

Northern Climate ExChange

Independent Information - Shared Understanding - Action on Climate Change

NCE Update January 27, 2010

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Announcements

1. Energy Solutions Centre: Northern Energy Solutions Conference: Practical and Current Energy Solutions for the North - February 2010

The **Energy Solutions Centre** will host the **Northern Energy Solutions Conference** on February 15 - 19, 2010 at the Yukon Inn in Whitehorse Yukon. The conference will focus on practical and current Energy Solutions for commercial and institutional structures. It will also touch on transportation, residential housing and other energy issues.

The North has remote regions and different energy scenarios, weather trends and population bases, with energy issues requiring unique solutions. Together, we will learn the best practices and solutions for energy issues in the north.

What are the solutions that can be implemented now to conserve energy, reduce costs and limit GHG emissions? Delegates from Nunavut, Northwest and Yukon Territories and some southern regions will attempt to answer this question.

Date: February 15-19, 2010

Contact: Sean MacKinnon by e-mail at sean.mackinnon@gov.yk.ca or by phone (867) 393-7067.

Website: www.yukonenergyconference.ca

www.esc.gov.yk.ca



2. Ecological Encounters: *The Wildlife of Yukon's Arctic Tundra: Patterns and Trends in a Warming World*

Sunday, February 28th, 2010, 3:30 pm- 5:00 pm
Yukon Wildlife Preserve (Free for members, \$15 for non-members)

Presented by **Dr. Don Reid of the Wildlife Conservation Society**, coordinator of the Arctic WOLVES (Wildlife Observatories Linking Vulnerable EcoSystems) project. Dr. Reid will illustrate patterns and trends from Arctic WOLVES observations and discuss what they might mean for the future of wildlife on Yukon's arctic fringe.

Ecological Encounters may be a combination of formal presentation and outdoor observations at the preserve. Dress for the weather.

Please pre-register by contacting either Chris Wilkinson, Program Officer, chris@yukonwildlife.ca or Clare Daitch, Program Manager, clare@yukonwildlife.ca. Phone: 867-456-7400

3. Adaptation and Activism: Climate Change Lecture Series - *'What Really Happened in Copenhagen'*

'What Really Happened in Copenhagen' will be presented by **Amber Church, National Director of the Canadian Youth Climate Coalition.**

When: **Wednesday, February 3rd, 7pm**
Where: **McBride Museum, Whitehorse.**

The recent United Nations climate change meetings in Copenhagen sparked interest and action worldwide. The Canadian Youth Delegation found themselves in the thick of it while on the ground in Denmark. Amber will talk about what happened in Copenhagen from her perspective and thoughts on where we go next.

This is the first in a series of free presentations on Climate Change offered through the **Adaptation and Activism: Climate Change Lecture Series**, co-hosted by the **Northern Climate Exchange** and the **McBride Museum**.

Lectures run every Wed evening from 7:00pm - 8:00pm at the McBride Museum starting **Feb 3rd until March 3rd 2010.**

To view bios of presenters and descriptions of the lectures please visit McBride's website at: www.macbridemuseum.com

For more information please contact Meghan Larivee, NCE Communication and Outreach Coordinator, at 456-8694 or mlarivee@yukoncollege.yk.ca.

4. Employment Opportunity: Pacific Climate Impacts Consortium (PCIC) - Lead Hydrologist

PCIC is seeking a [Lead Hydrologist](#). "The Lead Hydrologist leads a multi-disciplinary team of scientists to carry out hydrological research and analysis throughout British Columbia and Pacific North America. The incumbent reports to the Director/PCIC and works closely with the Senior Scientist, senior staff in Regional Climate Impacts, Climate Model Diagnostics, and Climate Analysis.

Consideration of candidates has begun and will continue until 7 February,

2010. For more information please refer to the [position description](#).

pacificclimate.org

5. 2010 International Arctic Research Center (IARC) Summer School, May 20 - June 4, 2010, University of Alaska, Fairbanks

IARC is offering an interdisciplinary summer course: "*Arctic in a changing climate: Physical and biological linkages to permafrost*" at the University of Alaska Fairbanks, May 20 - June 4, 2010.

