

ENVIRONMENTAL ENGINEERING NEWSLETTER

19 AUG. 2013

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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. STATE OF CLIMATE 2012

For the first time in several years, the El Niño-Southern Oscillation did not dominate regional climate conditions around the globe. A weak La Niña dissipated to ENSO neutral conditions by spring, and while El Niño appeared to be emerging during summer, this phase never fully developed as sea surface temperatures in the eastern equatorial Pacific uncharacteristically returned to neutral conditions. Nevertheless, other large-scale climate patterns and extreme weather events impacted various regions during the year. A negative phase of the Arctic Oscillation from mid-January to early February contributed to frigid conditions in parts of northern Africa, eastern Europe, and western Asia. A lack of rain during the 2012 wet season led to the worst drought in at least the past three decades for northeastern Brazil. Central North America also experienced one of its most severe droughts on record.

The Caribbean observed a very wet dry season and it was the Sahel's wettest rainy season in 50 years. Overall, the 2012 average temperature across global land and ocean surfaces ranked among the 10 warmest years on record. The global land surface temperature alone

was also among the 10 warmest on record. In the upper atmosphere, the average stratospheric temperature was record or near-record cold, depending on the dataset. After a 30-year warming trend from 1970 to 1999 for global sea surface temperatures, the period 2000–12 had little further trend. This may be linked to the prevalence of La Niña-like conditions during the 21st century. Heat content in the upper 700 m of the ocean remained near record high levels in 2012. Net increases from 2011 to 2012 were observed at 700-m to 2000-m depth and even in the abyssal ocean below. Following sharp decreases in global sea level in the first half of 2011 that were linked to the effects of La Niña, sea levels rebounded to reach records highs in 2012. The increased hydrological cycle seen in recent years continued, with more evaporation in drier locations and more precipitation in rainy areas. In a pattern that has held since 2004, salty areas of the ocean surfaces and subsurfaces were anomalously salty on average, while fresher areas were anomalously fresh. Global tropical cyclone activity during 2012 was near average, with a total of 84 storms compared with the 1981–2010 average of 89. Similar to 2010 and

2011, the North Atlantic was the only hurricane basin that experienced above-normal activity. In this basin, Sandy brought devastation to Cuba and parts of the eastern North American seaboard. All other basins experienced either near- or below-normal tropical cyclone activity. Only three tropical cyclones reached Category 5 intensity—all in the Western North Pacific basin. Of these, Super Typhoon Bopha became the only storm in the historical record to produce winds greater than 130 kt south of 7°N. It was also the costliest storm to affect the Philippines and killed more than 1000 residents. Minimum Arctic sea ice extent in September and Northern Hemisphere snow cover extent in June both reached new record lows. June snow cover extent is now declining at a faster rate (-17.6% per decade) than September sea ice extent (-13.0% per decade). Permafrost temperatures reached record high values in northernmost Alaska. A new melt extent record occurred on 11–12 July on the Greenland ice sheet; 97% of the ice sheet showed some form of melt, four times greater than the average melt for this time of year.

The climate in Antarctica was relatively stable overall. The largest maximum sea ice extent since records began in 1978 was observed in September 2012 (Editors note: See **Item Comments F below.**) In the stratosphere, warm air led to the second smallest ozone hole in the past two decades. Even so, the springtime ozone layer above Antarctica likely will not return to its early 1980s state until about 2060. Following a slight decline associated with the global financial crisis, global CO₂ emissions from fossil fuel combustion and cement production reached a record 9.5 ± 0.5 Pg C in 2011 and a new record of 9.7 ± 0.5 Pg C is estimated for 2012. Atmospheric CO₂ concentrations increased by 2.1 ppm in 2012, to 392.6 ppm. In spring 2012, for the first time, the atmospheric CO₂ concentration exceeded 400 ppm at 7 of the 13 Arctic observation sites.

Globally, other greenhouse gases including methane and nitrous oxide also continued to rise in concentration and the combined effect now represents a 32% increase in radiative forcing over a 1990 baseline. Concentrations of most ozone depleting substances continued to fall.

<http://www.ametsoc.org/2012stateoftheclimate.pdf>

B. EPA DEVELOPING CRITERIA AND STANDARDS FOR COOLING WATER INTAKE STRUCTURES

The EPA is developing revised regulations under section 316(b) of the Clean Water Act, which requires that the "location, design, construction and capacity of cooling water intake structures reflect the best technology available (BTA) for minimizing adverse environmental impact." The regulations affect cooling water intake structures at more than 1,500 facilities around the United States, including steam electric power plants, pulp and paper makers, chemical manufacturers, petroleum refiners, and metal refineries.

Cooling water intake structures can potentially cause adverse environmental impact by pulling significant numbers of fish and shellfish or their eggs into a power plant or factory cooling system (entrainment). There, the organisms may be killed or injured by heat, physical stress, or by chemicals used to clean the cooling system. Larger organisms may be killed or injured when they are trapped (impinged) against screens at the front of an intake structure.

EPA's newly proposed regulation includes uniform controls at all existing facilities to prevent fish from impingement, site-specific controls for existing facilities other than new units to prevent fish from entrainment, and uniform controls equivalent to closed cycle cooling for new units at existing facilities (also entrainment). Other regulatory options analyzed included similar

uniform impingement controls, and progressively more stringent requirements for entrainment controls.

Another option considered would impose the uniform impingement controls only for facilities withdrawing 50 million or more gallons per day of cooling water, with site-specific impingement controls for facilities withdrawing less than 50 million gallons per day. EPA issued two notices of data availability (NODA) in June 2012 that described flexibilities it is considering as part of the impingement mortality limitations and that described the preliminary results of surveys of households' willingness to pay for incremental reductions in fish mortality.

Additional information may be viewed at:

<http://www.reginfo.gov/public/do/eAgendaViewRule?pubId=201304&RIN=2040-AE95>

C. CARBON MANAGEMENT TECHNOLOGY CONFERENCE 2013

October 21-23, 2013

Hilton Alexandria Old Town Alexandria, VA

This foundational conference, sponsored by the eight major engineering societies (ASME, AIChE, IEEE, ASCE, TMS, SME, SPE and AIST), draws practiced professionals from all engineering disciplines to share their expertise and provide perspective on the reduction of greenhouse gas emissions and adaptation to changing climate. The conference will focus on engineering perspectives regarding technologies, strategies, policies, management systems, uncertainties, and metrics for evaluating alternatives. Gain engineering expertise, experience and perspectives on technologies, strategies, policies, management systems, metrics, and other key issues. Discover novel approaches and new technologies that are instrumental to technical, economic and social advancements in carbon management.

Through robust scheduled sessions, well-known speakers from leading companies and academic institutions, co-located workshops, and networking opportunities, this year's program will address 20+ topics under these four themes:

- Carbon Capture, Utilization and Storage
- Carbon Management Pathways from Electricity Generation to End User
- Potentially Game-Changing Technology and Evaluation
- Engineering Challenges and Solutions for Adaptation to Climate Change

To view the technical program, visit <http://fscarbonmanagement.org/content/technical-program>

Register today and be part of the one conference focused on the engineering perspectives critical to meeting the challenge of greenhouse gas emissions.

For more information or to register, please visit us at

<http://fscarbonmanagement.org/content/cmtc-2013>

Arnold Feldman

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

E. COURT HOLDS WETLANDS JURISDICTIONAL DETERMINATION IS NOT SUBJECT TO JUDICIAL REVIEW

On August 1, 2013, a federal district court in Minnesota held that a jurisdictional determination made Court Holds Wetlands Jurisdictional Determination Is Not Subject to Judicial Review

On August 1, 2013, a federal district court in Minnesota held that a jurisdictional determination made by the U.S. Army Corp of Engineers (“USACE”) under the Clean Water Act (“CWA”) is not a final agency action within the meaning of the federal Administrative Procedure Act.

Therefore, the jurisdictional determination by itself is not subject to judicial review. The case is *Hawkes Co. v. U.S. Army Corp of Engineers*, No. 13-00107 (D. Minn. filed Aug. 1, 2013).

The plaintiffs in the case sought a declaratory judgment and injunctive relief against the USACE. The underlying dispute involves property from which the plaintiffs wish to extract peat for use in the construction of golf greens. The USACE’s jurisdictional determination found the property is a wetland subject to the CWA requirement to obtain a fill permit from the USACE because a “significant nexus” exists between the property and the Red River (a navigable water of the United States). The plaintiffs sought to challenge the jurisdictional determination.

The district court, located in the Eighth Circuit, followed non-binding precedent from the Ninth and Fifth Circuits and several federal district courts across the country. In 2008 and 2006, the Ninth and Fifth Circuits, respectively, each held that a USACE wetlands jurisdictional determination was not a final agency action subject to judicial review. *See Fairbanks N. Star Borough v. U.S. Army Corps of Eng’rs*, 543 F.3d 586 (9th Cir. 2008); *Greater Gulfport Props., LLC v. U.S. Army Corps of Eng’rs*, 194 F. App’x 250 (5th Cir. Aug. 23, 2006) (unpublished). The Eighth Circuit has not addressed the question.

