

Communications exercise 4: A cold event

Often referred to as "global warming," climate change is popularly understood as the cause of heatwaves, new heat records and warmer average temperatures. However, cold weather events and new cold records will continue to occur under climate change. The northeast USA, for example, experienced an extremely cold 2014-2015 winter and record snowfalls in some locations. Some people may see cold weather in a climate change world as counterintuitive, and they may even respond by questioning the scientific reality of climate change.

For this exercise, imagine an unusual cold event in your country or region (or, if you prefer, a mild or other weather event that seems counter to climate change expectations), describe it, and explain to the audience why this occurred despite climate change.

The following articles may provide some useful background and ideas.

23 January 2013

Climate change brings colder winters to Europe and Asia

The world is warming, so why have winters been getting colder across much of Eurasia? This question has puzzled climate researchers in recent years. Now a study shows that the icy winter blasts are linked to intensified high-pressure systems hovering over Eurasia during the winter months.

In February 2012 temperatures in Berlin, Germany, plummeted to $-19.6\text{ }^{\circ}\text{C}$, and the monthly mean temperature was just $-1.7\text{ }^{\circ}\text{C}$. During the same month temperatures in Moscow, Russia, plunged to $-28.5\text{ }^{\circ}\text{C}$ and the monthly mean was less than $-10\text{ }^{\circ}\text{C}$. Continuing eastwards, temperatures in Beijing, China, dropped to $-7.8\text{ }^{\circ}\text{C}$ and the cold spell persisted, producing a monthly mean of $-5.5\text{ }^{\circ}\text{C}$.

This deep chill was not just a one-off. Similar episodes were recorded across Eurasia in January 2010, December 2009, January 2008 and January 2006. In each case the cold conditions were widespread and extreme, causing serious disruption, damage to infrastructure and loss of life.

"These cold events can influence the entire Eurasian continent, as well as Southeast Asia and Japan, with record temperatures sometimes more than $10\text{ }^{\circ}\text{C}$ colder than the long-term average," explained Xiangdong Zhang, a climate scientist at the University of Alaska Fairbanks, US.

Without a doubt, extreme cold-winter events have become more frequent across Eurasia in recent years, and climate scientists have been rather taken by surprise: frozen winters in Eurasia were not predicted by climate models.

To better understand these Eurasian cold anomalies, Zhang and his colleagues Chuhan Lu and Zhaoyong Guan from Nanjing University of Information Science and Technology, China,

analysed winter cyclone and anticyclone activities, and their interplay with the semi-permanent Siberian-high circulation pattern. Studying more than thirty years' worth of data, they found a persistent weakening of both cyclones and anticyclones between the 1990s and early 2000s, and a pronounced intensification of anticyclone activity afterwards.

"The intensified anticyclones bring north or northeast winds over Eurasia, which transport cold polar air to mid-latitude Eurasia," said Zhang. Furthermore, intensified anticyclones keep a tight lid on the atmosphere. "The strengthened descent of air mass prevents cloud formation and keeps skies clear, which enhances radiative cooling," explained Zhang, whose findings are published in *Environmental Research Letters*.

So why have winter anticyclones been strengthening over Eurasia? Melting sea ice in the Arctic and changing weather patterns are both possible drivers of the new winter weather trends. "Decreased sea-ice cover favours further extension of warm air into the central Arctic Ocean," explained Zhang. "When this warm air propagates to the lower-latitude Eurasian continent, it gets cooled due to radiative heat loss. Anticyclones accordingly form or intensify." Meanwhile, weakened tropospheric mid-latitude westerlies and aligned south–north winds over the North Atlantic increase heat transport from low to high latitudes.

Ironically it seems that Eurasia's extreme cold winters are partly a consequence of global warming, with warmer global temperatures driving sea-ice melt and changing weather patterns. Until now, climate models have failed to capture these extreme cold-winter events, but Zhang and his colleagues hope that their findings will help to improve future predictions. "We need to evaluate whether climate models can realistically capture weather-scale physical processes, such as clear-sky-induced radiative cooling, descent strength and anticyclone generation, which are critically important for extreme cold event formation," said Zhang.

