Some Storm Debates in 2004 – 03/2005

• Four hurricanes hit Florida in Fall 2004.
  o They caused a lot of damage.

• They created a huge amount of news.
  o Much news put a lot of the blame on global warming.

• But the natural cycle of Atlantic hurricanes show large up and down changes each 20 or 30 years.
  o People have not been able to identify a change due to global warming.
  o If there is any change due to global warming, it is probably a 1 to 3% effect.

• This document is saved to prepare part of the history of climate news and climate debate in this period.


Roy Jenne
June 2006
A Hurricane Expert Quits the IPCC on Jan 17, 2005

Roy Jenne
Feb 4, 2005
Rev Feb 15, 2005

Landsea quits the IPCC and says that an author had politicized the IPCC process that delivers reports about climate change.

1. Scientist quits IPCC panel over comments (Science, 28 Jan 05)
   - About climate change

2. What are the main issues in this document?

3. Kyoto pact is confirmed but conflict continues (Science News, Jan 1, 2005)
   - About Kyoto meeting Dec 6-17, 2004, in Argentina
   - They did debate the connection between weather related disasters and climate change
   - This story has a good statement about 2004 hurricanes by the head of NOAA

4. Politics fuel climate spat (Sun, Jan 23, 2005, Daily Camera, Boulder, Colorado)
   - Is it just a “spat?”

5. Hot models, a story in The Economist, Jan 29, 2005, 1 p
   - Landsea resigns and other stories

6. An email: Landsea is the hero (rec Feb 10, 2005)

7. Climate change and politics (The Economist, Feb 5, 2005, 2 p)
   - Includes Dr. Crichton book (State of Fear)
   - Landsea resigns IPCC, the arguments continue; also Trenberth
   - The hockey stick curve was popular in 2000 (arguments)
   - IPCC emissions projections (arguments), will the IPCC improve these?
   - Lomborg study involved noted economists

8. Selected comments about hurricanes (claims of increased storms), and the Trenberth-Landsea problem (2 p)

9. Climate change and alarmsism (4 p) In Der Spiegel, Germany
   - From Storch and Stehr in Germany
   - Published in Der Spiegel, Germany, in late Jan 2005
   - Please read this; it is very good

10. Chris Landsea leaves IPCC (Mon, Jan 17, 2005, 6 p)
    - He explains his reasons

    - By Mike Hume

12. Some issues about climate change and “bigger storms” (Sep 2004 clips, 17 p)
    - Selected articles from UCAR press clips for Sep 2004
    - See hurricane chart on Page 42

Page 2
13. More intense hurricanes could continue as a result of global warming
   - And comments by Bill Gray, CSU, hurricane expert. Gray does not like the link to global warming.

14. “Hurricane scientist leaves UN team”
   - a story in the Washington Post, publ Sat, Jan 22, 2005 (3 p)

15. Ice is melting in the Arctic
   - This is a recent story that got lots of news. It is scary.
   - But a pressure oscillation in the Arctic changes the wind, and changes the ice drift. This helps to explain what is happening. A lot of the ice melt might be due to a natural oscillation.

16. Landsea message to IPCC

17. Jim O’Brien, FSU, writes about hurricanes (3 p)

18. The hurricane Saga (2004-05)
   - From American Scientist, May, June 2005
   - Landsea, hurricanes, and storms in Europe.

Please read item 9 above, Page 14

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CLIMATE CHANGE

Scientist Quits IPCC Panel Over Comments

An ugly spat has broken out among contributors to the world’s leading scientific report on climate change. Chris Landsea, a hurricane expert with the National Oceanic and Atmospheric Administration in Miami, announced last week that he is resigning as a contributor to the next report of the Intergovernmental Panel on Climate Change (IPCC) because a leading co-author had “politicized” the process with pronouncements about the impact of global warming on last year’s tumultuous hurricane season.

The tussle began last October when Kevin Trenberth of the National Center for Atmospheric Research in Boulder, Colorado, took part in a media phone call organized by Harvard scientists on last year’s spate of hurricanes. Trenberth, who was introduced as the lead author of a chapter on climate observations for the IPCC’s 2007 report, noted that warming sea temperatures and rising sea levels caused by global warming are “changing” conditions for hurricanes and warned that the 2004 hurricanes “may well be a harbinger of the future.”

His widely reported comments upset Landsea, who notes that IPCC has concluded that no such link can yet be made. Landsea threatened to resign unless IPCC leaders reprimanded or removed Trenberth. On 16 January, Landsea stepped down, saying in an e-mail to colleagues that Trenberth’s actions have made it “very difficult for the IPCC process to proceed objectively” on hurricanes.

In an e-mail to Science, IPCC Secretary-General R. K. Pachauri repeated what he had told Landsea: “In their own individual rights, [IPCC authors] are free to express their views on any subject, including various aspects of climate change.” Trenberth told Science that “it’s ridiculous to suggest I [was] representing the IPCC”; his role as an author was mentioned during the October event merely as “part of my credentials.” He also defended his view that changing sea conditions could be contributing to greater hurricane intensity.

That position is “plausible,” says hurricane expert Kerry Emanuel of the Massachusetts Institute of Technology. But hurricane activity varies so much from decade to decade that “not a single person in my field thinks you can see the signal.”

–JoCelyn Kaiser

With reporting by Eli Kintisch and Pallava Bagla.

www.sciencemag.org SCIENCE VOL 307 28 JANUARY 2005

This came Thu Feb 3, 2005

Landsea quit IPCC

on Jan 17, 2005

This was in Science
What are the Main Issues in this Document?

1) Are storms more intense (or numerous) now than they were? What will happen with global warming?
   - The news has drawn the picture of worse and worse storms (both for now and later).
   - Some scientists have hipped the vision of bad storms a lot.

2) What do scientists think of the bunch of hurricanes over Florida in Fall 2004?
   - The number of hurricanes goes up and down. We are now in a period of more hurricanes.
   - The unusual 2004 in Florida should be regarded as a part of natural variability, and there is no evidence that it had much of anything to do with global warming.
   - There is a section in the new IPCC report (for 2007) that will describe what we know about hurricanes.
   - The bad Florida hurricanes of about Sep 2004 got a lot of news. The lead author (for storms and hurricanes, etc.) of the IPCC report (for 2007) said that the hurricanes were connected to global warming.
     - But the researchers in this area do not find evidence for a connection of more hurricanes or stronger hurricanes to global warming.
     - A key hurricane research person (Chris Landsea) tried to address the issue of statements by the lead author of this section of the IPCC report. He tried to resolve this question by working within IPCC. But he was shot down within IPCC.
       - So on Jan 17, 2005, he resigned from the IPCC.
       - Landsea does not want to see his research being “summarized” to proclaim information about hurricanes that he thinks is false.

3) In general, has the talk about climate change included far too much hype? There has been a problem.

Roy Jenne
February 2005
Climate Storm
Kyoto pact is confirmed, but conflict continues

An international meeting that was supposed to cement environmental rules stemming from the 1997 Kyoto treaty on global warming ended with little consensus besides an agreement to hold more discussions.

The meeting, held Dec. 6 to 17, 2004, in Buenos Aires, was the first since Russia ratified the Kyoto Protocol in November. Russia's approval fulfills the condition that countries responsible for more than 55 percent of the world's greenhouse gases have ratified the treaty, so the agreement will take effect on Feb. 16. The Kyoto Protocol commits ratifying countries to reduce their greenhouse-gas emissions, by 2012, to 5 percent below their 1990 emissions.

The meeting opened in a celebratory mood, but divisions quickly emerged. The United States, which hasn't ratified the treaty, allied with major oil producers and some developing countries and attempted to derail plans for a 2005 meeting to discuss greenhouse-gas reductions after 2012. However, a last-minute compromise states that a single, "informal" meeting will take place next May.

Conflict blocked agreement on compensation for the effects of climate change on small island states.

The assembled nations, including the United States, didn't argue over the link between greenhouse-gas emissions and rising temperatures, a point of past contention. However, they did debate the connection between weather-related disasters and climate change. The United Nations Environment Program (UNEP) released figures showing that 2004 was the costliest year on record for worldwide hurricane and other weather-related damage. The price tag was $90 billion for the first 10 months of 2004, compared with $65 billion for all of 2003.

"Climate scientists anticipate an increase in intensity of extreme weather events," warns UNEP head Klaus Toepfer, "and this is what the insurance industry is experiencing, resulting in . . . losses."

Recent increased storm activity didn't reflect human influence, said Conrad C. Lautenbacher Jr., the administrator of the Washington, D.C.-based National Oceanic and Atmospheric Administration (NOAA), at a press conference held by the U.S. delegation. "There is no scientific direct evidence that connects the storms with climate change," he said. He attributed the increased damage to natural weather cycles.

The director of the UNEP study, Thomas Loster of the Munich, Germany, insurance company Munich Re, later responded by pointing to computer simulations by NOAA scientist Thomas R. Knutson, which predict more intense tropical storms.

Knutson's research, which appeared in the Sept. 15, 2004 Journal of Climate, projected the effect of carbon dioxide concentration increases of 1 percent per year—less than the current rate—over 80 years and predicted that tropical storms will become half a category greater in strength, on average.

However, Knutson told Science News that he doubts that climate change underlies any significant increase in hurricane activity so far. —D. SHIGA

Science News
Jan 1, 2005
Page 3

- The head of NOAA gave a statement about hurricanes that was good.
- It was similar to what Landsea and other hurricane researchers say.
LOCAL NEWS

Politics fuel climate spat

NCAR scientist a focus of dispute over global warming

By Todd Neff
Camera Staff Writer

It may seem like a simple spat among scientists.

But an argument between a Florida hurricane researcher and a Boulder climate scientist illustrates how political the science of climate change has become.

Kevin Trenberth, a senior scientist at the National Center for Atmospheric Research in Boulder, associated the heavy 2004 Atlantic hurricane season with global warming during a Harvard University press conference in October.

His comments led to hurricane researcher Chris Landsea's resignation last week from the world's most prominent climate-change research effort, the Intergovernmental Panel on Climate Change. Landsea, a hurricane researcher with the National Oceanic and Atmospheric Administration's Ocean Hurricane Research Division in Miami, Fla., had worked on hurricane-related observations for major IPCC reports in 1995 and 2001.

"I have come to view the part of the IPCC to which my expertise is relevant as having become political," Landsea, who earned his doctorate at Colorado State University, wrote in an open resignation letter.

Hurricanes and global warming

NCAR's Trenberth was identified at the October news conference as lead author of a chapter on observed effects of climate changes for a major IPCC report — called the Fourth Assessment Report — expected in 2007. The organization's 2001 report has become a basic reference in climate-change science and policy.

Last fall, Trenberth asked Landsea to write up his observations on Atlantic hurricanes for the 2007 report. Landsea agreed.

But then Trenberth and other scientists participating in the press conference spoke of how human-caused global warming was making conditions ripe for frequent and more violent hurricanes such as those seen in 2004, when Florida was hit with four hurricanes and tropical storms in a five-week period.

Trenberth said, "the evidence strongly suggests more intense storms and risk of greater flooding events, so that the North Atlantic hurricane season of 2004 may well be a harbinger for the future."

Landsea countered that connecting the busy 2004 hurricane season to global warming was "in direct opposition to research written in the field," and that Trenberth's public statements were "so far outside current understanding" that he questioned the IPCC's ability to remain unbiased in reporting on hurricane activity. So he withdrew from the effort.

In a telephone interview with the Camera, Trenberth said the press conference had been called to rebut statements by Landsea and others who have said "global warming had nothing to do with hurricanes."

Among other evidence, Trenberth spoke of record-high sea-surface temperatures in the region and higher levels of water vapor, both of which feed hurricanes.

In a note Trenberth sent Tuesday to IPCC leaders, he said the upcoming report was a product of many views. It would, he said, "be extensively reviewed and does not belong to me."

One problem with using Atlantic hurricanes as a yardstick for global warming is that there are only seven or eight of them per year — of about 90 that occur worldwide on a "rock-steady" basis, said Kerry Emanuel, a professor and hurricane researcher at the Massachusetts Institute of Technology.

That leads to problems with what he called "the statistics of small numbers." In addition, Emanuel said, increased frequency of Atlantic hurricanes since 1995 appears to follow a natural cycle observed for decades.

"I think it's extremely difficult to pin the last season on global warming," Emanuel said. "That does not preclude that there may be a global warming signal buried in there somewhere, but nobody in my field thinks that we've seen it."

Reconciling science and politics

Hurricanes aside, the tiff illustrates a problem with the climate-change organization's attempts to remain apolitical, said Roger Pielke Jr., a University of Colorado professor and director of the Center for Science and Technology Policy Research at the Cooperative Institute for Research in the Environmental Sciences.

"It's clear that scientists have opinions, views and values," Pielke said. "When the IPCC tries to say they're above politics, it sets the stage for political influence."

Pielke said he thinks the organization must openly confront issues of policy by integrating policy options with scientific research.

"Otherwise it will just be a political football," he said. "It's unrealistic to expect with an issue as political as climate change that science can be done in a complete vacuum."

Contact Camera Staff Writer Todd Neff at (303) 473-1327 or neff@dailycamera.com.
Hot models

How to model the climate on the cheap

This month saw the start of a period when climate change will be in the news a lot. On January 17th Chris Landsea, a hurricanes specialist, withdrew from the Intergovernmental Panel on Climate Change, accusing it of "having become politicised". On January 29th a report by the International Climate Change Taskforce called for drastic actions to cut carbon dioxide (CO2) emissions. On February 1st a conference on the subject will be held at Britain's Hadley climate centre. And on February 16th the Kyoto protocol comes into force. You have been warned.

