constraint on the total magnitude of warming; inferences concerning the date at which the warming trend began and the rate at which it proceeded are much less certain. The available evidence from both GST and SAT studies is consistent with a major climatic warming over the North American continent that likely began near the middle of the 19th century in the east, later in the west. The magnitude of warming in eastern North America estimated from changes in GST significantly exceeds that estimated from changes in SAT. The sum of the evidence is consistent with theoretical predictions of warming related to the accumulation of greenhouse gases in the Earth's atmosphere from anthropogenic activities. However, the magnitude of the observed warming (~1°C) in North America is still within the range of estimated natural variability (~±1°C) for the Holocene (*21*). A cause and effect relationship between anthropogenic activities and climatic warming cannot be demonstrated unambiguously at the present time.

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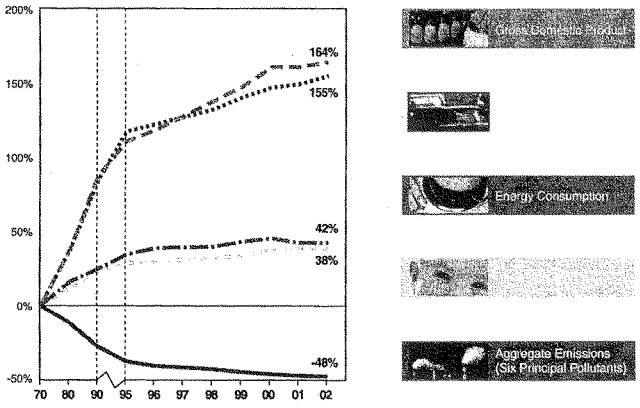
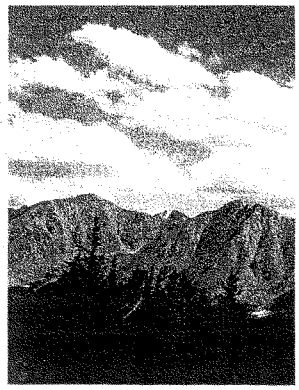
30. A substantial portion of this research was funded by the National Institute for Global Environmental Change of the U.S. Department of Energy (DOE) through the South Central Regional Center at Tulane University. Financial support does not constitute an endorsement by DOE of the views expressed in this Perspective. Financial support was also received from the National Science Foundation. The author thanks A. Lachenbruch of the U.S. Geological Survey and an anonymous reviewer for comments that helped to improve the manuscript.

Comparison of Growth Areas and Emissions



Between 1970 and 2002, gross domestic product increased 164 percent, vehicle miles traveled increased 155 percent, energy consumption increased 42 percent, and U.S. population increased 38 percent. At the same time, total emissions of the six principal air pollutants decreased 48 percent.

EPA used updated, peer-reviewed models that estimate VOC, NO_x, CO, and PM emissions from highway vehicles and nonroad engines and and better represent real-world conditions, such as more rapid accelerations and faster highway speeds. The emissions estimates generated by the new highway vehicle model are derived from actual tailpipe measurements from thousands of vehicles. Another change in the reporting of emissions trends is that emissions from wildfires and prescribed burning are not considered in the estimates of emission change. This is due to the large variability in the year-to-year levels of these emissions and the relatively small impact these distant emissions have on most monitoring locations. Because of the high degree of uncertainty in predicting emissions for these fires, their emissions have not been projected for 2002 for PM, CO, and VOCs. These emissions will be estimated when 2002 acres-burned data become available. However, fire



The New York Times

June 4, 2006 Sunday
Late Edition - Final

SECTION: Section 4; Column 1; Week in Review Desk; IDEAS & TRENDS; Pg. 16

LENGTH: 1020 words

HEADLINE: Climate Change: The View From the Patio

BYLINE: By HENRY FOUNTAIN

BODY:

SCIENTISTS had some sobering news last week about the potential impact of climate change, and it didn't come from the foot of a shrinking glacier in Alaska or the shores of a tropical resort where the rising ocean is threatening the beachfront bar.

It came from a North Carolina forest, at an experimental plot where scientists can precisely control the concentration of carbon dioxide in the air. Duke researchers discovered that when exposed to higher levels of CO2, the greenhouse gas released in ever-increasing quantities from human activity, **poison ivy** goes haywire.

The researchers found that the weedlike plant grew much faster under CO2 conditions similar to those projected for the middle of the century. The plant also produced a more noxious form of its rash-causing chemical: a more poisonous **poison ivy.**

"We were surprised to find it," said William H. Schlesinger, a Duke professor who took part in the study.

While much of the discussion of climate change focuses on the big picture of rising sea levels and increasing global air and ocean temperatures, the Duke finding helps explain the smaller picture. Climate change may be a real nuisance in the backyard.

Poison ivy is only the latest entry on a growing list of pests, both plant and animal, that may be nurtured. Japanese beetles, a voracious eater of turf and trees, live longer under higher levels of carbon dioxide. The ranges of other invasive insects, like fire ants, are expected to increase as the planet warms. Disease-carrying ticks have already been shown to have moved northward in Sweden. Mosquitoes could fly farther, too.

Poplars and birch trees are flowering earlier in New England, and some **global warming** forecasts predict that the region's sugar maples will eventually disappear. Elevated carbon dioxide has been shown to cause ragweed and certain pine trees to produce more pollen. "It's not a pretty picture," said Paul R. Epstein, associate director of the Center for Health and the Global Environment at Harvard Medical School.

While there is still disagreement over the extent of **global warming** and its potential to reshape the environment, Dr. Epstein noted that many of the changes that he and other scientists are tracking fall outside that debate. "They're just a result of carbon dioxide stimulation, something that no one disputes is rising," he said.

Poison ivy isn't the only plant whose growth is encouraged by additional carbon dioxide. In the Duke experiments, Dr. Schlesinger said, the trees themselves show an increase in growth under carbon dioxide concentrations roughly 50 percent higher than current conditions. "If you're a timber products company, you look at that favorably," he said.

Dr. Epstein, who has studied ragweed growth under increased carbon dioxide, said, "There are some side effects for public health as well as ecology." More cases of hay fever are likely to result from the additional pollen from ragweed and pine cones; a study at the same Duke forest showed that both plants produced more pollen under higher levels of CO2.

Increases in asthma have already been detected, Dr. Epstein said, as pollen and other airborne allergens combine with particles from

truck and bus exhaust to reach deep into the lungs.

Jonathan Patz, of the Nelson Institute and the department of population health sciences at the University of Wisconsin, summed up the situation. "The bottom line is that there are many major health outcomes that are highly sensitive to climate change," he said.

But climate change, Dr. Patz said, involves more than just temperature. Extreme weather -- harsher droughts on one end, and heavier rainfalls on the other -- is expected to become more common.

That could lead to more outbreaks of disease. Dr. Patz led a study of episodes of waterborne disease in the United States in the second half of the 20th century and found that most of them followed periods of very heavy rainfall. One of the worst cases was an outbreak of parasitic infections in 1993 that sickened 400,000 people in Milwaukee. This was preceded by the heaviest rainfall month in the city in 50 years.

More intense rainfall "is something that water managers are going to have to take seriously," Dr. Patz said.

Extreme dry conditions can lead to disease as well. Dr. Epstein said that the 1999 outbreak in New York of West Nile virus coincided with a severe drought. The mosquito that transmits the virus between animals and humans finds partly evaporated, filthy pools of water more suitable for breeding.

Other insects flourish in the seesawing between extreme wet and extreme dry conditions, Dr. Epstein said. "That's exactly what the bugs love," he said. "They like it dried out, and then rain that floods an area" and creates pools of standing water for breeding. "In the Northeast, that's what gives you outbreaks of equine encephalitis," he said, referring to another mosquito-borne disease.

Mosquitoes are pests, of course, as are Japanese beetles, ticks and **poison ivy,** for that matter. "It's not at all surprising that pests get pestier" because of changing environmental conditions, said May R. Berenbaum, head of the department of entomology at the University of Illinois at Urbana-Champaign, who was involved in the Japanese beetle studies. "They have this opportunistic life history."

Thomas E. Lovejoy, president of the Heinz Center, a Washington research group on environmental policy, said: "When you're sending ripples through the ecosystem, I think what you do is tilt the balance a bit in favor of the pests. It begins to sound sort of biblical."

Mr. Lovejoy said that the increase in nuisance species, and the potential disappearance of other, much-prized species, may help raise awareness of climate change.

"The really strong reaction in the New England states about the prospect of losing the sugar maple is a great example of that," he said.

"Part of that is that it is a fall tourist magnet, and it gives us a little bit of syrup in the spring. But the reaction also is, 'Hey, this is part of where I live, and it won't be there.' "

URL: http://www.nytimes.com

GRAPHIC: Drawing (Drawing by Lutz Widmaier)ChartMORE MOSQUITOES, MORE PLACES -- They like weather that swings between drought and flooding rain, which gives them standing water in which to breed.MORE POLLEN -- Plants like ragweed and the loblolly pine are expected to produce more.MORE ANTS -- Ranges of some species may spread northward as the climate warmsMORE ROBUST **POISON IVY** -- It grows faster and more potent as CO2 levels rise.MORE TICKS -- Studies have shown they are moving north.

LOAD-DATE: June 4, 2006

X-Original-To: ddeming@gcn.ou.edu
Delivered-To: ddeming@gcn.ou.edu
Date: Wed, 22 Nov 2006 13:09:09 -0500
To: David Deming <ddeming@gcn.ou.edu>
From: "William H. Schlesinger" <schlesin@duke.edu>
Subject: Re: CO2 and Plant Growth

Most plants using the C-3 photosynthetic pathway (which is most plants) will respond positively to rising CO2, if they have adequate supplies of water, nutrients, etc. Some C-4 grasses show no response.

At 12:50 PM 11/22/2006, you wrote:

> Hi,
>
> I'm looking at a NY Times article dated June 4, 2006,
> that describes some of your research on the effect of
> CO2 on plant growth.
>
> The article mentions that increased concentrations
> of atmospheric CO2 will affect poison ivy.
>
> In the article, you are quoted as stating that increased
> concentrations of CO2 will also cause trees to grow faster.
>
> My question is: is the same true for other plants, including
> common crops such as wheat, oranges, tomatoes, etc?
>
> Thanks.
>
> --DD
> --
>
> David Deming
> Associate Professor
> College of Arts and Sciences
>
> Mailing Address:
>
> College of Earth and Energy
> University of Oklahoma
> 100 E. Boyd St., Room 510
> Norman, OK 73019
> USA
>
> phone: 405-325-6304
>
> email: ddeming@ou.edu
> ---
>
> Stupidity...is of two sorts, one natural, the other acquired;
> the one the effect of ignorance, the other of instruction.
> Now of these two sorts of ignorance or stupidity, which
> is the most incurable? The latter. The man who knows nothing
> may learn; it is only requisite to excite in him the desire of
> knowledge. But he who is falsely learned, and has by
> degrees lost his reason when he thought to improve it,
> has purchased his stupidity at too dear a rate ever to
> renounce it.
>
> --- Claude Adrien Helvetius (1715-1771)

Paper: Tulsa World (OK)
Title: Professor's Bigfoot research makes him a campus outcast
Date: November 4, 2006

POCATELLO, Idaho -- **Jeffrey Meldrum** holds a Ph.D. in anatomical sciences and is a tenured professor of anatomy at Idaho State University.

He is also one of the world's foremost authorities on Bigfoot, the mythical smelly ape-man of the Northwest woods. And Meldrum firmly believes the lumbering, shaggy brute exists.

That makes him an outcast on the 12,700-student campus, where many scientists are embarrassed by what they call Meldrum's "pseudo-academic" pursuits and have called on the university to review his work with an eye toward revoking his tenure.

Meldrum, 48, spends most of his days in his laboratory in the Life Sciences Building, analyzing more than 200 jumbo plaster casts of what he contends are Bigfoot footprints.

For the past 10 years, he has added his scholarly sounding research to a field full of sham videos and supermarket tabloid stories. And he is convinced he has produced a body of evidence that proves there is a Bigfoot.

"It used to be you went to a bookstore and asked for a book on Bigfoot and you'd be directed to the occult section, right between the Bermuda Triangle and UFOs," Meldrum said. "Now you can find some in the natural science section."

Martin Hackworth, a senior lecturer in the physics department, called Meldrum's research a "joke."

"Do I cringe when I see the Discovery Channel and I see Idaho State University, Jeff Meldrum? Yes, I do," Hackworth said.

John Kijinski, dean of arts and sciences, said there have been "grumblings" about Meldrum's tenure, but no formal request for a review.

"He's a bona fide scientist," Kijinski said. "I think he helps this university. He provides a form of open discussion and dissenting viewpoints that may not be popular with the scientific community, but that's what academics (is) all about."

On campus, Meldrum -- himself a hulking figure, with a mop of brown hair, a bristly silver mustache, and a black T-shirt with a silhouette of a hunchbacked, lurking Bigfoot -- gets funny looks and the silent treatment from other scientists and professors.

Over the summer, more than 30 professors signed a petition criticizing the university for hosting a Bigfoot symposium where Meldrum was the main speaker.

He pays for his research with a $30,000 donation from a Bigfoot believer.

Still, Meldrum has a distinguished supporter in Jane Goodall, the world-famous authority on African chimpanzees. Her blurb on the jacket of Meldrum's new book, "Sasquatch: Legend Meets Science," lauds him for bringing "a much-needed level of scientific analysis" to the Bigfoot debate.

"As a scientist, she's very curious and she keeps an open mind," said Goodall spokeswoman Nona Gandelman. "She's fascinated by it."

When not in the lab, Meldrum heads for the woods of Washington state and Northern California, where he has collected what he says are footprints, hair and feces from the ape-man.

Meldrum said he dreams of one day bringing back the proof to silence the "stuffy academics."

"Is the theory of exploration dead?" he asked. "I'm not out to proselytize that Bigfoot exists. I place legend under

scrutiny and my conclusion is, absolutely, Bigfoot exists."

Author: JESSE HARLAN ALDERMAN Associated Press
Section: News
Page: A8

SHOW: CBS Evening News 6:30 PM EST CBS

December 27, 2004 Monday

LENGTH: 78 words

HEADLINE: Experts say tsunamis could become more common

ANCHORS: DAN RATHER

BODY:

DAN RATHER, anchor:

Climate experts warned today that tsunamis could become more common around the world and more dangerous.

They cite a number of factors, including a creeping rise in sea levels believed to come from **global warming** and growing populations along coastal areas.

You're watching the CBS EVENING NEWS. And up next, all they wanted was to spend Christmas with loved ones. So why did tens of thousands of Americans spend the holiday at airports?

(Announcements)

LOAD-DATE: December 28, 2004

DAVID DEMING

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RESEARCH GRANTS -- EXTERNAL

National Science Foundation Grant EAR-9909277, Fluids in the Upper Continental Crust: Static or Dynamic?, 3/1/2000-2/28/2003, $164,029.

Petroleum Research Fund Grant # 28390-AC8, "Overpressures, Temperature, and Hydrocarbon Generation in the Anadarko Basin II", 5/1/97-8/31/99, $50,000.

Petroleum Research Fund Grant # 28390-AC8, "Overpressures, Temperature, and Hydrocarbon Generation in the Anadarko Basin", 9/1/94-2/28/97, $50,000.

National Institute for Global Environmental Change, "Climate Change in North Central Oklahoma from Analysis of Borehole Temperatures", 7/1/93 - 1/95, $46,700.

National Science Foundation Grant # EAR-9219886 "Thermal Anomalies and Fluid Flow in the Continental Crust", 3/1/93-12/31/95, $95,518.

Petroleum Research Fund Grant # 25822-G2, "Thermal Histories of Sedimentary Basins", 5/1/92-8/31/94, $18,000.

Petroleum Research Fund, Undergraduate Supplement to Grant # 25822-G2, 5/1/92-8/31/94, $3000.

Petroleum Research Fund, Summer Fellowship for Visiting Faculty (w/ K. Cercone), 1/1/94-4/30/94, $5000. supplement to PRF Grant # 25822-G2

U.S. Geological Survey Branch of Petroleum Geology, "Analysis of Vitrinite Reflectance Data, North Slope of Alaska", 1992-93, $5000.

RESEARCH GRANTS -- INTERNAL

University of Oklahoma, Undergraduate Research Grant (w/ J. Matthew Herrin), 1995-96, $450.

University of Oklahoma, Undergraduate Research Grant (w/ J. Matthew Herrin), 1994-95, $500.

University of Oklahoma, Undergraduate Research Grant (w/ Edward McSweeney), 1993, $500.

University of Oklahoma, Junior Faculty Summer Fellowship, 6/92-8/92, $5000.

STATEMENT OF DANIEL SCHRAG, PH.D., LABORATORY FOR GEOCHEMICAL OCEANOGRAPHY, DEPARTMENT OF EARTH AND PLANETARY SCIENCES, HARVARD UNIVERSITY

Thank you to the Senators and to the staff members of the committee for inviting me to speak here today. I am a professor at Harvard University in the Department of Earth and Planetary Sciences and in the Division of Engineering and Applied Sciences. I also direct the Harvard University Center for the Environment, which allows me to work with faculty in public health, public policy, economics, business, law and a variety of other disciplines.

