

# ENVIRONMENTAL ENGINEERING NEWSLETTER

5 AUG. 2013

Please be aware any Newsletter URL ending in **020701.pdf** is available for downloading only during the six days following the date of the edition. If you need previous Newsletter entries contact George at [ghh@att.net](mailto:ghh@att.net).

Please Note: This newsletter contains articles that offer differing points of view regarding climate change, energy and other environmental issues. Any opinions expressed in this publication are the responses of the readers alone and do not represent the positions of the Environmental Engineering Division or the ASME.

**George Holliday**

*This week's edition includes:*

## **1) ENVIRONMENT – A. CLEAN WATER ACT PERMIT SHIELD REQUIRES DISCLOSURE OF POLLUTANT IN APPLICATION**

On July 22, 2013, a federal district court in Virginia held that the Clean Water Act's "permit shield" is not available as a defense to liability for discharges of a pollutant (selenium) not specifically authorized under a discharge permit when (1) the permittee did not disclose to the permitting agency that the pollutant could be discharged and (2) the pollutant being discharged was not "within the reasonable contemplation of the permitting authority at the time the permit was issued." The case is *Southern Appalachian Mountain Stewards, et al. v. A&G Coal Corporation*, No. 2:12-CV-00009 (W.D. Va. Jul. 22, 2013).

The district court's decision follows Fourth Circuit precedent established in *Piney Run Preservation Association v. County Commissioners of Carroll County, Maryland*, 268 F.3d 255 (4th Cir. 2001). In response to the defendant's plea that it had no reason to expect that its discharge would contain selenium, the court simply held "a permittee must have actually disclosed a pollutant in its permit application in order to avail itself of the permit shield as to that pollutant."

<http://www.eandp-environment.net/Environment/Env020701.pdf> Item 1

Roger Zygmunt

## **B. TENTH CIRCUIT REJECTS ENVIRONMENTAL GROUP'S CHALLENGE TO TITLE V PERMIT**

On July 23, 2013, the U.S. Court of Appeals for the Tenth Circuit (the "Tenth Circuit") upheld an EPA order denying in part a petition of WildEarth Guardians for objection to a Title V

operating permit issued by the Colorado Department of Public Health and Environment ("CDPHE") to Xcel Energy. The case is *WildEarth Guardians v. EPA*, No. 11-9559.

WildEarth Guardians alleged that the Xcel Energy permit needed to include a plan to bring the power station into compliance with the Clean Air Act's PSD requirements. Specifically, WildEarth Guardians alleged that the plant had made major modifications in 1994 and 1997 without undergoing PSD permitting, relying heavily on a 2002 EPA notice of violation for support. EPA denied the WildEarth Guardians petition on grounds that the 2002 notice of violation was itself insufficient to demonstrate noncompliance with the Clean Air Act, the additional evidence submitted by WildEarth Guardians was insufficient to demonstrate noncompliance, and that the CDPHE had adequately responded to WildEarth Guardians' comments regarding the PSD requirements.

The Tenth Circuit upheld EPA's decision to deny WildEarth Guardians' petition. The Tenth Circuit held that EPA was entitled to deference and that EPA had not acted arbitrarily or capriciously in determining that the 2002 notice of violation and the additional evidence offered by WildEarth Guardians were not sufficient to demonstrate a violation of the Clean Air Act. Additionally, the Tenth Circuit affirmed EPA's denial of the petition on grounds that the CDPHE had adequately responded to WildEarth Guardians' comments on the permit.

<http://www.eandp-environment.net/Environment/Env020701.pdf> Item 2

Roger Zygmunt

## **C. D.C. CIRCUIT DISMISSES CHALLENGE TO EPA OVER GREENHOUSE GASES**

*Posted July 26, 2013, 12:06 P.M. ET*

By [Andrew Childers](#)

Federal appeals court judges July 26 [dismissed](#) lawsuits from states and electric utilities challenging an Environmental Protection Agency order requiring states to update their air pollution plans to address greenhouse gases (*Texas v. EPA*, D.C. Cir., No. 10-1425, 7/26/13; *Utility Air Regulatory Group v. EPA*, D.C. Cir., No. 11-1037, 7/26/13.)

The U.S. Court of Appeals for the District of Columbia Circuit in a 2-1 decision dismissed the lawsuits brought by Texas, Wyoming, and the Utility Air Regulatory Group because they could not demonstrate that EPA's regulation caused them any injury.

"Neither the states' briefs nor their counsel at oral argument identified a concrete redressable injury or explained how the States had Article III standing to challenge the rules," Judge Judith W. Rogers said in the majority opinion.

She was joined by Judge David S. Tatel, while Judge Brett M. Kavanaugh dissented.

The states were required to ensure their state implementation plans included greenhouse gases as regulated pollutants as of Jan. 2, 2011, the date EPA began requiring prevention of significant deterioration permits for greenhouse gas emissions from stationary industrial sources. Prevention

of significant deterioration requires that large industrial sources install updated pollution controls known as best available control technology when they expand or make modifications that increase emissions.

The D.C. Circuit upheld EPA's long-standing interpretation of the Clean Air Act that prevention of significant deterioration permitting requirements at Section 165 of the Clean Air Act take effect immediately and are "unambiguously self-executing with respect to newly regulated pollutants."

For states such as Texas and Wyoming that were unable to address greenhouse gases by Jan. 2, 2011, EPA issued federal implementation plans, which saw the agency take over greenhouse gas permitting authority in those jurisdictions until such a time as their state implementation plans could be revised (75 Fed. Reg. 81,874).

Texas is the only state that has refused to make the necessary revision to its plan. EPA partially disapproved in December 2010 the Texas state implementation plan it had approved in 1992, saying it had been approved in error because the plan lacked a provision to automatically include newly regulated pollutants such as greenhouse gases (75 Fed. Reg. 82,430)

The judges heard oral argument in the case May 7 (44 ER 1376, 5/10/13).

## **ENERGY MAJORS FACE SUIT OVER CLAIMS OF WETLAND DAMAGE**

ExxonMobil, Chevron and 95 other companies are facing lawsuits from the Southeast Louisiana Flood Protection Authority-East over the alleged damaging of wetlands via the development of pipelines and transportation canals. The suit should be withdrawn, Louisiana Gov. Bobby Jindal said, as the agency went beyond its authority by retaining trial lawyers. "A better approach to helping restore Louisiana's coast includes holding the Army Corps of Engineers accountable, pushing for more offshore revenue sharing and holding BP accountable for the damage their spill is doing to our coast," Jindal said

<http://uk.reuters.com/article/2013/07/24/usa-gulfofmexico-lawsuit-idUKL1N0FU2F520130724>

## **D. ASME is planning to develop an annual large scale Energy Conference. Its first one is being planned for March 17–19, 2014 in San Diego and will focus on fracking.**

Arnold Feldman

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Roger Zygmunt

## **2) HEALTH – A. LEGIONELLOSIS - USA (05): (OHIO) FATAL, RETIREMENT COMMUNITY**

Two more people have died from legionnaires' disease at a Reynoldsburg retirement community, bringing the total deaths to 4 and those sickened to 35. It is the largest legionnaires' [disease] outbreak in Franklin County in recent memory, county health commissioner Susan Tilgner said yesterday [25 Jul 2013].

<http://www.eandp-environment.net/Health/Health020701.pdf>

## **3) SAFETY – A. GAS STOPS FLOWING FROM RUNAWAY WELL; FIRE DOWN TO SMALL FLAME**

Natural gas has stopped flowing from the well that blew out in the Gulf of Mexico Tuesday, federal officials said this morning.