Graduate students and young scientists in relevant fields are encouraged to apply for participation in the summer school. Advanced undergraduate students with strong qualifications will also be considered. The [application package](#) (application form, CV, and letter of recommendation from faculty member or supervisor) should be sent electronically to: **Tohru Saito** at saito@iarc.uaf.edu.

Application deadline: February 15, 2010.

www.iarc.uaf.edu

Articles

1. Courts as Battlefields in Climate Fights

By John Schwartz
New York Times
January 26, 2010

Tiny Kivalina, Alaska, does not have a hotel, a restaurant or a movie theater. But it has a very big lawsuit that might affect the way the nation deals with climate change.

Kivalina, an Inupiat Eskimo village of 400 perched on a barrier island north of the Arctic Circle, is accusing two dozen fuel and utility companies of helping to cause the climate change that it says is accelerating the island's erosion.

Blocks of sea ice used to protect the town's fragile coast from October on, but "we don't have buildup right now, and it is January," said Janet Mitchell, Kivalina's administrator. "We live in anxiety during high-winds seasons."

The village wants the companies, including ExxonMobil, Shell Oil, and many others, to pay the costs of relocating to the mainland, which could amount to as much as \$400 million.

The case is one of three major lawsuits filed by environmental groups, private lawyers and state officials around the nation against big producers of heat-trapping gases. And though the village faces a difficult battle, the cases are gathering steam.

In recent months, two federal appeals courts reversed decisions by federal district courts to dismiss climate-change lawsuits, allowing the cases to go forward. In Connecticut, environmental lawyers joined forces with attorneys general of eight states and the City of New York seeking a court order to reduce greenhouse gas emissions.

In Mississippi, Gulf Coast property owners claim that industry-produced emissions that contribute to climate change increased the potency of Hurricane Katrina in 2005.

And although a federal judge in Oakland, Calif., dismissed the Kivalina suit in October, the village is appealing the decision.

Tracy D. Hester, who has taught a course in climate lawsuits at the University of Houston law school, said

that with the issues "very much in play" in three circuits of the federal court system, "the game pieces are being set for eventual Supreme Court review."

The cases need not even get that far to have an impact, said James E. Tierney, the director of the National State Attorneys General program at Columbia Law School. Kivalina alleged in its complaint that the industry conspired "to suppress the awareness of the link" between emissions and climate change through "front groups, fake citizens organizations and bogus scientific bodies."

That claim echoes those in suits against the tobacco industry that ultimately led to industry settlements and increased government regulation.

If the climate-change cases even get to the discovery stage, and if the energy industry possesses embarrassing e-mail messages and memorandums similar to those that proved devastating to tobacco companies, Mr. Tierney said, "it's a hammer" that could drive industries to the negotiating table.

The cases generally rely on the common-law doctrine of nuisance, the same concept that allows neighbors to sue one another over noises, odors and the like that interfere with the use or enjoyment of property. In the context of climate change, such cases were once derided as frivolous long shots that would be shot down quickly. Scott H. Segal, a lawyer for energy companies, joked in a 2004 article in *Grist* magazine that the cases brought "new meaning to the term 'nuisance lawsuit.' "

No one is laughing now. In a report issued last year, Swiss Re, an insurance giant, compared the suits to those that led dozens of companies in asbestos industries to file for bankruptcy, and predicted that "climate change-related liability will develop more quickly than asbestos-related claims."

The pressure from such suits, the report stated, "could become a significant issue within the next couple of years."

The American Justice Partnership, a business-oriented group that is critical of the plaintiffs' bar, argued in a 2008 report that the conspiracy accusations made the Kivalina case "the most dangerous litigation in America."

The case could stifle debate over climate-change issues, the report stated, and increase "the threat of being named as a defendant or co-conspirator subject to invasive and costly inquiry."

President Obama's senior adviser for energy and climate change, Carol M. Browner, underscored the potential for the suits to affect policy in a briefing with reporters in September. Citing the Connecticut case, Ms. Browner warned that "the courts are starting to take control of this issue," and argued that setting environmental standards "is best done through legislation."