The Minnesota district court relied heavily on the reasoning of the Ninth Circuit in *Fairbanks North Star Borough*. The court found that the USACE’s jurisdictional determination met only one of the two conditions required to be considered a final agency action. The jurisdictional determination did (1) “mark the consummation of the agency’s decision making process” regarding wetlands jurisdiction, but the agency decision was not (2) “one ‘by which rights or obligations have been determined,’ or one from which ‘legal consequences will flow.’” *Hawkes* at 5 (quoting *Bennett v. Spear*, 520 U.S. 154, 178 (1997)). The court found that the USACE’s jurisdictional determination did not order the plaintiffs to take or forbear any particular action. The court stated that the plaintiffs have two options that may create a judicially reviewable situation. In what amounts to a Hobson’s choice, plaintiffs may proceed with peat extraction activities without consulting the USACE or the Environmental Protection Agency and possibly get sued, or the plaintiffs may pursue a permit from the USACE. Either the enforcement action or permit denial would allow plaintiffs to ultimately file suit.

A copy of the district court’s opinion is attached. by the U.S. Army Corp of Engineers (“USACE”) under the Clean Water Act (“CWA”) is not a final agency action within the meaning of the federal Administrative Procedure Act. Therefore, the jurisdictional determination by itself is not subject to judicial review. The case is *Hawkes Co. v. U.S. Army Corp of Engineers*, No. 13-00107 (D. Minn. filed Aug. 1, 2013).

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Roger Zygmunt

F. GLOBAL CCS INSTITUTE CCS WORKSHOP AT CMTC 2013

You are invited to participate in a workshop titled *CCS/CCUS Overview: What It Is and What Are Its Implications?* The workshop is sponsored by the Global CCS Institute in collaboration with the 2013 Carbon Management Technology Conference. It will be held at the Hilton Alexandria Old Town in Alexandria, VA on Sunday, October 20, 2013, and is geared to individuals who are involved in carbon dioxide management but who may not be an expert in all aspects.

Registration for this workshop is free: <https://chenected.wufoo.com/forms/registration-ccscus-overview-workshop/> and a networking reception will be held for all attendees after the completion of the workshop. For those who wish to further enhance their knowledge of carbon management we encourage you to also attend the Carbon Management Technology Conference (CMTC 2013), sponsored by AIChE, ASME, ASCE, IEEE, AIST, SPE, TMS, and SME which begins on Monday October 21. For more information visit the website:

<http://www.fscarbonmanagement.org/content/cmtc-2013>

G. EPA UPDATES OIL AND GAS STANDARDS FOR STORAGE TANKS

On August 5th, the U.S. Environmental Protection Agency (EPA) issued updates to its April 2012 oil and natural gas standards for storage tanks, which allow oil and natural gas production while ensuring air emissions are reduced as quickly as possible. The updates will phase in emission control deadlines, starting with higher-emitting tanks first, and will provide the time needed to ramp up the production and installation of controls. EPA is making the changes based on information received after the 2012 standards were issued that shows more storage tanks will come online than the agency originally estimated.

Storage tanks that emit six or more tons of volatile organic compounds (VOCs) a year must reduce emissions by 95 percent. The updated rule establishes two emission control deadlines:

- Tanks that come online after April 12, 2013 are likely to have higher emissions and must control VOC emissions within 60 days or by April 15, 2014, whichever is later; and,
- Tanks that came online before April 12, 2013 are likely to have lower emissions and must control VOC emissions by April 15, 2015.

The updated standards also establish an alternative emissions limit that would allow owners/operators to remove controls from tanks if they can demonstrate that the tanks emit less than four tons per year of VOC emissions without controls. In addition, the rule streamlines compliance and monitoring requirements for tanks that have already installed controls.

The oil and natural gas industry uses tanks for temporary storage of crude oil, condensate and other liquids before those liquids are moved to a pipeline, sold or moved for disposal. These storage tanks can be sources of emissions of ozone-forming VOCs, along with several toxic air pollutants, including benzene. This final action does not affect the April 2012 standards for capturing natural gas from hydraulically fractured wells.

2) HEALTH – A. HEPATITIS A - USA, UK: EPIDEMIOLOGY

The US Centers for Disease Control and Prevention [CDC] announced on Friday [2 Aug 2013] that a multi-state hepatitis A outbreak was traced back to a common shipment of pomegranate seeds from a company in Turkey. Pomegranate seeds from Goknur Foodstuffs Import Export Trading were used by the US Company Townsend Farms, Inc., to make Townsend Farms Organic Antioxidant Blend, a product sold from Costco markets.

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

3) SAFETY – A. GAS COMPRESSOR EXPLOSION FIRE



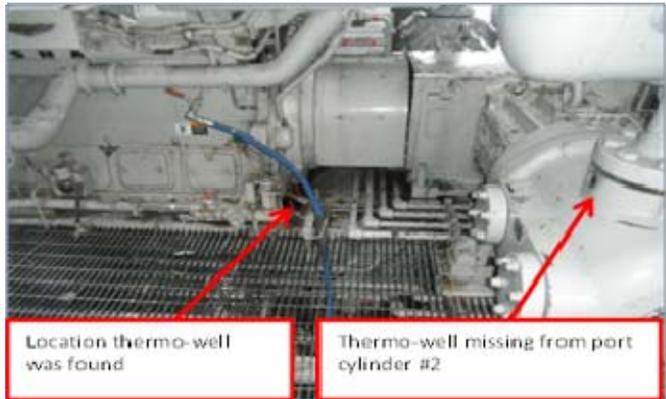
SAFETY ALERT

ISSUE: 08-2013

Gas Compressor Explosion Fire

Description of Incident:

- On April 6, at approximately 2230h, a fire and explosion occurred within a compressor building.
- The facility ESD activated at the point of explosion shutting down all units and the plant depressurized to flare.
- Operations personnel at site responded by activating the Emergency Response Plan (ERP) and local response team extinguished a small fire still burning within the compressor building.



What Caused It:

- A thermo-well assembly on the compressor second stage suction cylinder became dislodged releasing gas under pressure through a ½" NPT opening.
- Gas buildup inside the building was ignited at approximately the same time as fire and gas detection system activated the ESD.
- Most probable ignition source is the compressor engine turbocharger. Other potential sources include static or mechanical spark when thermo-well assembly dislodged.

Corrective/Preventive Actions:

- Conduct an inspection on all compressor thermo-well assemblies and other pressure associated threaded fittings to ensure they are installed and being maintained in accordance to manufacturer specifications.
- Ensure personnel working on or in proximity to thermo-well assemblies and other pressure associated threaded fittings have the appropriate training and access to approved work procedures.
- Review fire and gas detection control philosophy and placement to ensure that systems are able to effectively monitor enclosed areas for hazardous condition and provide a timely shut down in response to significant leaks or loss of containment from process piping under pressure.
- Review preventative maintenance (PM) processes to ensure that thermo-well assemblies and other pressure associated threaded fittings are part of the PM program where required.

4) TRANSPORTATION: A. EPA REVISITS ETHANOL MANDATE AS FUEL USE SLIPS

Fuel-Efficient Vehicles Pose Challenge to Consumption Targets

By RYAN TRACY

WASHINGTON—U.S. regulators said they would propose for the first time lowering the mandated consumption of corn ethanol used in motor fuel, a reversal in policy that puts a powerful industry on the defense.

The move could shrink demand for alternative fuels whose use is required by the U.S. mandate. It also could make it easier for oil refiners to meet the rules, depending on how the Environmental Protection Agency handles the change.

Because Americans are continuing to drive more fuel-efficient cars, U.S. gasoline consumption is expected to fall this year. At the same time, a 2007 law calls for rising use of ethanol, which makes up about 10% of the U.S. gasoline supply, and other fuels defined as renewable. That means the U.S. is heading toward the "blend wall," the point at which fuel marketers can't absorb any more ethanol into the gasoline supply without using higher-percentage ethanol blends that aren't widely sold.

As a result, on Tuesday the agency said that next year it would take the unprecedented step of seeking to reduce the amount of renewable fuel that the oil industry must use, saying it "does not currently foresee a scenario in which [the market](#) could consume enough ethanol."

"It's a significant development for the EPA to overtly state that it intends to be flexible," said Jason Bordoff, director of Columbia University's Center on Global Energy Policy. Mr. Bordoff has called for the agency to reduce the renewable-fuel requirement, saying the mandate could lead to higher gasoline prices.

Still to be determined is how big the cuts might be and who might suffer the largest hit. Ethanol has long enjoyed backing from lawmakers in Iowa and other Midwestern states, and Sen. Chuck Grassley (R., Iowa) said Tuesday he would fight any effort to substantially overhaul the fuel mandates.

The EPA announcement came as part of the rollout of its 2013 fuel requirements, which mandated use of 16.55 billion gallons of ethanol and other fuels, up more than a billion gallons from the previous year.