The questions before this committee today are whether press coverage of global warming in this country has portrayed accurately the state of scientific knowledge and whether the press has properly framed the issue for the public and for decision makers like yourselves. I am hesitant to generalize, as reporting on this issue is quite variable. I think it is safe to say that press reports are accurate when they present the strong consensus that exists among climate scientists that global warming is occurring, and when they describe some of the risks we face. When I have taken issue with press coverage of global warming, it is usually because the issue is presented as a debate between "believers" and "skeptics." Articles often give a voice to extreme views, rarely evaluating credentials or credibility. The public is left trying to decide whether global warming is real based on highly technical arguments, and left uncertain whether corrective action is necessary.

I think the proper framing of this issue is quite different: There is no serious debate about whether the earth will warm as carbon dioxide levels increase over this century—it will. What is difficult to predict is exactly how much warming will occur, and exactly how that will affect human society. The media does not usually explain this distinction very well. I would like to see the press raise the same question used for other issues of national security: Are the risks of severe consequences sufficient to warrant taking preventative action?

Humans are changing the amount of carbon dioxide in the atmosphere, mostly from burning of coal, oil and gas, with deforestation also playing a significant role. The current level, in excess of 380 parts per million (ppm), is higher than it has been for at least the last 650,000 years, and perhaps for tens of millions of years (Fig. 1). To put it differently, we are experiencing higher CO_2 levels now than any human being has ever seen in the history of the earth; and over the next 100 years, without substantial changes in the trajectory of energy technology or economic development, we will see atmospheric CO_2 rise to 800 to 1000 ppm, roughly triple the pre-industrial level. Carbon dioxide is a greenhouse gas. Its presence in planetary atmospheres causes warming of planetary surfaces; an extreme example is the CO_2-rich atmosphere of Venus, which is responsible for its surface temperature in excess of 460 °C.

The question that confronts us now is how the rise of CO_2 on this planet will affect our climate, not over millions or even thousands of years but over decades and centuries. We know that, coincident with the unprecedented rise in CO_2 over the last century, we have seen a rise in global temperatures. We know from Lonnie Thompson's work on tropical glaciers that this warming is not part of any natural cycle (Fig. 2). But this does not address the question of what will happen as CO_2 levels continue to rise. To answer this question, climate scientists have constructed models that represent the best understanding of the climate system from the last century of observations. These models tell us that climate change in this century may be dramatic, and perhaps even catastrophic. These models are not perfect—but this is not surprising as they are attempting to make predictions about an atmospheric state that no human being has ever seen. They remain an essential tool for exploring future scenarios, but we must also consider evidence for climate change from the geologic past. This is the major area of my research. I cannot cover it today in much detail, but let me simply say that lessons from earth history are surprisingly consistent, whether from warm climates or cold, whether over millions of years or thousands: our climate system is very sensitive to small perturbations (Fig. 3). And human activities represent a large perturbation, sending our atmosphere to a state unlike any seen for millions of years.

The important point is that the uncertainty in the climate models should not comfort us—just the opposite. Our best observations from earth history suggest that the earth is more sensitive to an increase in greenhouse gases than most of the models, and therefore that climate change may be worse than most of the models predict.

A good example comes from the question of whether Europe was slightly warmer than it is today during the medieval warm period, roughly 1,000 years ago. Some have suggested that such natural variability means that we don't need to worry about anthropogenic climate change in the future. Ironically, the logical conclusion, if indeed Europe was slightly warmer 1,000 years ago, is that we should be terrified

about the next 100 years. We know that the natural forcing 1,000 years ago, mostly changes in solar and volcanic activity, was small relative to the rise in CO_2 over the last 100 years, and tiny compared to what will happen in the next 100 years. So if Europe became much warmer 1,000 years ago in response to such miniscule forcing, we are in very, very big trouble.

Getting back to the question of the media, I think that the press, in general, could do a much better job in explaining to the public that uncertainty in our predictions of future climate change does not cast a shadow on the science, but rather is inevitable given the scale of the experiment we are doing on our planet. A notable exception is a recent cover article on global warming in The Economist in which the author, Emma Duncan, portrays global warming as an insurance problem. We buy insurance for our house not because we expect it to burn down, but because we could not afford the consequences if it did. Similarly, we should take immediate action to protect ourselves from future climate change not because we know it will be catastrophic, but because it a consensus of experts think that there is a substantial likelihood it will be catastrophic if no actions are taken. Moreover, the response time of oceans, glaciers, the atmosphere, and even our own energy technology means that we are confronting systems with huge momentum, and we will not have time to avoid a catastrophe once we are absolutely certain that one will occur.

Many possible tipping points have been identified in the climate system, each with large uncertainty about exactly when they will happen but also carrying enormous costs to our society. Good examples include the collapse of the Greenland Ice Sheet, causing more than 20 feet of sea level rise (Fig. 4), the early melting of mountain snow that provides the natural water storage for a large fraction of the world's population (including most of our western states), or the melting of permafrost in the tundra which might release hundreds of billions of tons of carbon dioxide to the atmosphere currently stored in frozen soils.

In light of these dangers, and in light of the growing evidence that serious harm from human-caused climate change is already occurring, I'd like to ask the climate skeptics here today this question: Do you really expect us to gamble our planet, our entire way of life, on your arguments that climate change will be gentle on our society? What are the consequences if you are wrong? If the Greenland Ice Sheet began to show signs of abrupt collapse, do you really think we could engineer a way to stop it? Whatever the probability, and I fear that it is much higher than many people think, the point is that it represents an unacceptable risk.

A more responsible question would be to ask what is the insurance premium? How much do we have to sacrifice today to prevent a catastrophe in the future? We do this sort of analysis all the time with homeland security and other issues that, like global warming, also affect our national security. With terrorism, we cannot be sure when, where, or even if an attack will occur, but we make great effort to reduce the risk at a huge cost to our economy. Relative to these costs, the price of climate change mitigation through investment in our energy infrastructure is minor, probably amounting to a continuing investment, over time, of less than 1 percent of our gross domestic product. And like many such actions, there are additional benefits to our military and to our economy that we obtain as we reduce our dependence on foreign sources of oil and gas. Developing and implementing advanced energy technologies that do not put carbon dioxide into the atmosphere is a grand challenge facing our society, but is also a remarkable business opportunity. America should lead in this new global market; we cannot afford to do otherwise.

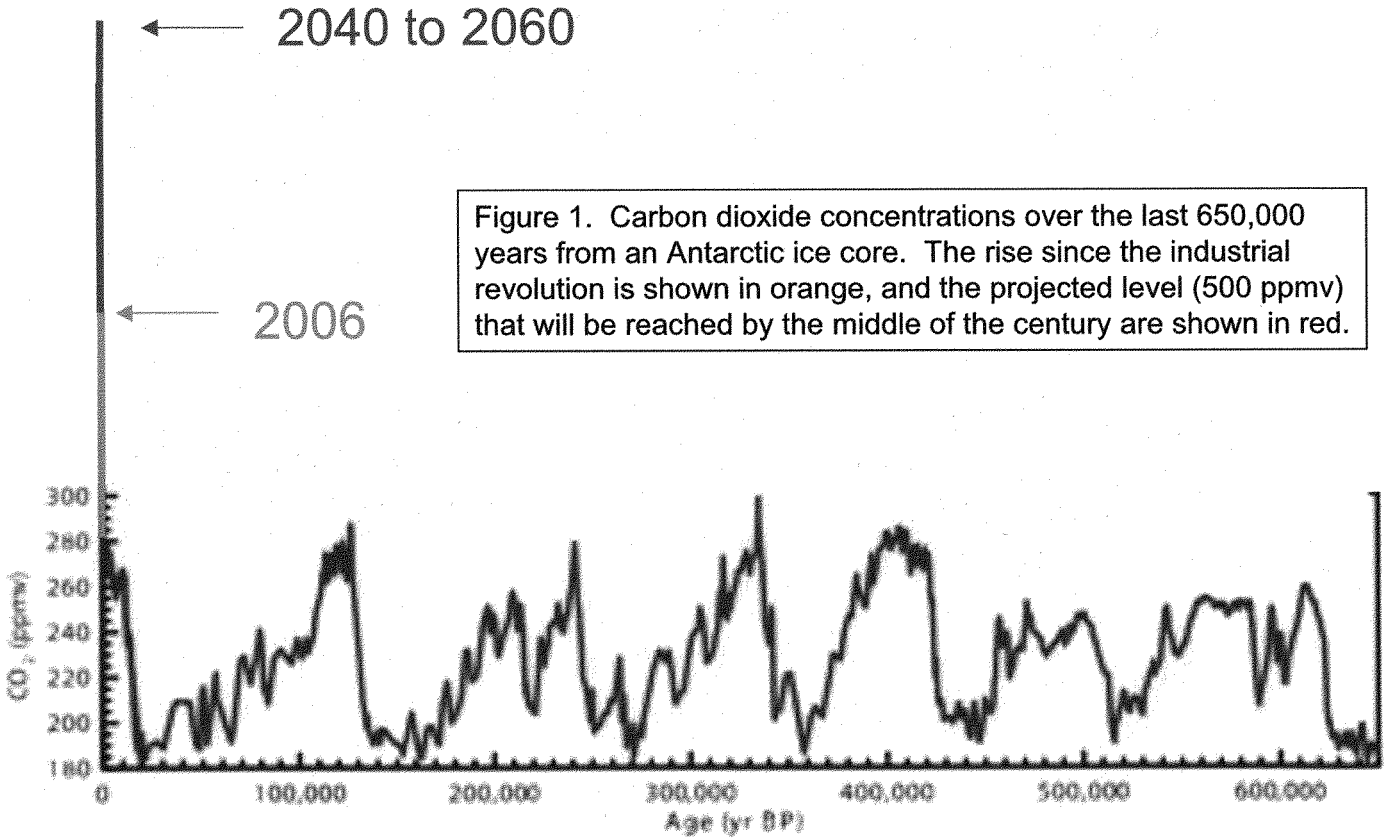


Figure 1. Carbon dioxide concentrations over the last 650,000 years from an Antarctic ice core. The rise since the industrial revolution is shown in orange, and the projected level (500 ppmv) that will be reached by the middle of the century are shown in red.

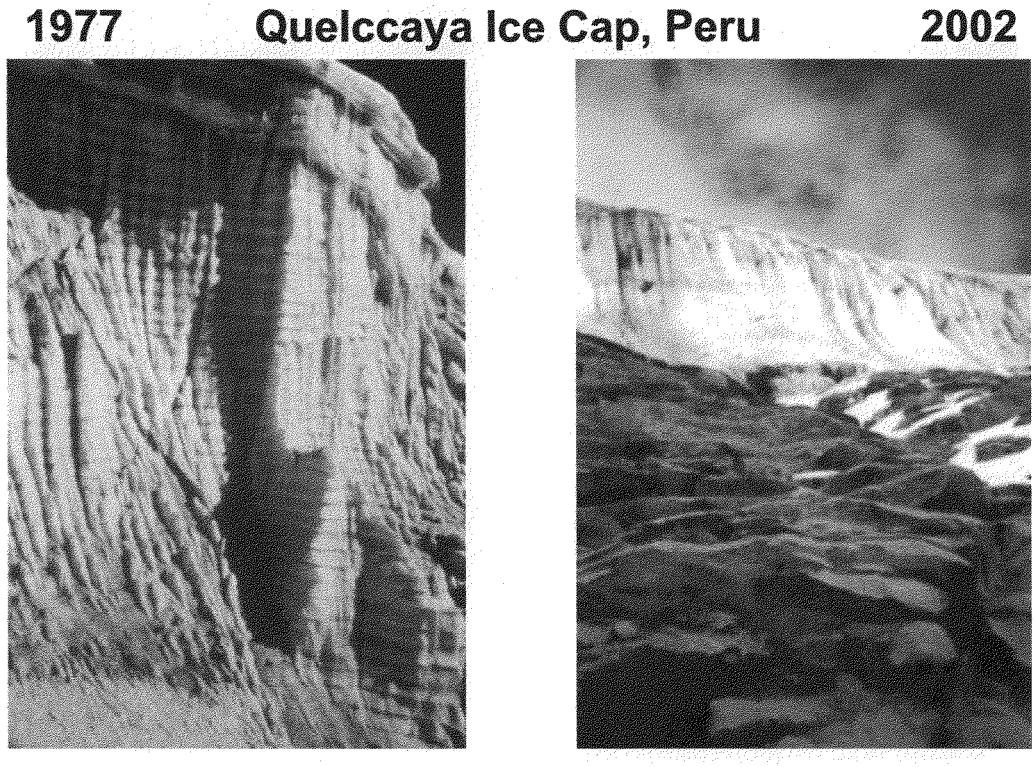


Figure 2. Photographs of the Quelccaya Ice Cap (from Lonnie Thomspon) showing the retreat between 1977 and 2002. Similar retreat is seen for tropical glaciers all over the world.

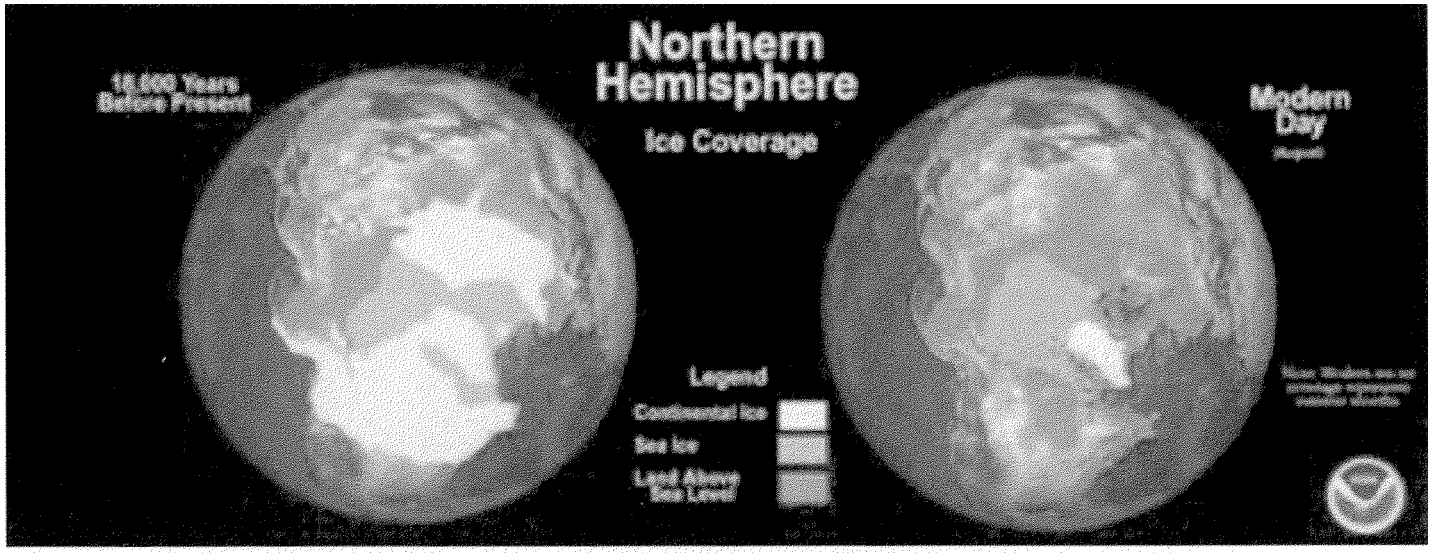


Figure 3. Difference in ice cover in the northern hemisphere between the Last Glacial Maximum (18,000 years ago) and today. The difference in global average temperature between these two states is 5°C.

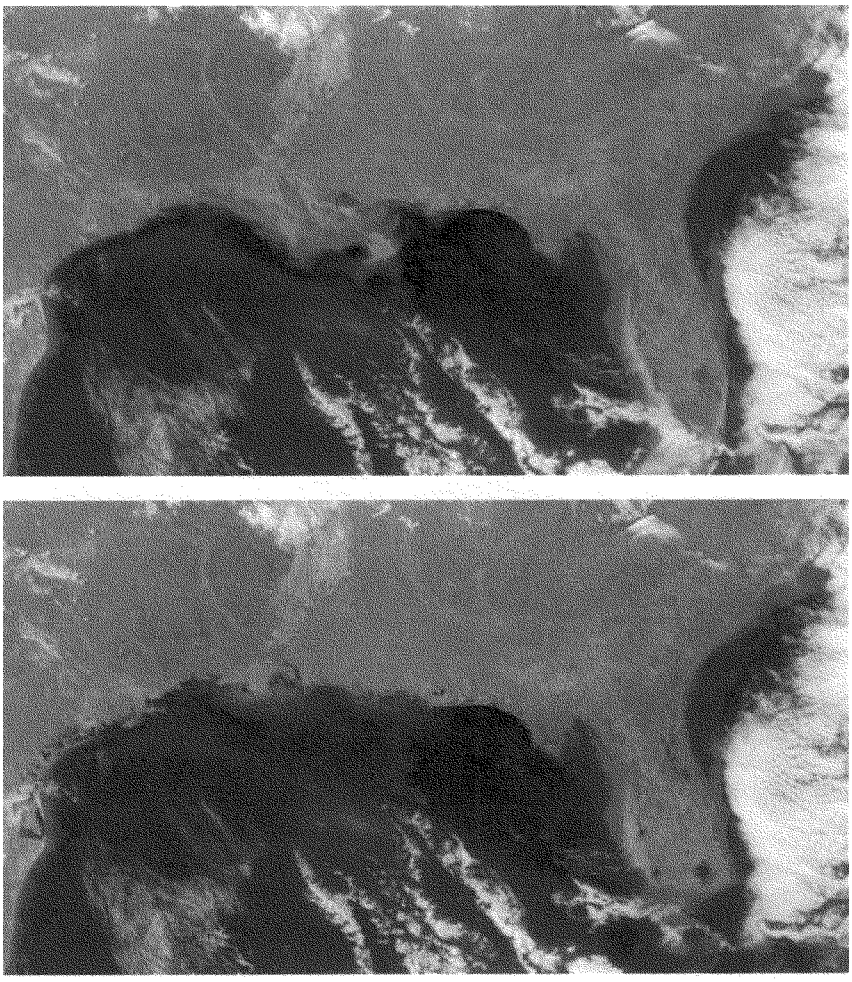
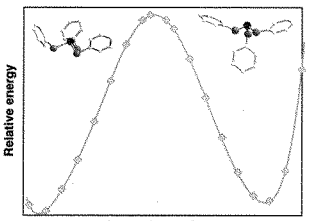


Figure 4. Map of the Southeastern U.S. showing modern coastlines (top) and coastlines if half of the Greenland Ice Sheet melted (11.5 foot rise in sea level).