The Bureau of Safety and Environmental Enforcement said the well “bridged over,” meaning small pieces of sediment and sand flowed into the well path and restricted the flow.

A fire that raged on the Hercules 625 drilling rig Wednesday is down to a single flame from residual gas, the bureau and Coast Guard reported.

Earlier story:

A blowout preventer may have ignited the fire that caused a Gulf of Mexico rig to partially collapse Wednesday, after a natural gas well blew out, federal authorities reported.

A leak in the natural gas well, owned by Walter Oil & Gas, ignited a fire on a jack-up rig operated by Hercules Offshore late Tuesday night, hours after its 44 workers had been evacuated, according to the Bureau of Safety and Environmental Enforcement.

The blowout preventer has since collapsed and isolated the fire, reducing the danger of a fire on the remainder of the jack-up rig but making a top kill operation remote, the Coast Guard said in an update to Congress Wednesday afternoon.

The two Houston-based companies have been working together with Wild Well Control, the Coast Guard and the Bureau of Safety and Environmental Enforcement to curb the uncontrolled flow of natural gas from the well.

“We are making preparations to fight the fire at this point,” said Tim O’Leary, a spokesman for Walter Oil & Gas. “We are marshaling pumps and boats with firefighting apparatus.”

No one was injured in the evacuation, and no oil was spilled, O’Leary said.

Two firefighting vessels in the area have been moved to a safe distance from the fire and a third vessel with additional fire-fighting capability has been moved to the site, according to the Bureau of Safety and Environmental Enforcement.

O’Leary said that the cantilever, an appendage of the jack-up rig that moves the drilling equipment over the well platform, has caught fire, but that the fire has not spread to the rest of the rig.

The fire caused the beams supporting the derrick and rig floor of the cantilever to fold and collapse over the rig structure, the Bureau of Safety and Environmental Enforcement said. The offshore support vessels were unable to get close enough to safely put water on the rig, the Coast Guard said in an update.

The ignition source may have been heat generated by the friction of formation sand shooting through the blowout preventer, the Coast Guard said. The sand may have traveled on the drill floor and up into the metal of the derrick.

Operators lost control of the natural gas well early Tuesday in the South Timbalier Block 220 in the Gulf of Mexico, while doing completion work on a sidetrack well to prepare for production. All 44 personnel from the Hercules 265 jack-up rig were safely evacuated, the company said.

“We do not know the status of the blowout preventer,” James Noe, executive vice president of Hercules Offshore, told FuelFix. “It’s on the rig which is on fire.”

The blowout preventer was constructed by Cameron, Noe said. Cameron will hold its second quarter earnings call on Thursday morning at 8:30 CST.

“There is no doubt that Hercules as well as Walter Oil & Gas, and the regulators, will be keenly interested in what role, if any, the blowout preventer played,” Noe said. “At the present moment we are singularly focused on identifying a plan, together with Walter Oil & Gas and the federal regulators, to regain control of the well.”

Any incident that involves an uncontrolled flow of hydrocarbons is likely to ignite, according to Brian Kalinec, owner of Kalinec Enterprises, a geophysicist consulting firm.

“Any kind of a spark or friction, especially if the surrounding air is dry, could start a fire,” Kalinec said. “It is like lighting a match and throwing it towards gasoline. It is highly flammable, so a spark could have caused it, if there is no other explanation.”

The Bureau of Safety and Environmental Enforcement is directing Walter Oil & Gas to begin preparations to move a jack-up rig on location to potentially drill a relief well. It could take two to four days to move a rig to location, and an additional 25 days to drill a relief well, the Coast Guard said Wednesday afternoon in a written statement.

“We are not focusing on the cause of the spark,” said Eileen Angelico, a spokeswoman for the Bureau of Safety and Environmental Enforcement. “All of that is going to be part of an investigation that has started into the loss of well control event. Right now, we are focusing on the fire and the securing of the well.”

The relief operation’s challenge will be to establish the flow path of the natural gas and then figure out the best way to mitigate it, according to Bud Danenberger, a consultant and former chief of offshore regulatory programs at the Minerals Management Service, which has now been reorganized into the Bureau of Safety and Environmental Enforcement.

“Their options are a surface operation – which would be hazardous under the circumstances – or a relief well,” Danenberger said. “In many ways it is much more dangerous to deal with a shallow water operation than a subsea well. In a deepwater operation, the emergency personnel are safely removed from the well and using operating equipment remotely. At 5,000 feet above, you are running a joy stick as opposed to being right there where the fire is and running the risk of a structure collapsing.”

While the source of the leak is still unknown, Danenberger explained that there are several possibilities. The flow path could be inside production casing or tubing.

Another flow path could be between the casing strings or the space between the two concentric casing strings. Alternatively, it could be outside the casing, back to the seafloor, either through cement channels or through fractures in the sediments.

“The fact that there is a fire would imply that that is flowing inside the casing or between the casing strings, because it is coming back up to the surface to the rig,” Danenberger said.

The next steps for the operation will hinge on how the well was constructed.

“I would hope that there is enough well bore and well integrity that they can apply a surface cap and then pump in mud and cement or make some connections to pump in heavy mud, but I have no idea what the well flow is,” Danenberger said. “This is all contingent on the integrity of the well bore.”

The natural gas flow has caused a one mile by 200 foot area of light sheen that is dissipating and no shoreline impact is expected under current conditions, the Coast Guard said.

The well is 55 miles off the coast of Louisiana in 154 feet of water, Walter Oil & Gas said.

The rig was working on a sidetrack well — drilled adjacent to an existing one — in preparation for production, the safety bureau said.

The two companies have emphasized the focus on safety in efforts to control the well.

The accident comes on the heels of a **Talos Energy well leak earlier this month**. Responders stopped the leak after four days, installing a metal plug and pumping cement into the site.

In 2010, **BP’s Macondo well blew**, releasing an estimated five million barrels of oil into the Gulf of Mexico before the well was successfully contained.

<http://fuelfix.com/blog/2013/07/23/47-rescued-from-gulf-rig-after-natural-gas-blowout/>

## **B. FLASH FIRE RISK ASSESSMENT FOR THE UPSTREAM O&G INDUSTRY**

Here’s the information on the RP 99 proposal Mike Ferris spoke about at the STEPS meeting last week:

To download this draft of RP99:

You can find the draft RP at:

<http://ballots.api.org/ecs/dpos/RP992013-06ballot.pdf>

To submit comments on RP99:

Register with API as indicated above. You will need to download the comment form or submit via the online comment form if it is still available when you log in. The ballot has a closing date of 7/24/2013.

Your Internet browser must be enabled to allow cookies in order to use the API Ballot Web site.

#### **4) TRANSPORTATION: A. TRANSCANADA REBUFFS EPA'S CALL FOR KEYSTONE CLEAN ENERGY**

The U.S. Environmental Protection Agency says [TransCanada Corp. \(TRP\)](#) should be required to buy renewable power to run pumps along the route of its proposed Keystone XL pipeline, a measure the company said is unworkable and unnecessary.

In a July 17 letter to the U.S. State Department, the Calgary-based company said the EPA suggested it buy renewable energy to run pumping stations from [Alberta](#) to Steele City, [Nebraska](#). The EPA, in an April filing with the State Department, also said the U.S. should work with [Canada](#) to promote technology to capture and store underground the carbon-dioxide emissions generated in the production of Canadian oil.

The State Department is reviewing the \$5.3 billion project because it crosses an international border. TransCanada first applied for a permit for the project in 2008.

“Keystone does not control the source of the power it purchases,” according to the letter, released yesterday by the company. “TransCanada has invested over \$5 billion in emission-less energy sources including the largest wind farm in [Maine](#) and 13 hydro power stations in the U.S. Northeast.”