The lion's share of that mandate—about 13.8 billion gallons—is expected to be met with ethanol from Midwestern corn. That would put government-required ethanol consumption at close to 10% of the U.S. gasoline supply. In future years, the effective annual ethanol requirement was supposed to jump above 14 billion gallons and beyond, under the 2007 law.

"The administration now acknowledges the blend wall as real and unavoidable," said Stephen Brown, vice president for federal-government affairs at refiner Tesoro Corp. "A clear signal is also being sent to Congress that additional authority to address the blend wall may be needed via legislation."

Reps. Fred Upton and Henry Waxman, the top Republican and Democrat, respectively, on the House Energy and Commerce Committee, have been discussing possible changes to the renewable-fuel law but haven't proposed consensus legislation yet. The ethanol industry has said legislative changes aren't necessary because refiners can switch to higher ethanol blends, which so far aren't being sold widely, even though the EPA says they are safe for new vehicles.

Having the EPA tweak the requirements "is exactly how the program was designed to work," said Brooke Coleman, executive director of the Advanced Ethanol Council, which represents developers of alternative fuels. "There are no problems...that can't be fixed administratively."

Any change proposed by the EPA could create winners and losers in the fuel industry.

Some oil refiners blend ethanol into gasoline themselves, meaning they can generate credits that count toward compliance with the EPA rules. Others don't and could have to buy those credits at high prices unless the EPA eases its requirements.

For U.S. ethanol producers, an EPA change could even turn out to be beneficial if the agency chooses to reduce the mandate in a way that shrinks demand for Brazilian ethanol, which competes with the U.S. product.

Write to Ryan Tracy at ryan.tracy@dowjones.com

A version of this article appeared August 7, 2013, on page A4 in the U.S. edition of The Wall Street Journal, with the headline: EPA Is Revisiting Ethanol Mandate As Fuel Use Slips.

B. OFFICIALS TIGHTEN CRUDE-SHIPPING STANDARDS

The Federal Railroad Administration plans to start asking [shipping companies](#) to supply testing data they use to classify their crude-oil shipments, saying it is concerned that some shipments are being transported in tank cars that aren't safe enough.

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

COMMENTS:

A. THE WEEK THAT WAS: 2013-08-10 (AUG. 10, 2013)

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

The Right Climate Stuff Team: In his *Forbes* column Larry Bell interviews Apollo astronaut Walter Cunningham, who discusses the change in culture at NASA from the days of the tremendous effort leading to the successful lunar missions as compared with today. Cunningham thinks that the culture of NASA today is less capable of significant accomplishments. Among other issues is that the Apollo scientists and engineers realized that hypotheses need to be challenged by empirical evidence.

Cunningham is part of The Right Climate Stuff team that tested the hypothesis that human emissions of carbon dioxide are causing unprecedented and dangerous global warming (Anthropogenic Global Warming (AGW)) against empirical data and found the hypothesis wanting. He is particularly concerned with the confusion in science created by NASA's Goddard Institute for Space Studies (GISS) and its former leader, James Hansen. Cunningham believes that GISS especially politicized science thereby compromising NASA's credibility and he was one of those who signed a letter to NASA Administrator Charlie Bolden to that effect.

A number of NASA retirees sent a second letter stating that NASA in general, and GISS in particular, failed to address all the salient data on climate change, and relied too heavily on climate models that fail to correctly predict climate change. Cunningham believes NASA should be at the forefront in collecting scientific evidence and debunking the hysteria over AGW. Please see link under Challenging the Orthodoxy.

Lowering Standards: Under its new leadership, the American Geophysical Union (AGU) announced a new statement on climate change drafted by a special committee for that purpose. The title says it all: "Human-induced climate change requires urgent action." The new leadership has completely politicized that once august scientific organization. Among other questionable statements is: "Human-caused increases in greenhouse gases are responsible for most of the observed global average surface warming of roughly 0.8°C (1.5°F) over the past 140 years." If the statement is correct, we all should be thankful that greenhouse gas emissions, carbon dioxide (CO₂) in particular, brought the earth out of the Little Ice Age and its brutal weather. Of

course, the AGU ignores the fact that a major component of 20th century warming occurred from about 1910 to 1940, long before significant CO2 emissions. The new leadership did not bother to submit the statement to the membership for a vote.

On her web site, Judith Curry presents the significant objections by Roger Pielke Sr., the only dissenter on the AGU committee. Curry questions why any professional society should issue statements on this topic. In her opinion the AGU statement is one of worst she has seen from a professional society.

In a different post, using criteria discussed at an AAAS workshop, Curry grades the climate statements by the Royal Society, the American Meteorological Society, and the American Geophysical Union. Under its new leadership, the AGU did not do well. Please see links under Lowering Standards and Questioning the Orthodoxy.

NOAA: The US National Oceanic and Atmospheric Administration (NOAA) released its 2012 State of the Climate report. The report evaded the facts that for a decade there has been little or no warming of the lower atmosphere, where the greenhouse effect takes place, and for over 15 years little or no surface warming. Instead the report states: “Warm temperature trends continue near Earth’s surface: Four major independent datasets show 2012 was among the 10 warmest years on record, ranking either 8th or 9th, depending upon the dataset used.” This is evasion of the facts.

The report further states: “The United States and Argentina had their warmest year on record.” As presented by John Christy and Joe D’Aleo, the statement for the US is questionable. An examination of surface records of the US that date back at least 80 years shows that more temperature records were set in the 1930s than during any other decade.

The logo of the web site carrying the report has the caption “science & information for a climate-smart nation.” Apparently, the leadership of NOAA believes that ignorance of significant, contradicting data is smart. Please see links under Lower Standards.

Climate and Violence: Statistician William Briggs discusses with widely differing statistics used in the paper “Quantifying the Influence of Climate on Human Conflict”, which was discussed in last week’s TWTW. He concludes: “The most charitable way to describe the result is complete and utter nonsense. I do not want to exaggerate, but this paper is not even a mess.” So much for the standards of “peer review” in *Science* magazine. Please see link under Lowering Standards.

Validating Models: As stated in prior TWTWs none of the some-73 global climate models have been validated and all run too hot when compared to lower atmospheric temperatures. On his web site, Bishop Hill, Andrew Montford presents a bibliography obtained by one of his readers from the British Met Office in response to an inquiry on the validity of the output from General Circulation Models. Montford suggests his readers may wish to randomly select a paper and see what comfort it gives in answering the question.

This should prove interesting. The very first paper gives some discomfort. It equates model simulations (model runs) with experiments, which is not correct. An experiment would be how well a model predicted a particular component of climate – such as warming of the atmosphere over the tropics, where Douglass et al. [IJG 2007] have shown that the models fail. Please see link under Challenging the Orthodoxy.

Quote of the Week: The quote comes from John Brignell who devoted his career to measurement in science and engineering and was a pioneer in computer modeling. Very simply, the value of feedbacks cannot be established within a model. The feedbacks must be thoroughly tested outside of the model. This procedure is ignored in the reports by the UN Intergovernmental Panel on Climate Change (IPCC) and its followers. On his web site, Brignell presents a list of hazards in computer modeling, which still apply. In a 12 minute video, Australian David Evans explains why the models are failing – the calculated feedbacks are wrong. Please see links under Model v. Observations and Model Issues.

After Climategate: University of East Anglia Professor of Climate Change, Mike Hulme, presented a provocative essay entitled “After Climategate...Never the Same,” which is found in his new book of essays. On her web site, Judith Curry reproduces part of the essay, which she links to, and offers some of her thoughts. Curry boldfaced a particular sentence: *The populist notion that all climate skeptics are either in the pay of oil barons or are right-wing ideologues, as is suggested for example by studies such as Oreskes and Conway (2011), cannot be sustained.* Please see link under Climategate Continued.

Himalayan Melt: In its Fourth Assessment Report (AR4, 2007), the IPCC reported that the Himalayan glaciers will melt during the 21st century. This would cause great suffering to the many people who live on the watersheds of the Indus and Ganges rivers. The government of India was so concerned that it hired India’s foremost glacier expert to examine the claim. He found it false. Some glaciers were advancing, others retreating, with no clear net trend. The IPCC dismissed this study, leading the government of India to form its own team on climate change

Three years ago, a group headed by Walter Immerzeel published a paper in *Science* stating that during the early part of this century the glaciers will melt quickly and the water levels in the rivers will drop significantly by the end of the century. Many glacial experts criticized the study stating that glaciers melt slowly.

Now a team headed by Immerzeel has backed down on the predictions made earlier, stating the glaciers will recede, but more slowly and that the monsoons will increase precipitation. Of course, this is based on un-validated computer models, and may be very wrong. But at least Immerzeel is willing recognize a need to correct his prior study, which is how science progresses. The question remains: what will the IPCC do? Please see links under Changing Cryosphere – Land / Sea Ice

Amplifications and Corrections: Several readers have complained about the proofreading of TWTW. However, it appears that the major problem is in formatting. As seen in the pdf posted on www.sepp.org long quotes are properly formatted with indentations. But when the word document is converted for distribution, this formatting is lost, making it somewhat difficult to follow. We will endeavor to be sensitive to proper formatting in the document that is distributed. As always we appreciate amplifications and corrections.