Calculated molecular conformations of triphenyl phosphite (TPP) (*9*). The structure on the right, found in the known crystalline phase of TPP, forms intermolecular hydrogen bonds. The structure on the left, thought to be the standard conformation in the liquid and gas phases, is predicted to only form intermolecular van der Waals interactions. Whether these structures play a role in the liquid-liquid phase transition of TPP remains unknown.

A remaining question in TPP concerns the nature of this short-range structure. Is it primarily associated with a different conformation of the TPP molecule (see the second figure), or does a much larger structural entity comprising several molecules play a role? Interestingly, the reported critical phenomenon in TPP does not strongly affect any measured thermodynamic properties of the liquid.

In phosphorus, the association of P_4 molecules into clusters or larger covalently bonded units could be the relevant order parameter for the polyamorphic transition. However, a critical point between liquid I and liquid II has not yet been found, nor has the critical nature of the transition been established. Extrapolation of the equilibrium phase line suggests that the critical point in phosphorus may occur at negative pressures (see the first figure).

A further, as yet experimentally unexplored question is whether a polyamorphic transition could exhibit a second critical point (referred to as the lower consolute point) at the lower end of the phase boundary between the two liquids. The existence of two critical points would lead to a closed loop in the temperature-density phase diagram (*8*). Such a scenario is likely to occur in polyamorphic systems that rely on orientation-dependent interactions such as hydrogen bonds (*8*).

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PHYSICS

Ancient Lessons for Our Future Climate

Daniel P. Schrag and Richard B. Alley

Humans are changing the amount of carbon dioxide in the atmosphere by burning coal, oil, and gas. The current atmospheric CO_2 concentration is higher than it has been for at least the past 430,000 years (*1*), and perhaps for tens of millions of years (*2*). Over the next 100 years, without substantial changes in energy technology or economic development, the atmospheric CO_2 concentration will rise to 800 to 1000 ppm (*3*). This rise represents a spectacular, uncontrolled experiment that humans are performing on Earth. The paleoclimate record may provide the best guess as to what may happen as a result.

One crude measure of how much the climate will warm in response to an increased atmospheric CO_2 concentration is the climate sensitivity, often taken as the globally averaged warming expected from doubling the atmospheric CO_2 concentration. This sensitivity is usually estimated as between 1.5° and 4.5°C on the basis of results from a suite of complex climate models and from efforts to explain temperature changes over the past century [see discussion in (*4*)]. However, many uncertainties exist in that estimation, including large gaps in our understanding of water vapor and cloud feedbacks on climate.

The study of past climates provides information about the magnitude of, and causes for, many preinstrumental climate changes, allowing for comparison with climate models and an independent assessment of climate sensitivity. Periodic ice ages over the past 2 million years were paced by Earth's orbit around the Sun. However, the synchronous and substantial glaciation in both hemispheres requires some additional feedbacks beyond the orbital variations to amplify the climate response and make it uniform in both hemispheres. Changes in the atmospheric CO_2 concentration are likely responsible for both (*5*). The sea surface temperature in the Western Equatorial Pacific was about 3°C colder during the last ice age than it is today (*6*). Given that this warm and stable area of the world ocean was relatively unaffected by changes in high-latitude ice cover and in ocean circulation, the cooling must be explained predominantly by radiative effects associated with changes in atmospheric CO_2 concentration. This observation yields a climate sensitivity that is on the high end of modern estimates, consistent with model simulations of the ice ages (*7*).

Likewise, warm episodes in Earth's history reveal a similar cautionary lesson. During the Eocene, 50 million years ago, palm trees grew in Wyoming (*8*) and deep ocean temperatures were more than 10°C warmer than present (*9*). Because we do not know exactly how high the atmospheric CO_2 concentration was at that time, we cannot use it as a direct measure of climate sensitivity. However, the extreme warmth at high latitudes—especially during the winter in continental interiors—cannot be simulated by climate models purely through elevating greenhouse gas concentrations (*10*). Special cloud feedbacks must be included that are not present in the models used to predict future climate change (*10*, *11*). This observation suggests that feedbacks may be missing from current models and that future climate change may be underestimated in these models, particularly at high latitudes.

This lesson is supported by an event at the very beginning of the Eocene, 55 million years ago. During the Paleocene-Eocene Thermal Maximum, tropical oceans warmed by 4° to 6°C and high-latitude oceans by 8° to 10°C in less than 10,000 years (*9*). The leading hypothesis for this event involves the release of methane, another powerful greenhouse gas, from the sea floor (*12*). However, the duration of the climate event—50,000 to

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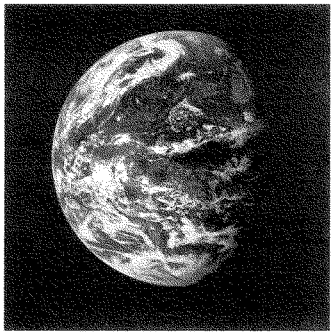
200,000 years in total (*9*)—suggests that the warming was probably caused mainly by an increase in the atmospheric concentration of CO_2 rather than methane, due to the short lifetime of methane in the atmosphere. The issue is still debated (*13*), but the extreme temperature change is consistent with a relatively high climate sensitivity if CO_2 is mainly responsible for the climate event. In addition, the large temperature change near the poles is troubling because there was no permanent sea or land ice at this time. The presumed mechanism for polar amplification in future climate change involves changes in ice cover (*14*). The extreme polar warming at the Paleocene-Eocene Thermal Maximum suggests that some additional feedback causes warming at high latitudes in the real climate system that is not incorporated in the current generation of climate models.



A sensitive system. Increases in atmospheric CO_2 cause Earth's atmosphere to warm. But the extent of the warming depends on the response of other parts of the climate system, including clouds and ice sheets. Reconstructions of past climate variability suggest that these factors may make Earth's climate more sensitive to CO_2 changes than most climate models indicate.

A final lesson from past climates is that climate changes are not always slow and steady, but can occur within decades or even years. The documentation of abrupt changes around the world during the last glacial period [e.g., (*15*)] is a spectacular reminder of how quickly climate can change. The mechanisms responsible for such changes during the ice age probably required a greater extent of land glaciers and sea ice than today, and are therefore unlikely to be experienced in the same way in the near future. However, the response of glaciers on Greenland and Antarctica to enhanced polar warming over the next century is sufficiently uncertain (*16*) that the possibility of sudden changes must be considered.

It would be a grave mistake to take these lessons from ancient climates as a reason to disregard the projections from climate models. The models are not perfect, but they represent the best understanding of the climate system from a century of observations and remain an essential tool for exploring future climate scenarios. Yet it is not surprising that there are some gaps in this understanding, because our atmosphere is heading toward a state far beyond the boundaries of all modern observations and calibrations.

Paleoclimate studies help to fill these gaps. The lessons are surprisingly consistent, whether from warm climates or cold, whether from millions or thousands of years ago: The climate system is very sensitive to small perturbations. The release of greenhouse gases through human activities represents a large perturbation, sending our atmosphere to a state unlike any seen for millions of years. It behooves us to remember the past as we anticipate the future.

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PLANT BIOLOGY

Plant Acupuncture: Sticking PINs in the Right Places

Nicholas J. Kaplinsky and M. Kathryn Barton

The plant hormone auxin affects many important aspects of plant growth and development. For example, auxin influences growth of plants relative to gravity (gravitropism) and light (phototropism), placement of leaf primordia, and the establishment of stem cell niches (*1*–*4*). These processes all depend on differences in the local concentrations of auxin. Such differential auxin concentrations are established through the directed (polar) transport of auxin from sites of biosynthesis (leaves) to sites of action in the shoot and root. In turn, polar auxin transport depends on the asymmetric localization in plant cells of proteins called PINFORMED (PIN) auxin transport facilitators (*5*).

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The location of PIN proteins, and hence the direction of polar auxin transport, varies depending on the type of tissue. For instance, in central portions of the root, PIN proteins are localized in basal areas of cells and auxin flow is directed downward. In contrast, in emerging leaf and floral primordia, PIN proteins are localized apically and auxin flow is directed upward (*4*–*6*) (see the figure). Because the localization of PIN proteins has such an important influence on polar auxin transport, plant biologists have sought to understand what determines the placement of PIN proteins in plant cells. On page 862 of this issue, Friml *et al.* (*7*) provide evidence that a major determinant of PIN protein localization in the model plant *Arabidopsis* is the serine-threonine kinase PINOID (PID). High levels of PID activity lead to the apical localization of PIN, whereas low levels lead to the basal localization of PIN.

Arabidopsis mutants that carry a defective *PINFORMED1* (*pin1*) gene make barren "pin-like" inflorescences that largely lack floral primordia (see the figure). Polar auxin transport is reduced in such *pin1* mutants, and inhibitors of polar auxin transport induce the development of pin-like inflorescences in wild-type plants (*8*, *9*). Application of auxin to these barren inflorescences rescues their ability to make pri-

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STATEMENT OF ROBERT M. CARTER, PH.D., JAMES COOK UNIVERSITY, TOWNSVILLE, AUSTRALIA

BIOGRAPHICAL NOTES

I am an Adjunct Research Professor at James Cook University (Queensland). I have 35 years training and experience as a palaeontologist, stratigrapher, marine geologist and environmental scientist, and hold degrees from the University of Otago (New Zealand; BSc Hons) and the University of Cambridge (England; Ph.D.). During my career I have held tenured academic staff positions at the University of Otago (Dunedin) and James Cook University (Townsville), where I was Professor and Head of School of Earth Sciences between 1981 and 1999.

I have wide experience in research management and administration, including service as Chair of the Earth Sciences Discipline Panel of the Australian Research Council, Chair of the national Marine Science and Technologies Committee, Director of the Australian Office of the Ocean Drilling Program, member of the international Planning and Technical Operations Committees, and Co-Chief Scientist on ODP Leg 181 (Southwest Pacific Gateways).

My current research on climate change, sea-level change and stratigraphy is based on field studies of Cenozoic sediments (last 65 million years) from the Southwest Pacific Ocean region, especially the Great Barrier Reef and offshore eastern New Zealand, and includes the analysis of marine sediment cores collected during ODP Leg 181. I am involved in helping to plan future IODP drilling legs to collect high-resolution climate data from the Pacific Ocean.

Throughout my career, my research has been supported by grants from competitive public research agencies, especially the Australian Research Council (ARC). I have received no research funding from special interest organisations such as environmental groups, energy companies or government departments.

I am the author of more than 100 papers in refereed scientific journals. I also contribute regular letters, opinion pieces and interviews to newspapers, national magazines and other media, and regularly engage in public speaking on matters related to my research knowledge. In 2005 I was appointed by the Australian Minister of the Environment to the judging panel for the Eureka Prize in Environmental Journalism, awarded annually by the Australian Museum, Sydney.

ABSTRACT

There is a strong conflict between current public alarm regarding human-caused climate change and the science justification for that alarm. The media serve to convey to the public the facts and hypotheses of climate change as provided by individual scientists, government and international research agencies and NGO lobby groups. In general, the media have propagated an alarmist cause for climate change, and they have certainly failed to convey to the public both the degree of uncertainty that is characteristic of climate science and many essential facts that are relevant to considerations of human causation. Ways in which the public debate is directed along alarmist lines are discussed. It is concluded that natural climate change is a hazard that—like other similar natural hazards—should be dealt with by adaptation. Attempting to mitigate human-caused climate change is an expensive exercise in futility.

INTRODUCTION—THE THREE REALITIES OF CLIMATE CHANGE

Climate change knows three realities. Science reality, which is what working scientists deal with on a daily basis. Virtual reality, which is the wholly imaginary world inside computer climate models. And public reality, which is the socio-political system within which politicians, business people and the general citizenry work.

The science reality is that climate is a complex, dynamic, natural system that no one wholly comprehends, though many scientists understand different small parts. Science provides no unambiguous empirical data that dangerous or even measurable human-caused global warming is occurring (e.g. Khilyuk & Chilingar, 2006). Second, the virtual reality is that deterministic computer models predict future climate according to the assumptions that are programmed into them. There is no "Theory of Climate", and the potential output of all realistic GCMs therefore encompasses a range of both future warmings and coolings. The difference between these outputs can be changed at will, simply by adjusting such poorly known parameters as the effects of cloud cover. And third, public reality in 2006 is that there exists a widespread but erroneous belief amongst citizens, businessmen and politicians that dangerous global warming is occurring and that it has human causation.

Three main agents have driven the public to believe in dangerous global warming. They are reports from the Intergovernmental Panel on Climate Change (IPCC), in-

cessant lobbying by environmental NGOs and allied political groups, and the obliging conveyance of selectively alarmist information by the media. Alarmist writing displays two invariable characteristics. First, it is mostly concerned with the minutiae of meteorological measurements and trends over the last 150 years and the absence of a proper geological context. Second, there is an over-reliance on the outputs of unvalidated computer model scenarios and attribution studies, i.e., virtual reality is favoured over empirical testing.

I summarise first several arguments against the conventional IPCC view that dangerous warming is occurring. I then comment on ancient temperature records, greenhouse theory and computer modeling, and conclude by discussing the role of the media in relaying science information about global warming to the public.

FOUR ARGUMENTS AGAINST DANGEROUS HUMAN-CAUSED GLOBAL WARMING

IPCC concentrates its analyses on climate over the last few hundred years, and fails to give proper weight to the geological context of modern climate change. The following facts, most of which draw on geological data, all militate against the IPCC argument that dangerous greenhouse warming is being caused by the accumulation of industrial carbon dioxide in the atmosphere:

1. As recorded in Antarctic ice cores, changes in temperature precede parallel changes in carbon dioxide by many hundred years or more (Mudelsee, 2001).
2. As recorded in the Greenland GRIP core (Grootes et al., 1993), the late 20th century warm period corresponds to a cyclic warming peak within a ~1500 year periodicity of probable solar origin (Bond et al., 2001), and was cooler than the preceding Minoan and Mediaeval Warm Periods.
3. In Antarctica, the late 20th century warming is as much as 5 °C cooler than were recent interglacial climate optimums (e.g., Watanabe et al., 2003).
4. As compared with high quality site-specific datasets such as GRIP (Grootes et al., 1993), neither the rate of temperature change nor the magnitude of the peak reached at the end of the 20th century lies outside the limits of recent natural climate change (Davis & Bohling, 2001).
5. Using the global average surface temperature record compiled by the Climate Research Unit of the U.K. Hadley Centre from thermometer measurements, temperature at the Earth's surface has flatlined since 1998 (Fig. 1). Temperature in the troposphere is virtually unchanged since 1979 once El Ninos and volcanic eruptions are taken into account (Fig. 2) (Gray, 2006).

THE IMPORTANCE OF ANCIENT TEMPERATURE RECORDS

The modern radiosonde and satellite MSU data provide an accurate, truly global temperature statistic. But to compare the late 20th century warm period with earlier geological warm events requires the use of local proxy data, for no truly global temperature statistics are available pre-1958 (or perhaps pre-1860, if you wish to trust the earlier parts of the surface thermometer record). Meaningful comparative judgements about climate change cannot be made on the basis of the trivially-short, 150-year-long thermometer surface temperature record, much less on the 26-year-long satellite tropospheric record, for long-term climate change occurs over spans of many thousands to millions of years.

One of the highest resolution proxy datasets that extends over an adequate period of time to record natural climate change is the oxygen isotope record from the Greenland ice core (Grootes et al., 1993). These data show, first, that the 1–2 °C/century rate of late 20th century warming in Greenland falls well within the Holocene envelope of rates of temperature change between -2.5 and $+2.5$ °C/century (Fig. 3). And, second (Fig. 4), that in Greenland the late 20th century warm period was cooler than the Mediaeval and Roman warm periods, and reflects a regular millennial solar temperature cycle. In addition, ice cores from Antarctica (Watanabe et al., 2003) show also that late 20th century temperature is up to 5 °C cooler there than temperature highs associated with earlier but geologically recent interglacial periods (Fig. 5).