As part of the fun, there was also the publication of an intriguing paper in Nature. The research was intriguing not so much for what it said (things may get hotter than expected), but for how it arrived at that conclusion. For it was one of the first serious scientific studies to exploit the idea of distributed computing.

Modelling the climate requires a huge amount of computing power, which is one reason the models have not been tested as thoroughly as they might have been. So David Stainforth of Oxford University and his colleagues decided to employ the idle capacity of 95,000 private desk-top computers to do it for very little money. Willing computer owners registered at a website (climateprediction.net), downloaded the appropriate software and then used their machines as normal. This enabled Dr Stainforth to test what is known as the Met Office Unified Model with 2,000 different sets of starting parameters.

Dr Stainforth wanted to explore the consequences of doubling CO2 levels from their pre-industrial values (at the moment they are about 1.6 times what they were at the beginning of the industrial revolution). What he observed, depending on the values of the parameters (such things as average cloud cover) was a range of increases between 2°C and 11°C, which is far greater than the current consensus of 2.2°C.

That is not as alarming as it sounds since, by his own admission, the model Dr Stainforth has been testing is crude. It dumps all its CO2 into the atmosphere in one go, instead of leaking it in over the years. And its description of the interaction between atmosphere and ocean is far too simple. But it does point the way towards a better way of doing the modelling business. And a cheaper one, too.
LANDSEA IS THE HERO IN THIS.

WHEN THE 3RD HURRICANE HAPPENED IN FLORIDA, THE PRIME MINISTER OF ENGLAND SAID THAT THE HURRICANES ARE DUE TO GLOBAL WARMING. I CHECKED WITH MANY, MANY ACTIVE HURRICANE RESEARCHERS AND NO ONE BELIEVES THAT THE HURRICANES IN FLORIDA THIS PAST YEAR ARE DUE TO GLOBAL WARMING.

I HAVE HEARD TRENBERTH SAY THAT THEY ARE DUE TO GLOBAL WARMING.

REGARDS JIM

--

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LIFE IS ABOUT FRIENDS
The debate over global warming is getting rancorous

"THE intermixing of science and politics is a bad combination, with a bad history." So warns Michael Crichton at the end of his current popular novel, "State of Fear". He argues that wilful obfuscation by politicians and wild-eyed greens is leading to a herd mentality over global warming, akin to the uncritical embrace of eugenics a century ago. "Once again," he intones ominously, "critics are few and harshly dealt with."

At first blush, it appears that Dr Crichton might have a point. Of course, there was once an intense global debate over global warming's most sacred cow—the Kyoto protocol on climate change. The treaty calls for immediate reductions in emissions of greenhouse gases by industrialised countries. George Bush upset many greens by abruptly confirming in 2001 that America would never ratify the Kyoto treaty. But other countries did ratify it, and it is due to come into force for them on February 16th, so the Kyoto debate is over.

The concern about crusading politicians also seems relevant. Tony Blair, Britain's prime minister, says climate change is his top priority, along with Africa, this year. He asked Sir David King, his chief science adviser, to organise a scientific conference in Britain this week to work out what adds up to "dangerous interference" with the climate system. The conference had not ended as The Economist went to press, but there was talk of pressure from politicians for agreement on a specific numerical definition of what is "dangerous"—a notion some participants said was not justified by the science.

They said, they said

Despite Kyoto's coming into force, vigorous debate between and among climate sceptics and climate hawks continues. First, consider the ongoing haggling over the science. The Intergovernmental Panel on Climate Change (IPCC), a body of leading scientists which advises the UN on climate issues, has established that the Earth is indeed warming, thanks in part to man's burning of fossil fuels. However, questions still remain as to the particulars.

For example, when Kevin Trenberth, head of the IPCC's panel on hurricanes, recently suggested that there exists a link between climate change and the wave of powerful hurricanes last year, he was immediately challenged. Christopher Landsea, a hurricane expert at America's National Oceanic and Atmospheric Administration, resigned from the IPCC panel, arguing that Dr Trenberth's comments went beyond what the peer-reviewed science could justify. He wrote a public letter complaining that "because of Dr Trenberth's pronouncements, the IPCC process has been subverted and compromised, its neutrality lost."

Dr Trenberth retorts that "politics is very strong in what is going on, but it is all coming from Landsea and colleagues. And they are linked to the sceptics?" Really?

Another example is the controversy over the most important totem of global warming: the "hockey stick". That is the nickname given to the plot of global temperatures published by Michael Mann, then of the University of Massachusetts in Amherst, and his colleagues in 1998, which shows a sharp upturn beginning at the time of the industrial revolution. This chart has often been trotted out as the clinching proof of anthropogenic warming. Sceptics have never liked this chart, which necessarily relies on statistics to infer historical temperatures from tree rings.

Two critics, Stephen McIntyre of the Northwest Exploration Company, in Toronto, and Ross McKitrick of the University of Guelph, also in Ontario, are about to publish a paper in Geophysical Research Letters (GRL), which alleges that Dr Mann's statistics are inaccurate, and that the hockey stick is a mere statistical artefact. Dr Mann and many other climate scientists dismiss Mr McIntyre's and Dr McKitrick's arguments.

The statistical issues involved are complicated—even Stephen Mackwell, the ed-

-10-
because they offered the lowest benefits for the costs incurred.

Now, some members of the Consensus are dissenting. Thomas Schelling of the University of Maryland, who voted on the final choices, thinks that presenting climate change at the bottom of the list as "bad" is misleading. He says he and the other gurus did not like Kyoto or the aggressive proposals made by Dr Cline, whom he sees as the "most alarmist of the serious climate policy experts", but Dr Schelling says he would have ranked modest climate proposals higher on the list, because he sees climate as a real problem.

Robert Mendelsohn, a conservative Yale economist who was an official "critic" of the climate paper in this process, goes further: because Dr Cline's positions are "well out of the mainstream", he had no choice but to reject them. He worries that "climate change was set up to fail."

Dr Lomberg insists that that was not at all the case. Picking an enthusiast like Dr Cline also could suggest that climate was being taken seriously by the Copenhagen process. However, he accepts that more modest proposals (such as a small carbon tax or investments in research) would have ranked higher on the list. Dr Cline, for his part, acknowledges that his views (for example, on the right discount rates to use when pondering long-term policies) "have not yet been accepted by the mainstream."

He is unhappy with how climate has been portrayed by the Copenhagen process, but he still feels that the attempt to assess global problems was well intentioned and worthwhile.

The death of environmentalism?

Perhaps the clearest sign that the imminent arrival into force of Kyoto has not led to a bout of green triumphalism comes from the debate among America's greens today. Michael Shellenberger and Ted Nordhaus, political strategists and green organizers, argue in a recent policy paper that, judging from polling data, America's big environmental groups have failed to persuade most Americans. They argue that greens need to develop more convincing arguments to get Americans to take global warming more seriously.

Predictably, Messrs Shellenberger and Nordhaus have unleashed a stream of counter-attacks that have led to a lively debate among American environmentalists. They conclude: "We in the environmental community today find ourselves head-down and knee-deep in the global warming river. It's time we got back to shore and envisioned a new path for the crossing."

Despite the arrival of Kyoto, the debate and dissent of recent weeks suggests that the treaty has not produced the world of self-confident greens and smothered critics feared by Dr Crichton. In fact, the contrary seems to be true.
1. The hurricane record

Roughly from 1970-94, Atlantic hurricane activity was relatively mild. Sure, there were monster hurricanes like Andrew in 1992 — its 177 mph winds killed 55 people in the U.S. and Caribbean and caused $26.5 billion in damage. Every year a big storm whips up — it's just that most fizzle before veering into a city.

Overall, the 25-year "quiet" period generated about half as many destructive storms as the previous stormy phase dating back to the 1920s, and about half as many as today's stormy phase appears likely to produce.

Since 1995, environmental conditions have shifted and the Atlantic has been spawning more strong storms. The number of major hurricanes has more than doubled. In the Caribbean, it's up by a factor of five.

Even with milder storm years in 1997 and 2002, the period since 1995 is the most active nine consecutive years on record, according to pioneering hurricane forecaster William Gray at Colorado State University.

2. There's no doubt which side the media is on -- almost every story about global warming and hurricanes available in searches of Google News carries a headline making the link, even when the stories themselves contain contradictory evidence.

3. All previous and current research in the area of hurricane variability has shown no reliable, long-term trend up in the frequency or intensity of tropical cyclones, either in the Atlantic or any other basin. The IPCC assessments in 1995 and 2001 also concluded that there was no global warming signal found in the hurricane record.

According to Mr. Taylor, the tempest isn't merely on the oceans, but also in the media teapot.

"Global warming causes increased storminess' makes for interesting headlines," he said. "It also violates fundamental scientific truth and the lessons of history."

4. But what about all that historical data showing hurricane cycles rising and falling?

Mr. Trenberth told Wired that history couldn't be a reliable guide since, naturally, global warming was changing everything.

"In 50 years, conditions will be so different they will overwhelm these historical cycles," he told Wired.

5. "I don't think the warming now is anywhere near enough to account for the increase in hurricanes that we're seeing," said Robert Gall of the National Center for Atmospheric Research in Boulder, Colo. "To me, this is just a natural variation in the frequency of hurricanes."

6. He also defended his view that changing sea conditions could be contributing to greater hurricane intensity.

That position is "plausible," says hurricane expert Kerry Emanuel of the Massachusetts Institute of Technology. But hurricane activity varies so much from decade to decade that "not a single person in my field thinks you can see the signal."

PANEL: MORE INTENSE HURRICANES COULD CONTINUE AS RESULT OF GLOBAL WARMING

WASHINGTON (BestWire) - The four hurricanes that struck the United States during the five-week period in August and September may be a sign of things to come as global warming continues to generate "more intense" tropical storm activity, according to some experts, who outlined their concerns during a telephone briefing Oct. 21.

"We know the climate is changing, that humans are having an influence, biological systems are responding on all continents and weather is becoming more extreme," said Paul R. Epstein, M.D., associate director of the Center for Health and the Global Environment at Harvard Medical School.

The panelists also acknowledged several skeptics critical of their theory.

For example, William M. Gray and the team of hurricane forecast experts with the Department of Atmospheric Science at Colorado State University, said in an Oct. 1 forecast of Atlantic hurricane activity, that Florida residents should not interpret the four hurricane landfalls to their state in August and September to be related, in any way, "to the much publicized human-induced global warming hypothesis."

Gulev, et al (2000) employed NCEP/NCAR reanalysis data since 1958 to study the occurrence of winter storms over the northern hemisphere. They found a statistically significant (at the 95% level) decline of 1.2 cyclones per year for the period, during which temperatures reportedly rose in much of the hemisphere.

2. Storm Stories
Weather Channel (---) National
09/23/2004 08:00 PM - 09:00 PM

[cc] 00:02:16 Rains are extremely rare in the coastal mountains here. A cold ocean to the west cools the atmosphere and induces rain before the clouds reach the land. When the pool of warm ocean water known as El Nino lies offshore, water-laden clouds pass over the ocean, waiting until they meet the cooling influence of the mountains to release their rains. Kevin Trenberth of the National Center for Atmospheric Research in Boulder, Colorado, blames global warming for more intense El Ninos and for weird weather of all kinds. When we look at what has happened over the last year or so, the very hot conditions, the very dry conditions, the droughts and the floods, these are the kinds of things we expect to see with global warming.

- Trenberth blames global warming for more intense El Ninos
- And for weird weather of all kinds

B
Hi,

attached please find the English translation of an article by myself and Nico Stehr, which was published one week ago in the German weekly DER SPIEGEL. It discusses the presentation and perception of anthropogenic climate change by scientists and the public, the asymmetric response to Emmerich's movie "The day after tomorrow" and Crichton's book "State of fear" - and about the tragedy of the commons in climate research. Maybe you find it interesting. comments are most welcome.

Regards

Hans in Germany

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Next Page: A very useful article by Storch & Stehr in Germany

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DR. JAMES J. O'BRIEN
PROFESSOR OF METEOROLOGY & OCEANOGRAPHY
Center for Ocean-Atmospheric
A Climate of Staged Angst

By Hans von Storch and Nico Stehr

The days are gone when climate researchers sat in their ivory towers packed to the rafters with supercomputers. Nowadays their field has become the stuff of thrillers, and they themselves have risen to take on the leading roles. The topic is so hotly contested, the prognoses so spectacular, that they are no longer merely the subject of media reports; now the specialists in staged apocalypse have moved in. Last year Roland Emmerich depicted a climatic collapse provoked by humankind in his film “The Day After Tomorrow.” Since last week the belittleric counterpart has been available in German bookstores: the novel “State of Fear,” by the best-selling author Michael Crichton.

The thriller is about the violent conflict between sober environmental realists and radical environmental idealists. For the idealists, the organized fear of abrupt climate change serves as a handy weapon. They interpret every somehow unusual weather event as proof of anthropogenic global warming. “You have to structure your information so that it’s always confirmed, no matter what kind of weather we have,” the P.R. consultant for the environmentalist organization advises. The realists, who protest that the evidence that human activity has increased meteorological extremes is thin, are fighting a losing battle. Their dry scientific arguments are unable to gain any ground against the colorful, horrific visions of the climate idealists.

Film and novel have certain aspects in common. Where Emmerich holds out the prospect of a threatening climate catastrophe, the book prophesies an economic collapse. In both cases, greenhouse gases produced by humankind are the culprit—in the film, because the emissions themselves are too much; in the book, because the fear of them is. The idealists are so obsessed with their mission that ultimately, in order to rouse the public, they themselves bring about the foretold catastrophes.

Despite a good deal of factually untrue—and thus all the more striking—compression, Crichton has quite correctly observed the dynamic of the paths of communication among scientists, environmentalist organizations, the state and the civilian population. For there is indeed a serious problem for the natural sciences: namely, the public depiction and perception of climate change. Research has landed in a crisis because its public actors assert themselves on the saturated market of discussion by overselling the topic.

