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'No concrete global warming proof in polar region'

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Are the ices of the Arctic north about to melt away for good? Rami Abdelrahman gets the views of a range of Swedish researchers.

Sweden's Crown Princess Victoria is one of a number of Scandinavian royals making for the Arctic archipelago on the Swedish ice-breaker *Oden* this weekend to participate in an event to coincide with and promote International Polar Year.

But will there even be a need for such ice-breaking vessels in years to come? Many commentators would have us believe that glaciers and ocean ice are about to go the way of the dodo.

Upon their arrival at Svalbard in Norway, however, the royals are likely to be informed by Swedish polar researchers that there is in fact very little concrete proof tying global warming to climate changes in the Arctic and sub-Arctic regions. Some indeed argue that there is more change in today's political rhetoric than there is in the environment.

Last year Sweden invested more than 33 million kronor ($5 million) on research in the Arctic region, which covers almost one quarter of the nation's landmass. Most of the Swedish funding, according to many researchers, goes mainly toward surveying the effects of climate change on glaciers and wildlife.

Professor Göran Ericsson from Umeå University will head a research delegation this summer to the Arctic north. His particular task is to study patterns of moose migration as they relate to climate change. Ericsson can literally "ring up a moose."

"We have attached GPS trackers on more than 40 moose. Once you dial the code to the GPS tracker, you can find the exact location of the animal," he says.

"Humans sweat when they get warm, but moose cannot do that. If the weather gets warmer they move towards colder places, often risking food shortages," he tells The Local.

Ericsson says moose have always moved about in the sub-Arctic regions of the Swedish north. But what researchers are testing now is whether the animals are moving further north due to climate change. "Sometimes this proves right, and sometimes it proves wrong."

Tomas Berg works with the *Fjällräv* (mountain fox) project, a venture aiming to preserve wildlife in the region. He too says it is difficult to ascertain what is really happening when it comes to climate change.

"We know that there is change, but we do not know in which direction. For example, the weather in the mountains might be warmer now, but in the long run it could get colder," he says.

Cecilia Johansson from Uppsala University is equally unwilling to link milder weather in the Arctic with more general climate fluctuations. A lecturer in meteorology, Johansson flies to the

Arctic region twice a year to study the effects of climate change on snow patterns.

“When it comes to weather and climate there are so many interrelated factors, triggering a chain of effects. For example, we had a warm winter in Sweden, but it was quite cold in the Mediterranean region. So we have to look at global warming from a global perspective.”

Every researcher seems to display a similar reticence when it comes to drawing far-reaching conclusions. Andrew Mercer studies the changes in glacier forms in the Arctic region at Stockholm University.

“It is quite a big picture -- we are talking about the whole planet. We have to compare many studies and often data is not available elsewhere in the same way it is here in Sweden,” he says, before adding that churches in Sweden have meteorological records dating back a few hundred years. Carl Linnaeus, the father of modern taxonomy, was one of the first Swedish scientists to study the effects of climate on wildlife.

“In the 1980s and 1990s, Swedish glaciers grew in size, which should indicate that we have had colder weather. But in fact there were other factors that contributed to their growth,” Mercer says.

However, climate has changed politics, especially in Sweden, as political parties include adaptation to climate change in their rhetoric and election campaigns. Mercer offers his view on the curious relationships between science and politics.

“What happened was that scientists sent out the results of their studies to politicians and the general public. Initially only the general public showed an interest. Politicians didn’t care. But once interest grew among the general public, the subject gradually made its way to the top of the politicians’ list of priorities,” he says.

The industrial sector also avoided the thorny issue of climate change for quite some time, thinking adaptation to a greener future a costly endeavour.

“However, scientists were able to prove that industry was damaging the climate. Scientists presented industries with possible scenarios and ways to adapt their products and mitigate climate change. With the growing interest in the general public, they began to see a new market with new opportunities.”

Mercer adds that industrialists are often on the same side as scientists, at least in Sweden.

“There is no such thing as a free lunch, though,” he says, explaining that it is cheaper for industries to avoid investing in new and green technologies, which are still in the development stage and remain expensive.

The discovery of oil has also added a new dimension to the geo-politics of the region. Investment has come pouring in from Europe, the US, Canada and Japan, as well as from Arab Gulf States, Latin America and China. According to National Geographic, 25 percent of all untapped global oil resources are to be found in the region.

But if oil reserves prove as plentiful as predicted, will there even be a need to drill through thick layers of ice in the future? The Arctic Climate Impact Assessment, ACIA, anticipates the disappearance of all ocean ice in the period from 2060-2100 should global warming continue at the current rate. However, Swedish scientists are not convinced that today’s meteorological trends will stand the test of time.

Rami Abdelrahman (news@thelocal.se)

Saudi Arabia Boosts Oil Supply, May Pump More Later (Update2)

http://www.bloomberg.com/apps/news?pid=newsarchive&sid=agZ1gqbuhxpo

By Ayesha Daya and Glen Carey

June 22 (Bloomberg) -- Saudi Arabia may raise its oil production beyond a planned 200,000 barrel-a-day increase in July if the oil market requires extra supply, Saudi Oil Minister Ali al-Naimi told consumers at a summit in Jeddah.

Saudi Arabia's commitment to government and business leaders to pump 9.7 million barrels a day next month came after crude rose to a record $139.89 in New York on June 16. Saudi King Abdullah said at today's summit that his country, the world's biggest oil exporter, seeks ``reasonable'' prices. OPEC President Chakib Khelil said a Saudi boost is ``illogical'' because refiners don't need more crude.

The International Energy Agency estimates that world oil use this year will climb 800,000 barrels a day, or 1 percent, as demand climbs in emerging markets. Stagnating production from Russia and the North Sea and disruption in Nigeria are also contributing to higher prices, which have touched off strikes, riots and accelerating inflation in nations around the world.

``Saudi Arabia is prepared and willing to produce additional barrels of crude above and beyond the 9.7 million barrels per day, which we plan to produce during the month of July, if demand for such quantities materializes and our customers tell us they are needed,'' Naimi said.

Saudi Arabia's capacity will be 12.5 million barrels a day by the end of 2009 and may rise to 15 million after that if necessary, he said.

Speculators Blamed

The president of the Organization of Petroleum Exporting Countries, Khelil, blamed $135 oil on speculative investors, the subprime credit crisis and geopolitics, rather than a shortage of supply. Khelil, who is also Algeria's oil minister, today dismissed the argument voiced by consuming nations that possible supply shortages are driving up prices.

``The concern over future oil supply is not a new phenomenon,'' he told reporters in Jeddah. Asked if oil prices would fall after the meeting, he replied: ``I don't think so.''

More than 35 countries, seven international organizations and 25 oil companies took part in today's summit in the Saudi Red Sea port, including U.K. Prime Minister Gordon Brown, U.S. Energy Secretary Samuel Bodman and Exxon Mobil Corp. Chief Executive Officer Rex Tillerson.

OPEC Divided

The Saudi King and other producer-nation officials including Kuwaiti oil minister Mohammed al-Olaim also called for greater regulation on oil market investors. The U.S. Commodity Futures Trading Commission is currently investigating the role of index-fund investors in the doubling of oil prices during the past year.

OPEC itself is divided. While Saudi Arabia is boosting output, other OPEC members including Libya, Algeria, Iran, Venezuela and Qatar are opposed to higher production, saying refiners aren't asking for more crude.

Libya's top oil official, Shokri Ghanem, said after the meeting ended that the Saudi output boost wouldn't affect the oil price, and yesterday said his country may have to cut its own production in response to the Saudi move.

Venezuelan Oil Minister Rafael Ramirez, also asked whether the oil price was likely to fall after the Saudi move, said: ``I don't think so because it's not a problem of supply.''

Kuwait, OPEC's fourth largest producer, said it's ready to join neighboring Saudi Arabia and raise output, if needed.