Number of the Week: 207 According to reports an estimated 207 coal-fired power plants will close within the decade, of those 138 have been shut down since 2009. Most of the plants that have been shut down are the older, less efficient, and smaller plants. Modern plants are a great

improvement to those built in the 1970s. A part of the shutdown is due to low prices of natural gas, but gas prices are rebounding due to a slowdown in drilling.

The plants to be shut down in the next 10 years have about 10% of the nation's generating capacity. Thanks to game playing by the EPA and the administration, by announcing future regulations for new power plants without being specific, no prudent utility will undertake the planning and construction of a new coal-fired plant that may not be approved under future, to-be-determined, regulations. This is but another example how indifferent Washington is to the stagnant economy. Please see link under Washington's Control of Energy and <http://in.reuters.com/article/2013/08/07/utilities-firstenergy-coal-idINL1N0G822U20130807> <http://www.sepp.org/twtwfiles/2013/TWTW%208-10-13.pdf>

B. A SATURATED GASSY ARGUMENT

A guest post by Spencer Weart, in collaboration with Raymond T. Pierrehumbert

The simple physics explanations for the greenhouse effect that you find on the internet are often quite wrong. These well-meaning errors can promote confusion about whether humanity is truly causing global warming by adding carbon dioxide to the atmosphere. Some people have been arguing that simple physics shows there is already so much CO₂ in the air that its effect on infrared radiation is "saturated"— meaning that adding more gas can make scarcely any difference in how much radiation gets through the atmosphere, since all the radiation is already blocked. And besides, isn't water vapor already blocking all the infrared rays that CO₂ ever would?

The arguments do sound good, so good that in fact they helped to suppress research on the greenhouse effect for half a century. In 1900, shortly after Svante Arrhenius published his pathbreaking argument that our use of fossil fuels will eventually warm the planet, another scientist, Knut Ångström, asked an assistant, Herr J. Koch, to do a simple experiment. He sent infrared radiation through a tube filled with carbon dioxide, containing somewhat less gas in total than would be found in a column of air reaching to the top of the atmosphere. That's not much, since the concentration in air is only a few hundred parts per million. Herr Koch did his experiments in a 30cm long tube, though 250cm would have been closer to the right length to use to represent the amount of CO₂ in the atmosphere. Herr Koch reported that when he cut the amount of gas in the tube by one-third, the amount of radiation that got through scarcely changed. The American meteorological community was alerted to Ångström's result in a commentary appearing in the June, 1901 issue of *Monthly Weather Review*, which used the result to caution "geologists" against adhering to Arrhenius' wild ideas.

Still more persuasive to scientists of the day was the fact that water vapor, which is far more abundant in the air than carbon dioxide, also intercepts infrared radiation. In the infrared spectrum, the main bands where each gas blocked radiation overlapped one another. How could adding CO₂ affect radiation in bands of the spectrum that H₂O (not to mention CO₂ itself) already made opaque? As these ideas spread, even scientists who had been enthusiastic about Arrhenius's work decided it was in error. Work on the question stagnated. If there was ever an "establishment" view about the greenhouse effect, it was confidence that the CO₂ emitted by humans could not affect anything so grand as the Earth's climate

<http://www.realclimate.org/index.php/archives/2007/06/a-saturated-gassy-argument/>

Ralph Architzel

C. IN DEFENSE OF CARBON DIOXIDE

Several things enter the discussion of why a molecule absorbs or does not absorb radiation.

For the sake of discussion, begin with helium, which is atomic. Its first excited state is something like 21.6 electron-volts (eV) high, so it takes photons of that energy to cause it to absorb energy. Since room temperature corresponds to about 1/40-eV, there is no chance that an atmosphere of helium could absorb and block IR from the earth.

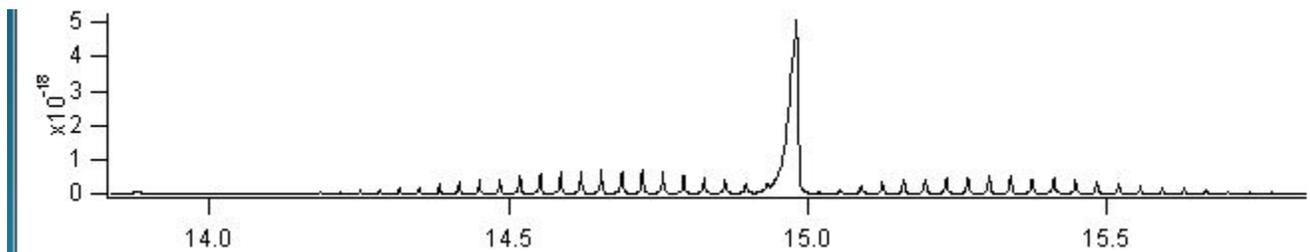
Now consider nitrogen and oxygen. They are molecules, so they have three excitation regimes. The first is electronic excitation (and that's in the several-eV range, too high to absorb IR from the earth.) The second is vibrational excitation. That's in the 0.2-eV range, again too high. The third is rotation, which is in the 0.02-eV range, just right if you consider only the energy. But that does not mean that the molecule absorbs well. Another matter is the dipole moment (imagine a tiny thing with a positive charge on one end and a negative charge on the other.) Absent a dipole moment, the IR (electromagnetic radiation in the infrared region) has no handle with which to change the rotational state of the molecule. Symmetrical diatomic molecules like N₂ and O₂ have a zero dipole moment.

Triatomic molecules like H₂O and CO₂ are different. In the first place, they have a variety of ways of vibrating and rotating. Especially H₂O, shaped like a bent dumbbell, has a very strong dipole moment. The strong dipole moment and the large number of ways of vibrating and rotating make H₂O a big absorber across the IR range of wavelengths.

CO₂ is a linear molecule ---> O==C==O In that orientation, it has no dipole moment, but it can undergo various vibrations such as --> O=C===O ... O===C=O, and



during which time it does have a dipole moment. That bending mode (like a dumbbell bending back and forth around the center) is the important one for absorption of IR. The spectrum for that mode of vibration is this:



where the horizontal axis is wavelength in microns (micrometers), and the vertical axis is absorption cross-section in square centimeters per molecule. I won't go into the details, but the 1 on the vertical axis means that --- at the present atmospheric density of CO₂, any radiation will be absorbed in 88 cm of travel. That is, at that strong peak near 15 microns, the CO₂ in the atmosphere will absorb any radiation at that wavelength by the time the IR has traveled less than 18 meters.

Cheers,

Cork Hayden

Thank you Howard for the explanation.

We all create typos from time to time. I believe you meant to say 18 meters both times, in your last paragraph below.

Cheers,

Kaufui Vincent

Kau-Fui et al:

I really did mean 88 and 18, but there's a mistake anyway. The attenuation distances are in cm, not meters.

Think of 18 as one-fifth of 88 (90 for the pedants)

Now let me explain. (It wouldn't hurt for me to have you folks check my arithmetic.) The cross-section sigma is the area that the IR has to hit in order to be absorbed. Think of a tube of cross-sectional area A, length dz, containing N targets each of absorption cross section sigma. For a photon going along the tube, the probability of a hit is N*sigma/A. Let the number density of CO₂ molecules be n. The volume of the tube is Adz. Each absorption reduces the beam intensity (I, photons per second) by the amount dI.

$$\text{Probability} = \frac{N\sigma}{A} = \frac{nA\sigma dz}{A} = n\sigma dz$$

$$\# \text{ of collisions} = I * n\sigma dz = -dI$$

$$\frac{dI}{I} = -n\sigma dz \Rightarrow I = I_0 e^{-n\sigma z}$$

So the beam is attenuated with a characteristic length n*sigma. That is, the beam goes to 1/e intensity at Z = 1/(n*sigma)

Approximate numbers: 3 X 10¹⁹ molecules of air per cubic centimeter at sea level. At 380 parts per million CO₂, there are 1.14 X 10¹⁶ molecules of CO₂ per cc. That's the number density n. For a sigma of 1 X 10⁻¹⁸ cm², the attenuation coefficient (n*sigma) is 0.0114 per cm. So Z = 88 cm (NOT meters!) For the PEAK value near 15 microns, the cross-section is 5 times as large, namely 5 X 10⁻¹⁸ cm², so the attenuation coefficient is 5 times as large, and the attenuation distance is one-fifth of 88 cm.

Please check my work!