Climate change of man-made origin is an important subject. But is it truly the “most important problem on the planet,” as an American senator claims? Are world peace, or the conquest of poverty, not similarly daunting challenges? And what about population growth, demographic change or quite normal natural disasters?

In the U.S., only a very few remain interested in the greenhouse effect. At the end of the 1980s, the situation was still different. That was the era of the great drought of 1988, the Mississippi flood of 1993, and the climate capers ought by rights to have taken off in earnest from that point. But that never happened in the U.S., and interest petered out. According to a survey by the CBS television network in May 2003, environmental problems were no longer ranked among the six most important subjects; and even within environmental problems, the topic of climate came in only in seventh place. In Germany, so far, things are still seen differently. But for how much longer?

In order to keep the topic of “climate catastrophe” — a concept nonexistent outside the German-speaking world, by the way—continually in the public eye, the media feel obligated, exactly like the protagonists in Crichton’s thriller, to keep framing the topic “a bit more attractively.” At the beginning of the 1990s—severe storms had just swept through the country—one could read and hear in the German media that storms were due to become ever more severe. Since then, storms have become rarer in northern Europe. But no notice is taken of this. The fact that barometric fluctuations in Stockholm have shown no systematic change in the frequency and severity of storms since Napoleon’s time is passed over in silence. Instead, there is now talk of heat waves and floods. Very much in the style of Crichton’s instigators of fear, the story is now that all manner of extreme events are on the increase. Thus even drought in Brandenburg and deluge on the Oder fit the picture without apparent contradiction.

Add to this—besides normal floods and storms—other, more dramatically threatening, scenarios: the reversal of the Gulf Stream and the resultant cooling of large areas of Europe, for instance, or even the rapid melting of the
Greenland ice pack. The question has already been publicly raised whether perhaps even the Asian tsunami can be attributed to the disastrous effects of human activity.

This will not be able to hold the public’s attention for long. Soon people will have become accustomed to these warnings, and will return to the topics of the day: unemployment and Hartz IV, Turkey’s entry to the E.U. or whether Borussia Dortmund can avert disaster on the soccer field and in the boardroom. Thus we will see firsthand how the prophets of doom will draw the climatic dangers in even more garish colours. The terrifying visions to haunt the future can already be guessed at: the breakup of the west Antarctic shelf ice, which will cause the water level to rise much more rapidly, and after a few decades of uncontrolled carbon dioxide emissions, an abrupt rise in temperatures, giving us a deadly atmosphere like that of Venus. Prospects such as these have long been in the public eye; can they not compete effortlessly with Emmerich’s Hollywood images?

The costs of stirring up fear are high. It sacrifices the otherwise so highly valued principle of sustainability. A scarce resource – public attention and trust in the reliability of science – is used up without being renewed by the practice of positive examples.

But what do climate researchers themselves think, how do they deal with the media and the population?

Public statements by noted German climate researchers give the impression that the scientific bases of the climate problem have essentially been solved. Thus science has provided the prerequisites for us to react appropriately to the goal; meaning, in this case, to reduce greenhouse gas emissions as much as possible.

This does not at all reflect the situation in the scientific community. A considerable number of climatologists are still by no means convinced that the fundamental questions have been adequately dealt with. Thus, in the last year a survey among climate researchers throughout the world found that a quarter of the respondents still harbor doubts about the human origin of the most recent climatic changes.

The majority of researchers are indeed of the opinion that global climate change caused by human activity is occurring, that it will accelerate in the future, and that it will thus become more readily apparent. This change will be accompanied by warmer temperatures and a higher water level. In the more distant future, that is, in about 100 years, a considerable increase of atmospheric greenhouse gases is foreseen, together with an increase in heavy precipitation in our latitudes; in some regions there could be more powerful storms, in others weaker ones.

But again and again, there are scientists to whom, true to the alarmists’ maxim in Crichton’s book, this does not sound dramatic enough. Thus, more and more often they connect current extreme weather events with anthropogenic climate change. To be sure, this is usually carefully formulated; interviews sound something like this: “Is the flooding of the Elbe, the hurricane in Florida, this year’s mild winter evidence for the climate catastrophe?” Answer: “That’s scientifically unproven. But many people see it that way.” Neither of these statements is false. In combination, however, they suggest the conclusion: Of course these weather events are evidence. Only no one dares to say this explicitly either.

The pattern is always the same: the significance of individual events is processed to suit the media and cleverly dramatized; when prognoses for the future are cited, among all the possible scenarios it is regularly the one with the highest rates of increase in greenhouse gas emissions – and thus with the most drastic climatic consequences – that is chosen; equally plausible variations with significantly lower emission increases go unnoticed.

Whom does this serve? It is assumed that fear can motivate listeners, but it is forgotten that it mobilizes them only in the short term. Climatic changes, however, demand long-term reactions. The effect on public opinion in the short view may indeed be “better,” and thus may also have a positive effect on reputation and research funding. But in order for this to function in the long run, each most recent claim about the future of the climate and of the planet must be ever more dramatic than the previous one. Once apocalyptic heat waves have been predicted, the climate-based extinction of animal species no longer attracts attention. Time to move on to the reversal of the Gulf Stream. Thus there arises a spiral of exaggeration. Each individual step may appear to be harmless; in total, however, the knowledge about climate, climate fluctuations, climate change and climatic effects that is transferred to the public becomes dramatically distorted.
Sadly, the mechanisms for correction within science itself have failed. Within the sciences, openly expressed doubts about the current evidence for climatic catastrophe are often seen as inconvenient, because they damage the “good cause,” particularly since they could be “misused by skeptics.” The incremental dramatization comes to be accepted, while any correction of the exaggeration is regarded as dangerous, because it is politically inopportune. Doubts are not made public; rather, people are led to believe in a solid edifice of knowledge that needs only to be completed at the outer edges.

The result of this self-censorship in scientists’ minds is a deaf ear for new and surprising ideas that compete with or even contradict conventional patterns of explanation; science degenerates into being a repair shop for popular, politically opportune claims to knowledge. Thus it not only becomes sterile; it also loses its ability to advise the public objectively.

One example of this is the discussion of the so-called “hockey stick,” a temperature curve that allegedly depicts the development over the last 1000 years, and whose shape resembles that of a hockey stick. In 2001 the Intergovernmental Panel on Climate Change, the committee of climate researchers appointed by UNO, rashly institutionalized this curve as the iconic symbol for anthropogenic climate change: At the end of a centuries-long period of stable temperatures, the upward-bent blade of the hockey stick represents the human influence.

In October 2004, we were able to demonstrate in the scientific journal “Science” that the methodological bases that led to this hockey-stick curve are mistaken. We wanted to reverse the spiral of exaggeration somewhat, without also relativizing the central message—that climate change caused by human activity does indeed exist. Prominent representatives of climate research, however, did not respond by taking issue with the facts. Instead, they worried that the noble cause of protecting the climate might have been done harm.

Other scientists lapse into a zeal reminiscent of nothing so much as the McCarthy era. For them, methodological criticism is the spawn of “conservative think tanks and propagandists for the oil and coal lobby,” which they believe they must expose; dramatizing climate change, on the other hand, is defended as a sensible means of educating society.

What is true for other sciences should also hold for climate research: Dissent is the motor of further development, Differences of opinion are not an unpleasant family affair. The concealment of dissent and uncertainty in favor of a politically good cause takes its toll on credibility, for the public is more intelligent than is usually assumed. In the long term, these allegedly so helpful dramatizations achieve the opposite of that which they wish to achieve.

By doing so, however, both science and society will have wasted an opportunity.

Hans von Storch, 55, heads the Coastal Research Institute of the GKSS Research Centre in Geesthacht, Germany; he is considered leading experts statistical analysis of climatological data and simulations. Together with Nico Stehr, 62, sociologist at the Zeppelin University in Friedrichshafen, Germany he has conducted ongoing research into the public perception of climate change.

Translated by Paul Malone

First published in Der Spiegel No. 4, 2005.
Dear Roy,
what a pleasant surprise to hear from you. And, yes, thanks for your encouraging words.
We tried to publish it in a US weekly or newspaper but failed. The piece seems to be well received by many scientists - while the activists just stay quiet.
But is my impression - maybe just wishful thinking - that the whole debate - at least in Germany - has turned to a more honest style. I wonder what the IPCC will do, but I am pessimistic as the IPCC is full of advocates of the style of Wigley and Trenberth. (Yes, the Landsea affair I am certainly quite concerned about.)

At the best
Hans

(PS: Maybe we see at Harry's 80th birthday in November?)

Hans von Storch
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My message:

Dear Hans,

Jim O'Brien sent me your paper on "A climate of staged angst" in Der Spiegel. I am really glad to have it. I was surprised that a paper like this would come from Europe. Anyway, it was very well done.

Have you had any reaction to the paper?

I just put together some readings about whether the rash of Florida hurricanes were connected to global warming. Landsea is a hurricane person working at the NOAA hurricane lab in Florida. On Jan 17, 2005, he resigned from the IPCC. These papers cover that issue and more. I am sending a copy to your address on Max-Planck-Strasse.

Thanks again for writing the paper.

Regards, Roy Jenne

2/23/2005
Prometheus
Category:
« Science Policy: General »
Category Index

January 17, 2005

Chris Landsea Leaves IPCC

Posted to Author: Others | Climate Change | Science Policy: General

This is an open letter to the community from Chris Landsea.

Dear colleagues,

After some prolonged deliberation, I have decided to withdraw from participating in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). I am withdrawing because I have come to view the part of the IPCC to which my expertise is relevant as having become politicized. In addition, when I have raised my concerns to the IPCC leadership, their response was simply to dismiss my concerns.

With this open letter to the community, I wish to explain the basis for my decision and bring awareness to what I view as a problem in the IPCC process. The IPCC is a group of climate researchers from around the world that every few years summarize how climate is changing and how it may be altered in the future due to manmade global warming. I had served both as an author for the Observations chapter and a Reviewer for the 2nd Assessment Report in 1995 and the 3rd Assessment Report in 2001, primarily on the topic of tropical cyclones (hurricanes and typhoons). My work on hurricanes, and tropical cyclones more generally, has
been widely cited by the IPCC. For the upcoming AR4, I was asked several weeks ago by the Observations chapter Lead Author - Dr. Kevin Trenberth - to provide the writeup for Atlantic hurricanes. As I had in the past, I agreed to assist the IPCC in what I thought was to be an important, and politically-neutral determination of what is happening with our climate.

Shortly after Dr. Trenberth requested that I draft the Atlantic hurricane section for the AR4's Observations chapter, Dr. Trenberth participated in a press conference organized by scientists at Harvard on the topic "Experts to warn global warming likely to continue spurring more outbreaks of intense hurricane activity" along with other media interviews on the topic. The result of this media interaction was widespread coverage that directly connected the very busy 2004 Atlantic hurricane season as being caused by anthropogenic greenhouse gas warming occurring today. Listening to and reading transcripts of this press conference and media interviews, it is apparent that Dr. Trenberth was being accurately quoted and summarized in such statements and was not being misrepresented in the media. These media sessions have potential to result in a widespread perception that global warming has made recent hurricane activity much more severe.

I found it a bit perplexing that the participants in the Harvard press conference had come to the conclusion that global warming was impacting hurricane activity today. To my knowledge, none of the participants in that press conference had performed any research on hurricane variability, nor were they reporting on any new work in the field. All previous and current research in the area of hurricane variability has shown no reliable, long-term trend up in the frequency or intensity of tropical cyclones, either in the Atlantic or any other basin. The IPCC assessments in 1995 and 2001 also concluded that there was no global warming signal found in the hurricane record.

Moreover, the evidence is quite strong and supported by the most recent credible studies that any impact in the future from global warming upon hurricane will likely be quite small. The latest results from the Geophysical Fluid Dynamics Laboratory (Knutson and Tuleya, Journal of Climate, 2004) suggest that by around 2080, hurricanes may have winds and rainfall about 5% more intense than today. It has been proposed that even this tiny change may be an exaggeration as to what may happen by the end of the 21st Century (Michaels, Knappenberger, and...

It is beyond me why my colleagues would utilize the media to push an unsupported agenda that recent hurricane activity has been due to global warming. Given Dr. Trenberth's role as the IPCC's Lead Author responsible for preparing the text on hurricanes, his public statements so far outside of current scientific understanding led me to concern that it would be very difficult for the IPCC process to proceed objectively with regards to the assessment on hurricane activity. My view is that when people identify themselves as being associated with the IPCC and then make pronouncements far outside current scientific understandings that this will harm the credibility of climate change science and will in the longer term diminish our role in public policy.

My concerns go beyond the actions of Dr. Trenberth and his colleagues to how he and other IPCC officials responded to my concerns. I did caution Dr. Trenberth before the media event and provided him a summary of the current understanding within the hurricane research community. I was disappointed when the IPCC leadership dismissed my concerns when I brought up the misrepresentation of climate science while invoking the authority of the IPCC. Specifically, the IPCC leadership said that Dr. Trenberth was speaking as an individual even though he was introduced in the press conference as an IPCC lead author; I was told that that the media was exaggerating or misrepresenting his words, even though the audio from the press conference and interview tells a different story (available on the web directly); and that Dr. Trenberth was accurately reflecting conclusions from the TAR, even though it is quite clear that the TAR stated that there was no connection between global warming and hurricane activity. The IPCC leadership saw nothing to be concerned with in Dr. Trenberth's unfounded pronouncements to the media, despite his supposedly impartial important role that he must undertake as a Lead Author on the upcoming AR4.