<http://www.bloomberg.com/news/2013-07-19/transcanada-rebuffs-epa-s-call-for-keystone-clean-energy.html>

Don Shaw

#### **COMMENTS:**

##### **A. THE WEEK THAT WAS: 2013-07-27 (July 27, 2013)**

*By Ken Haapala, Executive Vice President, Science and Environmental Policy Project (SEPP)*

**EPA Endangerment Finding:** The US Solicitor General, Department of Justice, and EPA attorneys filed their petition to the US Supreme Court requesting that it deny the petition from the group in which SEPP participates asking for the court to review the decision by the US Circuit Court of Appeals upholding the EPA Endangerment Finding (EF) that greenhouse gas emissions (GHG), particularly carbon dioxide (CO<sub>2</sub>), endanger public health or welfare. [For legal purposes the timing is December 7, 2009, the date of the EF.]

The standard asserted in the petition is quite loose. “Although it found some ‘uncertainties’ in the scientific data, the EPA ‘determined that the body of scientific evidence compellingly supports’ the finding that greenhouse gases **may reasonably be anticipated to endanger public health and public welfare by driving global climate change.**” [Boldface added.]

Elsewhere the petition states: "... EPA explained that the global warming by greenhouses gas emissions will produce an increase in heat-related deaths; an increase in respiratory illness and premature death relating to poor air quality; and increased risk of death, injury, and disease relating to extreme weather events; and an increase in food- and water-borne diseases." It goes on to state: "greenhouse gas pollution is reasonably anticipated to endanger public welfare by causing 'net adverse impacts on U.S. food production and agriculture, with the potential for significant disruptions on crop failure in the future'" by endanger[ing] U.S. forestry in both the near and long term"...

SEPP Comment: In spite of an enormous body of experimental and observational evidence that enhanced atmospheric CO<sub>2</sub> is benefiting agriculture and forestry, the EPA can reasonably anticipate that CO<sub>2</sub> will cause significant harm.

The petition states: "The EPA relied principally on 'recent synthesis and assessment reports' of three scientific organizations: the United States Global Climate Research Program, the Intergovernmental Panel on Climate Change, and the National Research Council."

It is here where we can assess the standards of science exhibited by the EPA, and the scientific organizations on which it relies: US Global Climate Research Program the UN Intergovernmental Panel on Climate Change (IPCC) and the National Research Council. At the time of the endangerment finding there were several dozen global climate models, now there are at least 73. The US has 19. One climate model is sufficient – if it has been validated.

- EPA offers no direct physical evidence that greenhouse gases are causing significant global warming or the dire future hazards.
- EPA relies heavily on global climate models for forecasts of future harm from increasing temperatures.
- From 1990 (first IPCC report) to the 2009 EF, the EPA and the scientific organizations upon which it relies have failed to produce a valid model
- Two decades is twice the time it took the Apollo team to model how to land men on the moon and bring them back, and to successfully complete the mission.
- Without direct physical evidence or a valid model, the EPA cannot establish causation – that greenhouse gases are responsible for significant global warming or climate change.
- The failure to validate a model is recognized by the IPCC because after the 1990 report the IPCC shifted from using the scientifically proper term "model predictions" to "model projections."
- The term "model projections" is scientifically nebulous.
- All studies based on the models that have not been validated are scientifically nebulous, such as those that claim dire future weather events.
- Climate change has been occurring for hundreds of millions of years. The EPA has produced no evidence that it can successfully explain natural climate change.
- Without understanding the natural causes of climate change, the EPA cannot scientifically understand the human influence on climate.
- Without model validation, or a separate rigorous probability analysis, the confidence (likelihood) expressed by the EPA in the model results is opinion, not scientifically derived.

What we see is the failure of these government entities to properly conduct rigorous scientific research and that the consequences can become dire. Why have they failed to validate the models? Only the administrators of these programs can say. It is not for the lack of money. As

stated in prior TWTWs, based on estimates by the GAO and the Congressional Research Service, the US has spent some \$160 to \$170 Billion on climate change activities from 1992 to 2012. Some administrators may claim they were not tasked with the responsibility of validating a model. But that is an excuse, if it is true, their reports should state that the report is based on unvalidated climate models, clearly and predominately, so there is no misunderstanding. As stated previously, the Court's decision on whether or not to hear the case will be on legal grounds, not scientific grounds. Unable to link to the EPA petition at this time.

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**A Beginning of Model Validation?** On his web site Climate Audit, Steve McIntyre had a pair of intriguing posts. The first, on July 21, was a teaser. It showed a simple model that visually outperformed the latest complex model from the Hadley Centre/Climatic Research Unit (HadCRUT4) for describing temperature trends from 1900 to today. The model shows a modest increase in temperatures in response to carbon dioxide emissions. A doubling of atmospheric CO<sub>2</sub> would result in a temperature increase of 1.67 deg C. This is a little more than one-half of claimed "likelihood" 3 deg C, according to the IPCC.

In his July 26 post, McIntyre states many of his readers surmised that the simple model was one devised by Guy Callendar and published in 1938. Callendar was an early proponent of the greenhouse effect and believed that increasing atmospheric carbon dioxide would be beneficial for humanity, including promoting plant growth, providing protection against extreme cold, and it may delay the return of another Ice Age, with destructive glaciation making much of the Northern Hemisphere uninhabitable.

Using established statistical techniques, McIntyre ran the Callendar model against 12 modern global circulation models and found that none of the 12 performed better and 10 performed far worse. It is too early to jump to conclusions from this analysis except to suggest that if simple models outperform complex models, then why rely on the complex models. "As [Steve] Mosher observed in a comment on the predecessor post, a more complicated model ought to be able to advance beyond the simple model and, if there is a deterioration in performance, there's something wrong with the model." Advocates of complexity could argue, that their models produce results other than temperature as well, which is true, but temperature increase is the central issue. For the somewhat technical discussion please see links under Models v Observations.

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**The Pause:** The British Met Office [formerly, Metrological Office] produced three reports with titles starting with "The recent pause in global warming:" David Whitehead observes that the reports may say more about the messenger than the message. Among other things, the reports imply there is nothing unusual about the current standstill. Which would come as a surprise to the EPA and its certainty in its findings. One of the models that was run multiple times reproduces the pause – which speaks to the lack of rigor in the models. Perhaps the models can be likened to a pot of hot water in which gelatin has been dissolved. The final form depends upon the mold in which it is cooled, with temperature data being the mold.

The reports also suggest the missing heat is hiding in the deep ocean. How a warming of the atmosphere, where the greenhouse effect takes place, thousands of feet above the surface enters the deep oceans without leaving a trace is a mystery to be explained. The reports also state that the highest level of projected warming has been reduced, and that the most likely level is reduced by 10%. Although the terms verified and validity are mentioned, there is no effort to rigorously validate the models.

At least the Met Office recognizes there is a pause, which is something that the US Administration does not. Please see links under Lowering Standards.

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**The Methane Bomb:** Occasionally, an article appears claiming the warming of the Arctic will trigger an enormous discharge of methane, which, in turn, will cause significantly more global warming. A new one appeared in *Nature*, claiming a massive reserve of methane hydrates will be released with the warming of the seabed of the East Siberian Arctic Shelf. A model was run estimating the staggering monetary costs to the world, about 85% of the 2012 world economy. Of course, it did not occur to the authors, or the editors, to ask why did this not occur about 8,000 to 5,000 years ago when the northern part of the Northern Hemisphere was considerably warmer than today? Or, since these methane deposits have existed for hundreds of thousands or millions of years, why did they not escape during the last interglacial period which was considerably warmer than today? Interestingly, Anthony Watts posted on his web site a comments on the paper by Gavin Schmidt of NASA-GISS, some of the points critical of the paper. Schmidt's final point is particularly noteworthy: "But we should not take what-if sensitivity experiments as predictions." Please see links under Communicating Better to the Public – Make things up

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**EIA Report:** The US Energy Information Administration (EIA) issued its annual report, which will be discussed in future TWTWs. The report projects a 56% increase in world energy consumption by 2040, with fossil fuels continuing to supply about 80% of the world's energy. It is amusing to note that some editors chose to emphasize growth in renewables, even though renewables will continue to provide a small part of the growth in energy use. Please see links under Energy Issues – Non-US.