Prompted by the invalidation of the Mann et al. hockey stick study, there has been much dispute over statements like "The rate and magnitude of 20th century warming is unprecedented for at least the past 1,000 years". A recent report by the National Academy of Sciences was able to conclude only that the 20th century warming was the greatest for several hundred years, a scarcely surprising conclusion.

In summary, as judged against ice core and other high resolution geological proxy records, the late 20th century warming (which as yet has not continued into the 21st century) is unusual in neither rate nor magnitude.

GREENHOUSE THEORY

Carbon dioxide is a colorless, odorless gas that has been present in earth's atmosphere through time in trace amounts ranging from a few hundred to a few thousand parts per million (ppm). Together with oxygen, it is the staff of life for earth's biosphere because the metabolism of plants depends upon its absorbtion. Increasing carbon dioxide in the range of about 200–1000 ppm has repeatedly been shown to be beneficial for plant growth, and to increase the efficiency of water use. Atmospheric carbon dioxide is therefore a benefice.

The currently favoured hypothesis of dangerous global warming includes the presumption that the warming is caused mainly by human emissions of the greenhouse gas carbon dioxide. This theory has failed the three main tests that it has been subjected to. Namely:

• late 20th century rates of temperature change and magnitude do not exceed previously known natural limits;

• no close relationship exists between the 20th century pattern of increasing carbon dioxide and changing temperature; and

• computer models using greenhouse radiation theory have proved unable to predict the course of temperature change 1990–2005, let alone to 2100.

Nonetheless, it is the case that carbon dioxide absorbs space-bound infrared radiation, thereby increasing the energy available at Earth's surface for warming or increased evaporation. This physical theory accepted, there are four problems with turning a human-driven increase in atmospheric carbon dioxide into global warming alarmism. They are as follows.

• The relationship between increasing carbon dioxide and increasing temperature is logarithmic, which lessens the forcing effect of each successive increment of carbon dioxide (Fig. 6).

• In increasing from perhaps 280 ppm in pre-industrial times to 380 ppm now, carbon dioxide has already produced 75 percent of the theoretical warming of about 1 °C that would be caused by a doubling to 560 ppm; as we move from 380 to 560 ppm, at most a few tenths of a degree of warming remain in the system; claims of greater warming, such as those of the IPCC, are based upon arbitrary adjustments to the lambda value in the Stefan-Boltzmann equation, and untested assumptions about positive feedbacks.

• The ice core data show conclusively that, during natural climate cycling, changes in temperature precede changes in carbon dioxide by several hundred to a thousand or so years (Mudelsee, 2001).

• In contrast to the 280 ppm levels indicated by averaged ice-core results, measurements of fossil plant stomata indicate that natural, pre-industrial carbon dioxide levels reached 350 ppm or higher during the Holocene (Kouwenberg et al., 2005).

So, yes, there is agreement that carbon dioxide increases will probably cause gentle feedback warming, but opinion remains strongly divided as to how great the warming will be for a real world doubling, and also whether any such warming is likely, on balance, to be beneficial or harmful.

COMPUTER MODELS

General circulation computer models (GCMs) are deterministic. Because many climate processes occur at a scale below that of the modelling grid, these processes have to be parameterized within the model. The modellers themselves acknowledge that they are unable to predict future climate, preferring the term "scenario" to describe the output of their experiments. Individual models differ widely in their output under an imposed regime of doubled carbon dioxide. In 2001, the IPCC cited a range of 1.8–5.6 °C warming by 2100 for the model outputs that they favoured, but this range can be further varied to even include negative outputs (i.e. cooling) by minor adjustment of some of the model parameters.

A second use of computer modelling is in climate attribution studies, whereby the known 20th century meteorological record is simulated using models fed with known or presumed forcings, such as increasing carbon dioxide, volcanic eruptions and other aerosols. After many years of trials, the IPCC in 2001 reported simulations that mimicked the historic temperature record if and only if human emissions were included in the forcings. These results have later been widely misrepresented as being evidence for human-caused global warming. They are, of course, evidence only that a curve matching exercise involving many degrees of freedom has plausibly mimicked the 20th century temperature curve. They are exercises in virtual reality, and not evidence of any type.

A major problem with all GCMs is that they rest upon the Kelvin fallacy, i.e., the assumption that the physics of the system is fully known. Though computer model-

ling and attribution studies are valuable heuristic tools, GCMs are not suitable for use as predictive tools for climate policy.

In contrast with GCMs, other empirical computer models have been trained using elapsed data up to the present. Such models have been constructed using the 150 year-long surface temperature record (Klyashtorin & Lyubushin, 2003), 3,500 year-long proxy records from a Sargasso Sea marine core and a South African speleothem (Loehle, 2004), and the 10,000 year-long Holocene proxy record from the GRIP ice core (Kotov, 2001). Virtually all forward projections using these fitted models project cooling during the early decades of the 21st century (e.g., Fig. 7).

THE ROLE OF THE MEDIA

Given the many uncertainties and inadequacies in our understanding of climate science, some of which are outlined above, and the lack of empirical evidence for human causation, how has it come about that public opinion in western nations is convinced that dangerous human-caused warming is occurring? The answer is that the public have been conditioned by the relentless repetition of alarmist climate messages through the media, to whose role I now turn.

The media play a primary role in reporting the results of scientific research to the general public. They do this today against the following background:

1. A rapidly changing media landscape. Formerly, there were three neatly separated categories of print, radio and television. With the late 20th century development of the world wide web there has been a dramatic rise in the number of professional websites and blog sites, and the development of parallel printed/web newspaper editions plus interactive discussion sites.

With such a miasma of sources of information now competing for public attention, the inevitable result has been an increasing shrillness and a loss of nuanced expression across all media. This does not serve science reporting well.

2. Because of the lack of legal libel restraint over blog sites in particular, character assassination and ad hominem attacks on so-called climate skeptics have become common. In the climate science area, sites such as Exxon's Secrets, Source Watch and De Smog Blog have developed such denigration into an art form, and apparently a well funded art form at that.

3. Over roughly the same time period as the Internet developed, western countries have seen the emergence of the public relations (PR) industry as a powerful force in society. It has been estimated that in the 1990s the USA had 130,000 media reporters and 150,000 PR personnel. The job of these PR people is to ensure that their employers' activities figure in the news in a positive way; a polite name for them is spinmeisters, and Prime Minister Tony Blair's Alistair Campbell was their acknowledged crown prince.

At the same time that they now employ PR professionals, large scientific employers often exert further control over the message that reaches the public by forbidding individual scientists to talk to the press and requiring that all comment be channeled through chosen PR representatives. Thus Nature's correspondent in Australia, Peter Pockley, reported (Australasian Science, Dec. 2004, p. 45):

"CSIRO's marine scientists have been "constrained" on the scientific advice and interoperation they can provide to the government's conservation plans for Australia's oceans. Likewise, climate scientists have been told not to engage in (public) debate on climate change and never to mention the Kyoto Accord on greenhouse gas emissions."

Morrison (2006) reports a survey showing, not surprisingly, that science stories provided with hyperbole rated 20 percent higher in terms of news-worthiness compared with factual reports on what had actually been achieved, and suggested that a Code of Conduct was needed to help guide science communicators.

4. It was learned by all media proprietors long ago that sensational or alarmist news sells. As one of Australia's most experienced science journalists has remarked (Julian Cribb, Australasian Science, August 2002, p. 38):

"The publication of 'bad news' is not a journalistic vice. It's a clear instruction from the market. It's what consumers, on average, demand. . . . As a newspaper editor I knew, as most editors know, that if you print a lot of good news, people stop buying your paper. Conversely, if you publish the correct mix of doom, gloom and disaster, your circulation swells. I have done the experiment."

It is a rare day that any metropolitan newspaper now fails to carry one or more alarmist stories on climate change and other like environmental causes.

5. A belief that good reporting is "balanced" reporting, and that the balance is discharged by providing "both" sides of any particular story.

Unfortunately, though taught in every journalism school, this technique is a travesty when applied to matters of science—which deals with testable hypotheses not

"balance". First, because there are not two but usually a multiplicity of sides to any complex scientific debate, such as that regarding global warming. Second, because—as practised—such journalistic balancing quickly becomes an excuse for not exercising personal knowledge and judgement about complex topics. "He says, she says" substitutes for "I, the reporter, judge that the data best support . . .".

6. A belief that environmental reporting is different from science reporting. Nearly all major media sources today employ an environmental reporter, but only a handful have a science reporter as well.

A little thought shows that there is a critical difference between the jobs of these two types of reporters. It goes without saying that a science reporter is charged with narrating the science truth, so far as that can be identified. But what is the primary role of an environmental reporter? Judging from their giddy effusions in the daily press, one might infer that their job description reads: "identify the baddies (alleged polluters or desecrators), and support the goodies (office-bearers in environmental NGOs) in pursuit of ever stricter public environmental regulation of all types".

It is my experience that the typical environmental reporter is marked less by her scientific expertise and more by her zeal for politically correct environmental causes. That is not a good recipe for objective reporting.

The result of this media landscape is that, with some exceptions, science reports in the news often lean heavily on PR copy provided by the employing agency of the scientists. Busy journalists are understandably pleased when they receive an interesting and well-written story on a topic identified as of public importance. The outcome—which I term frisbee science—is that the results delivered to the public carry a strong spin which, in the case of global warming, is invariably alarmist in nature.

PLAYING THE MAN AND NOT THE BALL

The means by which the public has been convinced that dangerous global warming is occurring are therefore not subtle. Indeed, the combined alarmist activities of the IPCC, crusading environmental NGOs, some individual leading climate scientists and many science academies can only be termed a propaganda campaign. But because all of these interest groups communicate with the public primarily through the press, it is the press that carries the prime gatekeeper responsibility for the unbalanced state of the current public view.

When doubts are raised about the legitimacy of a particular piece of climate alarmism—say that Tuvalu is being swamped by a rising sea-level—it is vanishingly rare for any ensuing press discussion to be primarily about the science question at issue. Rather, rhetorical devices are used to negate the doubts or the doubter. Assertions commonly made about skeptics or their views include the following.

1. "The science is settled"; or, there is a "consensus" on the issue.

A typical recent statement of this type by Governor Schwarzenegger, on Sunday Meet the Press, reads: "The science is in, we know the facts, there's not any more debate as to global warming or not".

The Governor is deluding himself, because the science of climate change has never been more uncertain. Furthermore, science is about facts, experiments and testing hypotheses, not consensus; and science is never "settled".

As Margaret Thatcher famously observed ("The Downing Street Years", p. 167):

"Consensus is the process of abandoning all beliefs, principles, values and policies in search of something in which no one believes, but to which no one objects; the process of avoiding the very issues that have to be solved, merely because you cannot (otherwise) get agreement on the way ahead".

2. He is paid by the fossil fuel industry, and is merely repeating their desired story.

An idea is not responsible for those who believe in it, and neither is the validity of an scientific hypothesis determined by the character or beliefs of the person who funded the research. Science discussions are determined on their merits, by using tests against empirical or experimental data. Who paid for the data to be gathered and assessed is simply irrelevant.

3. She works for a left wing/right wing think tank, so her work is tainted.

Think tanks serve an invaluable function in our society. On all sides of politics they are the source of much excellent policy analysis. They provide extended discussion and commentary on matters of public interest, and have made many fine contributions towards balancing the public debate on climate change. To be associated with a high-quality think tank, as I am with the Melbourne Institute of Public Affairs, is a privilege and a matter for pride, not shame.

That think tanks receive funding from industry sources is an indication that those that survive are delivering value for money, and does not impugn their integrity.

4. He is just a climate sceptic, a contrarian, a denialist.

These terms are used routinely as denigratory badges. The first two are amusingly silly.

First, because most people termed climate "skeptics" are in fact climate "agnostics", they have no particular axe to grind as to whether or not humans are having a dangerous influence on global climate. However, they prefer not to raise unnecessary alarms about dangerous climate change unless and until there is some solid empirical evidence in support. And, second, because all good scientists are skeptics: that is their professional job. To not be a skeptic of the hypothesis that you are testing is the rudest of scientific errors, for it means that you are committed to a particular outcome: that's faith, not science.

Introduction of the term "denialist" into the public climate debate, with its deliberate connotations with holocaust denial, serves only to cheapen those who have practiced the custom.

5. "Six Nobel Prize winners, and seven members of the National Academy of Sciences say . . .".

Argument from authority is the antithesis of the scientific method. That earlier this year the Royal Society of London tried to restrict the public debate on climate change through intimidation of Esso U.K. is a complete betrayal of all that the Society stands for. As John Daly commented on his website regarding a 2001 U.S. National Academy of Sciences report on global warming:

"The (2001) NAS committee made many assertions, none of which they chose to justify or explain other than to state it was "their view"—as if their mere authority as representing the National Academy of Science were enough to prevail in the argument.

Well it isn't. The days when mere 'authority' could win an argument or debate are long gone. Such deference is more characteristic of a mediaeval priesthood, not a modern science where every important claim must be justified and explained. Only evidence counts in this modern world."

6. The "precautionary principle" says that we should limit human carbon dioxide emissions because of the risk that the emissions will cause dangerous warming. Thus the science argument should be subservient to the risk argument.

The precautionary principle is intended to assist governments and peoples with risk analysis of environmental issues. First formulated at a United Nations environment conference at Rio de Janiero in 1992, it stated that "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation".

In order to take precautions, it is necessary to understand what one is taking them against. But at the moment global average temperature is flat-lining, and empirical predictions are for cooling. As Dick Lindzen recently pointed out in an article in the U.K. Telegraph: "After all, like Hurricane frequency or the price of oil, global mean temperature is as likely to go down as up".

The precautionary principle is oftentimes a moral precept masquerading under a scientific cloak. True scientific principles acknowledge the supremacy of experiment and observation, and do not bow to untestable moral propositions. Adhering to a moral principle through thick and thin is certainly a part of the precautionary principle as practiced by many environmentalists, and as such it is a principle of the wrong type to be used for the formulation of public environmental policy.

After comprehensive analysis, the Science and Technology Committee of the U.K. House of Commons recently came to a similar conclusion, commenting that "we can confirm our initial view that the term "precautionary principle" should not be used, and recommend that it cease to be included in policy guidance". The committee added that "In our view, the terms "precautionary principle" and "precautionary approach" in isolation from . . . clarification have been the subject of such confusion and different interpretations as to be devalued and of little practical help, particularly in public debate".

7. The Kyoto protocol is only a small first step towards a more comprehensive carbon emission regimen.

This argument has always been ridiculous. To expend trillions of dollars on measures that are predicted only to delay by 6 years a small fraction of a degree rise in hypothetical temperature is irrational behaviour. If it is a step, it is a step in the wrong direction, for—as Bjorn Lomborg never tires from pointing out—the same monies could be applied with much greater effect to other pressing environmental problems. The futility of the Kyoto approach has recently been underlined by the complete failure of the COP–13 talks at Nairobi to make progress towards a post-Kyoto carbon emissions agreement.

8. It is irresponsible of the press to be playing up the views of a small handful of contrarian scientists. In searching for formulaic "balance", the press overempha-

sizes the views of a few maverick scientists, and thereby delays the public acceptance of essential mitigation measures.

Quite to the contrary. Not only are there thousands of such "mavericks", including many of high scientific ability, but press coverage of climate change is generally dominated by one-sided alarmist reports which pay little or no attention to contrary views.

The small handful of quality newspapers that provide balanced coverage of the climate change issue include the U.S. Wall Street Journal, the U.K. Telegraph and the Australian. These publications are playing both a responsible and an essential role in keeping the public informed.

OTHER TECHNIQUES USED TO INFLUENCE THE PUBLIC DEBATE

Most of the matters just discussed relate to the denigration or neutralization of arguments from climate skeptics. In addition to these techniques, environmental writers and editors have developed their own armoury of weapons for influencing the public debate on climate change. These weapons include the following.

1. Couldism, mightism and perhapsism, fuelled by computer modelling

If, could, may, might, probably, perhaps, likely, expected, projected . . .

Wonderful words. So wonderful, in fact, that environmental writers scatter them through their articles on climate change like confetti. The reason is that—in the absence of empirical evidence for damaging human-caused climate change—public attention is best captured by making assertions about "possible" change. And, of course, using the output of computer models in support, virtually any type of climatic hazard can be asserted as a possible future change.

As an example, a 2005 Queensland State Government report on climate change used these words more than 50 times in 32 pages. That's a rate of almost twice a page. A typical "could probably" run in this report asserts that Queensland's climate could be more variable and extreme in the future "with more droughts, heatwaves and heavy rainfall" and probably with "maximum temperatures and heavy downpours . . . beyond our current experiences".

Reading further into the report reveals that these statements are all "climate change projections . . . developed from a range of computer-based models of global climate, and scenarios of future global greenhouse gas emissions".

In another similar example from Australia, Dr Penny Whetton, Leader of the Climate Impacts Group, was quoted in a CSIRO press release as saying "By 2070 Victoria is likely to be 0.7 to 5.0 °C warmer, compared to 1990. . . . Climate change in Victoria is likely to lead to more hot days, fewer frosts, more heavy rainfall and drier conditions leading to greater bushfire risk."

All this might be well and good if it had been established that the models being used possessed actual skill in predicting regional changes. That that is not the case is confirmed by the disclaimer that the CSIRO puts in all their climate modeling reports (e.g. "Climate Change in Queensland Under Enhanced Greenhouse Conditions" Final Report 1997–2002, 84 pp.).