It is certainly true that "individual scientists can do what they wish in their own rights", as one of the folks in the IPCC leadership suggested. Differing conclusions and robust debates are certainly crucial to progress in climate science. However, this case is not an honest scientific discussion conducted at a meeting of climate researchers. Instead, a scientist with an important role in the IPCC represented himself as a Lead Author for the IPCC has used that position to promulgate to the
media and general public his own opinion that the busy 2004 hurricane season was caused by global warming, which is in direct opposition to research written in the field and is counter to conclusions in the TAR. This becomes problematic when I am then asked to provide the draft about observed hurricane activity variations for the AR4 with, ironically, Dr. Trenberth as the Lead Author for this chapter. Because of Dr. Trenberth's pronouncements, the IPCC process on our assessment of these crucial extreme events in our climate system has been subverted and compromised, its neutrality lost. While no one can "tell" scientists what to say or not say (nor am I suggesting that), the IPCC did select Dr. Trenberth as a Lead Author and entrusted to him to carry out this duty in a non-biased, neutral point of view. When scientists hold press conferences and speak with the media, much care is needed not to reflect poorly upon the IPCC. It is of more than passing interest to note that Dr. Trenberth, while eager to share his views on global warming and hurricanes with the media, declined to do so at the Climate Variability and Change Conference in January where he made several presentations. Perhaps he was concerned that such speculation - though worthy in his mind of public pronouncements – would not stand up to the scrutiny of fellow climate scientists.

I personally cannot in good faith continue to contribute to a process that I view as both being motivated by pre-conceived agendas and being scientifically unsound. As the IPCC leadership has seen no wrong in Dr. Trenberth's actions and have retained him as a Lead Author for the AR4, I have decided to no longer participate in the IPCC AR4.

Sincerely, Chris Landsea

Attached are the correspondence between myself and key members of the IPCC FAR, Download file.

Posted on January 17, 2005 11:39 AM

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http://sciencepolicy.colorado.edu/prometheus/archives/science_policy_general/000318chri... 1/18/2005
» *Shoe Storm* from Crumb Trail

It's raining shoes as the global warming industry continues to come apart. This open resignation letter from Chris Landsea (what an evocative name) is an example: After some prolonged deliberation, I have decided to withdraw from participating in the ... [Read More]

Tracked on January 17, 2005 02:20 PM

» An *honest* scientist from Trudeupia

Kudos to Chris Landsea [Read More]

Tracked on January 17, 2005 06:16 PM

**Comments**

Well, that's rather interesting. I will watch to see what the fallout is. My immediate reaction is that CL is being rather premature. Had he waited a bit longer and pulled out because people had been interfering with his text, trying to "sex it up" or whatever, that would have been quite strong. As it is he is pulling out because he feels worried that someone might, even though no-one has.

Posted by: William Connolley at January 17, 2005 02:10 PM

Good, I'm glad he's leaving. We don't need to read climatology papers to know that climate is changing far faster than the simulation have been predicting.

Posted by: Thomas Lee Elifritz at January 17, 2005 02:52 PM

It would seem stronger, to me, to remain and fight. Surely no one is going to 'fire' him over this flap - staying and exposing any bias in the process would do a lot more good.

It will be interesting to see how this gets trumpeted, and the Crumb Trail trackback is the first clue - perhaps giving weight to the phrase 'making a picnic out of a crumb'.
Best,

D

Posted by: Dano at January 17, 2005 08:47 PM

This isn't a question of resigning when it would have the most impact. It's a question of ethics.
When the lead author of a scientific publication makes a public mis-statement of the science, it is incumbent on the co-authors to attempt a correction. Failing this (the IPCC board should have at least conducted a public flogging if not removed Dr. T. Tender from his position as lead author), there are few ethical options open other than resignation.

Posted by: Jim Kanuth at January 18, 2005 03:19 PM

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http://sciencepolicy.colorado.edu/prometheus/archives/science_policy_general/000318chri... 1/18/2005
(4) GLOBAL WARMING HOTHEADS WOULD BURN SCEPTICS AT THE STAKE

The Times of London

http://www.timesonline.co.uk/article/0,,1054-1469711,00.html

By Mick Hume

NEVER MIND the posters of Michael Howard as a flying pig, or the advertisements that expose our children to the stunted genitals of that Crazy Frog from the mobile ringtone. The most shocking advert today is the one about the apocalyptic dangers of climate change from the government-funded Carbon Trust. Unlike the other two ads it has not provoked public controversy, but to my mind its message is as crude as a Tory pig or an amphibian flasher.

The Carbon Trust advert on television begins with an actor playing Robert Oppenheimer, "father of the A-bomb". The portentous voiceover tells us: "One man has been where we all are today. When he saw what he had done, he said, 'I am become the destroyer of worlds' (cue shot of atomic explosion). Now we all have to face up to what we've done. Our climate is changing..."

To make us feel guilty about "what we have done", we are shown cities, electricity pylons, personal computers and cars, followed by violent storms, huge waves and flooded towns. The message is that we are destroying the world through climate change, which has been brought about by modern industry and technology. So we must change the way we live and work in order to repent of our sins - or as they put it now, "reduce our emissions". Others predicting doom via man-made global warming are becoming similarly heated; one international body suggests we might be just ten years from catastrophe.

What we ignorant laymen are rarely told is that there remain serious uncertainties about the extent and causes of climate change - as even some
scientists working with the Intergovernmental Panel on Climate Change will quietly concede. Yet woe betide any expert who tries to raise such questions in public.

When it comes to climate change, "sceptic" is a dirty word. Scientists who dissent from the strict orthodoxy on man-made global warming have been shouted down, labelled dupes of the US oil industry, even branded "climate change deniers" - a label with obvious historical connotations. Instead of taking up the sceptics' case, the accepted response of our illiberal age is to yell: "You can't say that!"

But is not scepticism crucial to scientific inquiry? Timothy Ball, a leading climatologist, says that those trying to test the theory of anthropogenic climate change - "a normal course of action in any real scientific venture" - are now being "chastised for not being in agreement with some sort of scientific consensus, as if a worldwide poll of climate experts had been taken, and as if such a consensus would represent scientific fact. Nothing could be farther from the truth; science advances by questioning, probing and re-examining existing beliefs."

We need to separate the science from the politics. Let the experts thrash out the evidence. But let them do so free from the pressures of a political climate in which human intervention is always seen as the problem rather than the solution, precaution is always privileged over risk, and the worst possible outcome is always assumed to be the best bet.

Perhaps those commanding us to "face up to what we have done" to the world might first face up to the dangers of reducing complex scientific issues to a simplistic political message, and presenting moralistic sermons as scientific laws. Whatever the true impact on the environment of burning fossil fuels, there seems a real risk of damaging the atmosphere of scientific inquiry by burning sceptics at the stake.

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(5) STREET FIGHTING

Science Policy, 4 February 2005
http://sciencepolicy.colorado.edu/prometheus/archives/climate_change/000340street_fightin

If anyone wants to understand why science is coming to be viewed as increasingly political one need only look to a quote from Kevin Trenberth in an article in the current issue of the Economist.

"For example, when Kevin Trenberth, head of the IPCC's panel on hurricanes, recently suggested that there exists a link between climate change and the wave of powerful hurricanes last year, he was immediately challenged. Christopher Landsea, a hurricane expert at America's National Oceanic and Atmospheric
Some issues about climate change

This has selected stories from the NCAR press clippings for lap 2004.

1) Get more publicity about global warming
   Encourage people to believe that we must have
   big programs that will stop the warming and that
   these actions must start soon. (Good or bad?)

2) With global warming there will be more big storms (say the)
   -Hurricanes, big winter storms, etc (make this
   seem very scary)

3) Get more publicity about storms
   Then the public may want to take action

Monstrous hurricanes such as Charley, Frances and Ivan may be a key to focusing public awareness of the serious threat that global climate change poses to civilization.

And getting the public more involved in pressing for reductions in the emissions from smokestacks and tailpipes that are a principal cause of the change is a key to averting that crisis, according to environmental author Ross Gelbspan.

4) Also say that changes in climate can be sudden
   - Make it sound like there could be huge
   weather changes in 2 days or a week - a new climate
   - It's an exciting worry
   - And fear can motivate people to support policies.

But programs based on hype and politics often are not good programs. One needs a careful analysis of options and costs.

NCAR  - 27 -

Roy James
Jan 20, 2005
Global warming can seem too remote to worry about, or too uncertain—something projected by the same computer techniques that often can’t get next week’s weather right. On a raw winter day you might think that a few degrees of warming wouldn’t be such a bad thing anyway. And no doubt about it: Warnings about climate change can sound like an environmentalist scare tactic, meant to force us out of our cars and cramp our lifestyles.

Comforting thoughts, perhaps. But turn to “GeoSigns,” the first chapter in our report on the changing planet. The Earth has some unsettling news.

From Alaska to the snowy peaks of the Andes the world is heating up right now, and fast. Globally, the temperature is up 1°F over the past century, but some of the coldest, most remote spots have warmed much more. The results aren’t pretty. Ice is melting, rivers are running dry, and coasts are eroding, threatening communities. Flora and fauna are feeling the heat too, as you’ll read in “EcoSigns.” These aren’t projections; they are facts on the ground.

The changes are happening largely out of sight, but they shouldn’t be out of mind, because they are omens of what’s in store for the rest of the planet.

Wait a minute, some doubters say. Climate is notoriously fickle. A thousand years ago Europe was balmy and wine grapes grew in England; by 400 years ago the climate had turned chilly and the Thames froze repeatedly. Maybe the current warming is another natural vagary, just a passing thing?

Don’t bet on it, say climate experts. Sure, the natural rhythms of climate might explain a few of the warming signs you’ll read about in the following pages. But something else is driving the planet-wide fever.

For centuries we’ve been clearing forests and burning coal, oil, and gas, pouring carbon dioxide and other heat-trapping gases into the atmosphere faster than plants and oceans can soak them up (see “The Case of the Missing Carbon,” February 2004). The atmosphere’s level of carbon dioxide now is higher than it has been for hundreds of thousands of years. “We’re now geological agents, capable of affecting the processes that determine climate,” says George Philander, a climate expert at Princeton University. In effect, we’re piling extra blankets on our planet.

Human activity almost certainly drove most of the past century’s warming, a landmark report from the United Nations Intergovernmental Panel on Climate Change (IPCC) declared in 2001. Global temperatures are shooting up faster than at any other time in the past thousand years. And climate models show that natural forces, such as volcanic eruptions and the slow flickers of the sun, can’t explain all that warming.

As CO₂ continues to rise, so will the mercury—another 3°F to 10°F by the end of the century, the IPCC projects. But the warming may not be gradual. The records of ancient climate described in “TimeSigns” suggest that the planet has a sticky thermostat. Some experts fear today’s temperature rise could accelerate into a devastating climate lurch. Continuing to fiddle with the global thermostat, says Philander, “is just not a wise thing to do.”

Already we’ve pumped out enough greenhouse gases to warm the planet for many decades to come. “We have created the environment in which our children and grandchildren are going to live,” says Tim Barnett of the Scripps Institution of Oceanography. We owe it to them to prepare for higher temperatures and changed weather—and to avoid compounding the damage.

It won’t be easy for a world addicted to fossil fuels to limit emissions.

Three years ago the United States spurned the Kyoto Protocol, citing cost. But even Kyoto would barely slow the rise in heat-trapping gases. Controlling the increase “would take 40 successful Kyotos,” says Jerry Mahlman of the National Center for Atmospheric Research. “But we’ve got to do it.”

The signs of warming in the following pages are striking enough, but they are just a taste of the havoc the next century could bring. Can we act in time to avert the worst of it? The Earth will tell.

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- Doing Kyoto would make little difference on how the climate changes.

- Mahlman says: We need 40 successful Kyotos.

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Roy Jenne
Scientists say more hurricanes probably on way

The Associated Press

Ivan, Frances and Charley delivered three staggering blows to the Gulf Coast and Florida, as well as Caribbean island nations, all in just five weeks.

Now here comes Jeanne, which could be lashing north Florida and Georgia by Monday. (Related: Track Jeannie)

Homeowners ritualistically re-hammering the same plywood over their windows figure it can't get much worse, right?

Brace yourselves: Scientists say 65 million Americans living on the Gulf and Atlantic coasts should expect weather like this for another 30 years. Maybe more.
Sure, it's hurricane season and storms happen. But counting Alex, which swamped the Carolinas in August, that's five in six weeks. And that doesn't include tropical storms Bonnie, Gaston, Earl and Hermine. (Related: The 2004 season to date)

"I don't remember this happening before in such a short period of time," National Hurricane Center director Max Mayfield told reporters, "and the season is only half-over."

It might be a generation before hurricane weather slips back into a quiet phase, he and other experts say.

"The hurricane threat is much greater than it was in the 1970s through early 1990s," said federal meteorologist Stan Goldenberg, who flew around Hurricane Ivan in research aircraft as it approached Mobile, Ala. "It could last another 10 to 40 years."

Goldenberg and other experts believe the current hurricane surge is part of an obvious storm cycle that probably has been waxing and waning for hundreds of years.

Roughly from 1970-94, Atlantic hurricane activity was relatively mild. Sure, there were monster hurricanes like Andrew in 1992 — its 177 mph winds killed 55 people in the U.S. and Caribbean and caused $26.5 billion in damage. Every year a big storm whips up — it's just that most fizzle before veering into a city.

Overall, the 25-year "quiet" period generated about half as many destructive storms as the previous stormy phase dating back to the 1920s, and about half as many as today's stormy phase appears likely to produce.

Since 1996, environmental conditions have shifted and the Atlantic has been spawning more strong storms. The number of major hurricanes has more than doubled. In the Caribbean, it's up by a factor of five.