Dollar Hedge

Oil rose to $139.89 a barrel on June 16 as investors bought commodities to hedge against a weakening U.S. dollar and concern mounted that demand is growing faster than supply. Gasoline retail prices over $4 a gallon in the U.S. are raising concern that the economy may slip into recession. Crude oil for July delivery closed June 20 in New York at $134.62 a barrel.

U.S. Energy Secretary Bodman rejected calls to put greater control on markets, and said a shortage of supply was responsible for high prices. He disputed the view that speculators are leading the markets to record levels.

The market needs between 3 million and 4 million barrels a day of spare oil production capacity, compared with the 2 million barrels a day currently available, Bodman said. OPEC says the world's spare capacity is about 3 million barrels a day, with two-thirds of that in Saudi Arabia.

``Market fundamentals show us that production has not kept pace with growing demand for oil resulting in increasing, and increasingly volatile, prices,'' Bodman said in a speech today.

More Supply

Italy's Minister of Industry Claudio Scajola and Brazil's Energy Minister Edison Lobao were among consumer-nation officials attending the Jeddah summit that said more supply was needed to ease prices. ``We expect Saudi Arabia to open the taps,'' Austrian Economy Minister Martin Bartenstein said in an interview two days ago. ``One third of inflation in the euro zone comes from energy and inflation is now of importance.''

Speaking in Jeddah today, the Austrian minister said: ``We would like to see more oil on the market. That is the only action I can think of that can discourage the speculators.''

Adam Sieminski, chief energy economist at Deutsche Bank AG, and other analysts maintain that consumers will need to curtail demand before prices head lower. The biggest drop in prices in 11 weeks came on June 18, after the world's second-biggest oil consumer, China, raised gasoline, diesel and power prices to rein in energy use.

Saudi Arabia will increase production capacity to 12.5 million barrels a day of oil by the end of next year and could add a further 2.5 million barrels a day if needed, from some new giant fields, Naimi said.

Zuluf, Shaybah Fields

``The Saudi announcement of a possible increase in capacity to 15 million barrels a day is a robust statement; it would be a huge increase,'' ENI SpA Chief Executive Officer Paolo Scaroni

said in an interview in Jeddah today. ``The world is worried about the shortage in spare capacity and any improvement will change this sentiment."

The further daily capacity includes 900,000 barrels from the Zuluf field, 700,000 barrels from Safaniyah, 300,000 barrels from Berri, 300,000 barrels from Khurais and 250,000 barrels from Shaybah, Naimi said.

U.K. Prime Minister Brown said in Jeddah today he will open Britain's energy industry to investment from oil producing nations as a way of keeping a lid on crude prices and paying for measures to clean up the environment. Further talks may be held between producers and consumers this year in London, he said.

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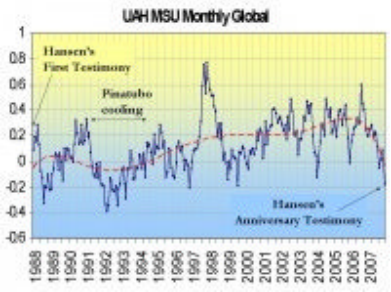
Monday, June 23, 2008
Hansen's Anniversary Testimony

By Joseph D'Aleo, CCM, AMS Fellow

On June 23, 1988 James Hanses, Astronomer by degree but climatologist by self appointment testified in front of congress. It was an orchestrated testimony coordinated by the then Vice President Al Gore and a senator from Colorado, Tim Wirth (now running Ted Turner's UN Foundation) who admitted they picked the day after calling the National Weather Service to ensure it was a hot day. He admitted proudly later they opened all the windows the night before, making air conditioning ineffective and making sure all involved including Hansen would be seen mopping their brow for maximum effect. Hansen testified "Number one, the earth is warmer in 1988 than at any time in the history of instrumental measurements. Number two, the global warming is now large enough that we can ascribe, with a high degree of confidence, a cause-and-effect relationship to the greenhouse effect."

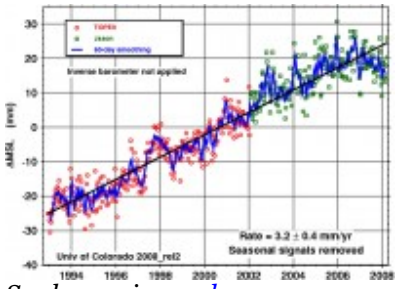
See in the story below how hard Hansen has worked to try and make his prognostication verify.

Here is the plot of actual NASA satellite monthly temperatures since June 1988. Note we are colder than in 1988.



See larger image here

His testimony will no doubt include reference to upcoming or ongoing dangerous rises in sea level and ignore the data.



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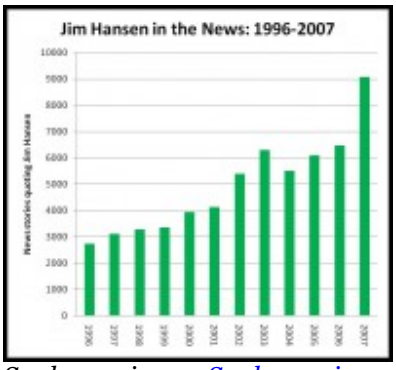
He will also no doubt repeat his claim he is being muzzled. He confuses a muzzle with a megaphone as shown by this table of actual Hansen media references by year (thanks to Roger Pielke Jr. on Prometheus).



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Today unlike in June 1988, temperatures will be near normal in DC with temperatures in the 70s and 80s with thunderstorms. The last two weeks have averaged 2 degrees below normal.

Posted on 06/23 at 09:04 AM
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The ongoing costs of "green:"

Fuel Costs May Force Some Kids To Walk
Montgomery Weighs Altering School Bus Rules

By Daniel de Vise
Washington Post Staff Writer
Monday, June 23, 2008; A01

Here's how rising fuel prices affect an organization with a fleet of 1,273 school buses: The Montgomery County school board today will consider giving Superintendent Jerry D. Weast emergency powers to make students walk farther to school, if need be, in the coming academic year.

The school system's diesel costs have more than doubled in four years, from $3.6 million in fiscal 2005 to a projected $7.9 million for fiscal 2009, which begins next month. It's a hardship shared by the Fairfax County school system, with more than 1,500 buses; the Prince George's County system, with 1,285 buses; and other area systems that transport tens of thousands of students daily and are paying more for fuel than the average parent at an Exxon pump on Rockville Pike.

"The last purchase we made was $4.40 a gallon," said John Matthews, Montgomery schools transportation director. A one-penny rise in price costs the school system $33,000 a year.

School officials generally think of fuel as a fixed cost. But it's really not, Weast reminded board members June 10 in Rockville. Should prices continue to rise, the school system could save money by raising maximum walking distances for students, because more walkers means fewer buses. Currently, elementary school students walk up to a mile, middle school students 1.5 miles and high school students two miles.

"You may have to come to a very delicate decision that you'll have to make sometime during the next year if the costs continue to go up," Weast said during a discussion of transportation policy. "A million [dollar] cost in fuel is about 16 1/2 teaching slots."

With the proposed rule change, Weast said he was "sending a very strong signal" about the dire state of the school system's $2 billion budget over the coming year. The proposal would allow him to adjust walking distances after "expedited" public comment, possibly a few days rather than a month. Despite that, school officials stress that they don't anticipate actually asking anyone to walk farther to school in the 2008-09 academic year.

Board members are scheduled to consider the policy revision today. How they vote might depend on public outcry. The board last changed walking distances in 1996, voting to extend the maximum high-school trek from 1.75 miles to two. Dozens of parents called school officials in protest. The change effectively eliminated three bus runs per high school, for a savings of $250,000 a year. Nearly 2,000 students lost their ride.

"Right now, our biggest uncontrollable cost is transportation, and gasoline," board member Stephen Abrams (Rockville-Potomac) said. "You're talking about an expense that does not directly correlate to education," he added, alluding to the axiom that when one contemplates cuts, it's best to steer clear of the classroom.