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**Number of the Week: 2/3, or 1/2, or less? How much should the IPCC reduce the "most likely warming" estimate for the 21st century in the upcoming report as compared with its 2007 report? Paul Knappenberger and Patrick Michaels present an interesting discussion on the IPCC's dilemma. Recent studies come up estimates far lower than that the IPCC used previously. To use these estimates in the upcoming report would undermine the following report on the dire consequences from the projected warming. (It would undermine the EPA endangerment finding as well.) Knappenberger and Michaels are betting the IPCC will essentially ignore the recent studies and mislead policymakers and the world. This would be consistent with the history of the IPCC, dismiss or ignore that you cannot explain. Please see link under Problems in the Orthodoxy**

## **B. DECADAL FORECASTING – WHAT IS IT AND WHAT DOES IT TELL US?**

Decadal forecasts are designed to forecast fluctuations in the climate system over the next few years through knowledge of the current climate state and multi-year variability of the oceans. This item provides some more detail on what they are, and what they can tell us.

Ken Arnold

<http://www.metoffice.gov.uk/research/news/decadal-forecasting>

## **C. THE NON-DENIERS HAVE THEMSELVES IN A REAL WRINGER**

The Non-Deniers (UK Met) released a statement "... the climate models have not been falsified by the recent pause in global surface temperatures". Firstly, how do they know if "pause" is the correct word? I use the words "halted" or "stopped"; pause has a different meaning. How do they define "recent"? Is 16.5 years recent? It is the same length period as the observed global warming. Secondly, there are about 100 known climate models but apparently not a single one predicted the halt in global warming in 1997. We are now 16.5 years into the halt period and recent years' measurements show a cooling trend bias. Thirdly, each one of the 100 models has to be independently validated taking the "recent pause" into account to meet statistical requirements. A reasonable person would believe that failing to predict the halt of global warming for 9 years or so then starting an apparent cooling trend for 7 years or so would be enough to throw out at least one (or more likely some) of the 100 climate models. Exactly against what and how will the 100 climate models be independently validated? If not even one of the models was not invalidated, then what does it take to invalidate the models? The latest IPCC assessment that was leaked to the public uses spaghetti graphs of the 100 climate model outputs throughout the document. The final IPCC assessment is due in a few months. Without the climate models the assessment is meritless. Carbon dioxide has stayed on an upward trend since 1997, yet the global temperature did not and now has a turn down bias.

The cows have come home to the Non-Deniers bringing a flock of crows with them. It is and has always been clear (to me, at least) carbon dioxide is not the root cause of the observed warming from 1980 to 1996. The climate models are currently without value since they are essentially completely driven by carbon dioxide content in the atmosphere. With carbon dioxide increasing, the models can only predict global temperature increasing. With the UK Met office advising that global warming paused, NASA GISS and NOAA will be forced to do likewise. EPA will have to rescind or put on hold their finding that carbon dioxide is a pollutant. Obama will have to rescind his Executive Orders relative to carbon dioxide emissions from power plants, etc. The whole kit and kaboodle of Non-Deniers will have to do some long sorely needed work to understand the relationships between the ocean cycles as represented by the PDO, AMO and NINO indexes. I hope the carbon dioxide crow tastes good. Tens of billions of dollars have been spent building the trap.

J Frank

## **D. PART 1 – COMMENTS ON THE UKMO REPORT ABOUT “THE RECENT PAUSE IN GLOBAL WARMING”**

Posted on [July 25, 2013](#) by [Bob Tisdale](#)

### **INTRODUCTION**

I've received a number of emails and requests to comment on the recently released 3-part report from the UK Met Office titled "The Recent Pause in Global Warming". See the UKMO webpage [here](#). This is part 1, corresponding to [part 1 of the UKMO report](#).

For additional discussions of the UKMO's papers, see Bishop Hill's post [Your ship is sinking. Will spin help?](#) and Judith Curry's post [UK Met Office on the pause](#).

The UKMO is offering the same old tired excuses. As a result, much of this post discusses topics and presents data that have addressed in past posts. In other words, parts of the following are simply rehashings of topics we've discussed previously. And as I try to do in many posts, I've saved the best for last: I don't believe the UKMO wanted to show a slowing of ocean heat content during the last decade or so, since the early 2000s, but they did.

<http://wattsupwiththat.com/2013/07/25/part-1-comments-on-the-ukmo-report-about-the-recent-pause-in-global-warming/#more-90426>

## **E. ICE-FREE ARCTIC IN TWO YEARS HERALDS METHANE CATASTROPHE – SCIENTIST**

Posted on [July 18, 2013](#) by [Anthony Watts](#)

A [new paper](#) in the journal Nature argues that the release of a 50 Gigatonne (Gt) methane pulse from thawing [Arctic](#) permafrost could destabilise the climate system and trigger costs as high as the value of the entire world's GDP. The East Siberian Arctic Shelf's (ESAS) reservoir of methane [gas](#) hydrates could be released slowly over 50 years or "catastrophically fast" in a matter of decades – if not even one decade – the researchers said.

Not everyone agrees that the paper's scenario of a catastrophic and imminent methane release is plausible. Nasa's Gavin Schmidt has previously argued that the danger of such a methane release [is low](#), whereas scientists like Prof Tim Lenton from Exeter [University](#) who specialises in climate tipping points, says the process would take [thousands if not tens of thousands of years](#), let alone a decade.

<http://wattsupwiththat.com/2013/07/18/watch-senate-climate-hearing-live/>

## **F. REVIEW OF SCIENCE BEHIND GLOBAL WARMING DEBAT**

The answer to the question has a few aspects:

1. I don't think I used the term "settled science" in anything I have written but I have talked about others who have used it. The problem I have with the term is that it may mean different things to different people, and science is in my opinion never "settled" in that there is no room for greater understanding.
2. It is possible to think of theories as being settled when they are accepted by those in the field and point to new areas of investigation which then prove out to be true. As an example, when I was in school we learned that atoms were made of protons, neutrons and electrons which led to the Periodic Table. To me this had been accepted science for decades. The Periodic Table in turn led to the discovery of elements which had been previously unknown but the Periodic Table could have been thought of as settled science. Since then there have been many discoveries that have created a better understanding of the atom and its particles and energies. But I still think the basic idea that atoms are made up of protons, neutrons and electrons is still valid. If you use settled science as applied to climate change, I can agree with some of it being settled.
3. As to CO2 being a GHG, CO2 concentration in the atmosphere increasing due to human activity, and greater CO2 concentration leading to global warming, in December 1009 I posted a series of 12 separate parts to my attempt to describe why I thought CO2 emissions was a theory worth considering. These were based mostly on the IPCC AR4 report of 2007. In this series I tried to answer as best I could accusations by Deniers as to why the AR4 report should not be believed. In Section 4 of this series I pointed out that a prominent Denier had claimed a scientist he stated

was very credible, Ramanathan who studies sea temperatures, had claimed there was no global warming. I then quoted directly from Ramanathan's paper to show how this was misconstrued. In addition, in Section 5 of this series I further quoted from the same scientist who the Deniers were misquoting:

Let me end this Section with a scary thought I just found out from my new friend Mr. Ramanathan:

Coincident with the greenhouse gas warming is the appearance of atmospheric brown clouds. If greenhouse gases are the ultimate end product of fossil fuel and CO<sub>2</sub>, then particulates in the air represent an intermediate phase.