Even with milder storm years in 1997 and 2002, the period since 1995 is the most active nine consecutive years on record, according to pioneering hurricane forecaster William Gray at Colorado State University.

Since 2000, the United States has been hit by an average of four powerful storms per season.

Forecasters have been warning of this for years. Even back in 1998 — a year that saw four hurricanes in September — Gray said: "We are going to see the return of some of these type of storms. People have to face up to it. The insurance industry has a major problem."

Last month, Gray tweaked his gloomy 2004 forecast downward, predicting 13 named storms rather than 14. He expected seven storms to blow up into hurricanes, three with sustained winds of 111 mph or greater.

So far, he's right. If storms continue brewing, Gray might wish he had tweaked his forecast up, not down. And don't forget that last year, two more tropical storms developed in the Caribbean after the hurricane season formally ended Nov. 30.

Why is the storm cycle intensifying now? Scientists aren't certain what causes the decades-long shifts in the ocean-atmosphere interplay.

Hurricanes reflect the complex dance between the atmosphere and the oceans.

During some decades, the Atlantic warms up, and more hurricanes are the result. Over the Atlantic, wind shear that knocks down rising storms tend to slacken, while humid westerly winds from Africa's bulge grow stronger.

Scientists look for large pools in subtropical ocean where water is at least 81 degrees Fahrenheit. The warm sea heats the air in a rising column, creating a center of moist low pressure.

Trade winds rush in toward this depression. Combined with the planet's rotation, they spin clouds counterclockwise around this steamy area, or "eye" of the storm.

Most scientists agree that global warming plays little or no role in the number of storms in the current hurricane cycle. (Related FAQ: Hurricanes and climate change)

Global climate models show that greenhouse gases from industry and traffic will drive up average world temperatures by a degree or two this century. In theory, all that extra heat could fuel more stormy weather. And local evidence of temperatures rising may already be apparent with some glaciers melting and spring flowers blooming early. But so far, climate change is too uncertain and today's hurricane patterns are too complex to draw a connection.

"I don't think the warming now is anywhere near enough to account for the increase in hurricanes that we're seeing," said Robert Gall of the National Center for Atmospheric Research in Boulder, Colo. "To me, this is just a natural variation in the frequency of hurricanes."

Hurricanes are among nature's most powerful natural events. Spinning as fast as a race car, the wall of clouds can rise 10 miles into the stratosphere and span 400 miles, as wide as Kansas.

The amount of mechanical energy generated by a such a swirling storm translates to a power supply of 360 billion kilowatt hours per day — equal, by some estimates, to all of the electricity consumed in United States in six months.

Only 12% of the world's swirling storms spawn in the Atlantic. About 100 of these cyclones are reported annually worldwide. Most of them crash unseen in the North Pacific and the Indian Ocean.
The Straits Times WWW

September 18, 2004

It's hurricane season - for another 30 years

DENVER - One after the other, they kept coming: ferocious hurricanes Charley, Frances and Ivan pounded the United States and Caribbean islands, all in just five weeks.

Now here comes Jeanne, which is threatening the Bahamas and could be lashing north Florida and Georgia by Monday.

Surely, say battered home owners re-hammering the same plywood over their windows, it can't get much worse.

But scientists are warning the 65 million Americans living on the Gulf of Mexico and Atlantic coasts to expect weather like this for another 30 years - or more.

Sure, it's hurricane season and storms happen. But counting Alex, which swamped the Carolinas in August, that's five in six weeks, excluding tropical storms Bonnie, Gaston, Earl and Hermine.

'I don't remember this happening before in such a short period of time,' National Hurricane Centre director Max Mayfield told reporters. 'And the season is only half over.'

It might be a generation before hurricane weather slips back into a quiet phase, he and other experts say.

They believe the current hurricane surge is part of a storm cycle that probably has been waxing and waning for hundreds of years.

Roughly from 1970 to 1994, Atlantic hurricane activity in the US was relatively mild. Overall, the 25-year 'quiet' period generated about half as many destructive storms as the previous stormy phase dating back to the 1920s, and about half as many as today's stormy phase appears likely to produce.

Since 1995, environmental conditions have shifted and the Atlantic has been spawning more strong storms. The number of major hurricanes has more than doubled. In the Caribbean, it's up by a factor of five.

Scientists are not sure what causes the decades-long shifts in frequency but most agree that global warming plays little or no role in the number of storms in the current hurricane cycle.

So far, climate change is too uncertain and today's hurricane patterns are too complex to draw a connection.

'I don't think the warming now is anywhere near enough to account for the increase in hurricanes that we're seeing,' said scientist Robert Gall of the National Center for Atmospheric Research in Colorado.

'To me, this is just a natural variation in the frequency of hurricanes.' -- AP

Gall was the head of the NCAR division to study storms of mesoscale size, like thunderstorms, hurricanes, etc.
Weather Makes Lawmakers Antsy  By Michael Grobb

Story location: http://www.wired.com/news/technology/0,1282,64970,00.html

02:00 AM Sep. 16, 2004 PT

WASHINGTON — With hurricanes ravaging Florida and other severe weather afoot, U.S. lawmakers are once again scratching their heads over climate changes and wondering to what degree they stem from greenhouse-gas emissions.

At a hearing of the Senate Commerce Committee on Wednesday, few were willing to take a wait-and-see attitude.

"We cannot afford to ignore an issue that is not static," said committee chairman John McCain (R-Arizona). "We need to take action that extends well beyond eloquent speeches and includes meaningful actions such as real reductions in the emission of greenhouse gases."

McCain, along with Sen. Joe Lieberman (D-Connecticut), has already sponsored the Climate Stewardship Act (SB139), which would limit greenhouse-gas emissions in the United States.

It failed to pass in 2003, but McCain and Lieberman are pushing for another vote in 2004. In the House, Rep. Wayne Gilchrest (R-Maryland) introduced a companion bill (HR4067) in March 2004.

The bills could gain traction this year, especially after the Bush administration appeared to soften its position on global warming in an August report suggesting that greenhouse gases are a contributing factor. (The administration, however, has signaled that it has not changed its policies based on the report).

At Wednesday's hearing, witnesses warned that failing to curtail greenhouse gases now could lead to adverse consequences in coming decades as current outputs reach critical mass.

"A markedly warmer world is likely to cross boundaries — much more than one in which we are more restrained in our carbon diet," said Daniel Cayan, a research meteorologist at the Scripps Institution of Oceanography at the University of San Diego.

Claudia Tebaldi, project scientist in the environmental and societal impacts group of the National Center for Atmospheric Research in Boulder, Colorado, said heat waves are already getting longer and more intense because of global warming, with the "most significant changes" in the United States hitting the West Coast.

Cayan predicted that 30 percent to 70 percent of California's snowpack will be gone by the end of the 21st century, even using the most conservative models.

Furthermore, as the polar icecaps melt, increasing volumes of water in the oceans absorb solar energy and heat up even more — accelerating the pace of melting ice, said Tebaldi. "There is a chain of reinforcement here, which makes this all the more worrisome," she said.

Sheila Watt-Cloutier, chairwoman of the Inuit Circumpolar Conference in northern Canada, told lawmakers that warming trends are decimating the native habitats of ice-dwelling animals. She said some Inuit men had drowned trying to cross "torrents where streams used to exist" to reach hunting grounds.

"The Earth is literally melting, and we need to come together to do the right thing," she said. "What's happening in the Arctic is a snapshot of what's going on across the planet."

The panelists at Wednesday's hearing, however, don't necessarily represent a consensus within the scientific community when it comes to global warming trends.

In fact, many critics argue the computer models used by the scientists who testified are inadequate and can't accurately predict the long-term effects of greenhouse-gas emissions.

Sallie Baliunas, host of the science and environment section of Tech Central Station, pointed out that scientists have only been tracking global climate trends since the mid-19th century — and, even then, only about 20 percent of the planet.

"Yes, the 20th century is warmer than the 19th century," she said. "But it's a very complicated question" when applied to longer periods. She said global warming in the last few decades could result from normal fluctuations that occur over very long periods not covered by current historical measurements.

"There will be better models available in the future," Baliunas said. "I think we could do much better, as long as scientists are allowed..."
George Taylor, Oregon's state climatologist, agreed that dire climate predictions often drown out dissent.

"You're hearing this chorus, and it all sounds like one voice," he said. "The other side hasn't been quite as vocal or aggressive."

According to Taylor, "the human component of climate change is quite small compared with natural variations. (The computer models) suffer from a lot of problems. I think they're overstating the effects of greenhouse gases."

At Wednesday's hearing, panelists admitted their models aren't perfect but argued that evidence is mounting that severe problems will form over the next century if emissions aren't curtailed today.

"Our crystal balls are all cloudy," said Peter Prumhoff, director of the global resources program at the Union of Concerned Scientists. "But models are becoming increasingly strong."

Qayan said a "preponderance of evidence" suggests that "something is happening... I think it's a very serious phenomenon we're in."

It's unclear whether such warnings made an impression on the Senate committee as a whole: Wednesday's hearing was sparsely attended.

However, senators who showed up expressed deep concern. "For crying out loud, when do we say there is change afoot, and we've got to do something about it?" asked Sen. Frank Lautenberg (D-New Jersey). "At what point do we feel the heat from the fire?"

Not many attended the Wednesday hearing.
SAN FRANCISCO
'Cool gray city' projected to turn murderously hot
Temperatures likely to rise by mid-century as a result of global warming, study warns

Chronicle Science Writer
Carl T. Hall

San Francisco's trademark cool summers are likely to heat up dramatically before the century is over, scientists said Monday, bringing frequent heat waves and a big jump in heat-related deaths.

A new city-by-city analysis of California climate projections suggests that everybody's favorite "cool gray city of love" may be in for a shock from the local impact of global climate change.

Critics, however, said that such doomsday global-warming scenarios were highly speculative -- designed mostly to sway public opinion and influence policymakers considering proposals to cut heat-trapping vehicle emissions.

The latest projections by the Union of Concerned Scientists in Washington, D.C., suggest that in a worst-case scenario, San Francisco can expect 55 heat-wave days -- three or more consecutive days of temperatures above 79 degrees -- a year by the 2050s and up to 135 such days a year by the 2090s, compared with only 10 to 15 heat-wave days in the 1990s.

These higher temperatures will translate into more deaths among old people, infants and people with heat-sensitive medical conditions, the authors said. By this reckoning, San Francisco would wind up experiencing at least 1,300 and up to as many as 4,500 more heat-related deaths in the decade of the 2090s -- or three to 10 times as many as occurred in the 1990s.

Interviewed on a typically balmy afternoon in San Francisco, study co-author Susanne C. Moser said that because of the influence of cooling ocean breezes, the city's increasingly frequent heat waves were more likely than in other places to start and stop abruptly.

The scenario suggests San Francisco will be transformed into something akin to an oven inside a deep freeze whose door keeps swinging open and shut.

"You'll get a lot of temperature variation, heat waves alternating with rapid cooling," said Moser, a staff scientist with the National Center for Atmospheric Research in Boulder, Colo. "That's a situation the body won't get used to."

She said this was one of many projected harmful impacts of climate change that might be avoided, or at least reduced, if steps were taken now to cut the amount of greenhouse gases polluting the atmosphere.

The best- and worst-case scenarios in the report reflect different assumptions on how much the release of such gases is cut back in coming years. One scenario assumes continued reliance on burning fossil fuels and rapid increase in heat-trapping gases all this century; the other assumes a transition to cleaner energy sources, which would allow greenhouse gas emissions to peak at mid-century, then taper back to current levels by 2100.

The report calls for "aggressive vehicle global warming standards" and was issued in advance of a key meeting of the California Air Resources Board on Sept. 23 in Los Angeles. The board plans to vote on proposed rules forcing automakers to reduce greenhouse-gas emissions at least 25 percent by 2016. The proposal would take effect with the 2009 model year.

The Union of Concerned Scientists issued a broader report last month on California's changing climate that was published in the Proceedings of the National Academy of Sciences. That report was intended to draw out the regional implications of the latest world climate-change models.

The report released Monday by the influential scientific advocacy group adds new numbers that zero in on the state's key urban centers -- San Francisco, Sacramento, Fresno, Los Angeles and Riverside-San Bernardino.

Overall temperature averages in California are projected to rise at least 2 degrees Fahrenheit and as much as 5.5 degrees by mid-century, depending on the volume of heat-trapping gases through the 2050s. By the end of the century, the projections call for temperatures up to 10.5 degrees warmer.

If that's the case, "a summer day in San Francisco could feel like a summer day in Tijuana today,"
Hurricanes, global warming and scientists: A volatile stew

Francis Till
Pick two scientists, any two scientists with strong climatology credentials, and ask whether global warming has anything to do with the recent onslaught of hurricanes and typhoons.

There’s no doubt which side the media is on -- almost every story about global warming and hurricanes available in searches of Google News carries a headline making the link, even when the stories themselves contain contradictory evidence.

But the scientists themselves tend to have polarised theories.

In fact, while some groups suggest that warmer oceans are more likely to spawn hurricanes (or, at least, spawn stronger ones), others say exactly the opposite.

Global warming doesn’t account for increases in hurricanes

According to Cybercast News Service (CNS), for example, a group of climate scientists (with impressive mainstream credentials) recently told US Senator John McCain, who chaired a Commerce Committee hearing examining recent scientific research concerning climate change impacts, that global warming should reduce the frequency and strength of hurricanes.

They said the facts, as reported by the National Hurricane Center, showed that in the last century the decade with the largest number of hurricanes to hit the US was the 1940s, and the frequency of hurricanes has gone down since then -- even as global warming took root.

In a letter to the Senator, reported extensively by CNS (and mentioned only briefly by many major news outlets) the scientists wrote: “Computer simulations suggest that in a warmer world most of the warming would occur in the Polar Regions. Atmospheric circulation, which crucially affects storms, is driven primarily by the temperature difference, or gradient, between the tropics and the poles.