Fuel costs are hitting other systems just as hard, prompting rules to govern such practices as idling in a parked bus and logging "deadhead miles," or those traveled with no students aboard. School systems are combining a route here, eliminating a stop there and using Global Positioning System software to squeeze every drop of fuel efficiency from their routes. No other area locality, however, appears to be considering making more students walk to school.

In Loudoun County, school fuel prices have increased by $2 a gallon in 12 months, from $2.30 a gallon in May 2007 to $4.28 last month, according to transportation director Michael Lunsford, pushing the fuel budget toward $5 million. The school system has enforced a strict no-idle policy.

The Prince William County system has budgeted $5.8 million for diesel in fiscal 2009 for its 857-bus fleet, an increase of 40 percent. School officials say they are maintaining a one-mile walk zone around all schools and urging drivers to idle no more than three minutes at a time.

Fuel costs have more than doubled since fiscal 2005 for the Prince George's system, which has spent $10 million for diesel in the fiscal year that ends next Monday. Officials issued a memo to remind drivers not to idle excessively. Bus stops have been combined, and transportation officials are using satellite technology to monitor bus speeds and maximize fuel efficiency. Walking

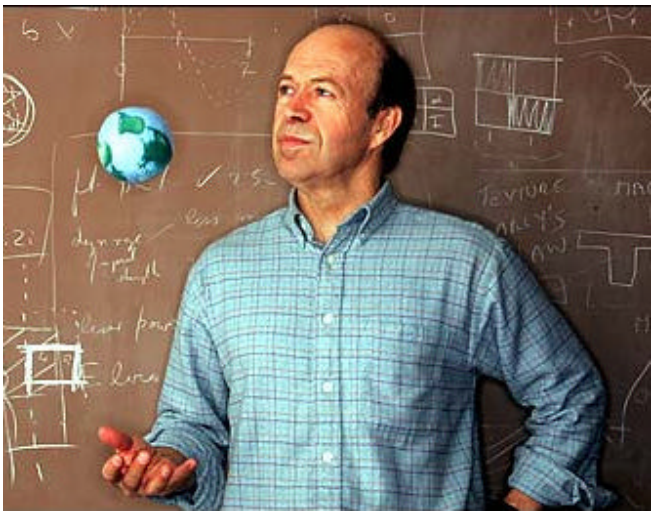
distances are 1.5 miles for elementary and middle school students and two miles for high school students.

The Fairfax School Board, which transports more students daily than any other school system except New York's, has budgeted $8.4 million for fuel in fiscal 2009, compared with $4.3 million in fiscal 2005, according to budget documents. Students walk up to one mile to elementary schools and 1.5 miles to secondary schools.

For perspective, consider the scenario in summer 2005. School systems regionwide at that time were hastily reworking budgets as they watched fuel prices approach record levels -- $2 a gallon.

NASA's Jim Hansen calls for energy company execs to be put on trial

22 06 2008



He's got the whoooole woorld in his hands…

This troubling news from the Guardian, UK

"James Hansen, one of the world's leading climate scientists, will today call for the chief executives of large fossil fuel companies to be put on trial for high crimes against humanity and nature, accusing them of actively spreading doubt about global warming in the same way that tobacco companies blurred the links between smoking and cancer.

Hansen will use the symbolically charged 20th anniversary of his groundbreaking speech to the US Congress - in which he was among the first to sound the alarm over the reality of global warming - to argue that radical steps need to be taken immediately if the "perfect storm" of irreversible climate change is not to become inevitable.

Speaking before Congress again, he will accuse the chief executive officers of companies such as ExxonMobil and Peabody Energy of being fully aware of the disinformation about climate change they are spreading."

complete story

I suspect he'll be calling for the jailing of bloggers like myself next. I think Mr. Hansen has lost all sense of reason, and his last shred of credibility.

UPDATE: Apparently Mr. Hansen has made the claims above on live radio on the Dian Rehm show this morning, audio files of the interview will be up shortly here:

http://wamu.org/programs/dr/08/06/23.php#20635

When the audio file is up, I'll post a direct link.

Climate: Coal research group head says carbon storage over emphasized as near term solution (OnPoint, 06/19/2008)

http://www.eenews.net/tv/transcript/825

With the Department of Energy making an 11th hour decision to rework its FutureGen carbon capture and storage project, and issues with investors mounting, is interest in CCS technology waning? During today's OnPoint, Ben Yamagata, director of the Coal Utilization Research Council, gives his take on how Congress should include CCS in upcoming climate change legislation. He explains why he believes DOE should pursue both the original version of FutureGen and the new version in order to address both near- and long-term issues. Yamagata also addresses some of the key public acceptance and investor confidence issues surrounding CCS technology.

Transcript

Monica Trauzzi: Welcome to OnPoint. I'm Monica Trauzzi. Joining me today is Ben Yamagata, director of the Coal Utilization Research Council. Ben, thanks for coming on the show.

Ben Yamagata: Thank you for having me. It's a pleasure being here.

Monica Trauzzi: Ben, at a recent forum Duke Energy's Jim Rogers said that the idea of carbon capture and storage has been oversold. It's being touted as sort of a magic pill when it's not. Has an accurate picture been painted about the future implementation of carbon capture and sequestration technology?

Ben Yamagata: I think there has been a lot of discussion about it and, unfortunately, when you get into situations where you're talking about massive pieces of legislation or whatnot, I think there is a tendency for both sides to over-exaggerate what's possible from a technical perspective. Our view is that it's important for political leaders to think about technology about development as a process of crawling, then walking, then running. And on the one side, I think in context of what Jim Rogers has said, there's too much focus on the running at this point. And we really need to think about taking the first baby steps before we lope into a full-charge gallop on this stuff. And so I would say, yeah, I would agree that at least certain elements of it who want to have this happen very quickly have overblown the possibility of when all of this can happen, not can it happen, which is an important distinction here, but when it's going to happen.

Monica Trauzzi: Is that something we saw in the Lieberman-Warner bill with the targets that were there?

Ben Yamagata: I think that there was an element of that, sure. You know, we talked about in the context of Lieberman-Warner, like the substitute that Chairman Boxer provided and that was discussed on the Senate floor a couple of weeks ago, there's too much emphasis on the notion that if we give coal enough money it will have a place in the energy universe. And I think the real issue that we have to focus on, and I don't see the Congress yet focusing on this, and that is to think about coal as part of making climate work. And what I mean by that is the discussion, too much, has been on we'll provide enough allowances, for example, and use those allowances to provide enough financial or otherwise incentives to protect the industry. Well, that's really only a piece of the issue here. The real issue is, and you heard it in the debates, seems to be one is what are we going to do with India and China? The second one, which I thought was very illuminating, perhaps even for the entire Senate, was the enormous cost of what we're trying to do here. I mean financially, both to the economy, to jobs, to the manufacturing sector, etc. And in the context of all of that, the way I think we should be thinking about coal and technology is India and China are going to use coal. They need technology to use it to address the carbon footprint question. We're the ones that can help provide that. That is a solution to the climate issue. It's not trying to help coal, to think of it in that context. In the context of the economy, if coal is the least expensive form of fossil fuel right now, which it is, it can remain the least expensive form of electric power generation if we do smart things in developing technology. And so looking at the economy issue, looking at the international issues in the context of the climate debate, if we think about coal as being part of making climate work, it's a better way of thinking about it than simply saying we need to help coal.

Monica Trauzzi: So, what's at the top of your agenda heading into the next congressional session then?

Ben Yamagata: I think, from our perspective, it is to make certain that the verbiage, if you will, that Jim Rogers and others have talked about is put into context. Not his necessarily, because I thought he was making a fair statement, but that we help policymakers and their staffs understand that we know how to do this. And I think everyone who understands the technology, both the capture piece of it and the sequestration piece of it, would agree that we know how to do it. What we don't know how to do is put it all together in an integrated fashion. And in doing so, and in giving us enough time to do so, we bring down the cost of all of that while we learn how to do it. Again, this goes back to the issue of crawling/ walking/running. If we don't know how to do that, or do it in that sequence, we're either not going to have the technologies ready when they're needed or they're going to cost too much and therefore they won't be used.