Cheers,

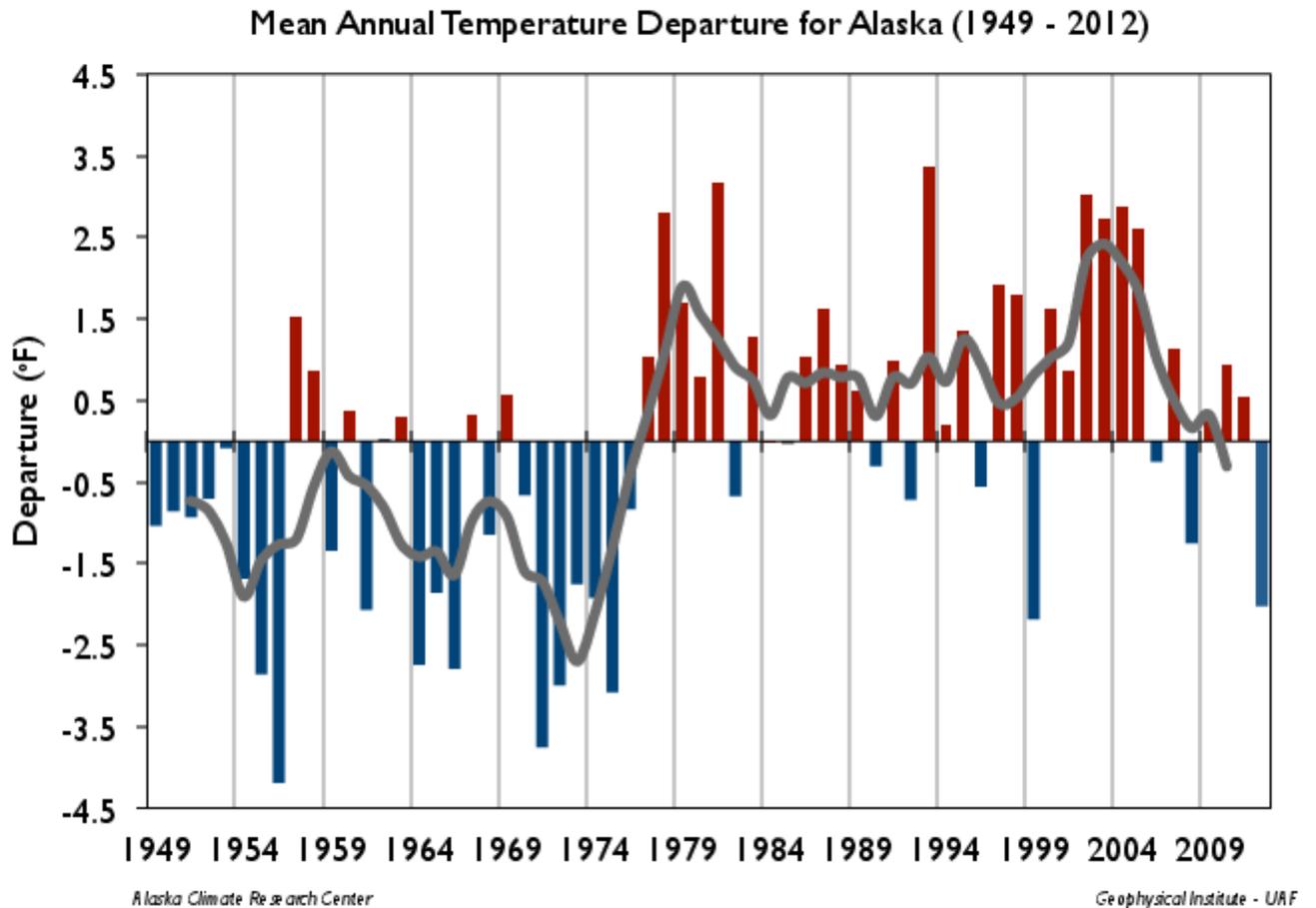
Cork

D. JEWELL CITES NEED TO CURB NATURAL GAS FLARING IN N.D.

North Dakota oil field operators and regulators understand that more action is necessary to curb natural gas flaring, Interior Secretary Sally Jewell said. About \$3.6 million in natural gas per day is flared in the state. "Flaring it and venting it is obviously not capturing resources that could be leading us to energy independence," Jewell said.

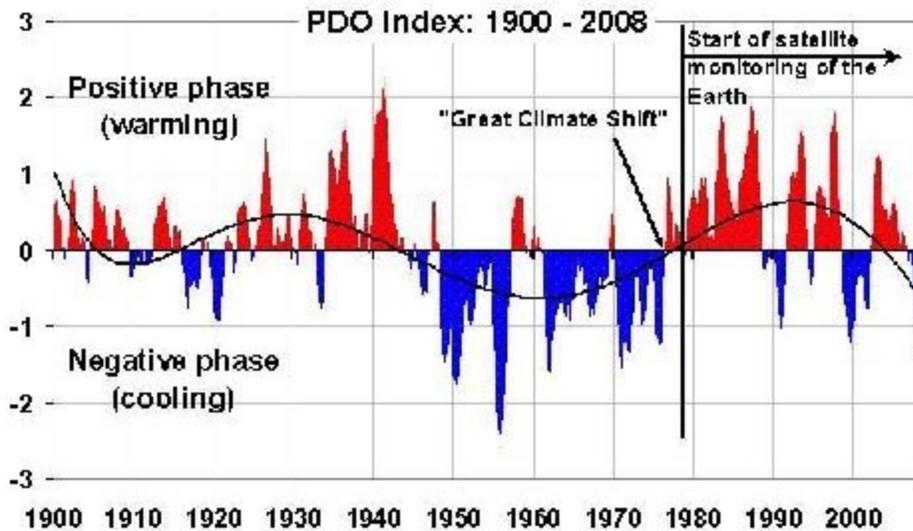
[The Forum \(Fargo, N.D.-Moorhead, Minn.\) \(free registration\)](#) (8/6)

E GRAPH OF ALASKA TEMPERATURES:



That is about as clear a visualization of a natural cycle at work as you can find. It is also about as clear a rejection of carbon dioxide being the root cause of observed global warming as you can find. Recall that AGW theory calls for more warming in the polar areas than lower latitudes. Recall also that the climatologists, including the Central Intelligence Agency, were warning of another Little Ice Age in the 1960s and 1970s. Note the abrupt climate shift in about 1978. That 5F departure simply cannot be caused by carbon dioxide. But it can be caused by a natural cycle oscillation.

Here is the PDO index graph from 1900 to 2008 with annotations:



Note the shift from cooling to warming in about 1978. Note the climate shift in about 1943 from warming to cooling. Note the cessation of warming in about 1997 and the start of cooling in about 2007.

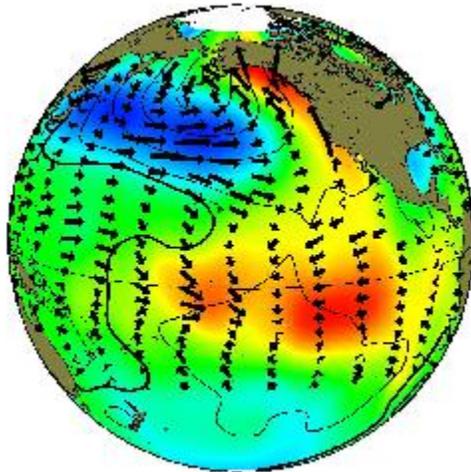
Here is chart of the PDO index updated through August 2012, so you can see the cooling trend extended past 2008.

[JISAO data](#)

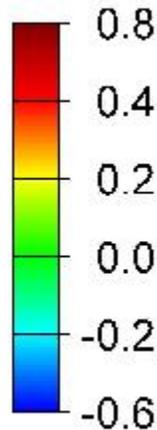
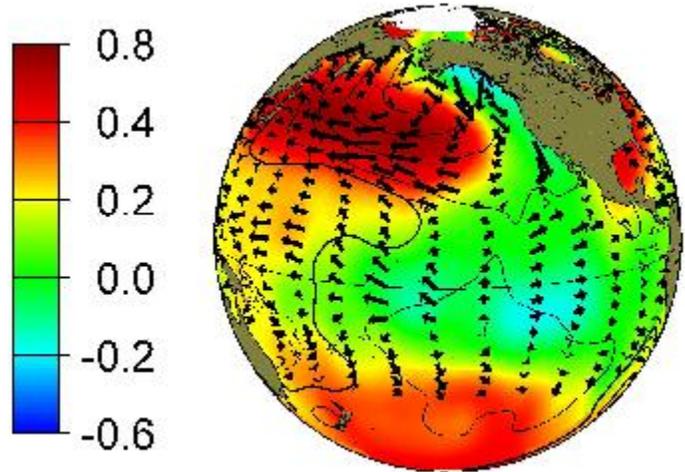
THE PACIFIC DECADAL OSCILLATION (PDO)

Typical wintertime Sea Surface Temperature (colors), Sea Level Pressure (contours) and surface windstress (arrows) anomaly patterns during warm and cool phases of PDO