The extent of global warming is not fully reflected in the Earth's *surface* temperatures. The additional heat trapped by the increase in greenhouse gases from the late nineteenth century to the present time has committed the planet to a global warming in the range of 1°C to 3°C. We have realized only a fraction (25–50 percent) of this warming.

Some of this warming has been masked by the dimming due to brown clouds, and the remaining heat is stored in the depths of the ocean to be released later. Through the process of convective overturning, oceans transfer infrared energy to their deepest layers and hold the heat, delaying the impact of global warming. Whether this stored heat will warm the atmosphere in a few decades or a few centuries is unknown. The delay of the warming by decades to centuries by the flywheel effect of ocean mixing, when combined with the century or more lifetime of CO<sub>2</sub> (and molecules of other greenhouse gases) in the atmosphere, presents policymakers with the central moral dilemma of the global-warming problem. Every decade we delay in taking action, we are committing the planet to additional warming that future generations have to deal with

The masking effect is equally troubling. We now know that the surface-cooling effect of aerosols may have masked as much as 50 percent of the global warming caused by greenhouse gases, presenting a serious dilemma for the global community: If we attempt to reduce air pollution because of its effect on health, we may see an amplification of global warming. At the same time, if greenhouse gases are curbed because of our concerns about global warming, the brown clouds may weaken the Earth's water cycle, particularly the monsoonal rainfall in Asia, leaving us with conflicting options involving those regions negatively impacted by global warming and those negatively impacted by air pollution.

4. I think that the vast majority of those working in this field can agree on the importance of GHG to climate change. I have attached that 2009 series if you want to torture yourself reading it. (I apologize for never going back and editing it to make it more consistent and readable.) In the section on settled science that series I concluded:

So what is my conclusion on settled science?

**1. It is “settled” that CO<sub>2</sub> is a greenhouse gas and that CO<sub>2</sub> in the atmosphere helps heat the earth as long as we understand “settled” in the same manner as we use the term to describe the Theory of Relativity.**

2. It is “settled” that more CO<sub>2</sub> in the atmosphere will lead to increased warming absent a corresponding negative forcing.
3. It is a consensus but NOT “settled science” that anthropogenic CO<sub>2</sub> emissions will lead to global warming.
4. There is room for debate as to how much warming will occur from a fixed increase in CO<sub>2</sub> concentration, although most scientists working in this area believe it will be significant.
5. It is misleading for proponents of global warming to call the theory “settled science” or to exaggerate the effects of CO<sub>2</sub> increases as there is much uncertainty in this area.
6. It is misleading for deniers of global warming to continue to misrepresent the IPCC report as the work of a few or to deny that the overwhelming majority of scientists working in this field believe it to be accurate.
7. It is possible that the overwhelming majority of scientists working in this field could be wrong.

5. AR 5 will come out in 2014 and we will see how the consensus changes.  
Ken Arnold, PE, NAE

## **G. THE LONG-TERM FATE OF ORGANIC CARBON IN SEMIARID GRASSLAND SOIL (23 JUL 2013)**

Reference

**Zhou, X., Chen, C., Wang, Y, Smaill, S. and Clinton, P. 2013. Warming rather than increased precipitation increases soil recalcitrant organic carbon in a semiarid grassland after 6 years of treatments. *PLOS ONE* 8: e53761.**

In introducing their study, Zhou *et al.* (2013) write that "the world's soils contain twice as much carbon as the atmosphere (Batjes, 1996)," and that "as a result, even minor soil organic carbon (SOC) losses from the soils can greatly enhance carbon dioxide concentrations in the atmosphere, which [could] have a positive feedback on climate (IPCC, 2007)." Thus, they state that an "improved understanding of changes in soil recalcitrant organic carbon in response to global warming is critical for predicting changes in [total] SOC storage."

In the hope of helping to provide some of that "improved understanding," Zhou *et al.* say they "took advantage of a long-term field experiment with increased temperature and precipitation" - which was established in late April 2005 in a semiarid temperate steppe in Duolun County, Inner Mongolia, China - "to investigate the effects of warming, increased precipitation and their interactions on SOC fraction" by quantifying "labile SOC, recalcitrant SOC and stable SOC at 0-10 and 10-20 cm depths."

The results of the efforts of the five researchers revealed that "neither warming nor increased precipitation affected total SOC and stable SOC at either depth," but that "increased precipitation significantly increased labile SOC at the 0-10 cm depth" and that "warming decreased labile SOC and marginally but significantly increased recalcitrant SOC at the 10-20 cm depth." And they say there were also "significant interactive effects of warming and increased precipitation on labile SOC and recalcitrant SOC at the 0-10 cm depths."

When all was said and done - and the several pluses and minuses accounted for - Zhou *et al.* concluded that "given that the absolute increase of SOC in the recalcitrant SOC pool was much greater than the decrease in labile SOC, and that the mean residence time of recalcitrant SOC is much greater, our results suggest that soil C storage at 10-20 cm depth may increase with

increasing temperature in this semiarid grassland," which thus represents a net *negative* feedback on predicted global warming.

#### **Additional References**

Batjes, N.H. 1996. Total carbon and nitrogen in the soils of the world. *European Journal of Soil Science* **47**: 151-163.

IPCC. 2007. IPCC Working Group I. *Climate Change 2007: The Physical Science Basis*. Cambridge University Press, Cambridge, United Kingdom.

## **H. CLIMATE CHANGE CONVERSATIONS: ESTABLISHMENT SCIENTISTS GETTING IT WRONG (24 JUL 2013)**

Shakhashiri, B.Z. and Bell, J.A. 2013. Climate Change Conversations. *Science* **340**: 9.

In a controversial Editorial published in the 5 April 2013 issue of *Science* entitled "Climate Change Conversations," Shakhashiri and Bell write that "everyone should understand why the climate is changing and what it means for them, their children, and generations to follow," and they further state that *scientist-citizens* have a responsibility to help their fellow citizens obtain such knowledge. It sounds like a good idea, except for the unfortunate *fact* that various factions of the scientific community are far from united in their assessments of just what that climatic knowledge is.

As a simple example, the two chemistry professors write that "the average temperature of Earth is increasing." In reality, however, it is *not* increasing, as the mean temperature of the globe has remained fairly steady for about the last decade and a half. But will it continue that way? Or will it soon begin to once again warm? Or actually begin to cool? Although many scientists hold one position or the other, *no one really knows*.

Shakhashiri and Bell also write that "extreme weather events are more frequent," when, in fact, nearly all types of extreme weather events are *not* more frequent now than they were in either the recent or more distant past, as may readily be seen from the many reviews we have archived under the general heading of [Extreme Weather](#) in our Topical Archive. In addition, they say that the combustion of fossil fuels is "a major driver of climate change," when this is merely the *opinion* of one (albeit a large) segment of the scientific community.

Continuing, the two chemists state that "to share this knowledge with the public and be credible as a 'scientist-citizen,' a scientist must acquire a good grasp of the science of climate change." Clearly, however, this is not enough; for there are many people with "a good grasp of the science of climate change" that have widely divergent ideas about the subject. And in such cases, a true scientist-citizen should readily acknowledge that there is no scientific unanimity on this issue. This being the case, it should be clear that neither is there any unanimity on the question of what should or should not be done about the still-unsettled subject. And, therefore, Shakhashiri and Bell's contention - that "supporting elected officials who promote policies and practices aimed to decrease the effects of global warming is another step that individuals and citizens' groups should take" - could someday be found to be just the *opposite* of what really *should* have been done.