Monica Trauzzi: Is interest in CCS waning though? And this sort of stems from DOE's decision on FutureGen and all the discussion we've been seeing recently, investors maybe aren't as confident as they were previously. So, are we seeing sort of a step back from CCS?

Ben Yamagata: I don't think we're seeing a step back as much as an attempt to be more informed about what can be done and how soon. And to the extent that that's happening, that's very healthy. We shouldn't be promising something that is going to raise expectations and thinking we're going to accomplish something that we're not going to accomplish, at least not in a timely fashion or in a least cost or least expensive fashion. So, I doubt that we're seeing a waning in CCS. I mean there are environmental groups out there that are also saying that it's overblown and I think that the proof is really on the other side. That is, we know how to deal with CO_2. The oil industry in particular has been doing it for years. We need to do larger and larger volumes of it. We need to learn how to capture it and still produce economic power. So it's that integration issue, not just in the integration of capturing CO_2 while it's being formed in the electric generation process, but capturing it, compressing it, putting it in pipes, and sending it to some type of geologic storage or enhanced oil recovery. And that's going to take some time and money.

Monica Trauzzi: Does the new FutureGen project do that? Do you think that the new project is going to help achieve those goals?

Ben Yamagata: I think that both the new FutureGen project and the current FutureGen project, depending on how you ...

Monica Trauzzi: Right.

Ben Yamagata: ... how you look at that, both of them can address that. They really address different goals, frankly, because what I call FutureGen plan B is really an attempt to say, look, we need to help those entities out there who are ready to do something now. That's different than looking at FutureGen plan A, which said, look, we need to know how to do a million tons a year, lots of electric production, and think about new technology that's going to be applied. I thought, and still do believe, they serve different purposes, both of them are very important. We need to incentivize and assist the type of technology that we know how to do today. At the same time, we need to provide incentives for tomorrow's technology. I thought FutureGen plan A deals with tomorrow's technology, really, and FutureGen plan B deals with technology we should be applying today.

Monica Trauzzi: So, is there a better way for the government to be spending their money, A or B?

Ben Yamagata: The government should be spending money in both places. We have a plan that is a two-part program and it says we should have a much, much more robust research development demonstration program, really on the order of magnitude of $17 to $20 billion dollars over the next 18 or 19 years. Because we want to get to really inexpensive power, coincident with the capture of CO2. At the same time, we want a second program that says let's start doing things now. Part of the problem that we've got right now is while Congress and everyone else has this discussion about what are we going to do about carbon capture and control and whatnot, we're losing really valuable time and we should be doing things right now that starts the process of letting us learn by doing. This is part of my crawl/walk/run process. And while we're debating all of this we're losing a year, two years, four years. And four years from now, unfortunately, we may not be in any better spot knowing what we're going to do with the technology than we are today. And that would be a shame, because we're losing valuable time. The government can help there just by providing the kind of incentives that we've talked about.

Monica Trauzzi: And that's a big question now. What do we do in the interim before this technology is commercially viable? You have environmental groups who are opposing the construction of any new coal-fired power plant.

Ben Yamagata: Right.

Monica Trauzzi: So, what does this mean for the coal industry and electric reliability for the next 10, 15 years, until this technology does exist?

Ben Yamagata: Well, I think that we've got to get realistic about that too, and that is coal has a place, like renewables, like nuclear, like energy efficiency. And we need to be developing all of these. When you say what are we going to be doing now? We need to be doing things now. Congressman Boucher just introduced a bill that looks really at imposing a fee on the industry that's self-imposed. Others in the Congress are looking at tax incentives. That's one of the things that we've been proposing. And even in the climate debate that happened a couple of weeks ago several senators, Senator Dorgan and Senator Enzi, had proposals or amendments that I thought were much more realistic in looking at what do we need to do and what could be done right now

to do that. So, the real answer to your question is we need to do things now. We need to get it done and we need to get started. We need to at least do that.

Monica Trauzzi: OK. So, beyond the technological hurdles there's some major investment and public perception issues at this point. Do you think that these hurdles are going to be more difficult to overcome than the technological hurdles? How do you go to a neighborhood here on tell someone that you want to push carbon under their house or close to their home? You know, are these public perception issues going to get in the way of the implementation of the technology?

Ben Yamagata: Well, first of all, I don't know, because I'm not schooled in that particular piece of it, how close you're going to get to neighborhoods as you say. But let's just assume ...

Monica Trauzzi: There has been a lot of public opposition.

Ben Yamagata: ... that there's opposition or there could be opposition to that, which is, you know, you get scared from things you don't understand. So, you have perceptions about bad things happening if you put pressurized, supercritical CO2 in a saline reservoir that happens to be a half a mile underneath the earth.

Monica Trauzzi: It sounds scary to me.

Ben Yamagata: Well, all of the experience, of course, shows that that doesn't come up, where you've had a situation years ago in Africa with a natural occurring CO2 venting. But I think the point here is, is we have to be very careful about educating the public and not leave it to others to do that. The government has to be involved. I think industry has to be involved. I think the environmental and NGO community all have to be involved. If we're truly of the view that we need to use coal and that CCS is viable, which I happen to think it is, then it is all of our obligation to make sure that the public is satisfied that they are secure and safe when we start putting CO2 into deep, geologic formations underground. You also mentioned the financial community. I think it's important that, as I said before we need to convince the financial community. And why would never be skeptics out there for heaven sakes?

Monica Trauzzi: It's a big investment you're asking people to make.

Ben Yamagata: It's a huge investment that you're asking people to make and so, again, for those folks on Capitol Hill and other places who are saying we need to do this quickly. For example, we've had these large debates about industries can do 85 percent carbon capture right now. And this is one of the things I suspect utilities CEOs are concerned about, I'm concerned about it, and that is, we might be able to do it. It's going to cost the electric consumer 60 to 90 percent more in their electric rates if we try to do that right now. So, it's not a question of can we do it, we can probably do it. It's going to be an enormous cost. That is not something the financial community is going to want to invest in, so we've got to bring that cost down. We can do it, at least that's what our technologists say, we can. And in doing so, we will create a better environment; both an investment environment and we'll create a better societal environment for accepting all of this. It's going to take some time.

Monica Trauzzi: I would love to go on, but we're out of time.

Ben Yamagata: It's a great pleasure being here.

Monica Trauzzi: A fascinating discussion. Thanks for coming in.

Ben Yamagata: Thank you very much.

Monica Trauzzi: This is OnPoint. I'm Monica Trauzzi. Thanks for watching.

Aviation/Climate: FAA's Dan Elwell discusses airline cutbacks, impact of high fuel prices on industry (OnPoint, 06/16/2008)

http://www.eenews.net/tv/transcript/815

As oil and gas prices continue to climb, airlines in the United States are making cutbacks to help reduce fuel use. During today's OnPoint, Dan Elwell, associate administrator for policy, planning and the environment at the Federal Aviation Administration, gives his take on how the airline industry may be affected by international and domestic caps on emissions. He discusses plans for a "next generation transportation system" that would reduce the amount of time airplanes spent in the air and make flying more efficient. Elwell gives the short-term outlook for airlines and consumers as gas prices continue to rise. He also addresses the disparity between fuel efficiency of U.S. fleets and European fleets.

Transcript

Monica Trauzzi: Welcome to OnPoint. I'm Monica Trauzzi. Joining me today is Dan Elwell, associate administrator for Policy, Planning, and the Environment at the Federal Aviation Administration. Dan, thanks coming on the show.

Dan Elwell: My pleasure, Monica.