"Warmer polar regions would reduce this gradient and thus lessen the overall intensity or frequency or both of storms - not just tropical storms but mid-latitude winter storms as well (such as blizzards and northeasters).

"Again, longer periods of history bear this out. In the past, warmer periods have seen a decline in the number and severity of storms. This is well-documented in scientific journals for data extending back centuries or even millennia. If the surface temperature of the planet rises further in the future, it is likely that these declines will continue," they wrote.

The experts noted that the hurricane season has not yet ended and said the frequency of hurricanes varies.

"We suggest that natural variability of storminess is the cause of Florida’s recent hurricane disasters. In such times there is an emotional tendency to pin blame somewhere," they wrote.
The scientists who generated that letter included Dr James O'Brien, professor of meteorology & oceanography at the Center for Ocean-Atmospheric Prediction Studies at Florida State University; Dr Gary Sharp, scientific director at the Center for Climate/Ocean Resources Study; Dr Anthony Lupo, professor of atmospheric science at the University of Missouri - Columbia; Dr David Legates, associate professor of climatology at the University of Delaware; and George Taylor, Oregon State climatologist.

George Taylor's perspective is outlined more completely in a piece on *Tech Central Station*, in which he says the "busy hurricane year in the Atlantic" has nothing to do with global warming.

Mr Taylor shows through a chart based on data from the National Hurricane Center that hurricanes have decreased, generally, over time -- and that, on balance, they are certainly not getting any stronger.

Of the North Atlantic as a whole, the United Nations Environment Programme of the World Meteorological Organization has said, he reports, "Reliable data ... since the 1940s indicate that the peak strength of the strongest hurricanes has not changed, and the mean maximum intensity of all hurricanes has decreased."

"Climate models, for all their problems, are unanimous in at least one respect: they predict that most of the future warming will be in high latitudes, in the polar regions. This will reduce the north-south temperature gradient and make poleward transfer of heat less vigorous -- a task in which tropical storms play a major role. All other things being equal, a warmer world should have fewer, not more, hurricanes," Mr Taylor said. "And most of the heating is in the winter."

That's not to say the storms aren't causing more damage, he notes, citing other research that shows the real problem along the coastline is "not changing climate but changing land use, as more and more development occurs along the shorelines, creating greater susceptibility to storm damage."

Global warming causes hurricanes

On the diametrically opposite side of this coin is New Zealander *Kevin Trenberth*, head of the climate analysis section at the National Center for Atmospheric Research in Boulder, Colorado, featured in a 15 September article on the topic in *Wired magazine*.

Mr Trenberth told Wired, with no hedging whatsoever, that, "Global warming is creating conditions that (are) more favorable for hurricanes to develop and be more severe."

Wired noted that few scientists were willing to go that far, but went on to note that new research by Mr Trenberth's group has found that water-vapor levels -- which it calls the "high-octane fuel of hurricanes" -- are now 15 per cent higher on average in the hurricane zone than they were 20 or 30 years ago, largely as a result of oceans warmed as part of a global pattern.

Wired asked Mr Trenberth if that meant there should be more very powerful hurricanes.

"That's the logical conclusion, although it may be somewhat controversial," Mr Trenberth told Wired.
David Battisti, an atmospheric scientist at the University of Washington, had an even more exotic proof for Wired: "the Earth is trapping more energy and that energy must be dissipated," he said.

But what about all that historical data showing hurricane cycles rising and falling?

Mr Trenberth told Wired that history couldn't be a reliable guide since, naturally, global warming was changing everything.

"In 50 years, conditions will be so different they will overwhelm these historical cycles," he told Wired.

Back at the McCain hearings, MSNBC reported that scientists told the panel that while global warming would produce stronger and more destructive hurricanes, it wouldn't increase their numbers.

"Warmer water temperatures will promote more intense tropical storms, but not necessarily make the frequency of those storms greater," said Dan Cayan, a research meteorologist at the University of California in San Diego, according to MSNBC.

MSNBC reported the contradictory contribution of the dissenting scientists, but sub-headlined its story: "Lawmakers told that stronger hurricanes may arise."

Yes? Or no?

The BBC says in its backgrounder on hurricanes that: "It could be said that a rise in sea surface temperatures will surely increase the area where these storms can form, therefore it is likely to increase the frequency of such hazards." [Emphasis added]

But, it goes on to note: "There are in fact so many other factors which influence the development of hurricanes, such as the influence of El Nino, seasonal Saharan rainfall, wind shear, to name a few, that it is very difficult to pinpoint any effect that global warming might have."

According to Mr Taylor, the tempest isn't merely on the oceans, but also in the media teapot.

"Global warming causes increased storminess' makes for interesting headlines," he said. "It also violates fundamental scientific truth and the lessons of history."
STORMS SEEN AS GLOBAL WARMING SIGNAL

John F. Bonfatti
NEWS STAFF REPORTER

Monstrous hurricanes such as Charley, Frances and Ivan may be a key to focusing public awareness of the serious threat that global climate change poses to civilization.

And getting the public more involved in pressing for reductions in the emissions from smokestacks and tailpipes that are a principal cause of the change is a key to averting that crisis, according to environmental author Ross Gelbspan.

News reports about hurricanes, heat waves, droughts and floods, and people's own perceptions about unusual weather patterns are helping make the point, he says.

"I think the public is becoming freaked out by the weather. Most people know something's not right," Gelbspan said Tuesday while in town promoting his book "Boiling Point." "The first manifestation of global change is altered weather patterns."

In his book, Gelbspan paints a gloomy picture of radical changes caused by the increase in temperature, including disease-carrying insects thriving in areas they never did before, flooded coastal communities, less good cropland and potable water, and an increase in health-related deaths.

But he also points to a potential solution that combines a change in energy subsidy policies in industrial countries, the creation of a fund to transfer renewable energy technologies to developing countries, and

- But poor countries can not use high cost strategies.

Bad news for Florida: More hurricanes likely

The frequency of hurricanes appears to go in cycles that last from 25 to 30 years. From 1950 to 1969, for example, hurricanes were frequent occurrences in the Atlantic Ocean, Caribbean Sea and Gulf of Mexico. Then followed 25 years of relative calm. Since 1995, however, the region has been buffeted by an average of slightly more than eight hurricanes each season, the most active period on record, although all of them don't make landfall.
1. Living On Earth
NPR (--) National
09/25/2004 04:00 PM - 05:00 PM

32.00 Hurricanes & Global Warming. So what about the question regarding the current batch of devastating hurricanes and any connection to global climate change? There have been a number of stories carried by other news outlets assuring the public that climate change has nothing to do with these storms, but we thought we’d check our own sources. Guest: Kevin Trenberth, head of the climate analysis section at the National Center for Atmospheric Research in Boulder, Colorado; Well, the way I think of it is that the hurricanes would be there anyway, but the global climate change, and global warming in particular, creates a different background environment in which the hurricanes are working. And in particular the sea-surface temperatures are a little warmer, the whole environment is a bit wetter, a bit moister, there’s more humidity, and that’s the main fuel for the hurricanes. As a result, the hurricanes are a bit more intense, and in particular the rainfall that comes out of them is somewhat greater than it would otherwise be. And the best estimate we have is somewhere in the neighborhood of ten to 15 percent over the last 30 years.

- see observed chart of hurricanes (on P 131)
- Frequent hurricanes 1980-1969
  - fairly calm 1970-1994
  - Another active period 1995-2004, etc

2. Storm Stories
Weather Channel (--) National
09/23/2004 08:00 PM - 09:00 PM

[cc] 00:02:16 Rains are extremely rare in the coastal mountains here. A cold ocean to the west cools the atmosphere and induces rain before the clouds reach the land. When the pool of warm ocean water known as El Nino lies offshore, water-laden clouds pass over the ocean, waiting until they meet the cooling influence of the mountains to release their rains. Kevin Trenberth of the National Center for Atmospheric Research in Boulder, Colorado, blames global warming for more intense El Ninos and for weird weather of all kinds. When we look at what has happened over the last year or so, the very hot conditions, the very dry conditions, the droughts and the floods, these are the kinds of things we expect to see with global warming.
The Weather Channel Follows Record-Breaking Hurricane Coverage With Special Documentary About Global Warming

Alaska Meltdown Premieres September 26

ATLANTA, Sept. 20 /PRNewswire/ -- On the heels of hurricane coverage that outranked all other news and information networks and broke its own records for viewership,* The Weather Channel shows its commitment to covering all aspects of weather and climate with the world premiere this Sunday of an important report on global warming: Alaska Meltdown. Besides drawing attention to immediate dangers from severe weather like that in the last few weeks, The Weather Channel also seeks to increase awareness of environmental issues with the "Forecast Earth" climate documentary series. The next presentation, Alaska Meltdown, will premiere September 26 at 8:30 p.m. ET.

The program will explore important questions that include:
- Why are ice and snow disappearing in the coldest regions on earth?
- How is climate change already affecting people's lives in Alaska?
- To what extent is Alaska's meltdown a sign of things to come for the rest of America?

"The coldest place in the U.S. may seem like a weird place to visit when studying global warming but no place in America has been hit harder by the phenomenon," notes Dr. Heidi Cullen, climate expert for The Weather Channel. She went to Alaska with a TWC production crew to help produce the show. She notes, "Global warming is hard to grasp because it's so big, and it's about how everything interacts with everything else. What we know about the climate system is that it is interconnected and if it's changing in one place, it's going to change somewhere else too." Dr. Cullen has received national press coverage in USA Today, Ad Age, and Entertainment Weekly; she appeared as a guest expert on CNN Headline News' "Down To Earth" environmental program and on local NPR stations. Before joining The Weather Channel, Dr. Cullen was a scientist at the National Center for Atmospheric Research (NCAR) in Boulder, CO.

Forecast Earth is a series of half-hour original programs from The Weather Channel that explore the science behind the weather and the climate through dramatic video, on-the-scene interviews with the people involved, and perspective by some of the world's leading experts on climate and environmental topics. "Just as our exceptional meteorology team and experts gave us unequalled insight and credibility during coverage of hurricanes, we again turn to the best-informed and esteemed authorities to investigate important environmental issues that are changing our climate and impacting our world," said Patrick Scott, president of The Weather Channel Networks.
In Alaska Meltdown, The Weather Channel explores global warming's impact on the 49th state by focusing on the future implications for the people who live there. The half-hour program shows ordinary Alaskans living through this extraordinary time and how they're trying to cope with a changing environment and the effect it's having on their livelihoods, their natural resources, and the very land on which they live. The first stop for Alaska Meltdown is 340 miles north of the Arctic Circle to Barrow, Alaska, where the Inupiat Eskimo tribe is dependent on whaling. Nowadays the sea ice is thinner, there's less multi-year ice, and what ice is there, breaks more often and is less reliable for whalers who are as far as four miles from land when they haul onto the ice a whale that can weigh 10 tons.

The average annual temperature in Alaska is up 3.3 degrees since 1948, with the highest warming in winter which is an average of 6.4 degrees higher since 1948. Why is Alaska heating up faster than the rest of America? It's because global warming is contributing to the snow-ice albedo effect. "The warmer temperatures melt snow and ice exposing the darker ocean and land surfaces which did not reflect light but instead absorb the heat, and this causes even more melting to take place," explains Dr. Cullen. Arctic sea ice has shrunk 30 percent over the last 30 years. Over 600,000 square miles have been lost. One victim may be the polar bears, whose habitat is melting away.

Alaska Meltdown also visits Shishmaref, a town on a thin barrier island off the west coast of Alaska. It is a town that may be wiped off the face of the earth in the next few years. As the ice which has always protected Shishmaref from the sea disappears, increasingly strong storms are chewing chunks out of soil no longer hardened by permafrost. At least 17 homes have been abandoned.

In the Kenai Peninsula of southern Alaska, global warming is associated with the massive loss of indigenous Spruce trees. Warmer climate opened the door for the worst Spruce Bark Beetle outbreak in 300 years, causing 40 million spruce trees to die. Since 1987, there hasn't been a spring cold enough to stop the beetles from reproducing at phenomenal rates. The southern Kenai Peninsula has been stripped of Spruce trees, turning a wildlife refuge into a landscape of thinly wooded hills covered with grassland. Told through the experience of homeowners whose property is now devoid of the trees, the loss is another example of the damage global warming can cause.

Dr. Glenn Juday, research climatologist at the University of Alaska in Fairbanks, sees the signs of global warming as the harbinger of things to come. Interviewed in Alaska Meltdown, Dr. Juday notes that climate changes like those revealed in the program have not occurred for thousands of years. "What's going on here is going to reach everyone eventually," he concludes.

TWC's Dr. Cullen, who provided invaluable support to researching, taping and producing Alaska Meltdown, was recently selected to join the World Climate Research Program’s Climate Variability (CLIVAR) Scientific Steering Group, an international project aimed at identifying, understanding, and predicting types of variability within the Earth's complex climate system. As a post-doc, she received a NOAA Climate & Global Change Fellowship and spent two years working at the International Research Institute for Climate Prediction (IRI) where she collaborated with scientists from Brazil, Paraguay, and Uruguay. She received a B.A. from Juniata College in Huntingdon, PA and then went on to obtain a B.S. in Engineering/Operations Research from Columbia University in NYC. As an undergraduate, Dr. Cullen was part of a 3-2 Program in which students pursue both a liberal arts degree and an engineering degree. Dr. Cullen returned to Columbia and received a Ph.D. in Earth and Environmental Sciences at Columbia University. Her dissertation focused on the North Atlantic Oscillation, an important climate influence.
Hurricanes and Global Warming: Is There a Link?