Especially is this the case when it is *realized*, as indicated by Bruinsma (2009), that in order to "meet the growing demand for crops" - due mainly to the increasing population of the planet - the production of major crops "will need to increase by 70% by 2050," which increase in production would require far more extra *land* and *water* than could realistically be made available for the task. Under these *real-world conditions*, therefore, the only hope we might

possibly have is that the CO<sub>2</sub> content of Earth's atmosphere would *continue to rise*, bestowing its *aerial fertilization* and *water-use efficiency amplification* effects upon our major crops, which is something that literally thousands of laboratory and field experiments have demonstrated it truly has the power to do.

Consequently, and in contrast to the contention of Shakhashiri and Bell that people should support officials who promote policies and practices aimed at decreasing anthropogenic CO<sub>2</sub> emissions, most rational men and women should seek to determine - as best they can, based upon *real-world observations* rather than *theoretical models* - which of the two opposing scientific factions seems to them to be the more likely to have the more correct view of the matter.

### **Additional Reference**

Bruinsma, J. 2009. The resource outlook to 2050: By how much do land, water use and crop yields need to increase by 2050. In: *Technical Papers from the Expert Meeting on "How to Feed the World in 2050."* Food and Agriculture Organization, Rome, Italy.

*Archived 24 July 2013*

## **I. CANADA OIL FIRM STILL UNABLE TO STOP LEAKS**

Four Separate Leaks Reported at Air-Force Base in Alberta

By Chester Dawson/The [Wall Street Journal](#)

Canada's largest independent oil producer has been unable to stop a series of leaks from underground wells, according to regulators in Alberta, raising questions about a technology the industry has championed as less environmentally disruptive than the open-pit mining of oil sands.

Leaks at CNRL's wells have drawn scrutiny from regulators and environmentalists. Above, Mike Hudema at a Greenpeace protest Thursday in Calgary.

Four separate leaks, the first of which was reported on May 20, comprise the equivalent of 175 barrels of oil and spread over at least 100 acres on the grounds of a Canadian air-force base in northeastern Alberta, according to preliminary figures from the chief provincial regulatory body. While the amount of oil is relatively small, it has contaminated a vast area of boreal forest, including killing some wildlife. It also represents a relatively rare case in which a producer hasn't been able to immediately identify the cause of a leak and correct it, drawing special scrutiny from regulators and environmentalists.

"We don't know when they're going to get control of it," said Alberta Energy Regulator spokesman Bob Curran.

[Canadian Natural Resources Ltd.](#), [CNQ.T -1.19%](#) or CNRL, the operator of the troubled well sites in Northeastern Alberta, issued a statement late Thursday that didn't include figures on the amount of oil leaked, but which said the "initial impacted area" was about 50 acres. It also attributed the leak to unspecified "mechanical failures of wellbores in the vicinity of the impacted areas."

Government officials say the leak poses no threat to people, but that it has affected wildlife and vegetation native to the muskeg-covered landscape of northern Alberta. It has killed 11 birds, four small mammals such as beavers and 21 amphibians, according to CNRL and the Alberta environment ministry.

"If we believe that a law has been broken there will be compliance action, but it is too early to speculate," said ministry spokeswoman Nikki Booth.

CNRL said Thursday it has 120 employees and contractors on site attempting to contain the leak and limit damage.

The Alberta Energy Regulator, or AER, ordered a halt to all steaming operations at what CNRL calls its Primrose facility on July 17 following the most recent leak on June 24, expanding a partial ban that it had issued in response to the earlier leaks this year.

The suspension order doesn't affect [oil recovery](#) from the area, which usually occurs after steaming has concluded. CNRL's latest financial reports show its total oil production was 681,000 barrels per day during the first three months of the year, including 109,000 barrels per day extracted from Primrose.

In its first-quarter earnings statement, CNRL said Primrose "generates returns amongst the highest in the company's portfolio," adding that it expects to drill up to 120 new wells per year at the site to boost production levels to 120,000-125,000 barrels per day for the next five to 10 years.

The Calgary-based company reported similar leakage at its Primrose wells in 2009, the cause of which was never identified in a government report released in January. At least 7,581 barrels of heavy oil were leaked and subsequently recovered in that incident, according to the AER report. "It's clear they never got to the bottom of it," said Chris Severson-Baker, a managing director at the Pembina Institute, a Canadian environmental think tank. "Having multiple failures shows a failure of the design and approval process."

The leak has sparked criticism the company has been slow to disclose the scope of the problem and explain its efforts to arrest the leakage. Some critics say the inability prevent such leaks points to larger problems with these methods to tap heavy oil, or bitumen, trapped deep in subterranean oil sands deposits.

"If the company doesn't know how to stop it, we really shouldn't be using this technology to extract bitumen" from oil sands, said Mike Hudema, a climate and energy campaigner with Greenpeace Canada, which staged a protest on Thursday in concert with Native American groups in front of CNRL's headquarters in downtown Calgary.

CNRL's Primrose site uses one of two major types of steam-based extraction techniques to access oil too deep for surface mining. Called cyclic steam stimulation, or CSS, it involves injecting high-pressure steam into underground oil deposits embedded in rock, creating fissures for petroleum to seep out.

Production using CCS and another form of lower-pressure in-situ extraction, which is called steam-assisted gravity drainage, are critical to accessing the nearly 80% of Alberta's total heavy oil reserves located deep underground. Oil producers say this form of extraction is more environmentally friendly than open pit mines because the aboveground well pads used are less disruptive to the surrounding landscape and don't leave behind toxic tailings ponds.

While commercial production at so-called in-situ oil sand mines dates back 30 years, only recently has it become a major source of growth for Canada's oil-sands industry. Of the 1.8 million barrels of oil a day produced from Canada's oil sands last year, more than half came from in these in-situ mines, according to the Canadian Association of Petroleum Producers.

CAPP projects in-situ extraction will leap to 3.5 million barrels per day by 2030, vastly exceeding the growth of open-pit mining, which will grow to 1.7 million barrels per day by then. Access to the area affected by the leak is restricted because it is located on the Cold Lake Air Weapons Range, the largest air force fighter base in Canada. Other major oil producers such as Cenovus Energy Inc. operate wells on the base, but haven't reported leaks.

Under the agreement allowing development of oil sands within the boundaries of air base, all employees working there must undergo a safety orientation class and off-road driving training "due to the potential risk involved with operating on an active air-to-ground weapons range."

## **J. WARMISTS DEBUNK ARCTIC METHANE CLAIMS**

The U.K. *Guardian* and dozens of additional media outlets are hyping a claim this week that rapidly receding Arctic sea ice will trigger a methane-release catastrophe within just a few years. While the media predictably tries to scare the pants off of people who don't closely follow the scientific debate, skeptics, mainstream warmists, and even prominent global warming alarmists agree the predictions of a methane catastrophe are over the top and ridiculous.

A new paper in the journal *Nature* claims summertime Arctic sea ice could disappear within a couple of years, triggering a chain of events that will release catastrophic amounts of frozen and trapped methane into the atmosphere. The warming effects of the methane release, the *Nature* paper claims, will send the planet over a tipping point for immediate, rapid, and catastrophic global warming.

Judith Curry, who generally agrees with the global warming narrative provided by the United Nations Intergovernmental Panel on Climate Change, noted on her Climate Etc. Web site that the predicted methane apocalypse "rests on two assumptions: (1) the 'spiral of death' loss of Arctic sea ice and (2) connection of the sea ice loss to a massive release of methane hydrates into the atmosphere on the time scale of a decade. Each of these assumptions is highly implausible, based upon my understanding; the combination of these two assumptions into a single scenario seems impossible to me."