Monica Trauzzi: Dan, airlines in the United States have received a lot of negative attention recently in the mainstream media. They're all making major cutbacks, forcing passengers to pay for checked baggage, paying for beverages now as well. Tell us the other side of the story though here. How severely are the airlines being hit by high fuel prices at this point?

Dan Elwell: Well, I think it's a tremendous hit right now. I think you had Jim May on the program not too long ago talking about part of that. Basically, the industry, at 130 plus dollars per barrel of oil, is not sustainable under the current model. So, clearly, something is going to have to break for them. You're seeing it in part as they do everything they can to increase revenue, but unless something fundamental, some game changer happens either in the alternate fuel world or some other sort of unforeseen helper here, I don't think that the airlines are going to be able to continue paying that much for fuel.

Monica Trauzzi: And do you see something happening in the alternative fuel world in the near term or is this sort of something that's down the line?

Dan Elwell: Well, there are some real interesting things being done right now in the biofuel sector. There's a lot being looked at with regard to blending biofuels and fossil fuels. We said, for many years, or the alternate fuel communities said for many years that if fuel got up above $60 a barrel, then you could have economically viable alternative fuels. Well, clearly, we're well above that. And we have, the FAA and a number of manufacturers and associations and international representatives, have formed the Commercial Aviation Alternate Fuel Initiative, CAFFI. They've had a number of meetings and there's something on the order of 143 members who are aggressively pursuing research and ideas and alternatives to fossil fuel.

Monica Trauzzi: One of your jobs at the FAA is to make sure that the skies are safe and some of the actions that the airlines are taking are more extreme than others. So, at what point you say enough is enough; this is now impacting the safety of these flights? And have you heard of any suggestions of how to sort of reduce costs that you thought were maybe not so safe?

Dan Elwell: I have not. And having been an airline pilot myself for about 15 years, I can tell you unequivocally, both on the airline side and certainly on the FAA side, safety is paramount. An airline will close its doors before it ever does anything to compromise safety. And having said that, are there things that they're doing currently to be more fuel efficient? Absolutely. They're reducing weight on all of their airplanes, they're single-engine taxi from the gate to take off, as opposed to using two engines, minimizing the use of the ancillary power unit that most airplanes have is that runs on fuel and powers the airplane when it's on the gate. Most airplanes at major airports are plugging, literally plugging their airplanes into the power source at the gate, rather than run that engine.

Monica Trauzzi: So, once the plane is in the air though, are things relatively the same as they were before?

Dan Elwell: Absolutely, but that doesn't mean that we're not aggressively pursuing ways that aircraft in the air can be more efficient. And we're doing that, obviously, through the implementation of our next-generation air transportation system, which I'm sure you and many of your watchers have heard about.

Monica Trauzzi: Yes and I definitely want to get into that in just a moment. First, I want to get your take on the current state of talks on climate change in the U.S. and internationally and how that's going to impact the aviation industry. We might have a cap in 2009, 2010. How is that going to impact your industry?

Dan Elwell: Obviously, in the U.S. you're talking about the recently shelved in Lieberman-Warner bill and, of course, there are others in the works. We are also in discussions with the European Union. They, as you know, have an emissions trading scheme in place and have recently been talking about introducing international aviation into their emissions trading scheme. That proposal, mostly for its unilateral nature, has sparked quite a bit of objection around the world, as you might guess. And so, in part to answer your question, a group was formed by the International Civil Aviation Organization, IKO, a group was formed of 15 nations to sit down and try to hammer out a way to reach a global framework for environmental emissions mitigation and not go the route of contentious debate and possible legal action with the EU on their emissions trading scheme. So, that group, the group on international aviation and climate change, will have its second meeting in Montreal and I'm the U.S. rep. So we will meet in Montreal in July. And all of the countries, I must say, all of the countries who were there, including European members are really keen on getting some sort of framework, some sort of international framework on fuel-efficiency measures that we can all, in a consensus basis, go after.

Monica Trauzzi: And for our viewers that might not be familiar, you're referring to the European Union's suggestion that all flights that come in to EU member state airports should be required to purchase emissions offsets for the fuel that they use to fly those planes. You're obviously very opposed to that.

Dan Elwell: Yeah, I mean aside from the unilateral nature of it, which contravenes the Chicago convention, which is the sort of umbrella set of regulations that international aviation falls under and adheres to, it also violates some have the very specific restrictions in bilateral aviation negotiations or bilateral aviation services agreements. But just common sense tells you that it's inherently unfair to expect, for instance, Japan Airlines to take off from Tokyo, fly to Heathrow, and pay the Europeans for every pound of carbon they burn from the ramp at Tokyo all the way to Heathrow. I think it would be a much different story if they were talking about the fuel burned

within the EU's borders. But to charge other countries for the carbon that they produce over their own countries, their countries and in international waters, we do have a problem with that.

Monica Trauzzi: All right, let's talk about the next-generation transportation system. It would essentially modernize the nation's airspace system. What are the key initiatives behind this program?

Dan Elwell: First, let me say I like the word transform. Modernize sort of suggests you're upgrading your PC. We're not. I mean we are going on the path of a 15-year complete transformation of how aircraft are moved in the sky. Currently, aircraft are controlled by World War II, 50s era radar technology. It worked very well, obviously, for many years, but it's antiquated. Aircraft are moved today very, very safely, but with less precision than the GPS device you have in your car. So, what we're going to move to is a satellite-based navigation system far, far more accurate. And we're going to have all of the aircraft in the system share their individual information with the controllers on the ground, so that we can move airplanes in a much more direct fashion, safer, more efficiently and use more airspace. So that will enable carriers to use optimal wind routes, wind and temperature routes, and burn less gas over the same route that they're burning gas today.

Monica Trauzzi: OK and that's where the environmental benefits command, because planes will be able to get to where they're going in a faster way.

Dan Elwell: Right. What we plan to do is, this system, it starts at the gate and it's a gate-to-gate system. And what we will do is reduce fuel burn on the ground because aircraft won't sit for 30, 40 minutes burning fuel. We're using approaches today at a number of airports that enable a pilot, from altitude, we're talking 35,000 feet, pull its throttles to idle and literally glide to the runway edge before bringing in the power and landing. Today, the current aviation structure has airplanes, from altitude, leveling off half a dozen times. And every time an airplane levels off it brings the power in, puts the nose up. So we're doing a lot of exciting new stuff in the system too.

Monica Trauzzi: How far off are we from implementation though?

Dan Elwell: It's going to be iterative and it's going to be incremental, but full-blown implementation of the entire country's airspace being monitored by the satellite system with full equipage, and that's very important, the equipage side of it for the users of the system, is 2025. But we recently made a list of items that we think we can accelerate and we're busy working on that.

Monica Trauzzi: Can the airlines afford this though? I mean how do you pay for this program?

Dan Elwell: Really, I think they might even say how can they not afford to do it, because the benefits on the backend of full implementation of next-gen, is billions of dollars. And when you're talking about hundreds of thousands and thousands and thousands of flights a day, just reducing the five-minute in-route time, 10 minutes on the ground, would pay for itself with within years. And these aren't huge equipage costs. Commercial aircraft, per aircraft, is a wide range right now, because manufacturers aren't putting them in yet, but 50 to 100,000 per copy. It's a lot, but it will absolutely pays for itself once we get this system in place.

Monica Trauzzi: You mentioned 2025 as a target year for implementation on a wide scale. What do we do in the interim?