"This report relates to climate change scenarios based on computer modelling. Models involve simplifications of the real processes that are not fully understood. Accordingly, no responsibility will be accepted by CSIRO or the QLD government for the accuracy of forecasts or predictions inferred from this report or for any person's interpretations, deductions, conclusions or actions in reliance on this report."

Needless to say, despite such caveats the press treat the outputs of modeling exercises as firm predictions of future climate. In truth, they are exercises only in virtual reality.

2. Data that are judged to be harmful to the global warming cause are simply ignored.

From amongst many possible examples, I note the two that I have discussed in more detail earlier. They are (i) that ice core data from Greenland show that neither the magnitude nor the rate of late 20th century warming falls outside previous natural limits; and (ii) that in ice cores generally, changes in temperature lead their parallel changes in carbon dioxide by at least several hundred years.

3. Enthusiastic reporting is undertaken of new science with alarmist implications, and no reporting of counter arguments.

In 2005, in a paper in Nature, Bryden and co-authors reported observations of flow-speeds in the Overturning Meridional Circulation in the North Atlantic ocean, and inferred a significant slowdown of the overturning circulation. The paper received wide publicity in the press, with much attention to the alarmist possibilities that it opened up. This year, papers by Schott et al. (2006) and Meinen et al. (2006) have described in more detail some of the natural fluctuations in flow strength of the Atlantic DWBC system, and Schott et al. conclude that their results "do not sup-

port suggestions of a basin-wide "slowdown" of the Atlantic Meridional Overturning Circulation". This revision of interpretation, not raising any alarm, was predictably largely ignored by the press.

A second recent example of press selectivity is provided by the enormous press coverage accorded to North Atlantic storms in 2005—a year which saw 15 hurricanes develop, including Katrina, accompanied by a tremendous amount of alarmist speculation that human-caused global warming was the cause. In contrast, 2006, with only 5 hurricanes, turned out to be a quiet year both for hurricanes and for press speculation about global warming being their cause.

4. Award winning journalists or public celebrities, mostly with no expertise in science, write ignorant polemics that are designed to encourage public alarm on climate change.

For example, Ian Henschke, a current affairs journalist with the Australian Broadcasting Corporation, and holder of a Reuters Fellowship to study global warming at Oxford University in 1999, wrote recently (Adelaide Review, March 2004, p. 7):

"The long-term effects of global warming are just beginning to become evident. . . . The impact of global warming means a warmer, wilder, wetter world where there will be winners and losers. We are carrying out an unauthorized experiment with the planet's weather system . . . that is and will continue to bleach and kill the Great Barrier Reef and gives us even bigger El Nino events that saw our national capital's suburbs ablaze last year. The rest of the world will also have its own chaotic response, from increasing heat waves in Europe to worse snow storms in Texas. Australia has become a pariah on this issue. Along with the U.S. we are seen as coming out with incoherent and inconsistent policies that make us part of the problem, not part of the solution."

This farrago of nonsense, which has been customized to stir particular local environmental fears, is of a genre that can be read in newspapers or watched on television around the world. Such pieces are presented by reporters whose political correctness and moral pretension greatly outstrips their scientific understanding.

5. Discrimination is exercised by both the popular and specialist scientific press against articles on climate change that are written from a balanced, rationalist or skeptical point of view.

Most long-standing climate skeptics have experienced this type of discrimination, and there are many examples listed on the internet.

Particularly worrisome is that two leading general science publications, Science and Nature, have developed a habit of not accepting short papers that are critical of earlier (demonstrably unsound) environmental papers that they have published. Three more popular and very widely distributed magazines, namely National Geographic, New Scientist and Scientific American, also display a great lack of balance in the material that they publish on climate change issues.

DISCUSSION AND CONCLUSIONS

I have discussed briefly above a number of arguments and practices that are applied widely throughout the public media in order to influence the public debate on climate towards alarmism. These techniques are used most often by doctrinaire persons who are bereft of scientific support for their strong personal belief that damaging, human-caused warming is occurring.

With some rare exceptions, the performance of the media, and especially the scientific press, on the global warming issue has been lamentable. Editors need to resist the daily temptation for alarmism, greatly improve their vigilance over publishing such weak rhetorical arguments as those outlined above, and insist that their reporters assess mainly the science issues at hand.

Driven by their addiction to alarmism, and a false belief that the causes of climate change are understood, environmental lobby groups worldwide urge the adoption of the precautionary principle to solve the "global warming problem". They argue that the world needs to move to a "post-carbon" economy as soon as possible, in order to curtail drastically the carbon dioxide emissions that they allege are causing warming. Yet it is only unvalidated computer models that suggest dangerous warming will occur, the observable facts being quite implacable that additional carbon dioxide brings mild warming only, most of which has already occurred because of the logarithmic nature of the relationship between increased carbon dioxide and increasing temperature.

Environmental campaigners for the mitigation of human greenhouse emissions appear to be blind to facts such as:

- that no amount of precaution is going stop natural climate change;

• that there is a 100 percent risk of damage from natural climate events, which happen every day;
• that we cannot measure, much less isolate, any presumed human climate signal globally;
• that extra atmospheric carbon dioxide causes mild warming only, and given its other properties is at least as likely to be beneficial as harmful; and
• that the causes of climate change are many, various and very incompletely understood.

It is a remarkable fact that despite the worldwide expenditure of perhaps U.S. $50 billion since 1990, and the efforts of tens of thousands of scientists worldwide, no human climate signal has yet been detected that is unambiguously distinct from natural variation. After the discrediting of the iconic "hockey stick" curve of recent temperature change, the IPCC's alarmist case for dangerous human climate change now rests not on empirical data of any sort but on misunderstood computer attribution models, failed greenhouse theory, and anecdotal accounts of climate changes—such as glaciers melting—that may well be of wholly or largely natural origin.

A goal to "stabilise world climate" is misplaced, not to mention unattainable. Climate is a dynamic system within which extreme events and dramatic changes will always occur, irrespective of human actions or preferences. Witness hurricane Katrina. The real danger of the current public global warming hysteria is that it is distracting attention and resources away from the need to develop a sound policy of adaptation to future natural climate vicissitudes.

Climate change is as much a geological as it is a meteorological issue. Geological hazards are mostly dealt with by providing civil defense authorities and the public with accurate, evidence-based information regarding events such as earthquakes, volcanic eruptions, tsunamis and floods, and by adaptation to the effects when an event occurs.

As for other major natural disasters, the appropriate preparation for extreme climate events is to mitigate and manage the negative effects when they occur. Careful planning will be needed to identify when a dangerous weather or climate event is imminent (or has started), and to foster ongoing research for the development of predictive tools for both sudden and long term climatic coolings and warmings. Climate impacts are generally slower to appear than those of other "instantaneous" disasters like earthquakes, tsunami, storms, volcanic eruptions, landslides or bushfires. This difference is not one of kind, and neither should be our response plans.

NOTE: Opinions, findings and conclusions expressed in this testimony are those of the author, and are not attributable to either his organization (James Cook University) or research fund provider (Australian Research Council).

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STATEMENT OF NAOMI ORESKES, PROFESSOR, UNIVERSITY OF CALIFORNIA, SAN DIEGO, CA

Thank you very much. It is an honor to have the opportunity to speak to you today about the history of climate science. I am a professor of history at the University of California, San Diego, where I teach, and research, the history of modern science. I hold a Bachelor of Science in Mining Geology from the Royal School of Mines, part of the University of London, and a Ph.D., from Stanford University, where I completed a graduate special program in geological research and history of science.

In recent months, the suggestion has been made that concern over anthropogenic global warming is a just a fad or a fashion. The history of science shows otherwise. Scientific attention to global warming has lasted over a century, involved thousands of scientists, and extended across six continents. It has spanned the disciplines of physics, chemistry, meteorology, and oceanography, and included some of the most illustrious and trusted scientists of the 20th century. And it has included scientific advisors to several U.S. Presidents—both Democratic and Republican.

Let me explain.

Scientists have been studying carbon dioxide and climate for a long time. John Tyndall first established in 1859 that carbon dioxide is a greenhouse gas. From this, Swedish geochemist Svante Arrhenius deduced in the 1890s that CO_2 released to the atmosphere by burning fossil fuels could alter Earth's climate. By the 1930s British engineer Guy Callendar had compiled empirical evidence that this effect was already discernible.[1]

Callendar's concern was pursued in the 1950s by American physicist Gilbert Plass, a pioneer in upper atmosphere spectroscopy, by geochemist Hans Suess, a pioneer of radiocarbon dating who worked closely with the U.S. Atomic Energy Commission, and by oceanographer Roger Revelle, a one-time commander in the U.S. Navy Hydrographic Office. By the 1960s, Charles David Keeling's systematic measurements demonstrated that atmospheric CO_2 was, indeed, steadily rising. (For this work, Keeling was awarded the National Medal of Science in 2002).

These basic facts of history are well known.[2]

What is less well known is that by the mid 1960s, a number of scientific advisory panels had expressed concern about global warming, and this concern was communicated by some of America's most illustrious scientists to Presidents Lyndon Johnson, Richard Nixon, and Jimmy Carter.

One early warning came in 1965 from the Environmental Pollution Board of the President's Science Advisory Committee, who warned that "by the year 2000 there will be about 25 percent more CO_2 in our atmosphere than at present [and] this will modify the heat balance of the atmosphere to such an extent that marked

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[1] Callendar, G.S. (1938). "The Artificial Production of Carbon Dioxide and Its Influence on Temperature." Quarterly J. Royal Meteorological Society 64: 223–40. See also James Roger Fleming (2006). The Callendar Effect: The Life and Work of Guy Stewart Callendar, the Scientist Who Established the Carbon Dioxide Theory of Climate Change, Boston: American Meteorological Society.

[2] James Rodger Fleming (1998). Historical Perspectives on Climate Change. New York: Oxford University Press; Weart, Spencer R. (2004). The Discovery of Global Warming. Cambridge, MA: Harvard University Press.

changes in climate could occur."[3] Accordingly, President Lyndon Johnson stated In a Special Message to the Congress: "This generation has altered the composition of the atmosphere on a global scale through . . . a steady increase in carbon dioxide from the burning of fossil fuels."[4]

A second warning came in 1966 from the U.S. National Academy of Sciences Panel on Weather and Climate Modification, headed by geophysicist Gordon MacDonald, who later served on President Nixon's Council on Environmental Quality (1970–1972).[5]

In 1974, in the wake of the Arab Oil Embargo, Alvin Weinberg, Director of the Oak Ridge National Laboratory, realized that climatological impacts might limit oil production before geology did.[6] In 1978, Robert M. White, the first administrator of NOAA and later President of the National Academy of Engineering, put it this way:

> We now understand that . . . carbon dioxide released during the burning of fossil fuels, can have consequences for climate that pose a considerable threat to future society. . . . The potential . . . impacts [are] ominous."[7]

In 1979 the subject was addressed by the JASON committee—the reclusive group of highly cleared scientists who gather annually to evaluate scientific and technical problems for the U.S. Government—and whose members have included some of the most brilliant scientists of our era, including physics Nobel Laureates Hans Bethe and Murray Gell-Mann.

The JASON scientists predicted that atmospheric CO_2 might double by the year 2035, resulting in mean global temperature increases of 2–3 °C, and polar warming of as much as 10–12 °C. This report also reached the White House, where Frank Press, Science Advisor to President Carter, asked the National Academy of Sciences for a second opinion. An Academy committee, headed by MIT meteorologist Jule Charney, affirmed the JASON conclusion: "If carbon dioxide continues to increase, [we] find no reason to doubt that climate changes will result, and no reason to believe that these changes will be negligible."

It was precisely these concerns that led in 1992 to the U.N. Framework Convention on Climate Change, which called for immediate action to reverse the trend of mounting greenhouse gas emissions. One early signatory was U.S. President George H.W. Bush, who called on world leaders to translate the written document into "concrete action to protect the planet." Three months later, the Convention was unanimously ratified by the U.S. Senate.

Since then, scientists around the world have worked assiduously to flesh out the details of this broadly affirmed picture. The purpose of my 2004 study of the scientific literature, published in the peer-reviewed journal Science, was to assess how much disagreement remained in the scientific community about the basic reality of global warming and its human causes. The answer surprised me: not one scientific paper in the random sample disagreed with the consensus position. Scientists, my study showed, are still arguing about the details, but the overall picture is clear. There is a consensus among both the leaders of climate science and the rank and file of active climate researchers.

I should acknowledge that one skeptic has challenged my study, and others have repeated his claim. This man is a social anthropologist in Liverpool, who, to my knowledge, has never published his arguments regarding my study in a peer-reviewed journal. This past October, he admitted that he made significant mistakes in his criticisms, and he now agrees with my general conclusion about the state of climate science.[8] In an interview with the Australian Broadcasting Commission, he acknowledged, "I do not think anyone is questioning that we are in a period of glob-

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[3] Restoring the Quality of Our Environment, Report of the Environmental Pollution Panel, President's Science Advisory Committee, The White House, December 1965, on p. 9.

[4] President Lyndon B. Johnson's "Special Message to the Congress on Conservation and Restoration of Natural Beauty" on Feb. 8, 1965. see: http://www.presidency.ucsb.edu/ws/index.php?pid=27285. This appears to be the first time "carbon dioxide" appeared in a presidential speech; thanks to Professor Zuoyue Wang of California State University, Pomona, for drawing my attention to this.

[5] "Weather and Climate Modification Problems and Prospects," Vol I. Final report of the Panel on Weather and Climate Modification, NAS–NRC Publication 1350, Washington, DC: NAS Press, 1966, particularly discussion on p. 10. See also "Scientific Problems of Weather Modification," A report of the Panel on Weather and Climate Modification, Committee on Atmospheric Sciences, NAS–NRC Publication 1236, Washington, DC: NAS Press, 1964. On Gordon MacDonald, see Munk, Walter, Naomi Oreskes, and Richard Muller, 2004. "Gordon J.F. MacDonald," National Academy of Sciences Biographical Memoirs 84: 3–26.

[6] Weinberg, Alvin (1974). "Global Effects of Man's Production of Energy." Science 186: 205.

[7] White, Robert M. (1978). Oceans and Climate: An Introduction, Oceanus 21: 2–3.

[8] This was recently reported by the Australian Broadcasting Commission, see http://www.abc.net.au/mediawatch/transcripts/s1777013.htm

al warming. Neither do I doubt that the overwhelming majority of climatologists is agreed that the current warming period is mostly due to human impact."

The scientific evidence is clear: the predictions made decades ago by Arrhenius, Callendar, Plass, Suess, Revelle, Charney, MacDonald, Weinberg, White, the JASON committee, and many others, have come true.

One prediction, however, did not come true.

In 1983, the National Academy formed a committee chaired by physicist William Nierenberg to look in greater detail at the issues raised by the JASON and Charney reports. The Nierenberg committee accepted their scientific conclusions, but declined to view global warming as a problem, predicting that any adverse effects would be adequately remedied by technological innovation driven by market forces.

This prediction, I think it is fair to say, has not come true. Technological innovation has not saved the homes of the citizens of Shishmaref, Alaska, nor stopped the acidification of the world's oceans, nor prevented the melting of polar ice.

Thank you very much for your time.

STATEMENT OF DAN GAINOR, THE BOONE PICKENS FREE MARKET FELLOW, DIRECTOR, BUSINESS & MEDIA INSTITUTE

Thank you Mr. Chairman, Senators, ladies and gentlemen. We're here to discuss the media coverage of the climate change debate. But there's only one problem, there is almost none of that debate actually in the media.

Journalists pledged to be neutral, long ago gave up their watchdog role to become lapdogs for one position. The media became alarmist claiming the planet is at a "tipping point" as if at any moment everything would go over the edge. An April 2006 issue of Time magazine pushed readers over that edge with 24 pages of advocacy, claiming: "The debate is over. Global warming is upon us with a vengeance."

CBS's Scott Pelley, who covers the environment, actually compared climate change skeptics with Holocaust deniers and claimed: "There becomes a point in journalism where striving for balance becomes irresponsible."

In an effort to provide balance to that irresponsible position, let's recall the media's record on climate change. Reporters told us roughly 30 years ago that a similar fate awaited mankind. Then, journalists were convinced we would all freeze to death.

In an April 1975 article entitled "The Cooling World," Newsweek advised us that "the earth's climate seems to be cooling down." A May 1975 New York Times piece cautioned: "Scientists Ponder Why World's Climate is Changing: A Major Cooling Widely Considered to Be Inevitable."

The Washington Post, U.S. News & World Report and Science News all chimed in that cool was suddenly very hot. One award-winning piece in Fortune said if the trend continued, it could "affect the whole human occupation of the earth."

The irony of this scare is that just years before, we had been warned the earth was warming. In March 1929, the Los Angeles Times told readers "Most geologists think the world is growing warmer, and that it will continue to get warmer." The New York Times took a similar approach with a headline that said "America in Longest Warm Spell Since 1776." And less than 10 years before that, the Times had detailed the exploits of Capt. Donald MacMillan's Arctic expedition and how "MacMillan Reports Signs of New Ice Age."

In more than 100 years, the major media have warned us of at least four separate climate cataclysms—an ice age, warming, another ice age and another bout of warming. If you count the current catch-all term of "climate change," that would be five separate media predictions. Even by their count, they're 0–3.