Even high-profile global warming extremists are calling B.S. on the methane apocalypse claims. Gavin Schmidt, for example, noted that even under a "worst case" scenario, methane "will probably not be a huge player in climate change in the coming century."

## **K. NOAA SCIENTISTS REPORT 2012 HEAT WAVE MOSTLY NATURAL**

Record-setting warm temperatures in the United States during early 2012 were mostly the result of natural weather events and had little connection with global warming, a team of scientists from the National Oceanic and Atmospheric Administration (NOAA) and the University of Colorado report in a new peer-reviewed paper. "This long-term regional warming is an order-of-magnitude smaller than temperature anomalies observed during the event, indicating that most of the extreme warmth must be explained by other factors. Several lines of evidence strongly implicate natural variations as the primary cause for the extreme event," the scientists explained. <http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-12-00069.1?af=R&&>

## **L. ALARMISTS CONCEDE NO INCREASE IN GLOBAL TEMPERATURE VOLATILITY**

There has been no recent increase in global temperature volatility, a team of scientists including disgraced Climategate central figure Phil Jones acknowledge in a newly published peer-reviewed study. The scientists report temperature volatility has increased in some regions and decreased in

others. While the media focuses on regions where volatility has increased, the planet as a whole is experiencing no increase in temperature volatility. Moreover, the study predicted temperature volatility will decrease during the course of the twenty-first century.

<http://www.sciencedaily.com/releases/2013/07/130724134252.htm>

## **M. GREENLAND DATA SHOW TEMPERATURES WERE WARMER IN RECENT PAST**

The warmest temperatures of the present interglacial warm period, which began approximately 10,000 years ago, occurred between 4,000 and 6,000 years ago, scientists report in a new peer-reviewed study. Scientists examined sediment composition in several lakes near the edge of the Greenland ice sheet and discovered local summer temperatures were 2 to 3 degrees Celsius warmer during that time period than they are today.

<http://www.nipccreport.org/articles/2013/jul/24jul2013a3.html>

## **N. MY PERSONAL PATH TO CATASTROPHIC AGW SKEPTICISM**

Posted on July 25, 2013 by Guest Blogger

Please allow me to recount the details of my personal path to CAGW scepticism. I have never previously found myself at odds with the scientific mainstream and at times it feels quite odd. Perhaps others here have similar experiences? I am curious to know how fellow-readers came to their current views. If some have gone from genuine scepticism to accepting CAGW, I would find that especially fascinating.

My own story begins at school in England in the early 80s. Between playing with Bunsen burners and iron filings, I remember being told that some scientists predicted that we would soon enter a new ice age. This sounded quite exciting but I never really thought it would happen; I was too young then to have seen any significant change in the world around me and it all seemed rather far-fetched. A nuclear war seemed far more likely. Soon enough the whole scare melted away.

<http://wattsupwiththat.com/2013/07/25/my-personal-path-to-catastrophic-agw-skepticism/#more-90436>

## **O. FRACKING DREAMS OF A NEW ICE AGE**

Scientists in Japan and the U.S. say they are moving closer to tapping a new source of energy: methane hydrate, a crystalline form of natural gas found in Arctic permafrost and at the bottom of oceans.

At room temperature the crystal gives off intense heat, earning it the nickname of "fire in ice," and making the estimated 700,000 trillion cubic feet of the substance scattered around the world a potentially major fuel source, containing more energy than all previously discovered oil and gas combined, according to researchers at the U.S. Geological Survey.

Commercial production of methane hydrate is expected to take at least a decade—if it comes at all. Different technologies to harvest the gas are being tested, but so far no single approach has

been perfected, and it remains prohibitively expensive. But booming energy demand in Asia, which is spurring gigantic projects to liquefy natural gas in Australia, Canada and Africa, is also giving momentum to efforts to mine the frozen clumps of methane hydrate mixed deep in seafloor sediment.

The biggest concern is that the sediment that contains methane hydrate is inherently unstable, meaning a drilling accident could set off a landslide that sends massive amounts of methane—a potent greenhouse gas—bubbling up through the ocean and into the atmosphere.

Oil and gas companies establishing deep-water drilling rigs normally look at avoiding methane-hydrate clusters, said Richard Charter, senior member of environmental group the Ocean Foundation, who has long studied methane hydrates.

Nevertheless, the government of Japan—where natural gas costs are currently \$16 per million British thermal units, four times the level in the U.S.—has vowed to bring methane hydrate into the mainstream by 2023 after a successful drilling test in March.

In the government-sponsored test off of the southern coast of Japan's main island, Honshu, a drilling rig bored nearly 2,000 feet below the seafloor.

Special equipment reduced the pressure around the methane hydrate crystals, dissolving them into gas and water, and then pumped about 4.2 million cubic feet of gas to the surface. While not a huge haul, it was enough to convince Japanese researchers that more natural gas could be harvested.

If Japan can deliver on its vow to produce natural gas economically from the methane hydrate deposits off its shores, it could experience a natural-gas boom that matches the fracking-fueled one under way in North America, said Surya Rajan, analyst at IHS CERA.

"If you look at what a dramatic shift the North American gas industry has gone through, could you afford to bet against something similar happening in methane hydrate?" Mr. Rajan said.

Successful development of methane hydrates could throw a wrench into liquefied-natural-gas megaprojects such as Australia's \$50 billion Gorgon development led by Chevron Corp., experts say.

"It would make me have pause about investing billions of dollars in an LNG export terminal," said Christopher Knittel, an energy economics professor at the Massachusetts Institute of Technology in Cambridge.

Not all observers think that the costs can come down enough to make methane hydrate viable. But plenty of countries, particularly in Asia, are planning to try.

China plans to host an international conference on methane hydrate in 2014.

India is contemplating a push to develop the vast quantities of methane hydrate discovered off its coast in the Indian Ocean in 2006, according to the U.S. Geological Survey, a part of the U.S. Department of Interior that conducts scientific research.

In the U.S., scientists explored the northern Gulf of Mexico in May to map some of the 6.7 quadrillion cubic feet of methane-hydrate clusters believed to be underwater there.

The Consortium for Ocean Leadership, a nonprofit group of researchers, is now trying to convince the Department of Energy to lend it a research drilling ship to do more tests.

"There are a huge amount of people internationally working in this area," said Carolyn Ruppel, head of the gas hydrates project at the USGS. "A lot of national governments have gotten into the game."

The most optimal places to harvest methane hydrate are near where the continental shelf transitions to the deep ocean, areas difficult to access from sea level.

Would-be producers also have to be careful when harvesting fragile clusters of methane hydrate to ensure nearby crystals don't prematurely break and send greenhouse gases bubbling to the surface.

The cost of developing this new source of energy remains high, with estimates ranging from \$30 to \$60 per million British thermal units. In the U.S., natural gas currently trades for less than \$4 per million BTUs, as the rise of fracking produced a gas glut.

But countries like Japan, Korea, India, and Taiwan import gas "at a high price and thus may find it economical to produce their own resources," said George Hirasaki, a professor at Rice University in Houston who has done research on methane hydrates.

Last year, ConocoPhillips worked with the DOE on a test run producing natural gas from methane hydrate in Alaska's North Slope, home to about 85 trillion cubic feet of technically recoverable methane hydrate, according to DOE statistics.

The company spent 13 days injecting carbon dioxide and nitrogen into methane-hydrate clusters in the permafrost. The chemical cocktail fractures the permafrost, allowing the gas to escape through the newly made fractures for collection.