Dan Elwell: Well, in interim, I'm glad you asked Monica because we have a plan, we have what we refer to as the five-pillar plan, with regard to aviation and the environment. First of all, we'd need to get a lot smarter on the science of aviation's emissions. We know a lot about CO2 and how

much CO2 we're producing and its effects. But what we know a little bit less, or significantly less, is what is contrail formation? What is that doing to global warming? What are the secondary and tertiary effects of some of the particulate matter? We're not as solid on that. So, first and foremost, we need to get the science a lot better on aviation emissions. And while not waiting for that, we then need to go after our operational procedures, which I just talked to you about, with next-gen, aggressively pursuing better more efficient operational procedures. And, on the R&D side, we've got to get better airframe and engine technology. And there's some exciting things going on in that regime, I mean the Pratt & Whitney Geared Turbofan engine that they're introducing, I know GE is introducing some really new, exciting stuff. So, technological improvements, airframe improvements, operational improvements, these are things we can do now. The New York, New Jersey, Philadelphia airspace redesign that we just signed a record of decision, back in September, when that's fully implemented in five years, 20 percent reduction in the New York area of current delays. So that means a lot. We're going to ...

Monica Trauzzi: But near-term, next couple of years, airlines are still going to be feeling the squeeze?

Dan Elwell: Yes, they are. I mean absolutely and you're seeing it in their actions, what the airlines are doing right now.

Monica Trauzzi: The Europeans, they really seem to be ahead of the game here. Their fleets are more modern, they're more fuel-efficient. Why haven't the U.S. airlines been as forward about purchasing new fleets and becoming more fuel efficient?

Dan Elwell: Well, fleet transition is a slow process and there's a long lead time to it. This rise in the price of fuel has been a rather sudden and precipitous one and they're reacting. But the way the airlines react today for survival is to just reduce capacity. Airlines made decisions back in the late 90s and at the turn of the millennium, some of them chose to hold on to old airplanes and work their network that way. That's not going to be viable going forward. So, I think one of the biggest reasons that European industry has a more modern fleet is because they tend to have more, long-range flights and activity. And they also have started much later than we did on the low-cost carrier model. That started around 2000. And those are mostly new aircraft.

Monica Trauzzi: OK, Dan, we're going to end it right there on that note. I thank you for coming on the show.

Dan Elwell: My pleasure, thank you.

Monica Trauzzi: This is OnPoint. I'm Monica Trauzzi. Thanks for watching.

STUARIES: EPA develops pilot program to mitigate effects of climate change (06/23/2008)

The U.S. EPA announced Thursday that six estuaries on both ends of the country will be used as case studies to determine how coastal communities and ecosystems can best adapt to climate change.

Coined "Climate Ready Estuaries," the programs will receive assistance from the EPA to "assess and reduce their vulnerability to climate change," a statement said.

Estuaries -- partially enclosed bodies of water where rivers meet the sea -- are "likely to experience some of the most severe effects of climate change," according to the EPA's Web site. Due to effects like sea level rise, warmer temperatures and changed amounts of precipitation, inundation of coastal land and habitat loss could hit the areas hard.

The six pilot programs chosen are the New Hampshire Estuaries Project, the Massachusetts Bays Estuary Program, Partnership for the Delaware Estuary, the Albemarle-Pamlico Sounds National Estuary Program, the Charlotte Harbor Estuary Program and the San Francisco Estuary Project.

EPA and local decision-makers will assess the specific areas vulnerable to climate change for each estuary. They will try to identify cost-effective adaptation options, engage stakeholders and leverage existing efforts, EPA spokeswoman Roxanne Smith said in an e-mail interview.

Building capacity to take practical, local steps

Smith said the goals could include: establishing shoreline setbacks (not allowing new construction within a quarter mile of the shoreline); placing plants, stones and other materials along the shore to prevent erosion; incorporating sea level rise projections into planning for new infrastructure; and integrating coastal management and climate change projects into land use planning.

Smith said the adaptation plans will likely differ among the estuaries. Each one will have access to technical experts from the EPA, and the agency will provide additional on-site visits if necessary. "Our aim is to build capacity for local decision makers and resource managers to help take pro-active, practical steps for bays at risk," said EPA Assistant Administrator for Water Benjamin Grumbles in a statement.

Applications were sent out to all national estuaries to determine which program would best benefit from the pilot process. Selections were based on whether the estuaries showed a "demonstrated commitment to adaptation planning," along with the presence of existing partnerships, and whether the results could easily be used for other national estuary programs and coastal communities, Smith said.

"The Climate Ready Estuaries effort will take the lessons learned from the pilots to provide information and leadership to other coastal communities around the nation," the statement said.

MARKETS: Increasing use of coal in Europe drives up the price of CO2 emissions trades (06/23/2008)

John J. Fialka, **ClimateWire** *reporter*

Although Europe's cap-and-trade carbon emissions trading system was initially designed to discourage the use of coal, the soaring price of oil is spurring utilities to use more of it.

Because natural gas prices are tied to the soaring price of crude oil, power generators are finding it cheaper to switch to coal-fired plants, which create twice as much CO_2 emissions as gas-fired plants. Because their emissions levels are capped, the utilities then have to buy more allowances

or permits to emit a metric ton of CO_2 in the European Union's market. Last week, according to Point Carbon, an Oslo, Norway-based company that tracks the market, the price of an allowance topped €28 ($43.40), hitting a two-year high.

Henrik Hasselknippe, Point Carbon's chief market analyst, predicted the price could rise more steeply between now and 2012, reaching the equivalent of $70 per allowance.

"This is a surprise from earlier projections," admitted Hasselknippe, who said experts believed that the use of credits from emissions reduction projects in developing nations or in Eastern Europe would help reduce the upward pressure on the price of allowances. He said one of the problems involves the United Nations, which is tightening its approval procedures for emissions reduction projects, creating a backlog.

The Kyoto Protocol allows the use of reduction credits under its Clean Development Mechanism for developing countries or, in the case of Eastern Europe, so-called Joint Implementation Projects. The theory is that a metric ton of CO_2 emissions reduced anywhere in the world has the same environmental value, and that use of credits from reductions implemented in the Third World will make reduction efforts in industrial nations much cheaper.

Linkage with potential U.S. CO_2 market may be more difficult

The soaring European carbon prices are also likely to raise eyebrows in the United States, where Congress is debating whether to include a "safety valve" that would authorize government intervention in a U.S. cap-and-trade system if carbon prices got high enough to damage the U.S. economy. The price range considered damaging in the recent Senate debate started at about $22 per allowance.

"Politically in Europe this is acceptable," said Hasselknippe, referring to the rapidly rising and much higher European price range, but it may be "difficult to sell politically," in the United States, he said, if the two markets become linked, as some U.S. senators have suggested. "With the current high prices in Europe, we may have regional markets for a while," he added.

Richard Rosenzweig, chief operating officer for Natsource LLC, an asset management firm that buys emissions credits around the world, said "people are very concerned about a supply crunch." He blamed the tightening U.N. registration process and slow implementation of emissions reductions projects in Eastern Europe. "The institutions that are needed to do this aren't set up there yet."

Robert Stavins, director of Harvard University's environmental economics program, blamed a decision by the European Union to limit the influx of foreign-based reduction credits. "I think that was the wrong policy decision," he said.

Welcome to 'green capitalism'

Stavins said that rising European allowance prices and an aversion by European traders to the possibility of a safety valve emerging in a U.S. trading program will make direct linkage of the two trading markets improbable. But he said that an E.U.-U.S. market could emerge through an indirect linkage that would allow trading in international reduction credits, but not emission allowances. "I think that's where we will be moving toward over the next several years," he said.

While the steeply rising allowance prices are driving up electricity prices in Europe, some U.S. traders are making money. In Europe, some 12,000 companies in electricity and heavy industries make up most of the trading. Few U.S. industries are involved because most are not subject to the

European cap. But U.S. investment banks and other members of the financial community have been active in buying and selling European allowances, said Hasselknippe.

"They're selling when it's high and buying when it's low. This is like any other commodity market. I like to call this green capitalism," he explained.

Sea Surface Temperatures off the Coast of North Iceland

Reference

Sicre, M.-A., Jacob, J., Ezat, U., Rousse, S., Kissel, C., Yiou, P., Eiriksson, J., Knudsen, K.L., Jansen, E. and Turon, J.-L. 2008. Decadal variability of sea surface temperatures off North Iceland over the last 2000 years. *Earth and Planetary Science Letters* **268**: 137-142.