She suggested that the situation increased the pressure on Congress to pass legislation to curb heat-trapping gases. The Environmental Protection Agency is drafting regulations on such emissions as dangerous pollutants under the Clean Air Act, an authority confirmed by the 2007 Supreme Court decision, *Massachusetts v. E.P.A.*

A bill to curb such gases that passed the House last year has not advanced in the Senate. And the climate talks last month in Copenhagen produced little.

That sense of inaction has left a situation in which those intent on reducing gas emissions could try to make the courts "a significant battleground," said Harold Kim, an official in the administration of President George W. Bush who is now senior vice president for reform initiatives at the United States Chamber Institute for Legal Reform.

"This is trending into an area that could be explosive - for better or for worse, depending on how you look at it," Mr. Kim said.

Pat D. Hemlepp, a spokesman for American Electric Power, a defendant in the Connecticut case, said that he could not comment directly on the suit, but that "our view is that litigation is not the appropriate way to address climate concerns."

The company, Mr. Hemlepp said, supports the House bill. "We are not one of those heels-dug-in, just-say-no companies on climate action," he said.

Matthew F. Pawa, the lawyer who helped organize the Connecticut suit and the Kivalina litigation, said the cases were not about affecting public policy.

"I filed these cases because I expect and want to win in court," Mr. Pawa said. "I'm a litigator, and that's what I do."

Despite the recent victories, climate lawsuits are still at a preliminary stage. Mr. Segal, the lawyer who made the "nuisance lawsuit" joke, said issues like proving climate change, its link to the companies and the further link to the damage "have not been addressed."

If the cases go to trial, he said, "these burdens will be particularly tough in the climate context."

A lawyer working with Mr. Pawa in the Kivalina suit, Stephen D. Susman, agreed that the road ahead was uphill.

"The legal landscape is horrible," said Mr. Susman, of Houston. "No lawyer can say this is a way to make money."

He also said he doubted that the cases would prompt large numbers of class-action suits, since courts would not be likely to allow the formation of a class of litigants among people with such diverse experiences.

Michael B. Gerrard, a professor at Columbia University law school and director of its Center for Climate Change Law, said the first efforts to sue tobacco companies had appeared to be weak as well.

"They lost the first cases; they kept on trying new theories," Mr. Gerrard said, "and eventually won big."

www.nytimes.com

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2. Nain teen to speak on climate change at Winnipeg conference

By Mitchell White
The Labradorian
January 26, 2010

Climate change is the theme of a youth forum where a high school student from Labrador will be delivering a keynote address.

Seventeen-year-old Caitlyn Baikie of Nain will be heading to Winnipeg in early February to deliver a speech addressing her views on climate change.

"I want to tell them ... how the choices they make out there will affect our lifestyle sometimes more than it would theirs," said Baikie.

She will deliver her address to a delegation of over 200 scientists, teachers and students from Manitoba, Saskatchewan, Ontario and Nunavut during the Arctic Climate Change Youth Forum 2010.

The forum will bring together the parties to discuss what is happening with scientific research on climate change in the Arctic, and how students and teachers can become actively engaged in the process.

Baikie says she has no qualms about presenting to the large delegation. That can be evidenced by her job of delivering a speech to a similar sized audience in the same city last year.

"Everybody was going to (a coworker) and saying how impressed they were with Caitlyn's presentation,"

said Sandra Dicker, the co-ordinator for Nunatsiavut's Division of Youth, Elders and Recreation, whose division accompanied Baikie to a conference last year where she had delivered a speech on suicide prevention and how the division was using related funds.

"I think that she's an excellent candidate," said Dicker who works with Baikie on the Rising Youth Council of Nunatsiavut. "She definitely has a lot of knowledge on things such as climate change."

Baikie developed an indepth understanding of the effects of climate change in her region when she was invited to board the Amundsen, a research vessel owned by the Canadian Coast Guard, this fall to assist in scientific research.

Aboard the Amundsen, she assisted in collecting and analyzing samples as well as offered the knowledge that she had of the region.