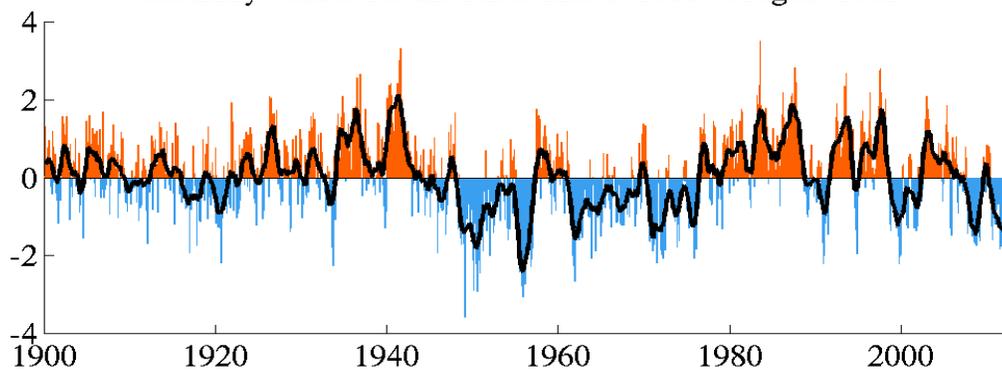
warm phase



cool phase



monthly values for the PDO index: 1900 - August 2012



The "Pacific Decadal Oscillation" (PDO) is a long-lived El Niño-like pattern of Pacific climate variability. While the two climate oscillations have similar spatial climate fingerprints, they have very different behavior in time. Fisheries scientist Steven Hare coined the term "Pacific Decadal Oscillation" (PDO) in 1996 while researching connections between Alaska salmon production cycles and Pacific climate (his dissertation topic with advisor Robert Francis). Two main

characteristics distinguish PDO from El Niño/Southern Oscillation (ENSO): first, 20th century PDO "events" persisted for 20-to-30 years, while typical ENSO events persisted for 6 to 18 months; second, the climatic fingerprints of the PDO are most visible in the North Pacific/North American sector, while secondary signatures exist in the tropics - the opposite is true for ENSO. Several independent studies find evidence for just two full PDO cycles in the past century: "cool" PDO regimes prevailed from 1890-1924 and again from 1947-1976, while "warm" PDO regimes dominated from 1925-1946 and from 1977 through (at least) the mid-1990's. Shoshiro Minobe has shown that 20th century PDO fluctuations were most energetic in two general periodicities, one from 15-to-25 years, and the other from 50-to-70 years.

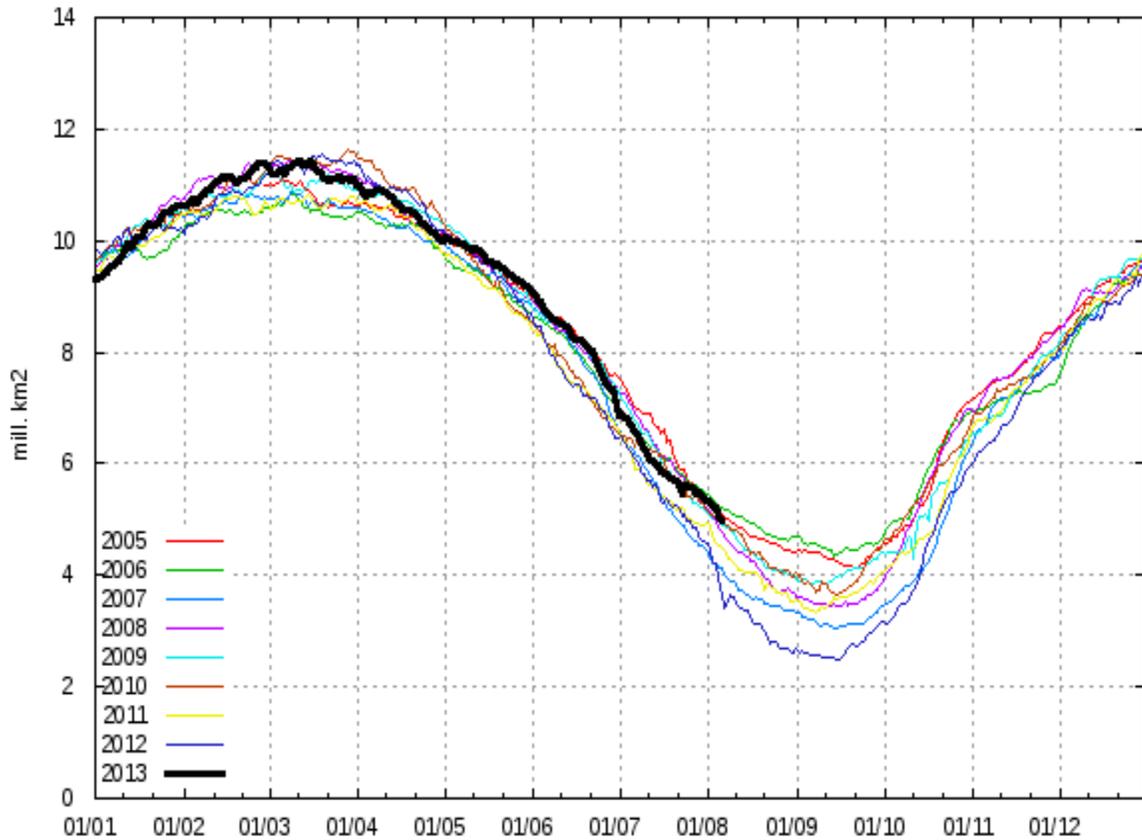
<http://ingrid.ideo.columbia.edu/%28home/alexeyk/mydata/TSsvd.in%29readfile/.SST/.PDO/>
end paste

This is pretty straight forward measured data showing how the earth's climate varies with natural cycles. The PDO along with the AMO are multidecadal long events that one can see the cycles in ones lifetime if one lives a normal life span. Most of us have lived through the PDO cooling phase then the warm phase and now the start of the cooling phase once again. Most of us still have our memories for reflection. Most of us have analysis skills to use to draw conclusions. Most of us have common sense to reject bullshit output based on unverified computer models that cannot predict a 16 year 8 month halt in global warming but continue to predict global temperatures going up since carbon dioxide content of the atmosphere continues to go up and is the driving force programmed into the models. What a shame that some of us are not all of us.

J Frank

F. ARCTIC SEA ICE EXTENT 30% OR GREATER (DMI)

Arctic Sea ice extent 30% or greater (DMI)