What was done

The authors developed a unique 2000-year-long summer sea surface temperature (SST) record with unprecedented temporal resolution (2-5 years) from a sediment core retrieved off North Iceland (66°33'N, 17°42W), based on their analyses of alkenones synthesized primarily in the summer by the marine alga *Emiliania huxleyi* that grew in the overlying ocean's surface waters, while dating of the SST data was provided by tephrochronology.

What was learned

The graph below is adapted from the temperature history derived by Sicre *et al.* Of particular interest to us is the fact it clearly reveals the millennial-scale oscillation of climate that produced the Roman Warm Period, Dark Ages Cold Period, Medieval Warm Period, Little Ice Age and Current Warm Period.

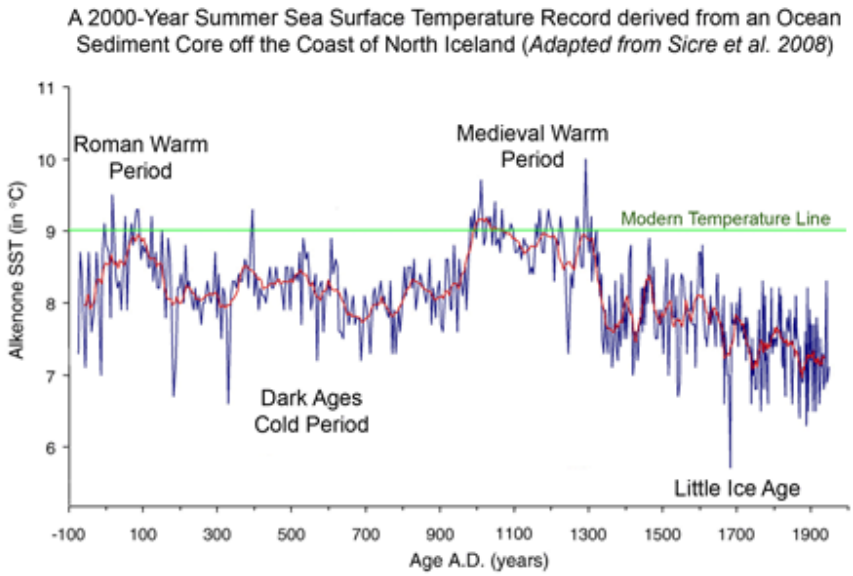


Figure 1. Sea surface temperature vs. time. Adapted from Sicre et al. (2008).

In comparing prior temperatures to those of the near-present, we note that the SST record peaks at about 8.3°C somewhere in the vicinity of 1940, which was a particularly warm time in earth's modern history. However, the researchers show a "modern temperature" of 9°C that they determined from a box-core of nearby surface sediment, which they say "is consistent with the

recent compilation produced by Hanna *et al.* (2006)," who report that "since 1874, July and August SSTs measured at Grimsey Island have varied between 6.7 and 9°C," which ultimately suggests that Sicre *et al.*'s 9°C value is the *peak* modern temperature observed to the time of Hanna *et al.*'s analysis.

What it means

In light of the above observations, it can be concluded that the peak temperature of the Medieval Warm Period was fully 1°C warmer than the peak temperature of the Current Warm Period, and that the peak temperature of the Roman Warm Period was about 0.5°C warmer than that of the Current Warm Period. And since the air's CO2 concentration at those two earlier times was at least 100 ppm less than it is today, whatever caused the much higher-than-current temperatures of those earlier warm periods may well be what has caused the more modest high temperatures the earth has experienced in our day and age.

Reference

Hanna, E., Jonsson, T., Olafsson, J. and Vladimarsson, H. 2006. Icelandic coastal sea surface temperature records constructed: putting the pulse on air-sea-climate interactions in the Northern North Atlantic. Part I: Comparison with HadISST1 open-ocean surface temperatures and preliminary analysis of long-term patterns and anomalies of SSTs around Iceland. *Journal of Climate* **19**: 5652-5666.

Reviewed 18 June 2008

Antarctic Ice-Sheet and Sea-Ice Albedo and Temperature: 1981-2000

http://co2science.org/articles/V11/N25/C1.php

Reference

Laine, V. 2008. Antarctic ice sheet and sea ice regional albedo and temperature change, 1981-2000, from AVHRR Polar Pathfinder data. *Remote Sensing of Environment* **112**: 646-667.

What was done

For the spring-summer period of November/December/January, the author determined 1981-2000 trends of Antarctic ice-sheet and sea-ice surface *albedo* and *temperature*, as well as sea-ice *concentration* and *extent*, based on Advanced Very High Resolution Polar Pathfinder data in the case of ice-sheet surface albedo and temperature, and the Scanning Multichannel Microwave Radiometer and Special Sensor Microwave Imagers in the case of sea-ice concentration and extent. These analyses were carried out for the continent as a whole, as well as five longitudinal sectors emanating from the south pole: 20°E-90°E, 90°E-160°E, 160°E-130°W, 130°W-60°W, and 60°W-20°E.

What was learned

Laine reports that "all the regions show negative spring-summer surface temperature trends for the study period," noting that "the slight cooling trends seem to be parallel with the results of Comiso (2000), who studied Antarctic temperature trends using both satellite and station data." In addition, the Finnish researcher states that "the sea ice concentration shows slight increasing trends in most sectors, where the sea ice extent trends seem to be near zero." As a result of these several findings, it is not surprising that Laine also reports that "the Antarctic region as a whole and all the sectors separately show slightly positive spring-summer albedo trends."

What it means
In a world that supposedly experienced unprecedented warming over the last two decades of the 20th century, it is interesting to learn that the whole of Antarctica appears to have bucked the global trend: by cooling a bit, acquiring slightly more sea ice, and becoming a tad more reflective of incoming solar radiation.

Reference
Comiso, J.C. 2000. Variability and trends in Antarctic surface temperatures from *in situ* and satellite infrared measurements. *Journal of Climate* **13**: 1674-1696.

Reviewed 18 June 2008

Rapid Genetic Change in Terrestrial Plants
Volume 11, Number 25: 18 June 2008
http://co2science.org/articles/V11/N25/EDIT.php

Some fifteen years ago, Root and Schneider (1993) wrote that CO2-induced changes in global climate were expected to occur "too fast for evolutionary processes such as natural selection to keep pace," and that this constraint "could substantially enhance the probability of extinction of numerous species."

This idea has pervaded the thinking of climate-alarmists ever since it was first suggested; and it figures prominently in the ongoing doom-and-gloom predictions of Al Gore and James Hansen. But is it correct? In an exciting new paper recently published in *Global Change Biology*, Jump *et al.* (2008) describe an experiment that suggests the contention is fatally flawed.

In Barcelona, Spain's Garraf Natural Park, where they worked with *Fumana thymifolia* -- a small shrub that occurs around the Mediterranean Basin -- the seven scientists say they "investigated whether reduced seedling establishment observed as a consequence of climate manipulation is a random or selective process, thereby allowing us to answer the key question: *does climate change provoke evolutionary change within natural populations?*"

Their study had an unaltered *control* treatment, a *drought* treatment that employed automatically-activated transparent plastic shields that covered a third of the plots in response to rainfall and retreated when rainfall stopped (which decreased soil moisture by about 20%), and a *warming* treatment that employed reflective covers that reduced nighttime re-radiation of energy received from the sun during the prior daylight hours from another third of the plots (which increased temperature by about 1°C).

As a result of these environmental interventions, Jump *et al.* report that over the 7-year period 1999-2005, mean yearly seedling density per treatment was significantly reduced in the drought and warming treatments compared with the control treatment, and that "when compared against control samples, high single-locus genetic divergence occurred in drought and warming treatment samples, with genetic differentiation up to 37 times higher than background (mean neutral locus) genetic differentiation."