The hubris that convinces supposedly unbiased journalists they are providing the "truth" on climate change has led them to criticize America for its stance on the issue including the Kyoto treaty. But they typically leave out the 95–0 vote against Kyoto by this very Senate or the many billions of dollars such an agreement would cost America. This attitude has resulted in a media obsession with Al Gore's film "An Inconvenient Truth." At least 75 TV shows covered Gore or the film in just 3 months this summer—more than 3½ times the length of his movie.

The Today Show's Matt Lauer even lent his status to a Sci-Fi Network program that listed global warming among other potential threats to our species including asteroids, aliens and evil robots.

Scientists who dare question the almost religious belief in climate change, and yes, they do exist, are ignored or undermined in news reports as are policymakers and pundits who take similar views. The few journalists who sometimes give another side, like the New York Times' Andrew Revkin, emphasize funding sources for

that side of the debate and rarely bother to question the billions of dollars that go into promoting global warming.

This goes against the basic tenets of journalism to be skeptical of all sides of an issue. It also violates the ethical code of the Society of Professional Journalists which urges the media to "Support the open exchange of views, even views they find repugnant." That code calls for reporters to "Distinguish between advocacy and news reporting."

But that wasn't the media response when Chairman Inhofe read some of our report "Fire & Ice" on the Senate floor in September. Newsweek responded with a roughly 1,000 word clarification of its 1975 global cooling report, but added it made the mistake as recently as 1992. Newsweek still claimed "the story wasn't 'wrong' in the journalistic sense of 'inaccurate.'" But at least it owned up to the error—after 31 years.

In the New York Times editorial that responded to Sen. Inhofe's comments, the Times summarized: "Cooling, warming—we never get it right."

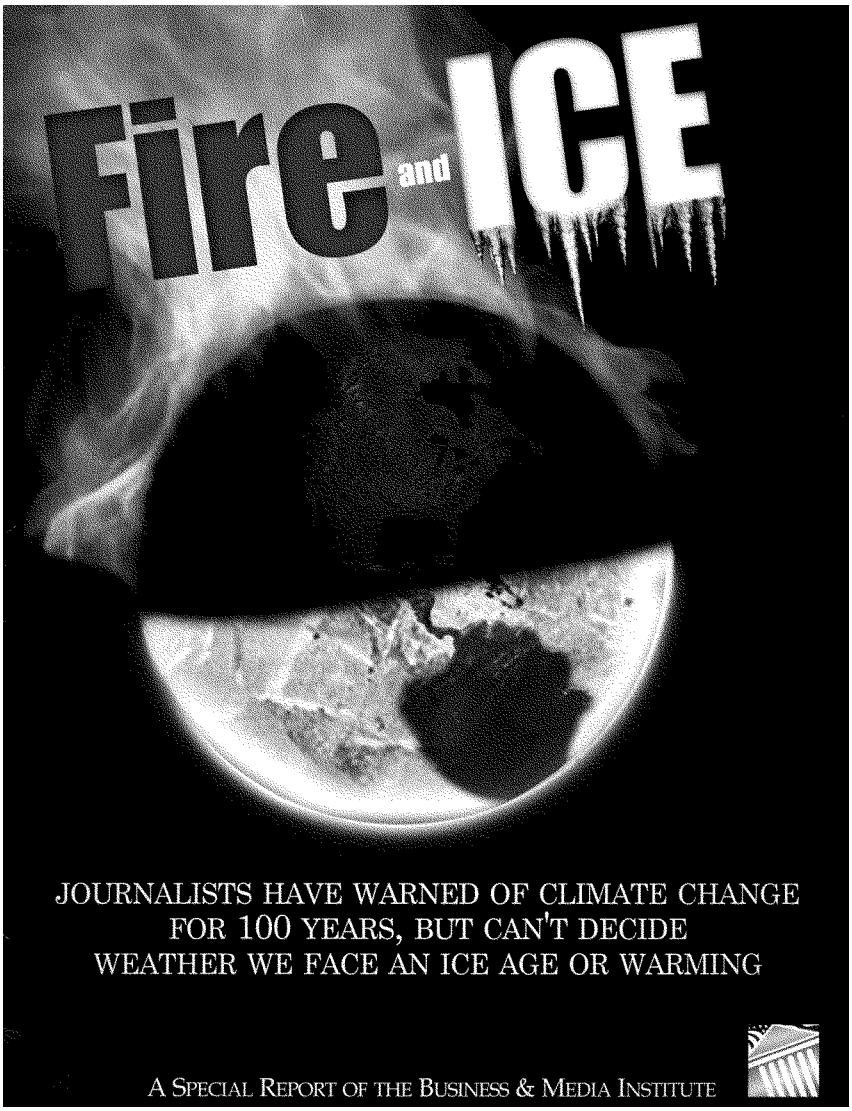
That's the inconvenient truth.

Thank you.

A New York Times-line

"MacMillan Reports Signs of New Ice Age"	"America in Longest Warm Spell Since 1776; Temperature Line Records a 25-Year Rise"	"Scientists Ponder Why World's Climate is Changing; A Major Cooling Widely Considered to Be Inevitable"	"Past Hot Times Hold Few Reasons to Relax About New Warming"
Sept. 18, 1924	March 27, 1933	May 21, 1975	Dec. 27, 2005

Source: Business & Media Institute; a division of the Media Research Center


Fire and ICE
JOURNALISTS HAVE WARNED OF CLIMATE CHANGE
FOR 100 YEARS, BUT CAN'T DECIDE
WEATHER WE FACE AN ICE AGE OR WARMING
A SPECIAL REPORT OF THE BUSINESS & MEDIA INSTITUTE

FIRE AND ICE

Journalists have warned of climate change for 100 years,
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SPECIAL REPORT

BUSINESS & MEDIA INSTITUTE
ADVANCING THE CULTURE OF FREE ENTERPRISE IN AMERICA

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EXECUTIVE SUMMARY

MAY 17, 2006

Thanks to the release of Al Gore's latest effort on global warming – this time in book and movie form – climate change is the hot topic in press rooms around the globe. It isn't the first time.

The media have warned about impending climate doom four different times in the last 100 years. Only they can't decide if mankind will die from warming or cooling.

As the noise from the controversy has increased, it has drowned out any debate. Journalists have taken advocacy positions, often ignoring climate change skeptics entirely. One CBS reporter even compared skeptics of manmade global warming to Holocaust deniers.

The Society of Environmental Journalists Spring 2006 SEJournal included a now-common media position, arguing against balance. But that sense of certainty ignores the industry's history of hyping climate change – from cooling to warming, back to cooling and warming once again.

> "Scientists Ponder Why World's Climate is Changing; A Major Cooling Widely Considered to Be Inevitable"
>
> --The New York Times
> May 21, 1975

The Media Research Center's Business & Media Institute (formerly the Free Market Project) conducted an extensive analysis of print media's climate change coverage back to the late 1800s.

It found that many publications now claiming the world is on the brink of a global warming disaster said the same about an impending ice age – just 30 years ago. Several major ones, including The New York Times, Time magazine and Newsweek, have reported on three or even four different climate shifts since 1895.

In addition, BMI found:

- **"Global Cooling" Was Just as Realistic:** Several publications warned in the 1970s that global cooling posed a major threat to the food supply. Now, remarkably, global warming is also considered a threat to the very same food supply.

- **Glaciers Are Growing or Shrinking:** The media continue to point to glaciers as a sign of climate change, but they have used them as examples of both cooling and warming.

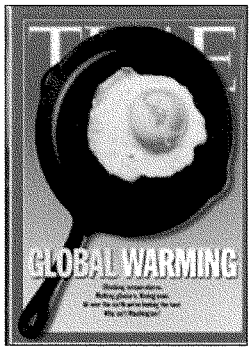
To find out more information or to set up an interview, contact Colleen O'Boyle at 703-683-5004 ext. 122

• **Global Warming History Ignored:** The media treat global warming like it's a new idea. In fact, British amateur meteorologist G. S. Callendar argued that mankind was responsible for heating up the planet with carbon dioxide emissions – in 1938. That was decades before scientists and journalists alerted the public about the threat of a new ice age.

• **New York Times the Worst:** Longtime readers of the Times could easily recall the paper claiming "A Major Cooling Widely Considered to Be Inevitable," along with its strong support of current global warming predictions. Older readers might well recall two other claims of a climate shift back to the 1800s – one an ice age and the other warming again.

Time's coverage of global warming has turned into outright advocacy. The April 3, 2006, issue of the magazine said: "By Any Measure, Earth Is At ... The Tipping Point. The climate is crashing, and global warming is to blame."

The Times has warned of four separate climate changes since 1895.



FIRE AND ICE

Journalists have warned of climate change for 100 years,
but can't decide weather we face an ice age or warming

MAY 17, 2006

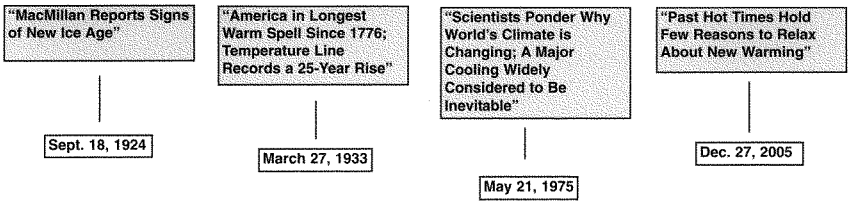
BY R. WARREN ANDERSON
RESEARCH ANALYST

DAN GAINOR
THE BOONE PICKENS FREE MARKET FELLOW

It was five years before the turn of the century and major media were warning of disastrous climate change. Page six of The New York Times was headlined with the serious concerns of "geologists." Only the president at the time wasn't Bill Clinton; it was Grover Cleveland. And the Times wasn't warning about global warming – it was telling readers the looming dangers of a new ice age.

The year was 1895, and it was just one of four different time periods in the last 100 years when major print media predicted an impending climate crisis. Each prediction carried its own elements of doom, saying Canada could be "wiped out" or lower crop yields would mean "billions will die."

A New York Times-line



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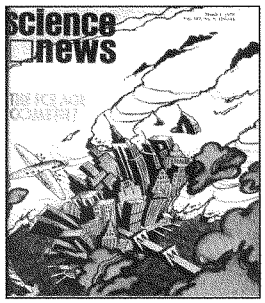
Just as the weather has changed over time, so has the reporting – blowing hot or cold with short-term changes in temperature.

Following the ice age threats from the late 1800s, fears of an imminent and icy catastrophe were compounded in the 1920s by Arctic explorer Donald MacMillan and an obsession with the news of his polar expedition. As the Times put it on Feb. 24, 1895, "Geologists Think the World May Be Frozen Up Again."

Those concerns lasted well into the late 1920s. But when the earth's surface warmed less than half a degree, newspapers and magazines responded with stories about the new threat. Once again the Times was out in front, cautioning "the earth is steadily growing warmer."

After a while, that second phase of climate cautions began to fade. By 1954, Fortune magazine was warming to another cooling trend and ran an article titled "Climate – the Heat May Be Off." As the United States and the old Soviet Union faced off, the media joined them with reports of a more dangerous Cold War of Man vs. Nature.

The New York Times ran warming stories into the late 1950s, but it too came around to the new fears. Just three decades ago, in 1975, the paper reported: "A Major Cooling Widely Considered to Be Inevitable."



The future looked cold and ominous in this Science News depiction from March 1, 1975.

That trend, too, cooled off and was replaced by the current era of reporting on the dangers of global warming. Just six years later, on Aug. 22, 1981, the Times quoted seven government atmospheric scientists who predicted global warming of an "almost unprecedented magnitude."

In all, the print news media have warned of four separate climate changes in slightly more than 100 years – global cooling, warming, cooling again, and, perhaps not so finally, warming. Some current warming stories combine the concepts and claim the next ice age will be triggered by rising temperatures – the theme of the 2004 movie "The Day After Tomorrow."

Recent global warming reports have continued that trend, morphing into a hybrid of both theories. News media that once touted the threat of "global warming" have moved on to the more flexible term "climate change." As the Times described it, climate change can mean any major shift, making the earth cooler or warmer. In a March 30, 2006, piece on ExxonMobil's approach to the environment, a reporter argued the firm's chairman "has gone out of his way to soften Exxon's public stance on climate change."

The effect of the idea of "climate change" means that any major climate event can be blamed on global warming, supposedly driven by mankind.

Spring 2006 has been swamped with climate change hype in every type of media – books, newspapers, magazines, online, TV and even movies.

One-time presidential candidate Al Gore, a patron saint of the environmental movement, is releasing "An Inconvenient Truth" in book and movie form, warning, "Our ability to live is what is at stake."

Despite all the historical shifting from one position to another, many in the media no longer welcome opposing views on the climate. CBS reporter Scott Pelley went so far as to compare climate change skeptics with Holocaust deniers.

"If I do an interview with [Holocaust survivor] Elie Wiesel," Pelley asked, "am I required as a journalist to find a Holocaust denier?" he said in an interview on March 23 with CBS News's PublicEye blog.

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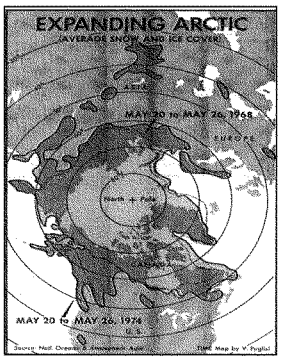
He added that the whole idea of impartial journalism just didn't work for climate stories. "There becomes a point in journalism where striving for balance becomes irresponsible," he said.

Pelley's comments ignored an essential point: that 30 years ago, the media were certain about the prospect of a new ice age. And that is only the most recent example of how much journalists have changed their minds on this essential debate.

Some in the media would probably argue that they merely report what scientists tell them, but that would be only half true.

Journalists decide not only what they cover; they also decide whether to include opposing viewpoints. That's a balance lacking in the current "debate."

This isn't a question of science. It's a question of whether Americans can trust what the media tell them about science.



Time magazine's June 24, 1974, story showed how Arctic snow and ice had grown from 1968 to 1974.

Global Cooling: 1954-1976

The ice age is coming, the sun's zooming in
Engines stop running, the wheat is growing thin
A nuclear era, but I have no fear
'Cause London is drowning, and I live by the river

-- The Clash
"London Calling,"
released in 1979

The first Earth Day was celebrated on April 22, 1970, amidst hysteria about the dangers of a new ice age. The media had been spreading warnings of a cooling period since the 1950s, but those alarms grew louder in the 1970s.

Three months before, on January 11, The Washington Post told readers to "get a good grip on your long johns, cold weather haters - the worst may be yet to come," in an article titled "Colder Winters Held Dawn of New Ice Age." The article quoted climatologist Reid Bryson, who said "there's no relief in sight" about the cooling trend.

Journalists took the threat of another ice age seriously. Fortune magazine actually won a "Science Writing Award" from the American Institute of Physics for its own analysis of the danger. "As for the present cooling trend a number of leading climatologists have concluded that it is very bad news indeed," Fortune announced in February 1974.

A Time Magazine Time-line

"The discoveries of changes in the sun's heat... and the southward advance of glaciers in recent years have given rise to conjectures of the possible advent of a new ice age."
Sept. 10, 1923

"Gaffers who claim that winters were harder when they were boys are quite right... weather men have no doubt that the world at least for the time being is growing warmer."
Jan. 2, 1939

"Climatological Cassandras are becoming increasingly apprehensive, for the weather aberrations they are studying may be the harbinger of another ice age."
June 24, 1974

"[S]cientists no longer doubt that global warming is happening, and almost nobody questions the fact that humans are at least partly responsible."
April 9, 2001

To find out more information or to set up an interview, contact Colleen O'Boyle at 703-683-5004 ext. 122

Al Gore: Still Hot for Global Warming

Just as the media have always relied on glaciers in climate change stories, they now rely on certain talking heads to make their points about global warming.

Former Vice President Al Gore has become a major spokesman for the environmental movement and an advocate for larger and more intrusive bureaucracy to fend off climate change.

Currently, Gore is promoting his second global warming book, "An Inconvenient Truth," which also has a companion film. The trailer from the new movie claims ominously: "Our ability to live is what is at stake."

His latest effort has already begun to generate new media attention about Gore's global warming efforts. Incredibly, there have been more than 1,000 print stories containing Al Gore and global warming since Earth Day 2004 – and that was before his new book.

Gore first published "Earth in the Balance" in 1992, a book on "ecology and the human spirit" that advocated for worldwide treaties to control the environmental efforts of every nation. The book contained a 65-page chapter about "A Global Marshall Plan." This environmental plan would help us "grapple with the enormous challenge we now face."

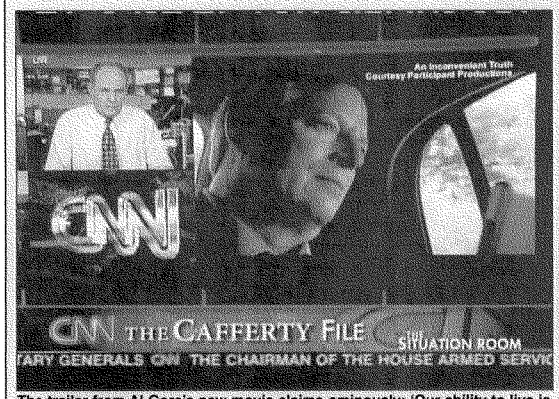
He said he rejected the notion of a world government and instead advocated international agreements establishing "global constraints on acceptable behavior."