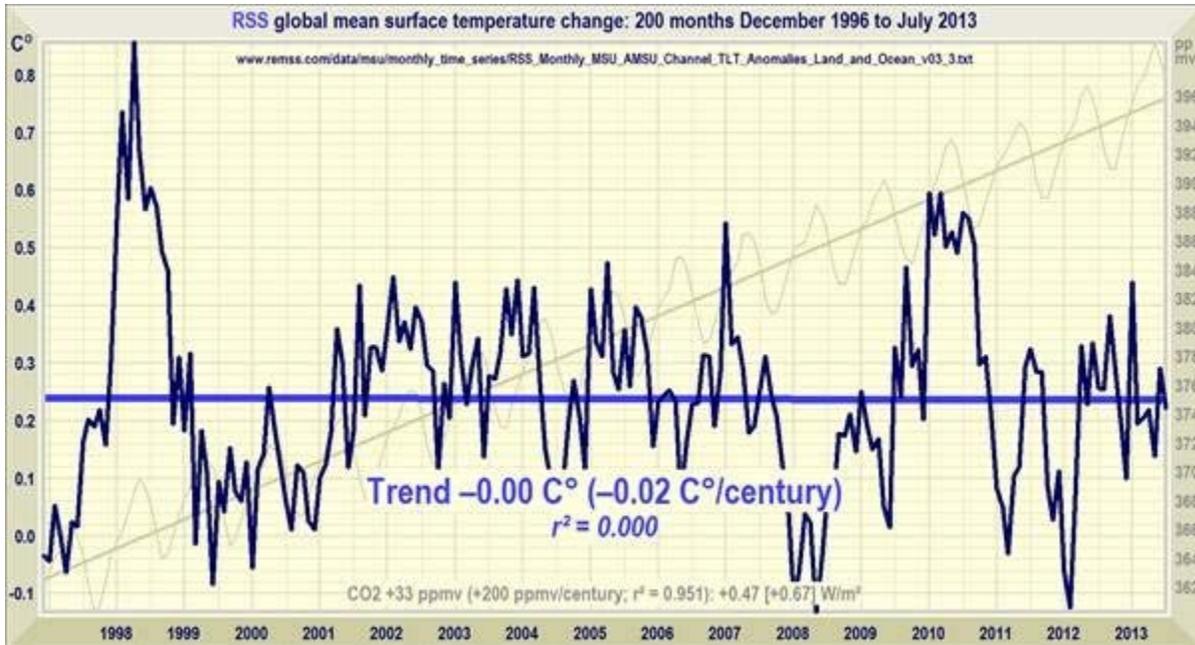


Thu Aug 8 08:00:10 UTC 2013

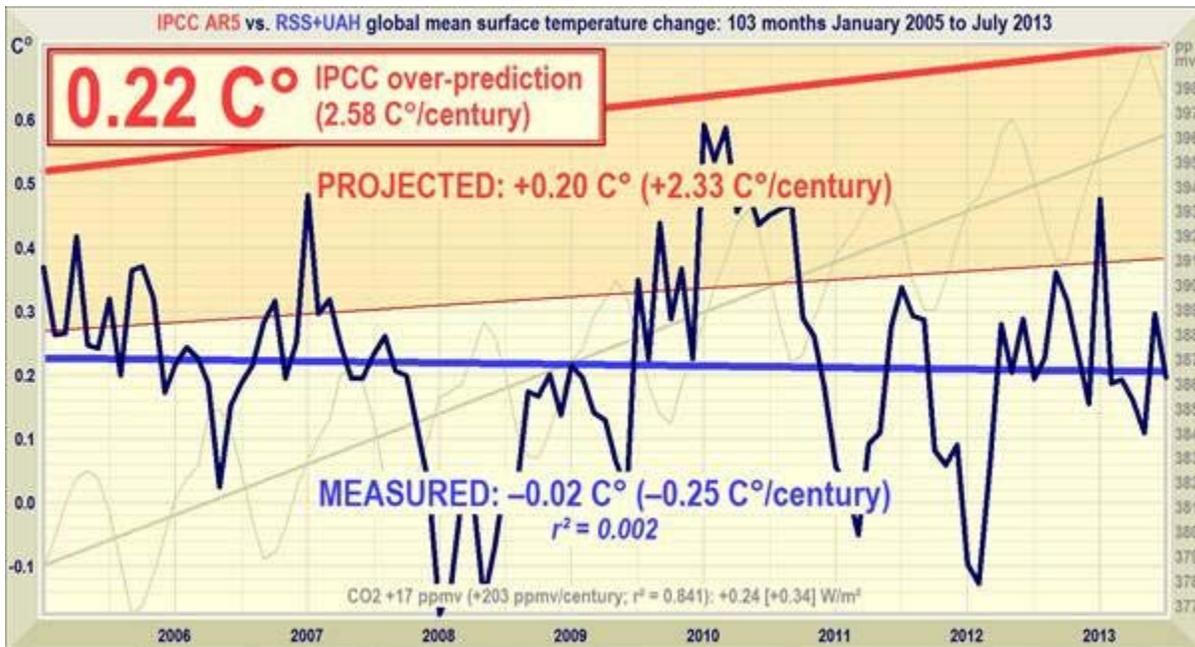
Danish Meteorological Institute (DMI) – Centre for Ocean and Ice – Click the pic to view at source
<http://www.investorvillage.com/smbd.asp?mb=11227&mn=8740&pt=msg&mid=12370063>

G. SOME USEFUL CHARTS ON THE LACK OF GLOBAL WARMING FOR 16 YEARS AND 8 MONTHS

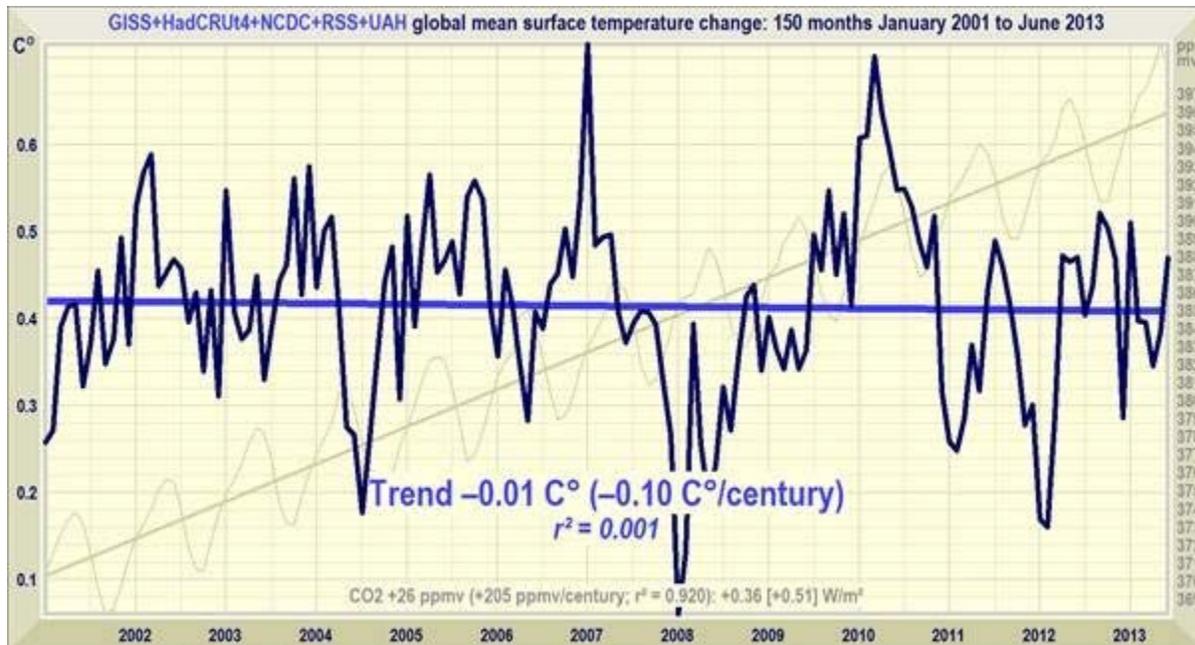
These charts were prepared by Lord Monckton to rebut the AGU policy statement. He belongs to the AGU. RSS is one of only two official administrators for the satellite atmosphere measurements. The other is UAH. The light wavy background line is carbon dioxide in the atmosphere. The first chart below shows zero warming since 1997. Note the well known Super El Nino in 1997/1998 and the Major El Nino in 2009 - 2010. Also note the well known La Ninas in 1999 - 2000, 2008 and 2012.



And, though some 0.2 C° warming should have occurred since January 2005 according to the forthcoming *Fifth Assessment Report* of the Intergovernmental Panel on Climate Change, the satellite records show no global warming at all since that date.



The next chart shows global cooling, albeit very slight, since 2001 for all five official temperature data keepers.



As you can see there is no correlation between global temperature and carbon dioxide content in the atmosphere. I have looked at many charts in the past 7 years. If carbon dioxide has any effect on global warming it is very small. The extended halt in global warming coupled with slight cooling can be only one thing - natural cycles at work equalizing the global temperature back to its standard temperature of 60F (15C) from the Little Ice Age. We are not there yet and may not get there in this interglacial if we go back into another Maunder Minimum in the next few years. Even if we do not go into a Maunder type cycle, we are only a few years into the cold half of the PDO cycle that lasts 30 years or so.

J Frank

H. MAJOR DANISH DAILY WARNS: “GLOBE MAY BE ON PATH TO LITTLE ICE AGE...MUCH COLDER WINTERS...DRAMATIC CONSEQUENCES”!

Another major European media outlet is asking: *Where's the global warming?*

Moreover, they are featuring prominent skeptic scientists who are warning of a potential little ice age and dismissing CO2 as a major climate driver. And all of this just before the release of the IPCC's 5AR, no less!

<http://notrickszone.com/2013/08/09/major-danish-daily-warns-globe-may-be-on-path-to-little-ice-age-much-colder-winters-dramatic-consequences/>

Don Shaw

I. THE TOP 5 LIES OF OBAMA'S CLIMATE CHANGE SPEECH

False Witness: President Obama is being lauded for his plans to restrict carbon dioxide emissions. But the scheme looks more like the last refuge of a desperate movement, because the speech he gave in its defense was full of lies.

Al Gore called Obama's Tuesday presentation at Georgetown University a "terrific and historic speech." It was not an honest message, though.

His text was laden with myths, fables, distortions and outright lies. Here are the top five:

<http://hockeyschtick.blogspot.com/2013/06/the-top-5-lies-of-obamas-climate-change.html>

Ron Kelm

J. CANADIAN SANDS-OIL FIRM STRUGGLES TO PLUG LEAK

• CHESTER DAWSON

• CONNECT



Dawson/The Wall Street Journal

Chester

More than 7,300 barrels of oil have leaked at the Alberta site.

COLD LAKE AIR WEAPONS RANGE, Alberta—The chief executive of Canada's largest independent oil producer said efforts to plug a series of leaks and prevent new ones will raise costs at one of its most productive oil-sands sites, but rejected criticism that the technology used to extract the oil is flawed.

[Canadian Natural Resources](#) Ltd.'s Primrose operation, on a weapons-testing range on Canada's largest air force base, has been plagued by four separate leaks whose cause remains unknown. The leaks so far total more than 7,300 barrels of oil.

Chief Executive Steve Laut, on a visit to the site in northeastern Alberta late Thursday, said CNRL is working to contain damage to the surrounding boreal forest and is prepared to adjust its oil-extraction methods using high-pressure steam in order to stop new leaks from forming.

"It's going to cost us more," Mr. Laut said.