In discussing their findings, the researchers say they suggest that the significant reduction in seedling survival they observed in the drought and warming treatments "results from an episode of selection for individuals tolerant of the modified climatic conditions and is not due simply to a random reduction in plant establishment," which implication, in their words, "reinforces results reported by other authors that show that genetic variability for climate-related traits exists within

natural plant populations (Hamrick and Holden, 1979; Cobb *et al.*, 1994; Kelly *et al.*, 2003; Mitton and Duran, 2004; Franks *et al.*, 2007)."

Jump *et al.* thus conclude that contemporary climate change "is driving changes in gene frequency within natural plant populations," and that these changes "are occurring on the same time scale as current climatic changes, based on preexisting genetic variability within populations," additionally citing, in this regard, the supportive findings of Jump and Penuelas (2005), Thomas (2005), Jump *et al.* (2006) and Reusch and Wood (2007). What is more, they say that this ability to rapidly adapt to rapid climate change may increase the persistence of species "beyond that predicted under a species-based climate envelope approach," such as is typically used by climate alarmists to justify their prediction of impending extinctions of huge numbers of species.

In a conclusion that clearly repudiates this catastrophic extinction scenario, Jump *et al.* say that their results actually *demonstrate* "that rapid evolution in response to climate change may be widespread in natural populations, based on genetic variation already present within the population," which likelihood is becoming ever more evident with each new study that investigates the subject.

Sherwood, Keith and Craig Idso

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Hamrick, J.L. and Holden, L.R. 1979. Influence of microhabitat heterogeneity on gene frequency distribution and gametic phase disequilibrium in *Avena barbata*. *Evolution* **33**: 707-711.

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Wheat Production in a Warming World

http://co2science.org/articles/V11/N25/B2.php

Reference

Ortiz, R., Sayre, K.D., Govaerts, B., Gupta, R., Subbarao, G.V., Ban, T., Hodson, D., Dixon, J.M., Ortiz-Monasterio, J.I. and Reynolds, M. 2008. Climate change: Can wheat beat the heat? *Agriculture, Ecosystems and Environment* **126**: 46-58.

Background

The authors write that "about 21% of the world's food depends on the wheat crop," that "81% of wheat consumed in the developing world is produced and utilized within the same country, if not the same community," and that "many poor households depend on increased wheat production on their own farms for improved household food security," which is becoming an ever greater concern as predictions of continued global warming grow ever more extreme.

What was done

Ortiz *et al.* reviewed the status of some of the approaches for addressing the oft-predicted negative impacts that climate change may have on wheat production in some of the most important wheat growing areas of the world.

What was learned

The ten international researchers report that "to adapt and mitigate the climate change effects on wheat supplies for the poor, germplasm scientists and agronomists are developing heat-tolerant wheat germplasm, as well as cultivars better adapted to conservation agriculture," noting that these encouraging results include "identifying sources of alleles for heat tolerance and their introgression into breeding populations through conventional methods and biotechnology." In addition, they report that "wheat geneticists and physiologists are also assessing wild relatives of wheat as potential sources of genes with inhibitory effects on soil nitrification," which activity could ultimately lead to significantly reduced emissions of nitrous oxide from agricultural soils and thereby shrink the impetus for global warming provided by this important trace greenhouse gas, which molecule-for-molecule is about 300 times more radiatively active than CO_2.

What it means

As a result of these several activities, Ortiz *et al.* conclude that important technology and knowledge will flow to farmers that will enable them "to face the risks associated with climate change," suggesting that it is indeed possible for wheat to "beat the heat" in the years and decades ahead.

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Climate and Population Change in China

http://co2science.org/articles/V11/N25/B1.php

Reference
Lee, H.F., Fok, L. and Zhang, D.D. 2008. Climatic change and Chinese population growth dynamics over the last millennium. *Climatic Change* **88**: 131-156.

What was done
The authors employed "fine-grained temperature reconstructions and historical population data sets" to "statistically test a hypothesized relationship between temperature change and population growth (i.e., cooling associated with below average population growth) in China over the past millennium."

What was learned
As revealed by historical statistics, Lee *et al*. report that "war peaks, population collapses, and dynastic changes matched closely with cooling (Zhang *et al*., 2005, 2006)." Noting that their work "further verified the synchronistic relationship between population and climate cycles," they state that this relationship appears to have been "fundamental, not incidental, in causing human misery and the resultant historical downturns in Chinese history," citing two additional corroborative studies of the subject (Hinsch, 1988; Li 1999), although they add that the "temperature-population relationship was mediated by geographic factors, the aridity threshold, and social factors."

What it means
Putting it rather bluntly, the three Hong Kong researchers state that "given that human populations are food limited, and the fact that in many places populations have reached dangerously high levels and which also lack a safety margin, the onset of bad times associated with cooling would bring a fast response expressed as population shrinkage."

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Poll: most Britons doubt cause of climate change

http://www.guardian.co.uk/environment/2008/jun/22/climatechange.carbonemissions

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The majority of the British public is still not convinced that climate change is caused by humans - and many others believe scientists are exaggerating the problem, according to an exclusive poll for The Observer.

The results have shocked campaigners who hoped that doubts would have been silenced by a report last year by more than 2,500 scientists for the UN Intergovernmental Panel on Climate Change (IPCC), which found a 90 per cent chance that humans were the main cause of climate change and warned that drastic action was needed to cut greenhouse gas emissions.

The findings come just before the release of the government's long-awaited renewable energy strategy, which aims to cut the UK's greenhouse gas emissions by 20 per cent over the next 12 years.

The poll, by Ipsos MORI, found widespread contradictions, with some people saying politicians were not doing enough to tackle the problem, even though they were cynical about government attempts to impose regulations or raise taxes. In a sign of the enormous task ahead for those pushing for drastic cuts to carbon emissions, many people said they did not want to restrict their lifestyles and only a small minority believe they need to make 'significant and radical' changes such as driving and flying less.

'It's disappointing and the government will be really worried,' said Jonathon Porritt, chairman of the government's Sustainable Development Commission. 'They [politicians] need the context in which they're developing new policies to be a lot stronger and more positive. Otherwise the potential for backlash and unpopularity is considerable.'

There is growing concern that an economic depression and rising fuel and food prices are denting public interest in environmental issues. ***Some environmentalists blame the public's doubts on last year's Channel 4 documentary The Great Global Warming Swindle[1], and on recent books, including one by Lord Lawson, the former Chancellor, that question the consensus on climate change.***

However Professor Bjorn Lomborg, author of The Skeptical Environmentalist, said politicians and campaigners were to blame for over-simplifying the problem by only publicising evidence to support the case. 'Things that we do know - like humans do cause climate change - are being put in doubt,' said Lomborg. 'If you're saying, "We're not going to tell you the whole truth, but we're going to ask you to pay up a lot of money," people are going to be unsure.'

In response to the poll's findings, the Department for the Environment issued a statement: 'The IPCC... concluded the scientific evidence for climate change is clear and it is down to human activities. It is already affecting people's lives - and the impact will be much greater if we don't act now.'

Ipsos MORI polled 1,039 adults and found that six out of 10 agreed that 'many scientific experts still question if humans are contributing to climate change', and that four out of 10 'sometimes think climate change might not be as bad as people say'. In both cases, another 20 per cent were not convinced either way. Despite this, three quarters still professed to be concerned about climate change.

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[1] We are hearing that our DVD is also making a growing major impact in the US.

Those most worried were more likely to have a degree, be in social classes A or B, have a higher income, said Phil Downing, Ipsos MORI's head of environmental research.

'People are broadly concerned, but not entirely convinced,' said Downing. 'Despite many attempts to broaden the environment movement, it doesn't seem to have become fully embedded as a mainstream concern,' he said.

More than half of those polled did not have confidence in international or British political leaders to tackle climate change, but only just over a quarter think it's too late to stop it. Two thirds want the government to do more but nearly as many said they were cynical about government policies such as green taxes, which they see as 'stealth' taxes.