<http://environmentalresearchweb.org/cws/article/news/52135>

COLD SNAPS LINGER DESPITE CLIMATE CHANGE

Keep a winter coat and mittens handy. A new climate analysis from scientists at Pacific Northwest National Laboratory and University of Reading (UK) found that under climate warming, cold air outbreaks, or CAOs, are projected to continue over North America but less frequently. In a geographic swath stretching from Alaska and southwestern Canada to the northwestern and mid-western United States, the top five coldest historical events may still happen. Indeed, as humans, ecosystems, and societal infrastructures adapt to an average warmer climate, these findings show continued future challenges in coping with extreme cold events.

"The research isolated the changes of future cold air outbreaks to changes in the mean, the variance, and the skewness of daily surface air temperature" said Dr. Yang Gao, postdoctoral researcher and atmospheric scientist at PNNL. "Our analysis identified processes that will regulate future CAOs and climate factors that conspire to produce a distinct spatial pattern of CAO changes in North America."

APPROACH:

The PNNL-led research team analyzed model outputs from 26 global climate models used in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5). Comparing the daily surface air temperature simulated for the present and future, they quantified the changes in CAO duration over North America. To determine what processes modulate CAO changes, they performed statistical analyses to isolate the contributions of changes from the mean, variance, and skewness of daily surface temperature to changes in CAO duration in the future. They compared the distinct spatial patterns of these changes to changes in large-scale circulation patterns such as atmospheric blocking and the equator-to-pole temperature gradients, as well as the spatial distribution of the 0oC isotherm, and sea ice and snow cover to identify factors that influence CAO events.

The team found that CAO changes in the future can be explained largely by the mean warming that reduced the chance of very cold temperatures. But, reduced variability of surface temperature due to amplified warming in the Arctic contributes as much as a 20% reduction of CAO from Alaska to the northeastern United States and eastern Canada. The changes of CAOs are also affected by changes in the skewness of surface air temperature, which are modulated by the frequency of atmospheric blocking and the melting of snow cover and sea ice as the climate warms.

These findings provide important insights on processes that influence cold extremes, with implications for human health, agriculture, energy, and other sectors of the society to climate extremes in the future.

IMPACTS:

Even as the climate warms, cold air outbreaks may continue to impact certain regions in Earth's mid-to-high latitudes and the Arctic.

“Understanding which atmospheric and surface processes modulate the CAO changes can provide valuable insights on how, in a changing climate, those processes interact to influence climate extremes,” said Dr. Ruby Leung, PNNL Laboratory Fellow, atmospheric scientist and corresponding author on the study. “This will then help us improve climate models to more faithfully capture those processes and improve our predictions.”

Cold air outbreaks may be more deadly than extreme heat spells. Certainly, they cause large economic losses through damages to crops, energy and other life-sustaining infrastructure. Looking at a large suite of climate simulations from multiple models allowed scientists in this study to identify common climate features that project cold air outbreaks in the future.

<http://phys.org/news/2015-04-cold-snaps-linger-climate.html>

25 May 2015

Record Cold and Snow Destroy Global Warming Claims

Yet another bitterly cold, snowy winter is destroying alarmist global warming claims, proving once again that over-the-top global warming predictions are proving no more scientifically credible than snake oil.

This morning, stunning photos show New England lobster boats frozen in port, looking like they are stranded deep within the Arctic Circle. The boats have been frozen in place for weeks, which would be remarkable enough if this were the middle of January. However, the calendar is about to turn to March.

Connecticut is experiencing its coldest February in recorded history. So is Michigan. So is Toronto. Cleveland and Chicago are experiencing their second coldest February in recorded history. Frigid and record cold temperatures are being set from Key West to International Falls. At the same time, blizzard after blizzard is burying much of the nation with record winter snow totals, with winter snowfall records being set from Boston to Denver. Bitter cold and snowfall records shatter global warming claims.

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Global warming activists are in full-throttle damage control, desperately claiming global warming causes record snow and cold.

The Center for American Progress claimed, “climate change may have affected the [Boston] snowstorm — may have made it more likely, may have made it worse than it would have been without so much greenhouse gas in the atmosphere.”