These "voluntarily" entered, "fair" agreements would contain incentives and non-compliance penalties, but could impact rich nations like the United States more than others.

The United Nations should consider establishing a "Stewardship Council" to monitor the green treaties and handle the global environment, he said. Yearly environmental meetings for bureaucrats would become necessary.

Gore lectures regularly on human-caused global warming. A typical example was his Jan. 15, 2004, New York appearance.

He spoke at the Beacon Theater and thanked leaders of MoveOn.org, teaching that the "wealthy right-wing ideologues have joined with the most cynical and irresponsible companies in the oil, coal and mining industries to contribute large sums of money to finance pseudo-scientific front groups that specialize in sowing confusion in the public's mind about global warming."



The trailer from Al Gore's new movie claims ominously: 'Our ability to live is what is at stake.' In this CNN clip, Jack Cafferty discusses the film.

To find out more information or to set up an interview, contact Colleen O'Boyle at 703-683-5004 ext. 122

"It is the root cause of a lot of that unpleasant weather around the world and they warn that it carries the potential for human disasters of unprecedented magnitude," the article continued.

That article also emphasized Bryson's extreme doomsday predictions. "There is very important climatic change going on right now, and it's not merely something of academic interest."

Bryson warned, "It is something that, if it continues, will affect the whole human occupation of the earth - like a billion people starving. The effects are already showing up in a rather drastic way." However, the world population increased by 2.5 billion since that warning.

Fortune had been emphasizing the cooling trend for 20 years. In 1954, it picked up on the idea of a frozen earth and ran an article titled "Climate - the Heat May Be Off."

The story debunked the notion that "despite all you may have read, heard, or imagined, it's been growing cooler - not warmer - since the Thirties."

The claims of global catastrophe were remarkably similar to what the media deliver now about global warming.

"The cooling has already killed hundreds of thousands of people in poor nations," wrote Lowell Ponte in his 1976 book "The Cooling."

The Times Warms to Cooling

The New York Times had been cautioning its readers about global warming during the 1950s, but it too came around to the new threat by Jan. 19, 1975.

Referring to the 1970s as being part of a 10,000-year period of warmth in between ice ages, the paper wrote, "There seems to be little doubt that the present period of unusual warmth will eventually give way to a time of colder climate."

By Dec. 30, 2005, the Times had once again changed gears and reported, "Climatologists said the ice cores left no doubt that the burning of fossil fuels is altering the atmosphere in a substantial and unprecedented way."

If the proper measures weren't taken, he cautioned, then the cooling would lead to "world famine, world chaos, and probably world war, and this could all come by the year 2000."

There were more warnings. The Nov. 15, 1969, "Science News" quoted meteorologist Dr. J. Murray Mitchell Jr. about global cooling worries. "How long the current cooling trend continues is one of the most important problems of our civilization," he said.

If the cooling continued for 200 to 300 years, the earth could be plunged into an ice age, Mitchell continued.

Six years later, the periodical reported "the cooling since 1940 has been large enough and consistent enough that it will not soon be reversed."

A city in a snow globe illustrated that March 1, 1975, article, while the cover showed an ice age obliterating an unfortunate city.

In 1975, cooling went from "one of the most important problems" to a first-place tie for "death and misery." "The threat of a new ice age must now stand alongside nuclear war as a likely source of wholesale death and misery for mankind," said Nigel Calder, a former editor of "New Scientist."

He claimed it was not his disposition to be a "doomsday man." His analysis came from "the facts [that] have emerged" about past ice ages, according to the July/August International Wildlife Magazine.

The idea of a worldwide deep freeze snowballed.

Naturally, science fiction authors embraced the topic. Writer John Christopher delivered a book on the coming ice age in 1962 called "The World in Winter."

In Christopher's novel, England and other "rich countries of the north" broke down under the icy onslaught.

"The machines stopped, the land was dead and the people went south," he explained.

James Follett took a slightly different tack. His book "Ice" was about "a rogue Antarctic iceberg" that "becomes a major world menace." Follett in his book conceived "the teeth chattering possibility of how Nature can punish those who foolishly believe they have mastered her."

Global Warming: 1929-1969

Today's global warming advocates probably don't even realize their claims aren't original. Before the cooling worries of the '70s, America went through global warming fever for several decades around World War II.

The nation entered the "longest warm spell since 1776," according to a March 27, 1933, New York Times headline. Shifting climate gears from ice to heat, the Associated Press article began "That next ice age, if one is coming ... is still a long way off."

One year earlier, the paper reported that "the earth is steadily growing warmer" in its May 15 edition. The Washington Post felt the heat as well and titled an article simply "Hot weather" on August 2, 1930.

That article, reminiscent of a stand-up comedy routine, told readers that the heat was so bad, people were going to be saying, "Ah, do you remember that torrid summer of 1930. It was so hot that * * *."

The Los Angeles Times beat both papers to the heat with the headline: "Is another ice age coming?" on March 11, 1929. Its answer to that question: "Most geologists think the world is growing warmer, and that it will continue to get warmer."

Meteorologist J. B. Kincer of the federal weather bureau published a scholarly article on the warming world in the September 1933 "Monthly Weather Review."

The article began discussing the "wide-spread and persistent tendency toward warmer weather" and asked "Is our climate changing?" Kincer proceeded to document the warming trend. Out of 21 winters examined from 1912-33 in Washington, D.C., 18 were warmer than normal and all of the past 13 were mild.

New Haven, Conn., experienced warmer temperatures, with evidence from records that went "back to near the close of the Revolutionary War," claimed the analysis. Using records from various other cities, Kincer showed that the world was warming.

British amateur meteorologist G. S. Callendar made a bold claim five years later that many would recognize now. He argued that man was responsible for heating up the planet with carbon dioxide emissions - in 1938.

It wasn't a common notion at the time, but he published an article in the Quarterly Journal of the Royal Meteorological Society on the subject. "In the following paper I hope to show that such influence is not only possible, but is actually occurring at the present time," Callendar wrote. He went on the lecture circuit describing carbon-dioxide-induced global warming.

But Callendar didn't conclude his article with an apocalyptic forecast, as happens in today's global warming stories. Instead he said the change "is likely to prove beneficial to mankind in several ways, besides the provision of heat and power." Furthermore, it would allow for greater agriculture production and hold off the return of glaciers "indefinitely."

On November 6 the following year, The Chicago Daily Tribune ran an article titled "Experts puzzle over 20 year mercury rise." It began, "Chicago is in the front rank of thousands of cities thuout [sic] the world which have been affected by a mysterious trend toward warmer climate in the last two decades."

The rising mercury trend continued into the '50s. The New York Times reported that "we have learned that the world has been getting warmer in the last half century" on Aug. 10, 1952. According to the Times, the evidence was the introduction of cod in the Eskimo's diet - a fish they had not encountered before 1920 or so.

The following year, the paper reported that studies confirmed summers and winters were getting warmer.

This warming gave the Eskimos more to handle than cod. "Arctic Findings in Particular Support Theory of Rising Global Temperatures," announced the Times during the middle of winter, on Feb. 15, 1959. Glaciers were melting in Alaska and the "ice in the Arctic ocean is about half as thick as it was in the late nineteenth century."

A decade later, the Times reaffirmed its position that "the Arctic pack ice is thinning and that the ocean at the North Pole may become an open sea within a decade or two," according to polar explorer Col. Bernt Bachen in the Feb. 20, 1969, piece.

One of the most surprising aspects of the global warming claims of the 20th Century is that they followed close behind similar theories of another major climate change - that one an ice age.

Global Cooling: 1895-1932

The world knew all about cold weather in the 1800s. America and Europe had escaped a 500-year period of cooling, called the Little Ice Age, around 1850. So when the Times warned of new cooling in 1895, it was a serious prediction.

On Feb. 24, 1895, the Times announced "Geologists Think the World May Be Frozen Up Again." The article debated "whether recent and long-continued observations do not point to the advent of a second glacial period." Those concerns were brought on by increases in northern glaciers and in the severity of Scandinavia's climate.

Fear spread through the print media over the next three decades. A few months after the sinking of the Titanic, on Oct. 7, 1912, page one of the Times reported, "Prof. Schmidt Warns Us of an Encroaching Ice Age."

Scientists knew of four ice ages in the past, leading Professor Nathaniel Schmidt of Cornell University to conclude that one day we will need scientific knowledge "to combat the perils" of the next one.

The same day the Los Angeles Times ran an article about Schmidt as well, entitled "Fifth ice age is on the way." It was subtitled "Human race will have to fight for its existence against cold."

That end-of-the-world tone wasn't unusual. "Scientist says Arctic ice will wipe out Canada," declared a front-page Chicago Tribune headline on Aug. 9, 1923. "Professor Gregory" of Yale University stated that "another world ice-epoch is due." He was the American representative to the Pan-Pacific Science Congress and warned that North America would disappear as far south as the Great Lakes, and huge parts of Asia and Europe would be "wiped out."

Gregory's predictions went on and on. Switzerland would be "entirely obliterated," and parts of South America would be "overrun."

The good news - "Australia has nothing to fear." The Washington Post picked up on the story the following day, announcing "Ice Age Coming Here."

Talk of the ice age threat even reached France. In a New York Times article from Sept. 20, 1922, a penguin found in France was viewed as an "ice-age harbinger."

Even though the penguin probably escaped from the Antarctic explorer Sir Ernest Shackleton's ship, it "caused considerable consternation in the country."

Some of the sound of the Roaring '20s was the noise of a coming ice age - prominently covered by The New York Times. Capt. Donald MacMillan began his Arctic expeditions in 1908 with Robert Peary.

He was going to Greenland to test the "Menace of a new ice age," as the Times reported on June 10, 1923.

The menace was coming from "indications in Arctic that have caused some apprehension."

Two weeks later the Times reported that MacMillan would get data to help determine "whether there is any foundation for the theory which has been advanced in some quarters that another ice age is impending."

On July 4, 1923, the paper announced that the "Explorer Hopes to Determine Whether new 'Ice Age' is Coming."

The Atlanta Constitution also had commented on the impending ice age on July 21, 1923. MacMillan found the "biggest glacier" and reported on the great increase of glaciers in the Arctic as compared to earlier measures.

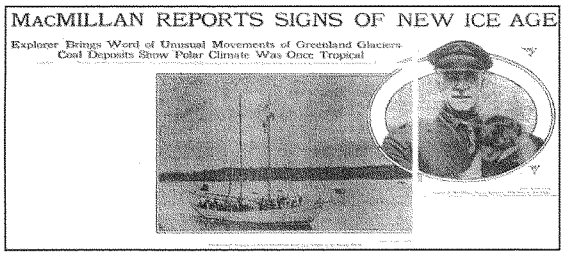
Even allowing for "the provisional nature of the earlier surveys," glacial activity had greatly augmented, "according to the men of science." Not only was "the world of science" following MacMillan, so too were the "radio fans."

The Christian Science Monitor reported on the potential ice age as well, on July 3, 1923. "Captain MacMillan left Wicasset, Me., two weeks ago for Sydney, the jumping-off point for the north seas, announcing that one of the purposes of his cruise was to determine whether there is beginning another 'ice age,' as the advance of glaciers in the last 70 years would seem to indicate."

Then on Sept. 18, 1924, The New York Times declared the threat was real, saying "MacMillan Reports Signs of New Ice Age."

Concerns about global cooling continued. Swedish scientist Rutger Sernander also forecasted a new ice age. He headed a Swedish committee of scientists studying "climatic development" in the Scandinavian country.

According to the LA Times on April 6, 1924, he claimed there was "scientific ground for believing" that the conditions "when all winds will bring snow, the sun cannot prevail against the clouds, and three winters will come in one, with no summer between," had already begun.



MACMILLAN REPORTS SIGNS OF NEW ICE AGE

Explorer Brings Word of Unusual Movements of Greenland Glaciers
Coal Deposits Show Polar Climate Was Once Tropical

In 1924, the Times was convinced that cold was a mighty threat.

That ice age talk cooled in the early 1930s. But The Atlantic in 1932 puffed the last blast of Arctic air in the article "This Cold, Cold World." Author W. J. Humphries compared the state of the earth to the state of the world before other ice ages.

He wrote "If these things be true, it is evident, therefore that we must be just teetering on an ice age."

Concluding the article he noted the uncertainty of such things, but closed with "we do know that the climatic gait of this our world is insecure and unsteady, teetering, indeed, on an ice age, however near or distant the inevitable fall."

Cooling and Warming Both Threats to Food

Just like today, the news media were certain about the threat that an ice age posed.

In the 1970s, as the world cooled down, the fear was that mankind couldn't grow enough food with a longer winter. "Climate Changes Endanger World's Food Output," declared a New York Times headline on Aug. 8, 1974, right in the heat of summer.

"Bad weather this summer and the threat of more of it to come hang ominously over every estimate of the world food situation," the article began.

It continued saying the dire consequences of the cooling climate created a deadly risk of suffering and mass starvation.

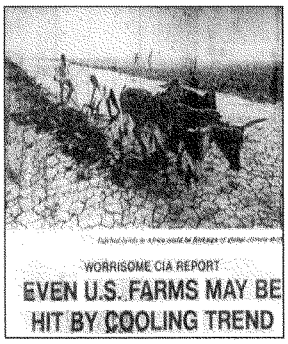
Various climatologists issued a statement that "the facts of the present climate change are such that the most optimistic experts would assign near certainty to major crop failure in a decade," reported the Dec. 29, 1974, New York Times. If policy makers did not account for this oncoming doom, "mass deaths by starvation and probably in anarchy and violence" would result.

Time magazine delivered its own gloomy outlook on the "World Food Crisis" on June 24 of that same year and followed with the article "Weather Change: Poorer Harvests" on November 11.

According to the November story, the mean global surface temperature had fallen just 1 degree Fahrenheit since the 1940s. Yet this small drop "trimmed a week to ten days from the growing season" in the earth's breadbasket regions.

The prior advances of the Green Revolution that bolstered world agriculture would be vulnerable to the lower temperatures and lead to "agricultural disasters."

Newsweek was equally downbeat in its article "The Cooling World." "There are ominous signs that the earth's weather patterns have begun to change dramatically," which would lead to drastically decreased food production, it said.



This headline from the May 31, 1976, U.S. News & World Report is a reminder that it hasn't been very long since global warming wasn't a concern.

"The drop in food output could begin quite soon, perhaps only ten years from now," the magazine told readers on April 28 the following year.

This, Newsweek said, was based on the "central fact" that "the earth's climate seems to be cooling down." Despite some disagreement on the cause and extent of cooling, meteorologists were "almost unanimous in the view that the trend will reduce agricultural productivity for the rest of the century."

Despite Newsweek's claim, agricultural productivity didn't drop for the rest of the century. It actually increased at an "annual rate of 1.76% over the period 1948 to 2002," according to the Department of Agriculture.

That didn't deter the magazine from warning about declining agriculture once again 30 years later – this time because the earth was getting warmer. "Livestock are dying. Crops are withering," it said in the Aug. 8, 2005, edition. It added that "extremely dry weather of recent months has spawned swarms of locusts" and they were destroying crops in France. Was global warming to blame? "Evidence is mounting to support just such fears," determined the piece.

U.S. News & World Report was agriculturally pessimistic as well. "Global climate change may alter temperature and rainfall patterns, many scientists fear, with uncertain consequences for agriculture." That was just 13 years ago, in 1993.

That wasn't the first time warming was blamed for influencing agriculture. In 1953 William J. Baxter wrote the book "Today's Revolution in Weather!" on the warming climate. His studies showed "that the heat zone is moving northward and the winters are getting milder with less snowfall."

Baxter titled a chapter in his book "Make Room For Trees, Grains, Vegetables and Bugs on the North Express!"

Climate Change: Unpredictable Results

Date	Publication	Prediction (All exact quotes)	Outcome
Oct. 7, 1912	New York Times	Prof. Schmidt Warns Us of an Encroaching Ice Age	Still encroaching...
June 28, 1923	Los Angeles Times	The possibility of another Ice Age already having started... is admitted by men of first rank in the scientific world, men specially qualified to speak.	Must be a slow starter.
Aug. 9, 1923	Chicago Tribune	Scientist says Arctic ice will wipe out Canada	Still there last time we checked.
December 1932	The Atlantic	We must be just teetering on an ice age which some relatively mild geologic action would be sufficient to start going.	Still teetering.
Feb. 20, 1969	New York Times from Col. Bernt Bachen	The Arctic pack ice is thinning and that the ocean at the North Pole may become an open sea within a decade or two.	Santa still is safe.
February 1974	Fortune magazine from Reid Bryson	There is very important climatic change going on right now... It is something that, if it continues, will affect the whole human occupation of the earth – like a billion people starving.	World population increased by 2.5 billion.
March 1, 1975	Science News	The cooling since 1940 has been large enough and consistent enough that it will not soon be reversed, and we are unlikely to quickly regain the "very extraordinary period of warmth" that preceded it.	If "not soon be reversed" means "reversed by the next decade," then yes.
March 1, 1975	Science News	The temperature has already fallen back some 0.6 degrees, and shows no sign of reversal.	So much for climatologists reading the signs correctly.
July-August 1975	International Wildlife	But the sense of the discoveries is that there is no reason why the ice age should not start in earnest in our lifetimes.	There's still time.
1992	Al Gore, "Earth in the Balance"	About 10 million residents of Bangladesh will lose their homes and means of sustenance because of the rising sea level, due to global warming, in the next few decades.	While periodic monsoons still cause flooding, rising seas have not been a problem.
Feb. 2, 2006	The Daily Telegraph	"Billions will die," says Lovelock, who tells us that he is not normally a gloomy type. Human civilisation will be reduced to a "broken rabble ruled by brutal warlords", and the plague-ridden remainder of the species will flee the cracked and broken earth to the Arctic, the last temperate spot, where a few breeding couples will survive.	Even Malthus must be turning over in his grave over this one.