"It was intense, but it was a lot of fun," said Baikie of the grueling hours and heavy workload.

She was invited to take part in the research by the Schools on Board program, the same program that has requested she make this latest presentation.

"Last year I was like 'global warming, that's not going to happen,'" said Baikie. "This year, after learning so much and seeing the impacts I'm like 'whoa, it's really happening.'"

She says that the existence of climate change in her region is now more prominent than ever, especially with the lateness of the freezing of the ice this year.

"These people don't realize that we use the ice to live," said Baikie. "I have already spoken to some of the elders and they don't remember any time when (the freeze up) was this late."

Being part of this scientific research has sparked an interest in the sciences for Baikie who hopes to minor in environmental science when she heads to university next fall.

www.thelabradorian.ca

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3. Fossil scientists fear coal firm will damage ancient sites

Ellesmere exploration project could threaten evidence of earth's history

By Gabriel Zárate
Nunatsiaq News
January 25, 2010

A proposed coal exploration project on Ellesmere Island threatens an internationally-important collection of rare fossil sites, a group of fossil scientists said last week.

The Society of Vertebrate Paleontology asked its members to lobby the the Nunavut Impact Review Board about a coal exploration project at several sites on Ellesmere Island.

A firm called Weststar Resources Corp. is proposing to search for coal near an area on Ellesemere called Strathcona Fiord, where scientists have already found ancient fossil records bearing crucial information about climate change and early life on earth.

"They're rather rare (fossil) deposits for that part of the world," explained Blaire Van Valkenburgh, the president of the society. "They represent a place and a time that isn't well represented in the fossil record."

She said some of the most valuable fossils are about 50 million to 55 million years old, during a time of a major warming shift in the earth's climate.

Paleontologists study fossils from this time to see how animals and plants adapt to climate change without human influences, she explained.

Strathcona Fiord is also where researchers from the Canadian Museum of Nature discovered the remains of a 300-million-year-old creature called they "tiktaalik."

Tiktaalik is an animal that likely represents a missing link between fish and land-based animals.

Newer fossils there include some that are three to five million years old, including animals there are ancestors of modern species like bears, horses and beavers.

Mitch Adams, the president of Weststar, said the proposed project arises from the new viability of shipping in the Northwest Passage, as well as new shipbuilding technology.

Adams downplayed paleontologist's concerns, saying that at this point, the exploration project is small and expected to take only two to three years.

"To think that we're just coming up there with dump trucks and ruining the fossil record is kind of far-fetched in my mind," Adams said.

Under their proposal, Westar would set up a permanent camp until exploration is complete.

Referring to the high cost of operating in the High Arctic, Adams suggested a cooperative project with paleontologists.

He said researchers and coal explorers could share the costs of setting up a field camp, to everyone's benefit.

Van Valkenburgh was responsive to that suggestion, saying on-site paleontologists could work to ensure the most valuable fossil beds remain undisturbed by exploration.

The paleontology society wants its members ask the review board to give Westar's project a thorough review and perhaps modify or abandon it.

NIRB's director of technical services said the board has received many such letters, now publicly available on the agency's website.

"Every comment we receive from the public is given due consideration," he said.

Fossil deposits, like archeological sites, come under the board's mandate, he said.

www.nunatsiaqonline.ca

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4. Yukon River kings will be hot topic at fish board meeting this week

By Tim Mowry
Daily News Miner
January 24, 2010

The Alaska Board of Fisheries will meet for six days in Fairbanks starting Tuesday, and the big issue will be Yukon River king salmon. The fact that the federal government last week declared the 2008 and 2009 Yukon River king salmon runs disasters only magnifies the situation.

"It's going to be interesting to see what happens," said Mike Smith, subsistence resource director for Tanana Chiefs Conference in Fairbanks. "We're hoping some conservation efforts are implemented."

TCC represents dozens of villages on the upper and middle Yukon and Tanana rivers, and many fishermen in those villages say both the size of the Yukon king run and the size of the fish themselves are getting smaller, Smith said.

Stan Zuray of Tanana is one of them.