ConocoPhillips was able "to safely extract a steady flow of natural gas," a spokeswoman said. ConocoPhillips declined to say how much it has invested in methane-hydrate production. The Houston-based company said that "at present, the technology does not exist to produce natural gas economically from hydrates."

## **P. NOAA CAUGHT USING CONTRADICTIONARY TEMPERATURE DATA**

The National Oceanic and Atmospheric Administration appears to be using two contradictory datasets for its official temperature records, meteorologist Anthony Watts reports. The contradictory data cast doubt on NOAA's assertion that 2012 was a year of record warmth in the United States.

Watts reports that he was looking up month-to-month average temperatures in the United States when he discovered NOAA was reporting higher temperatures to the press than were reflected in NOAA's own data.

"On the eve of what will likely be a pronouncement from NCDC on 2012 being the 'hottest year ever', and since what I found is systemic and very influential to the press and to the public, I thought I should make my findings widely known now," Watts reports.

Watts posted a full summary of his findings on his Watts Up With That? Web site, available at the link below

<http://wattsupwiththat.com/2013/01/06/does-noaas-national-climatic-data-center-ncdc-keep-two-separate-sets-of-climate-books-for-the-usa/>

## **Q. SENATE EPW HEARING: "CLIMATE CHANGE: IT'S HAPPENED BEFORE"**

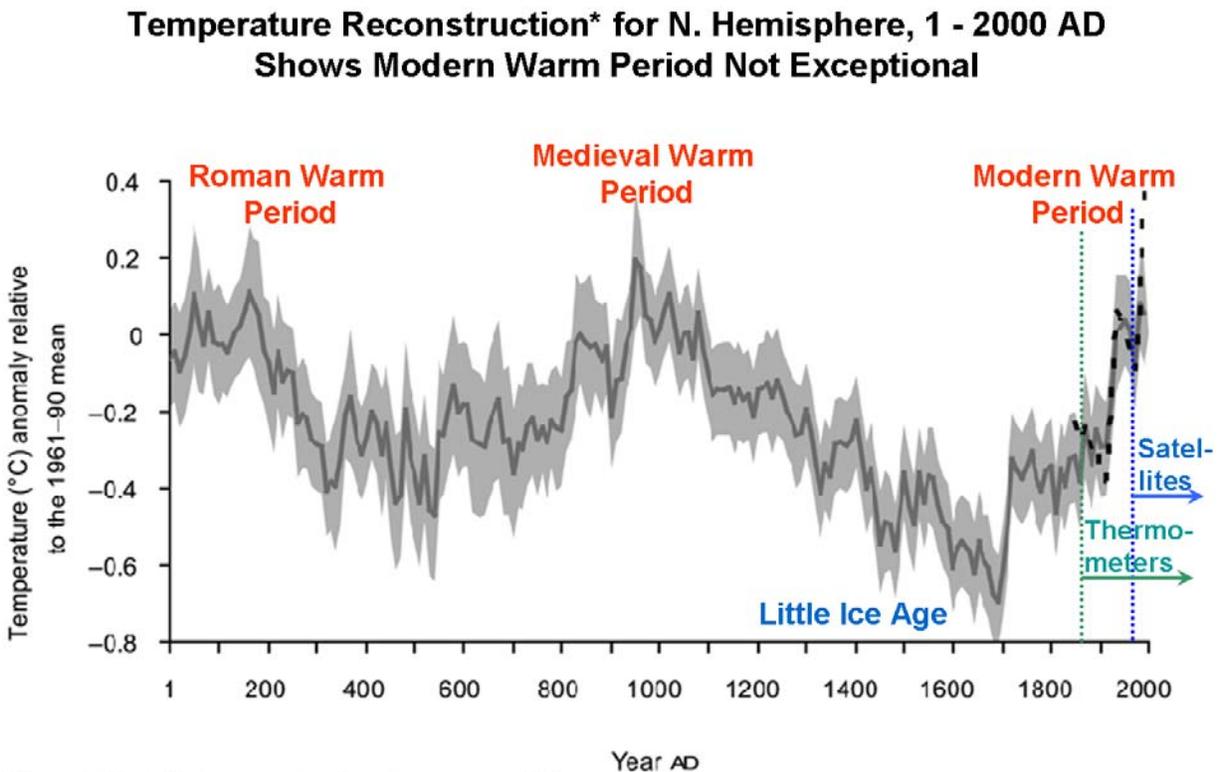
July 19th, 2013

OK, so yesterday's hearing really was entitled, "Climate Change: It's Happening Now". I like my title better.

In this exceedingly rare photo of me actually cracking a smile, note my subliminal shout out to the “Coke” brothers (whom I’ve never met, btw...I don’t even know what they do):

From the opening remarks made by the Democrats on the Environment and Public Works (EPW) Committee, apparently you can see climate change yourself just by looking in your backyard, or seeing how far from shore fishermen must go now to catch fish, or even (help me with the logic on this one) the fact that [smoking causes cancer](#).

I just submitted my updated written testimony ([Spencer EPW Written Testimony 7 18 2013 updated](#)) to include the following chart (Click for full size):



\*Ljungqvist, F.C. 2010. A new reconstruction of temperature variability in the extra-tropical Northern Hemisphere during the last two millennia. *Geografiska Annaler: Physical Geography*, Vol. 92 A(3), pp. 339-351, September 2010. DOI: 10.1111/j.1468-0459.2010.00399.x

This chart illustrates that, yes, we are currently warm, but not significantly warmer than the Medieval Warm Period (MWP) or the Roman Warm Period (RWP). So how is it we know today’s warmth is human-caused, when the last two warm periods couldn’t have been caused by humans? Hmmm?

And if you want to hit me with a [Hockey Stick](#), might I remind you that there are many more papers supporting the MWP and RWP than there are supporting the Hockey Stick’s slick revision of history?

Or does “consensus” only count when it supports your side?

What’s that you say? The hockey stick is now the “new consensus”? So a scientific consensus can be wrong, after all? Hmmm.

## **Hearing Post Mortem**

The advertised star of the show was Heidi Cullen (aka “de-certify all TV meteorologists who don’t toe the line on global warming Heidi”) who did an admirable [job of](#) presenting a litany of half-truths (hurricanes have increased [except in the last 7 years]; strong tornadoes have decreased [but she couldn’t bring her self to actually say that]; wildfire acres burned have increased dramatically [but the *number* of wildfires have decreased dramatically...all consistent with the USFS "let it burn" policy]; droughts and floods have increased [except NOAA's charts say there is no change over the last 100 years], etc.).

Roger Pielke, Jr. was absolutely devastating in his testimony. Here’s a guy who claims to largely support the IPCC party line, even claiming increasing CO2 is having a “profound” effect on the climate system, yet he chides those who would try to use severe weather as evidence of climate change. The evidence simply isn’t there. Very Lomborgian, sans the sexy T-shirt.

During my [testimony](#) (in the Flash video, starting about 3:04 for my oral, and 3:23 for follow-up questions/interrogation) I decided to depart from my usual practice of reading of a prepared text to just winging it. There is VERY little you can cover in 5 minutes, and there were a number of things I would have liked to have said, but there simply isn’t time...that’s just the way committee hearings go.

All of the senators were moving in and out of the hearing room for a floor vote, so there were only 2-4 senators present at any given time.

Thanks to all of those who have posted and e-mailed supportive comments...I really appreciate it. Getting flogged in public by Sen. Boxer (last time I testified) and Sen. Whitehouse (this time) is not one of my favorite activities. But I warned the staffers I wasn’t going to be pushed around this time without some pushing back. I think we did OK for a hearing where the witness numbers were stacked against us.

**Regards**  
**George**