By George Taylor

Published 09/14/2004

I could see this one coming.

The other day a lady in my department saw me and said, "Well, George, with all these hurricanes it's pretty clear that global warming is happening, right?" I think Jane was just being playful, because she's heard me talk about global warming and knows of my "politically incorrect" viewpoint on this issue. Yet she raises a question that a lot of people have been asking: does the busy hurricane year in the Atlantic have anything to do with global warming?

The short answer: no.

The long answer:

Long-term statistics on hurricanes are quite good, so we can have some confidence in the trends we see in hurricane counts. There are two reasons for this: (1) hurricanes are big, powerful storms and very hard to miss; (2) they are well-defined. The Saffir-Simpson scale uses wind speed (one-minute average) to define a hurricane's strength, starting at 74 mph (Category 1) and ending at speeds above 155 mph (Category 5). Other rating systems use central pressure as a criterion.

Figure 1, obtained from data provided by the National Hurricane Center, shows hurricane strikes (landfalls) by decade in the U.S. since 1900. The 1940s were rather busy, the 70s the quietest, and the 1990s pretty close to the long-term average. A simple linear fit suggests a decrease over time. This is a result echoed by Easterling, et al (2000), who said, "the number of intense and landfalling
Atlantic hurricanes has declined." In the Gulf of Mexico there is "no sign of an increase in hurricane frequency or intensity," according to Bove, et al (1998). For the North Atlantic as a whole, according to the United Nations Environment Programme of the World Meteorological Organization, "Reliable data? since the 1940s indicate that the peak strength of the strongest hurricanes has not changed, and the mean maximum intensity of all hurricanes has decreased."

Granted, there has been an upswing in the Atlantic since 1995, and this year's bumper crop of storms has struck Florida in numbers and intensities seldom occurring before. A sign of things to come, especially in a warmer world? Not according to Bill Gray's Tropical Forecast group at Colorado State University. Gray, who has developed successful methods for predicting hurricane activity, said, "Various groups and individuals have suggested that the recent large upswing in Atlantic hurricane activity (since 1995) may be in some way related to the effects of increased man-made greenhouse gases such as carbon dioxide (CO2). There is no reasonable scientific way that such an interpretation of this recent upward shift in Atlantic hurricane activity can be made."

And there is no reason to expect increases in hurricanes due to greenhouse warming. Climate models, for all their problems, are unanimous in at least one respect: they predict that most of the future warming will be in high latitudes, in the polar regions. This will reduce the north-south temperature gradient and make poleward transfer of heat less vigorous -- a task in which tropical storms play a major role. All other things being equal, a warmer world should have fewer, not more, hurricanes.

The same effect should reduce the overall intensity of mid-latitude storms as well. Does it? Let's examine the evidence.

Schwartz and Schmidlin (2002) analyzed frequencies of blizzards in the US since 1959. Defining a blizzard as a storm with falling or blowing snow, visibilities less than 400 meters and winds over 16 m/sec, they concluded that there have been increasing numbers of blizzards reported, while the area affected by all blizzards has not changed significantly. This would indicate that blizzards are becoming smaller. It is also possible that "NWS is recording smaller, weaker blizzards in recent years that went unrecorded earlier in the period, as occurred also in the official record of tornadoes in the United States," which would suggest that blizzard frequency increases may be overstated.

Changnon and Changnon (2000) studied hail frequencies in the US over the last century. They found that "the national average based on all hail values formed a bell-shaped 100-year distribution with hail occurrences peaking in mid-century." Thunderstorm distributions were similar to the hail results. Further, the authors found that hail insurance loss values have declined since the 1950s, in agreement with the hail results.

Zhang, et al (2000) examined storm activity along the US East Coast over the twentieth century. After stating, "It has been speculated that future global warming will change the frequency and severity of tropical and extratropical storms," the authors used historical data in an attempt to help predict future trends. Using a variety of indices, including storm surge water levels, the authors found "no significant trend in storm activity during this century along the East Coast." The real problem along the coastline, they say, is not changing climate but changing land use, as more and more development occurs along the shorelines, creating greater susceptibility to storm damage.

Gulev, et al (2000) employed NCEP/NCAR reanalysis data since 1958 to study the occurrence of winter storms over the northern hemisphere. They found a statistically significant (at the 95% level) decline of 1.2 cyclones per year for the period, during which temperatures reportedly rose in much of the hemisphere.

"Global warming causes increased storminess" makes for interesting headlines. It also violates fundamental scientific truth and the lessons of history.
PANEL: MORE INTENSE HURRICANES COULD CONTINUE AS RESULT OF GLOBAL WARMING

WASHINGTON (BestWire) - The four hurricanes that struck the United States during the five-week period in August and September may be a sign of things to come as global warming continues to generate "more intense" tropical storm activity, according to some experts, who outlined their concerns during a telephone briefing Oct. 21.

"We know the climate is changing, that humans are having an influence, biological systems are responding on all continents and weather is becoming more extreme," said Paul R. Epstein, M.D., associate director of the Center for Health and the Global Environment at Harvard Medical School.

The panel, who participated in the briefing sponsored by the center, said that warming sea-surface temperatures brought about by increasing concentrations of greenhouse gases in the atmosphere from human activities will raise the risk of repeats in future years of intense hurricanes and subsequent flooding that the United States experienced in 2004.

While the panel couldn't say that climate change will result in more or fewer hurricanes in the future, they said there is evidence that the storms that do occur will be more intense than in the past.

"This year unusually intense period of destructive weather activity, with four hurricanes hitting the U.S. in a five-week period, could be a harbinger of more extremes to come," Epstein said, referring to Hurricanes Charley, Frances, Ivan and Jeanne, which struck Florida and other southeastern states. "Weather patterns are changing, the character of the system is changing. It is becoming a signal of how the system is behaving."

The panelists also acknowledged several skeptics critical of their theory.

For example, William M. Gray and the team of hurricane forecast experts with the Department of Atmospheric Science at Colorado State University said in an Oct. 1 forecast of Atlantic hurricane activity, that Florida residents should not interpret the four hurricane landfalls to their state in August and September to be related, in any way, "to the much publicized human-induced global warming hypothesis."

"Although an unusual event (likely occurring about once every 100 years), these four strong landfall events are a rare combination of an above-average season of major hurricane activity together with unusually favorable broad scale steering currents that drove mid-Atlantic tropical cyclones westward instead of allowing them to recurve," Gray and the team wrote.
Hurricane Scientist Leaves U.N. Team

By Juliet Eilperin

A federal hurricane research scientist resigned last week from a U.N.-sponsored climate assessment team, saying the group's leader had politicized the process.

Chris Landsea, who works at the National Oceanic and Atmospheric Administration's hurricane research division in Miami, said Monday that he would not contribute to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change's chapter on atmospheric and surface climate conditions because the lead author had told reporters global warming contributed to intense Atlantic hurricanes last year.

In a letter he posted on the Internet, Landsea said there was little evidence to justify Kevin Trenberth's assertion in October that in light of current warming trends, "the North Atlantic hurricane season of 2004 may well be a harbinger of the future."

"It is beyond me why my colleagues would utilize the media to push an unsupported agenda that recent hurricane activity has been due to global warming," he wrote. "My view is that when people identify themselves as being associated with the IPCC and then make pronouncements far outside current scientific understandings that this will harm the credibility of climate change science and will in the longer term diminish our role in public policy."

The spat between Landsea and Trenberth -- who heads the climate analysis section at the private nonprofit National Center for Atmospheric Research in Boulder, Colo. -- underscores a larger battle over what role scientists should play in one of the decade's most contentious environmental debates. Some researchers say they have a duty to express concern about human contributions to climate change, given what is at stake; others say scientists have no right to act as policy advocates.

The IPCC, which has already concluded that human activity accounts for much of the warming the earth has experienced over 50 years, is seeking to evaluate how and why the climate is changing. It will issue its next report in 2007, basing its findings on a consensus-oriented process that involves hundreds of scientists as well as senior diplomatic officials.

The Atlantic had an unusual number of severe hurricanes last year, four of which hit Florida. In 2004, major tropical storms, including nine hurricanes, occurred in the Atlantic. Between 1974 and 1994, the Atlantic averaged 8.6 serious tropical storms annually.

Trenberth, who in an interview Friday called Landsea's charges "ridiculous," said he participated last fall in a media conference call organized by Harvard University professors "to correct misleading impressions that global warming had played no role at all in last year's hurricane season." He added he would have welcomed opposing views in the assessment, even though he believes "if global warming is..."
happening, how can hurricanes not be affected? It's part of the overall system."

Landsea, who could not be reached for comment Friday, wrote in his resignation letter that a recent report from the Geophysical Fluid Dynamics Laboratory suggests that by 2080 hurricanes are likely to be only 5 percent more intense than they are now.

"I personally cannot in good faith contribute to a process that I view as both being motivated by pre-conceived agendas and being scientifically unsound," he wrote.

IPCC officials have not intervened in the dispute. R.K. Pachauri, who heads the overall climate assessment, wrote in a Dec. 8 e-mail to Landsea that "individual scientists can do what they wish in their own right, as long as they are not saying anything on behalf of the IPCC."

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p 46
Ice is melting in the Arctic; lots of news
(A change in the wind explains a lot of this)

Scary Arctic Ice Loss?
Blame the Wind

The past three Septembers have seen the
Arctic ice pack shrink dramatically to a
record low amid signs that greenhouse
warming could be melting the ice, threaten-
ing to clear the Arctic Ocean within
decades. Researchers are still worried, but a
study presented at the meeting offers some
reassurance. A natural, temporary shift in
the wind may have been largely to blame for
the recent shrinkage.

Winds of the high northern latitudes are
the domain of the Arctic Oscillation (AO),
an erratic atmospheric pressure seesaw
(Science, 9 April 1999, p. 241). Over
weeks, years, or even decades, pressure can
call over the pole while rising around a cir-
cle near the latitude of Alaska. The result-
ing steeper pressure drop across high lati-
tudes increases the generally westerly

winds blowing there. When the pressure
seesaws the other way, the winds drop to
weaker than average.

Wondering how the AO had been influ-
encing Arctic ice, meteorologists Ignatius
Rigor and J. Michael Wallace of the Univer-
sity of Washington, Seattle, created a model
that keeps track of ice as it forms and blows
around the Arctic Ocean, thickening with
time. In the 1980s, the AO was in its so-
called low-index phase, with higher than
average pressure over the pole and therefore
weaker westerly winds. In the model, those
winds tended to drive the ice around in cir-
cles off the Alaskan and Siberian coasts,
giving it a chance to thicken for an average
of 10 years or more. But in the 1990s, the
AO swung into its strong-wind phase. In the
model, the new circulation tended to blow
old, thick ice out of the Arctic Ocean
through the Fram Strait and into the North
Atlantic. The remaining ice was thinner
then under the opposite AO phase and thus
easier to melt away. In fact, ice did surge
through Fram Strait in the early 1990s, and
the ice has thinned, culminating in the
record low ice extents of recent years.

At least some of the recent ice loss is
indeed "a hangover effect" of the early '90s
swing in the AO, says meteorologist Mark
Serreze of the University of Colorado,
Boulder. The AO index fell back toward
more normal levels in the late '90s, he
notes, but the ice hasn't recovered yet.
Because Arctic warming has been lengthen-
ing the period in the summer during which
ice can melt, he says, Arctic ice may well
continue to shrink, although probably not as
rapidly as it did recently.

In the long term, Serreze adds, climate
models predict that greenhouse warming
should lead to increased melting over com-
ing decades. Some models even have the
intensifying greenhouse pushing the AO
into a permanent positive phase, he says,
which would favor still-greater ice losses.

-RICHARD A. KERR

Snapshots From the Meeting

A nudge toward magnetic flip-flop. Two paleomagnetists found themselves presenting
adjacent posters that argued for a previously unrecognized prelude to the most recent
reversal of Earth's magnetic field. Researchers had thought that the field generated by the
churning molten iron of the outer core had simply weakened and reoriented itself for a
few thousand years and then got ready to flip about 780,000 years ago. Not so fast, say
Laurie Brown of the University of Massachusetts, Amherst, and Bedir-Kaya Singer of the University of
Wisconsin-Madison. Brown, who is working on the paleomagnetic record frozen into lavas of cen-
tral Chile and Singer, study of lavas in Tahiti, found that the field had actually weakened
and moved toward a reversal 18,000 years earlier. The prolonged precursory move toward
reversal may have given the liquid outer core time to overcome the stabilizing influence of
the solid inner core.

-R.A.K.
Yet Another Low Year For Arctic Minimum Sea Ice Concentration

For a third consecutive year, the Arctic has seen near-record low sea ice extent in September. This replicates similar patterns seen in 2002 and 2003. There were hints that this might occur as early as May, when anomalously low conditions were first observed. As these conditions persisted throughout summer of 2004, the statistical likelihood of an extreme year increased. While the lagged correlation between ice extent in May and September is modest (0.34), the correlation becomes stronger as the summer progresses to 0.71 between June and September, and 0.84 between July and September.

These Arctic minima are related to atmospheric circulation via the Arctic Oscillation (AO). When the AO is in a positive phase, atmospheric pressures are lower over the Arctic Ocean, resulting in stronger than normal winds and warm conditions. This fosters both increased ice transport around and out of the Arctic basin as well as enhanced summer melt. A negative phase of the AO yields higher pressure, lighter winds, and colder air temperatures. The AO index has been predominantly positive since the late 1980s, particularly during 1989-1995. A recent study by Ignatius Rigor (University of Washington, Seattle) suggests that this prolonged positive phase fostered transport of much of the thicker multi-year, or perennial, ice pack out of the Arctic. This ice was replaced by thinner first-year ice, leaving the overall Arctic sea ice pack more sensitive to air temperature anomalies than in previous decades. If this theory holds true, then we are seeing an Arctic sea ice pack that is more susceptible than in previous decades to positive anomalies in the AO. In 2002, the low September ice concentration was preceded by a strongly positive winter AO index, while in 2003, the index was weakly positive. In 2004, the winter AO index was strongly negative.