National Geographic published an article titled, “Blizzard of Nor’easters No Surprise, Thanks to Climate Change.”

“How global warming can worsen snowfalls,” read a Boston Globe headline.

Global warming alarmists’ own prior global warming claims, however, indict their current claims.

The United Nations Intergovernmental Panel on Climate Change (IPCC) stated very clearly, “Milder winter temperatures will decrease heavy snowstorms.” Well, winters are clearly not becoming milder or bereft of heavy snowstorms.

Many global warming activists are still attempting to defend the discredited IPCC prediction, claiming a single winter does not invalidate a long-term trend. As the Union of Concerned Scientists claimed, “Winters have generally been warming faster than other seasons in the United States and recent research indicates that climate change” is causing it. The problem with such an assertion is that last winter was exceptionally cold and snowy, too. And winters nationwide have been getting colder for the past 20 years. Objective scientific data show winters have been getting colder and colder throughout the United States for the past two decades. When global warming alarmists claim winters will become warmer and free of snow, yet their predictions are proven false for 20 years in a row, at some point logical people come to realize that global warming alarmists are selling snake oil.

It is not just the winter, either. National Oceanic and Atmospheric Administration data show the United States has been cooling for the past decade. Nor is it just the United States defying alarmist predictions. Global temperature data show no global warming since the late 1990s and very little global warming for the past 45 years.

Another global warming activist tactic is to argue that global warming actually causes more snow. Of course, this is exactly the opposite of what they used to claim, as shown in the IPCC prediction. Moreover, real-world scientific data prove their new claims false. Global warming activists argue that warmer air can hold more moisture, so winter snow storms that used to bring 12 inches of snow now bring 14 inches of snow. The problem with this new assertion is – as documented above – winter temperatures are substantially colder now than they used to be. Global warming activists cannot claim recent record snowfalls are caused by warmer winters when winters are in fact much colder than they used to be.

The most meaningful lesson from the unusually cold and snowy recent winters is that global warming is so minor as to be barely noticeable. When temperatures rise merely a fraction of one degree, the polar ice caps won't melt, the oceanic conveyor belt will not shut down, alligators will not take up residence in Montana, cats will not start living with dogs, and winters will not suddenly disappear. We will still have very cold and snowy winters. We will still have hot summers. Your grandfather will still claim that to make it to school each day he walked barefoot through the snow, uphill each way.

Global warming alarmists will still try to sell their snake oil, hoping you will forget that tornadoes, hurricanes, droughts, floods, snow, and heat waves all really did occur prior to 1988. Most of these events actually occurred more frequently in decades past. And global warming activists will try to induce you to forget their prior snake-oil predictions, like the warm and snow-free predictions issued by the IPCC. They claim every weather and climate event – whether warmth or cold, rain or shine – is caused by global warming. Global warming is the new snake oil that soulless hucksters on the Western frontier claimed applied to every malady a person could experience.

In the classic movie *The Outlaw Josey Wales*, a carpet-bagging snake oil salesman claimed his product cures cramps, wounds, hangovers, and “just about everything.” Clint Eastwood, playing Josey Wales, then spit a mouthful of dark brown tobacco juice on the snake oil salesman's bright white jacket and asked, “How is it with stains?”

This makes one think of failed and all-encompassing global warming predictions. Heck, it makes one think of the entire alarmist global warming movement – how is it with stains?

[Note: This article has been updated, adding more specific examples of global warming spin-control.]

<http://www.forbes.com/sites/jamestaylor/2015/02/25/cold-and-snow-destroy-global-warming-claims/>

More links:

<http://climatemodeling.science.energy.gov/research-highlights/cold-snaps-linger-despite-climate-change>

<http://phys.org/news/2015-03-climate-extreme-winters.html>

<http://www.economist.com/blogs/economist-explains/2015/03/economist-explains-2>

<https://www.edf.org/blog/2014/03/18/four-reasons-why-climate-still-changing-despite-cold>

<http://climatemodeling.science.energy.gov/research-highlights/cold-snaps-linger-despite-climate-change>