"We are very committed to making sure we get this thing cleaned up, understand the cause, how to prevent it and getting this thing back in shape," he said.

The leaks pose no threat to people, but have affected wildlife and vegetation in a 50-acre contained area on the largely muskeg-covered Royal Canadian Air Force base. CNRL experienced similar leaks here in 2009, which has raised questions about its so-called in situ steam-based extraction techniques.

Alberta's energy regulator last month imposed an indefinite ban on some steaming operations at Primrose, which the Calgary, Alberta-based company had touted earlier this year for producing 109,000 barrels a day and generating "returns amongst the highest in the company's portfolio."

The leaks, the first of which was reported in May, have forced CNRL to cut its production forecast for the area next year by about 10,000 barrels a day. Before the leaks, it had planned to drill up to 120 new wells annually at Primrose and boost production to 120,000-125,000 barrels a day for the next five to 10 years.

In the second quarter, CNRL's total output was more than 623,000 barrels of oil equivalent a day.

Its problems at Primrose have drawn attention to a form of production that is less well known than the oil sands' open pit mines but is growing rapidly and viewed by industry as critical for accessing the nearly 80% of Alberta's total heavy-oil reserves located deep underground. The company blames "seepage" from poorly capped well bores that have been abandoned, but hasn't been able to pinpoint which ones. Environmental organizations, however, say the high-pressure steaming has fractured subterranean capstone that traps oil reserves below it, a problem which would be difficult to remedy.

Mr. Laut denied that possibility and defended his company's use of so-called cyclic steam injection, or CSS, citing a nearly 30-year operational track record. "It's physically impossible to inject steam up through that cap rock because the pressures that are required are more than we inject," he said.

Critics said it is too early to rule out any possible causes. "It's irresponsible for CNRL to advance a theory when the investigation is incomplete," said Chris Severson-Baker, a managing director at the Pembina Institute, a Canadian environmental think tank. "Whatever they learned in 2009 didn't prevent this latest incident," he added.

Provincial officials overseeing the cleanup echoed the company's preliminary analysis. "We let the technical merit prove it through, but what we're looking at is a likely well bore, or near well bore, failure," said Colin Woods, an on-site team leader for the Alberta Energy Regulator, which is conducting an investigation into the leaks.

But a government report issued in January appeared to contradict claims by CNRL that the 2009 leaks were caused solely by faulty oil well bores. While stating that the pathway to the surface was never identified, the finding by the AER's predecessor organization cited underground rock formation breaches from high-pressure steaming "not related to a well bore issue" as a probable contributing factor.

CNRL says the leaks likely began in early spring, though weren't detected until May 20. Regulators were informed that day, although the problem wasn't publicly announced until June 24 and the partial ban wasn't imposed until CNRL had completed all of its planned steaming operations at Primrose for the year.

The regulator says the length of the ban on new steaming operations at Primrose could be lifted before the conclusion of its probe. "The restrictions will remain in place until we are confident the issue is understood and we are confident it won't happen again. That could happen before the investigation is fully complete," said AER spokeswoman Cara Tobin.

The extraction method used by CNRL at Primrose involves injecting high-pressure steam into underground oil deposits embedded in rock, creating fissures for petroleum to seep out of the same well which is used to pump in the steam. Typically, steam is injected for a matter of months and then halted to allow recovery of the oil leached out from the rock.

Alberta's oil producers have invested heavily in CSS and another form of lower-pressure in-situ extraction called steam-assisted gravity drainage. Of the 1.8 million barrels of oil a day produced from Canadian 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 a day by 2030.

A version of this article appeared August 10, 2013, on page B3 in the U.S. edition of The Wall Street Journal, with the headline: Plugging a Canadian Leak.

K. Greenland soars to its highest temperature ever recorded, almost 80 degrees F.

[Maniitsoq WaPo](http://wattsupwiththat.files.wordpress.com/2013/08/maniitsoq_wapo.png?w=640)

http://wattsupwiththat.files.wordpress.com/2013/08/maniitsoq_wapo.png?w=640 />

Source: <http://www.washingtonpost.com/blogs/capital-weather-gang/wp/2013/08/01/greenland-soars-to-highest-temperature-ever-recorded/>

Any time I read about new record temperatures in the Arctic or Antarctic, I tend to think of this simple truth: *In near polar settlements, temperature is measured close to that small human island of warmth, and since most such towns are completely dependent on aviation, the measurement is often done at the airport, since weather there is a go/no go factor of primary importance.*

It turns out I was correct. What was surprising was just how correct my hunch turned out to be. <http://wattsupwiththat.com/>

L. WHAT THE 'YEAR OF LIVING DANGEROUSLY' AT NEARLY 400 PPM OF CO2 IN EARTH'S ATMOSPHERE LOOKS LIKE

Posted on [August 10, 2013](#) by [Anthony Watts](#)

Those that want to make today's weather seem like the "worst ever" often make ludicrous claims trying to link weather to high CO2 levels. For example, that extra CO2 gives the weather "[personality](#)", or even more extreme linkage, like this:

[Climate Depot](#) has a headline from [Goddard](#) that touts all the weather (not climate) issues of 2013 in the context of the highest ever reported CO2 concentration in modern times.

Unfortunately, the link contained no proof, only claims. I decided to provide the proof.

First, about that 400PPM of CO2:

[Climate Depot](#) has a headline from [Goddard](#) that touts all the weather (not climate) issues of 2013 in the context of the highest ever reported CO2 concentration in modern times.

Unfortunately, the link contained no proof, only claims. I decided to provide the proof.

The Keeling Curve

A DAILY RECORD OF ATMOSPHERIC CARBON DIOXIDE FROM SCRIPPS INSTITUTION OF OCEANOGRAPHY AT UC SAN DIEGO



[What Does This Number Mean?](#) [How are CO2 Data Processed?](#) [Scripps CO2 Group Website](#) [The State of Climate: Other Indicators](#)

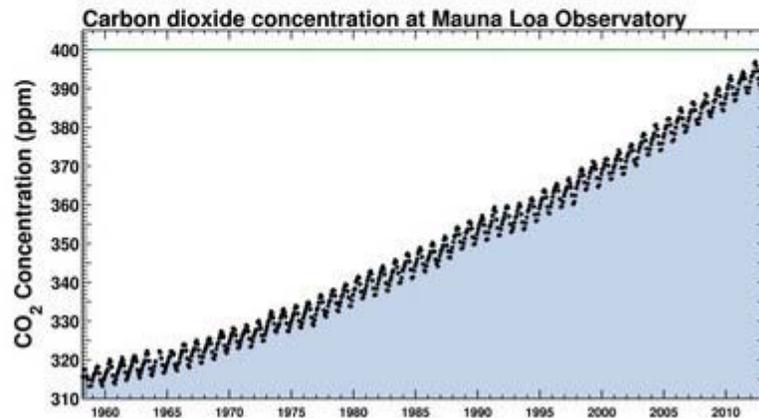
Search

Current reading: 399.50 ppm

CO2 concentration on April 29, 2013

Historical Charts

- 1 week
- 1 month
- 1 year
- 2 years
- Keeling Curve (1958-present)
- 300 years
- 800,000 years



 alt="399PPM_CO2" data-bbox="112 431 550 445"/>
http://wattsupwiththat.files.wordpress.com/2013/08/399ppm_co2.jpg?w=640

Unfortunately, they backed down from the claim later [saying](#):
<http://wattsupwiththat.com/2013/08/10/what-the-year-of-living-dangerously-at-nearly-400-ppm-of-co2-in-earths-atmosphere-looks-like/#more-91398>

M. EUROPE BAILS ON GREEN ENERGY

Posted on August 9, 2013 by Anthony Watts

Dr. Benny Peiser at *The Australian*: *Europe pulls the plug on its green future*

Slowly but gradually, Europe is awakening to a green energy crisis, an economic and political debacle that is entirely self-inflicted.

The mainstream media, which used to encourage the renewables push enthusiastically, is beginning to sober up too. With more and more cracks beginning to appear, many newspapers are returning to their proper role as the fourth estate, exposing the pitfalls of Europe's green-energy gamble and opening their pages for thorough analysis and debate. Today, European media is full of news and commentary about the problems of an ill-conceived strategy that is becoming increasingly shaky and divisive.

As country after country abandons, curtails or reneges on once-generous support for [renewable energy](#), Europe is beginning to realise that its green energy strategy is dying on the vine. Green dreams are giving way to hard economic realities.

From: *The Australian* <http://www.theaustralian.com.au/news/health-science/europe-pulls-the-plug-on-its-green-future/story-e6frg8y6-1>

N. BP SUES EPA TO GET NEW CONTRACTS

BP PLC has sued the U.S. Environmental Protection Agency, saying the agency is abusing its discretion by continuing to bar the company from new government contracts following guilty pleas related to the 2010 Gulf of Mexico oil spill.

http://online.barrons.com/article/SB10001424127887324769704579009470069250570.html?mod=rss_law

Regards
George