The failure of the sea ice pack to recover supports the hypothesis of a thinner ice pack that is more sensitive to surface air temperature anomalies. While the ice extent minima are occurring annually on a hemispheric basis, these anomalies do not occur in the same geographic location every year. For instance, while the total ice concentration in July 2004 is lower than usual, positive anomalies are seen in Hudson Bay, along parts of the Canadian Archipelago, and in the Laptev Sea, while lower than normal conditions occur in the Kara Sea, north of Svalbard, and along the Beaufort and Chukchi Sea coasts of Alaska. This differs from patterns seen in July 2002 and 2003. These regional anomalies in sea ice concentration are consistent with the spatial pattern of observed anomalies in surface air temperatures.

For further information and sources, please see <http://nsidc.org/data/seaice_index> and <http://www.ncdc.noaa.gov>.

Antarctic Glaciers Speed Up In Response To Ice Shelf Collapse

New evidence found by researchers at NSIDC, NASA, and the Instituto Antártico Argentino (IIA) shows that after the Larsen B Ice Shelf disintegrated in 2002, glaciers in the Antarctic Peninsula have both accelerated and thinned en route to the Weddell Sea. The findings indicate that ice shelf breakup may rapidly lead to sea level rise.

In a paper published in Geophysical Research Letters, Ted Scambos and Jennifer Bohlander of NSIDC, Chris Shuman of the Oceans and Ice Branch at NASA's Goddard Space Flight Center, and Pedro Skvarca of the IIA describe two- to six-fold increases in centerline speed of four glaciers feeding the now-collapsed section of the Larsen B Ice Shelf. They also describe elevation losses in three glaciers in the collapse area. The researchers used both Landsat 7 and ICESat satellite imagery in this study.

In the same issue of GRL, Eric Rignot of NASA's Jet Propulsion Laboratory and collaborators describe the same acceleration using Interferometric SAR from RADARSAT. Using their map of the flowspeed, they estimate that the glaciers ought to be thinning by tens of meters. ICESat elevation measurements by the Scambos team corroborate their prediction.

Landsea sends message to the IPCC

From: CHRIS LANDSEA <CHRIS.LANDSEA@NOAA.GOV>
Date: Fri, 05 Nov 2004 17:40:43 -0500
To: Susan.Solomon@noaa.gov, Frank.Marks@noaa.gov, Rick.Rosen@noaa.gov, Peter.Ortner@noaa.gov,Thomas.C.Peterson@noaa.gov,Thomas.R.Karl@noaa.gov, Albert.Klein.Tank@knmi.nl, dhko@hko.gov.hk, rahim_f@irimet.net, lindam@ucar.edu, pachauri@teri.res.in, p.jones@uea.ac.uk, killeen@ucar.edu, B.J.Hoskins@reading.ac.uk, bubujallow@hotmail.com
Cc: trenbert@cdg.ucar.edu

Subject: Hurricanes and Global Warming for IPCC

Dear Drs. R. Pachauri, S. Solomon, P. Jones, A. Klein-Tank, CY Lam, F. Rahimzadeh, B. Hoskins, B. Jallow, T. Karl, T. Peterson, L. Mearns, R. Rosen, T. Killeen, F. Marks, and P. Ortner (with a cc to K. Trenberth),

Recently Dr. Kevin Trenberth participated in a press conference on the topic "Experts to warn global warming likely to continue spurring more outbreaks of intense hurricane activity" along with Drs. Paul Epstein, James McCarthy and Matthias Weber. The result of this media event was widespread coverage like the following from Reuters:

Global Warming Effects Faster Than Feared - Experts
Thu Oct 21, 3:32 PM ET Science - Reuters
By Maggie Fox, Health and Science Correspondent

WASHINGTON (Reuters) - Recent storms, droughts and heat waves are probably being caused by global warming, which means the effects of climate change are coming faster than anyone had feared, climate experts said on Thursday.

The four hurricanes that bashed Florida and the Caribbean within a five-week period over the summer, intense storms over the western Pacific, heat waves that killed tens of thousands of Europeans last year and a continued drought across the U.S. southwest are only the beginning, the experts said.

Listening to the whole press conference, available at
http://www.med.harvard.edu/chge/media.html - the media coverage seems to accurately reflect what actually was said by Dr. Trenberth and the panel at this event. Similar statements by Dr. Trenberth are also on the record in his September 24th, 2004 interview with the Living on Earth media program - http://www.loe.org/index.htm. In summary, he is attributing an increase in this year's Atlantic and NW Pacific tropical cyclone activity to anthropogenic warming as a result of enhanced atmospheric greenhouse gases.

My concerns are: Where is the science, the refereed publications, that substantiate these pronouncements? What studies are being alluded to that have shown a connection between observed warming trends on the earth and long-term trends in tropical cyclone
activity? As far as I know there are none.

I have been a Contributing Author for both the IPCC in 1995 and 2000, when I wrote the sections on observed changes in tropical cyclones around the world. I also dutifully have provided reviews for both IPCC editions on the observed variability and projection chapters. I was asked just three weeks ago by Dr. Trenberth as Lead Author of the Observations chapter to again provide a writeup on observed Atlantic hurricane activity for the 2007 IPCC Fourth Assessment Report. I agreed to do so, as I realize that this is an important task and one that I may be able to provide a meaningful contribution toward.

However, these press events greatly concern me. The Lead Author of the Observations chapter seems to have already come to the conclusion that global warming has altered hurricane activity and has publicly stated so. This does not reflect the consensus within the hurricane research community.

I am concerned that it may not be possible for the IPCC process to proceed objectively at this point, with regards to hurricane activity. Thus I would like assurance that what will be included in the IPCC report will reflect the best available information and the consensus within the scientific community most expert on the specific topic.

There are many legitimate scientific reasons to be concerned with global warming, but the evidence just is not there with hurricanes no matter how much it is trumped up for the media and the public. Proceeding with such announcements outside the proper IPCC process taints the credibility of climate change science and will in the longer term diminish our influence over public policy.

The sad thing about this is that it did not have to turn out this way. I did try to caution both Dr. Trenberth and Dr. Linda Mearns before the media event (email included below) and provided a summary of the consensus within the hurricane research community. Dr. Mearns decided not to participate in the panel perhaps as a result of my email correspondence. I sincerely wish Dr. Trenberth had made the same decision. Dr. Trenberth wrote back to me that he hoped that this press conference would not "go out of control". I would suggest that it was out of control the minute that he and his fellow panel members decided to forego the peer review scientific process and abuse science in pursuit of a political agenda.

Sincerely,
Chris Landsea
NOAA/AOML/Hurricane Research Division

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HERE IS MY OP ED PIECE ON THE SUBJECT

- Hurricanes

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LIFE IS ABOUT FRIENDS

8/2/2005
Hurricane Experts Found Everywhere One Looks

DR. JAMES J. OBRIEN
PROFESSOR OF METEOROLOGY & OCEANOGRAPHY
Center for Ocean-Atmospheric
Prediction Studies/FSU

Aug 2, 2005

There is some disagreement amongst climate scientists on the potential impact of global climate change on future hurricanes in the Atlantic Ocean. Last year claims were made that the frequency of hurricanes will increase due to global climate change.

For example, after Hurricane Bonny, Charley and Frances hit Florida in 2004; the prime minister of England, Mr. Tony Blair and many other prominent American scientists told the world that the hurricanes were due to global warming. Luckily scientists who actually regularly study hurricanes quickly responded with the facts and for once the misinformation was curbed quickly and effectively.

But, now the alarmists are at it again claiming that Global Warning will increase the intensity of hurricanes. Don't worry readers; there is absolutely no scientific support or correlation of hurricane intensity or hurricane frequency with global warming.

Hurricane scientists and experts actually believe that variations in the Atlantic Ocean Conveyer, not global temperatures, determine the frequency of hurricanes. It is predicted that we will see an increase in the number of Atlantic hurricanes for the next 10-15 years compared to recent years. This is nothing new – the last peak occurred between 1930-1970.

What is the Atlantic Ocean Conveyer and why does it affect hurricanes? In the North Atlantic in the Labrador and Gin Sea, water is cooled and sinks to the bottom in winter. The sinking water is replaced by warm Gulf Stream water that leaves the North Carolina coast and proceeds toward the Northeast to Ireland and Norway. The Gulf Stream draws water from the South Atlantic. The rest of the conveyer belt is in the other oceans but the Atlantic portion is the dominant feature.
This oceanic phenomenon varies and changes the sea surface temperatures. When it is strong 1930-1970; 1995 – current, there are more Atlantic hurricanes. When it is weak, 1905-1925; 1975-1994, the hurricane season is mild.

And what about intensity? Hurricanes have to keep moving or they die by upwelling the cold water below the warmer sea surface temperatures. Hurricane Mitch, 1998, is a textbook example of this: Mitch stalled off Honduras when it lost its upper atmospheric steering currents. This caused it to die and drop over 6 feet of rain on the poor folks in Honduras and Nicaragua!

A hurricane will also grow stronger as it moves over water warmer than 80 F (26.5 C). This is why some people believe that global warming will increase hurricane intensity but there are no scientific calculations that show the areas of water this warm increasing in size.

However, if one graphs the ocean environment for Category 3, 4 and 5 storms, there is no difference in ocean surface temperatures for tropical storms and category 1 and 2 storms. What's more, the scientific literature documents that the western Atlantic off Africa is the prime breeding ground for the stronger storms – and many of those stronger storms never make it to landfall.

While it is tempting to blame the frequency or intensity of hurricanes on man, we must all remember how variable nature is – and specifically in this case, the effect of natural variations on hurricanes’ intensity and frequency is extremely higher than the possibility of man’s interference.
Four big hurricanes hit Florida about Aug-Sep 2004.

They caused lots of damage.

There was intense news coverage of this event.

News stories from a few scientists made it sound as if global warming had a major effect on the development of these hurricanes.

On Jan 16, 2005, Chris Landsea resigned from the IPCC over this issue. He was very worried that a lead author of IPCC would declare that there was a strong effect of global warming on hurricanes. But any such effect appears to be weak and mostly lost in the noise.

Here is the story from The American Scientist.

NOTE: I did not discover this article until July 2006. — Roy Jenne
hurricane activity in 2004, Trenberth said, "...in the Atlantic there's no guarantee that this is going to continue, because in the Atlantic there is large, natural decade-to-decade variability in hurricane activity..." So far so good. But he then added: "...now superimposed on that natural variability is also this longer-term trend that we associate with global warming." A listener could easily reach the conclusion that climatologists had at least some evidence of a warming-induced upward trend in hurricane activity.

Although one can find theoretical support for the proposition that hurricanes may indeed get worse—from a consideration of general principles (hurricanes are fueled by the heat from tropical seas, which will likely warm somewhat over the coming decades) and from certain computer models (one 2004 study suggests that hurricane winds might increase by 5 percent or so over roughly the next 80 years)—the historical record does not show any obvious trend.

In an open letter to the climate-science community, Landsea wrote:

...Given Dr. Trenberth's role as the IPCC's Lead Author responsible for preparing the text on hurricanes, his public statements so far outside of current scientific understanding led [to my] concern that it would be very difficult for the IPCC process to proceed objectively.... My view is that when people identify themselves as being associated with the IPCC and then make pronouncements far outside current scientific understandings[,] this will harm the credibility of climate change science and will in the longer term diminish our role in public policy.

Trenberth now says that "it was clear I was not speaking for the IPCC." Yet the moderator for the briefing had introduced Trenberth as "convening lead author of the 2007 Intergovernmental Panel on Climate Change report." And in his opening remarks Trenberth volunteered, "I was a lead author on the 2001 IPCC report for Working Group One, which deals with the science of climate change, and in fact I was involved in developing some of the information that is in that report dealing with hurricanes."

Commenting on Trenberth's controversial statements to the press, Hans von Storch, a climatologist at the Institute for Coastal Research in Geesthacht, Germany, says "It's a demonstration of how highly politicized the IPCC process has become." Von Storch should know, having lately been in the thick of some rather heated climate debates himself. One erupted two years ago, forcing him to resign his position as editor of Climate Research in protest when he was prevented from publishing an editorial critical of an article that had appeared in that journal, one that called the uniqueness of recent global warming into question. (It's clear that here von Storch was acting on principle, not campaigning to defend the notion that the recent warming is extraordinary. Indeed, his own work points in the other direction: Last year von Storch and five coauthors published a paper in Science suggesting that ancient swings in climate might well have been a lot larger than many experts, including those on the IPCC, estimate.)

Although tropical hurricanes are not his specialty, von Storch has studied the evolution of storminess elsewhere. Lars Bärring of Lund University in Sweden and von Storch published a paper last year (in Geophysical Research Letters) that uses measurements of barometric pressure to gauge the degree of storminess in Europe in 1995 was, in fact, similar to the level existing in 1900. Landsea suspects something similar will happen when Americans look back at the busy hurricane season of 2004: "If I had to make a guess for the next 20 years, I'd say it's going to be a lot like the last 10 years." That is not to say that Landsea discounts any influence of a warming planet. "No one should pooh-pooh the possibility that global warming might do bad things," he says. But he stresses that the increase in hurricane wind strength being suggested on the basis of computer modeling is "pretty tiny." And he points out that the monitoring of hurricane winds today has a coarseness of about 5 miles per hour. So the influence of global warming on hurricanes now, if it exists at all, is in the noise. "Even in 2080," he says, "you might not be able to measure it."—David Schneider