The warming world led him to estimate that within 10 years Canada would produce more wheat than the United States, though he said America's corn dominance would remain.

It was more than just crops that were in trouble. Baxter also noted that fishermen in Maine could catch tropical and semi-tropical fish, which were just beginning to appear. The green crab, which also migrated north, was "slowly killing" the profitable industry of steamer clams.

Ice, Ice Baby

Another subject was prominent whether journalists were warning about global warming or an ice age: glaciers. For 110 years, scientists eyed the mammoth mountains of ice to determine the nature of the temperature shift. Reporters treated the glaciers like they were the ultimate predictors of climate.

In 1895, geologists thought the world was freezing up again due to the "great masses of ice" that were frequently seen farther south than before.

The New York Times reported that icebergs were so bad, and they decreased the temperature of Iceland so much, that inhabitants fearing a famine were "emigrating to North America."

In 1902, when Teddy Roosevelt became the first president to ride in a car, the Los Angeles Times delivered a story that should be familiar to modern readers. The paper's story on "Disappearing Glaciers" in the Alps said the glaciers were not "running away," but rather "deteriorating slowly, with a persistency that means their final annihilation."

The melting led to alpine hotel owners having trouble keeping patrons. It was established that it was a "scientific fact" that the glaciers were "surely disappearing." That didn't happen. Instead they grew once more.

More than 100 years after their "final annihilation" was declared, the LA Times was once again writing the same story. An Associated Press story in the Aug. 21, 2005, paper showed how glacier stories never really change. According to the article: "A sign on a sheer cliff wall nearby points to a mountain hut. It should have been at eye level but is more than 60 feet above visitors' heads. That's how much the glacier has shrunk since the sign went up 35 years ago."

But glacier stories didn't always show them melting away like ice cubes in a warm drink. The Boston Daily Globe in 1923 reported one purpose of MacMillan's Arctic expedition was to determine the beginning of the next ice age, "as the advance of glaciers in the last 70 years would indicate."

When that era of ice-age reports melted away, retreating glaciers were again highlighted. In 1953's "Today's Revolution in Weather!" William Baxter wrote that "the recession of glaciers over the whole earth affords the best proof that climate is warming," despite the fact that the world had been in its cooling phase for more than a decade when he wrote it. He gave examples of glaciers melting in Lapland, the Alps, Mr. Rainer and Antarctica.

Time magazine in 1951 noted permafrost in Russia was receding northward up to 100 yards per year. In 1952, The New York Times kept with the warming trend. It reported the global warming studies of climatologist Dr. Hans W. Ahlmann, whose "trump card" "has been the melting glaciers."

The next year the Times said "nearly all the great ice sheets are in retreat."

U.S. News and World Report agreed, noted that "winters are getting milder, summers drier. Glaciers are receding, deserts growing" on Jan. 8, 1954. In the '70s, glaciers did an about face. Ponte in "The Cooling" warned that "The rapid advance of some glaciers has threatened human settlements in Alaska, Iceland, Canada, China, and the Soviet Union."

Time contradicted its 1951 report and stated that the cooling trend was here to stay. The June 24, 1974, article was based on those omnipresent "telltale signs" such as the "unexpected persistence and thickness of pack ice in the waters around Iceland."

Even The Christian Science Monitor in the same year noted "glaciers which had been retreating until 1940 have begun to advance." The article continued, "the North Atlantic is cooling down about as fast as an ocean can cool."

The New York Times noted that in 1972 the "mantle of polar ice increased by 12 percent" and had not returned to "normal" size.

North Atlantic sea temperatures declined, and shipping routes were "cluttered with abnormal amounts of ice."

Furthermore, the permafrost in Russia and Canada was advancing southward, according to the December 29 article that closed out 1974.

Decades later, the Times seemed confused by melting ice. On Dec. 8, 2002, the paper ran an article titled "Arctic Ice Is Melting at Record Level, Scientists Say." The first sentence read "The melting of Greenland glaciers and Arctic Ocean sea ice this past summer reached levels not seen in decades."

Was the ice melting at record levels, as the headline stated, or at a level seen decades ago, as the first line mentioned?

On Sept. 14, 2005, the Times reported the recession of glaciers "seen from Peru to Tibet to Greenland" could accelerate and become abrupt.

This, in turn, could increase the rise of the sea level and block the Gulf Stream. Hence "a modern counterpart of the 18,000-year-old global-warming event could trigger a new ice age."

Government Comes to the Rescue

Mankind managed to survive three phases of fear about global warming and cooling without massive bureaucracy and government intervention, but aggressive lobbying by environmental groups finally changed that reality.

The Kyoto treaty, new emissions standards and foreign regulations are but a few examples.

Getting the government involved to control the weather isn't a new concept. When the earth was cooling, The New York Times reported on a panel that recommended a multimillion-dollar research program to combat the threat.

That program was to start with $18 million a year in funding and increase to about $67 million by 1980, according to the Jan. 19, 1975, Times. That would be more than $200 million in today's dollars.

Weather warnings in the '70s from "reputable researchers" worried policy-makers so much that scientists at a National Academy of Sciences meeting "proposed the evacuation of some six million people" from parts of Africa, reported the Times on Dec. 29, 1974.

That article went on to tell of the costly and unnecessary plans of the old Soviet Union. It diverted time from Cold War activities to scheme about diverting the coming cold front.

It had plans to reroute "large Siberian rivers, melting Arctic ice and damming the Bering Strait" to help warm the "frigid fringes of the Soviet Union."

Newsweek's 1975 article "The Cooling World" noted climatologists' admission that "solutions" to global cooling "such as melting the arctic ice cap by covering it with black soot or diverting arctic rivers," could result in more problems than they would solve.

More recently, 27 European climatologists have become worried that the warming trend "may be irreversible, at least over most of the coming century," according to Time magazine on Nov. 13, 2000. The obvious solution? Bigger government.

They "should start planning immediately to adapt to the new extremes of weather that their citizens will face – with bans on building in potential flood plains in the north, for example, and water conservation measures in the south."

To find out more information or to set up an interview, contact Colleen O'Boyle at 703-683-5004 ext. 122

Almost 50 policy and research recommendations came with the report.

The news media have given space to numerous alleged solutions to our climate problems.

Stephen Salter of the University of Edinburgh had some unusual ideas to repel an effect of global warming. In 2002 he had the notion of creating a rainmaker, "which looks like a giant egg whisk," according to the Evening News of Edinburgh on Dec. 2, 2002.

The Atlantic edition of Newsweek on June 30, 2003, reported on the whisk. The British government gave him 105,000 pounds to research it.

Besides promoting greater prosperity and peace, it could "lift enough seawater to lower sea levels by a meter, stemming the rise of the oceans – one of the most troublesome consequences of global warming." The rain created would be redirected toward land using the wind's direction.

Instead of just fixing a symptom of global warming, Salter now wants to head it off. He wants to spray water droplets into low altitude clouds to increase their whiteness and block out more sunlight.

The National Academy of Sciences (NAS) has considered other ways to lower temperatures and the media were there to give them credence.

Newsweek on May 20, 1991, reported on five ways to fight warming from the National Research Council, the operating arm of the NAS.

The first idea was to release "billions of aluminized, hydrogen-filled balloons" to reflect sunlight. To reflect more sunlight, "fire one-ton shells filled with dust into the upper atmosphere." Airplane engines could pollute more in order to release a "layer of soot" to block the sun.

U.S. Funds Nearly $4 Billion in Climate-Change Research

Global warming is a good business to be in for government funding. More than 99.5 percent of American climate change funding comes from the government, which spends $4 billion per year on climate change research.

Researchers use this money to promote doom and gloom reports on what man is doing to his world.

The bigger and more catastrophic climate change cataclysm becomes, the more it is justifiable to take more money and exert more control – a cycle that feeds itself. Scientist and environmentalist Stephen Schneider explained these tactics.

"On the one hand, as scientists we are ethically bound to the scientific method, in effect promising to tell the truth, the whole truth, and nothing but – which means that we must include all the doubts, the caveats, the ifs, ands, and buts. On the other hand, we are not just scientists but human beings as well. And like most people we'd like to see the world a better place, which in this context translates into our working to reduce the risk of potentially disastrous climatic change. To do that we need to get some broad-based support, to capture the public's imagination. That, of course, entails getting loads of media coverage. So we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we might have." (Discover, October, 1989)

Environmental lobbying, a $1.6 billion industry, puts increased pressure on government to spend more on global warming and take more control.

Calls for higher taxes, more regulation and greater government intervention in private businesses increase as environmentalists propagate scarier scenarios.

To find out more information or to set up an interview, contact Colleen O'Boyle at 703-683-5004 ext. 122

Should any sunlight remain, 50,000 orbiting mirrors, 39 square miles each, could block it out.

With any heat left, "infrared lasers on mountains" could be used "to zap rising CFCs," rendering them harmless.

Global Warming: 1981-Present and Beyond

The media have bombarded Americans almost daily with the most recent version of the climate apocalypse.

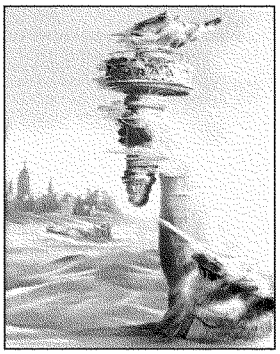
Global warming has replaced the media's ice age claims, but the results somehow have stayed the same – the deaths of millions or even billions of people, widespread devastation and starvation.

The recent slight increase in temperature could "quite literally, alter the fundamentals of life on the planet" argued the Jan. 18, 2006, Washington Post.

In the aftermath of Hurricane Katrina, Nicholas D. Kristof of The New York Times wrote a column that lamented the lack of federal spending on global warming.

"We spend about $500 billion a year on a military budget, yet we don't want to spend peanuts to protect against climate change," he said in a Sept. 27, 2005, piece.

Kristof's words were noteworthy, not for his argument about spending, but for his obvious use of the term "climate change." While his column was filled with references to "global warming," it also reflected the latest trend as the coverage has morphed once again.



20th Century Fox's "The Day After Tomorrow" pushed the idea that global warming could lead to an ice age.

The two terms are often used interchangeably, but can mean something entirely different.

The latest threat has little to do with global warming and has everything to do with ... everything.

The latest predictions claim that warming might well trigger another ice age.

The warm currents of the Gulf Stream, according to a 2005 study by the National Oceanography Centre in Southampton, U.K., have decreased 30 percent.

This has raised "fears that it might fail entirely and plunge the continent into a mini ice age," as the Gulf Stream regulates temperatures in Europe and the eastern United States.

This has "long been predicted" as a potential ramification of global warming.

Hollywood picked up on this notion before the study and produced "The Day After Tomorrow."

In the movie global warming triggered an immediate ice age. People had to dodge oncoming ice. Americans were fleeing to Mexico. Wolves were on the prowl. Meanwhile our hero, a government paleoclimatologist, had to go to New York City to save his son from the catastrophe.

But it's not just a potential ice age. Every major weather event becomes somehow linked to "climate change."

Numerous news reports connected Hurricane Katrina with changing global temperatures. Droughts, floods and more have received similar media treatment.

Even The New York Times doesn't go that far – yet.

In an April 23, 2006, piece, reporter Andrew C. Revkin gave no credence to that coverage.

"At the same time, few scientists agree with the idea that the recent spate of potent hurricanes, European heat waves, African drought and other weather extremes are, in essence, our fault. There is more than enough natural variability in nature to mask a direct connection, they say," he explained.

Unfortunately, that brief brush with caution hasn't touched the rest of the media.

Time magazine's recent cover story included this terrifying headline:

"Polar Ice Caps Are Melting Faster Than Ever... More And More; Land Is Being Devastated By Drought... Rising Waters Are Drowning Low-Lying Communities... By Any Measure, Earth Is At ... The Tipping Point The climate is crashing, and global warming is to blame. Why the crisis hit so soon —and what we can do about it"

That attitude reflects far more of the current media climate. As the magazine claimed, many of today's weather problems can be blamed on the changing climate.

"Disasters have always been with us and surely always will be. But when they hit this hard and come this fast — when the emergency becomes commonplace — something has gone grievously wrong. That something is global warming," Time said.

Methodology

The Business & Media Institute (BMI) examined how the major media have covered the issue of climate change over a long period of time. Because television only gained importance in the post-World War II period, BMI looked at major print outlets.

There were limitations with that approach because some major publications lack the lengthy history that others enjoy. However, the search covered more than 30 publications from the 1850s to 2006 — including newspapers, magzines, journals and books.

Recent newspaper and magazine articles were obtained from Lexis-Nexis. All other magazine articles were acquired from the Library of Congress either in print or microfilm.

Older newspapers were obtained from ProQuest. The extensive bibliography includes every publication cited in this report.

BMI looked through thousands of headlines and chose hundreds of stories to analyze.

Dates on the time periods for cooling and warming reporting phases are approximate, and are derived from the stories that BMI analyzed.

Conclusion

What can one conclude from 110 years of conflicting climate coverage except that the weather changes and the media are just as capricious?

Certainly, their record speaks for itself.

Four separate and distinct climate theories targeted at a public taught to believe the news.

Only all four versions of the truth can't possibly be accurate.

For ordinary Americans to judge the media's version of current events about global warming, it is necessary to admit that journalists have misrepresented the story three other times.

Yet no one in the media is owning up to that fact.

Newspapers that pride themselves on correction policies for the smallest errors now find themselves facing a historical record that is enormous and unforgiving.

It is time for the news media to admit a consistent failure to report this issue fairly or accurately, with due skepticism of scientific claims.

Recommendations

It would be difficult for the media to do a worse job with climate change coverage. Perhaps the most important suggestion would be to remember the basic rules about journalism and set aside biases – a simple suggestion, but far from easy given the overwhelming extent of the problem.

Three of the guidelines from the Society of Professional Journalists are especially appropriate:

- "Support the open exchange of views, even views they find repugnant."
- "Give voice to the voiceless; official and unofficial sources of information can be equally valid."
- "Distinguish between advocacy and news reporting. Analysis and commentary should be labeled and not misrepresent fact or context."

That last bullet point could apply to almost any major news outlet in the United States. They could all learn something and take into account the historical context of media coverage of climate change.

Some other important points include:

- **Don't Stifle Debate:** Most scientists do agree that the earth has warmed a little more than a degree in the last 100 years. That doesn't mean that scientists concur mankind is to blame. Even if that were the case, the impact of warming is unclear.

People in northern climes might enjoy improved weather and longer growing seasons.

- **Don't Ignore the Cost:** Global warming solutions pushed by environmental groups are notoriously expensive. Just signing on to the Kyoto treaty would have cost the United States several hundred billion dollars each year, according to estimates from the U.S. government generated during President Bill Clinton's term.

Every story that talks about new regulations or forced cutbacks on emissions should discuss the cost of those proposals.

- **Report Accurately on Statistics:** Accurate temperature records have been kept only since the end of the 19th Century, shortly after the world left the Little Ice Age. So while recorded temperatures are increasing, they are not the warmest ever. A 2003 study by Harvard and the Smithsonian Center for Astrophysics, "20th Century Climate Not So Hot," "determined that the 20th century is neither the warmest century nor the century with the most extreme weather of the past 1,000 years."

Bibliography

For a complete bibliography, go to:

www.businessandmedia.org.

A Brief History of the Business & Media Institute

The Business & Media Institute (BMI) is the only media watchdog operation devoted to monitoring business and economic issues. Its mission is to advance the culture of free enterprise in America. According to a survey by the National Council on Economic Education, 79 percent of Americans get the majority of their economic information from television. The study determined that an astounding 61 percent of the general public could not answer questions about basic economic concepts.

It is BMI's goal to bring balance to economic reporting and to promote a fair portrayal of the business community in the media. Providing resources for journalists, such as connections to sources who can speak intelligently about the economy, is one way it pursues this end. BMI, formerly known as the Free Market Project, has produced numerous pieces of research, many of which received critical acclaim in the national media. Its analysts cover a range of issues including global warming, taxes, regulation, government spending, and Social Security.

BMI, which was founded in 1992, is a division of the Media Research Center (MRC), America's foremost media watchdog. MRC has been the leader in documenting, exposing and neutralizing liberal bias since 1987. Its products are cited on a regular basis by radio talk show hosts, syndicated columnists, authors and Internet news services. Its other divisions include the Cybercast News Service, which strives to produce accurate, balanced news coverage, and TimesWatch, which monitors The New York Times exclusively. Together, all the MRC's divisions are committed to getting truth to the American people.

The MRC is organized under Section 501(c)(3) of the Internal Revenue Service Code, and contributions to the MRC are tax-deductible for income tax purposes. The MRC does not accept government grants or contracts. It raises funds each year solely from private sources such as individuals, foundations and corporations.

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