"We've removed all the real big fish," Zuray said. "The 50-pounders are gone, and there's only a few left over 40 pounds. Now we're reduced to 30-pounders."

The decline in big fish is one of the reasons Zuray, a member of the Tanana/Rampart/Manley Fish and Game Advisory Committee, wants to see the Fish Board pass a proposal that would restrict fishermen to using nets with only 6-inch mesh size instead of the current 8-inch mesh favored by fishermen, especially those in the lower river. Smaller net size would allow more big fish to escape, he said.

"I think if you don't allow any mesh size larger than 6 inch, like they do in the Kuskokwim River, if that proposal could pass, we may someday be able to commercial fish again," Zuray said, referring to restrictions the past two years that have prevented commercial fishing anywhere on the Yukon. "The Yukon is the about the only place you see with large mesh gillnets allowed."

The seven-person fish board, which sets seasons, bag limits and other rules for fishing in Alaska waters, will consider several proposals that are aimed at getting more fish and more big fish to the spawning grounds in Alaska and Canada. Among them are proposals from local advisory committees to reduce the mesh size on nets used to catch fish, restrict how deep nets can be placed, restrict what kind of nets can be used and restrict when and how long fishermen can fish.

Similar proposals have been brought before the fish board in past years but the board has rejected them. Given the state of the Yukon River chinook run, however, things could be different this time around.

"They almost have to do something now," said Virgil Umphenour, who sits on both the Fairbanks Fish and Game Advisory Committee and Eastern Interior Regional Advisory Council.

Umphenour, a Fairbanks fish processor and former Fish Board member, helped author several of the proposals the board will consider.

"We've put every option there is on the plate," he said. "Our proposals are to target the smaller fish and to allow at times purely unmolested escapement to get fish to the spawning grounds."

The Yukon chinook run has been in decline for several years and unprecedented restrictions were placed on both subsistence and commercial fishermen this past season in an attempt to get more fish to their Canadian spawning grounds, as required in an international treaty between the U.S. and Canada.

The strategy worked, but it came with a heavy price in the form of a greatly reduced subsistence harvest and no commercial fishery, which prompted last week's disaster declaration by the feds.

Umphenour has been lobbying the board for the past 15 years to go to smaller mesh size on nets and to restrict fishing at certain times to ensure escapement.

If the state managed the king run every year like it did last year, when the Department of Fish and Game prohibited any fishing on the first pulse of kings - commercial or subsistence - it would solve the problem, Umphenour said.

"What we want (the state) to do is put what they did this year in regulation," he said. "They do what our proposals are when there's an absolute emergency and then they go back to business as usual when there's not, which is totally irresponsible management."

The early season restrictions placed on fishermen this past year produced some of the biggest fish he has seen in recent years, and Zuray doesn't think it's a coincidence. Restrictions early in the season allowed more big fish bound for Canada to escape, he said.

"We took a disaster run and because it was managed properly for the amount of fish that came in we passed for the first time in several years some quality escapement," Zuray said.

Smith agreed, saying fishermen on the Koyukuk River this past season reported seeing more king salmon than they have in decades.

"From a management perspective, what's that tell us?" he said. "We need to habitually stay off that first pulse to maximize escapement goals where we have them."

It's not only the number of fish that reach the spawning grounds that is important, Smith, from TCC, said. Size and age are important, which is where restrictions like net size come in, he said. Fewer big fish on the spawning grounds means less production, Smith said, noting that bigger females produce more eggs than smaller ones.

"You want your escapement to be comprised of all age classes with a large percentage of big females," he said. "So what if you made your escapement goal if 90 percent of them are small, unproductive (males)? The biological integrity of the (chinook run) is getting worse and without some really stringent conservation efforts that will continue to decline."

The state has no control over other limiting factors like climate change, ocean conditions and environmental factors, but the state can dictate how fishermen catch fish, he said.

State commercial fisheries biologist Steve Hayes, who manages the Yukon's chinook run for the Alaska Department of Fish and Game, acknowledged the contention by many fishermen that Yukon kings are getting smaller.

"They're worried," he said. "They'd like to see something done."

The state has conducted a net mesh size study in the Yukon River the past three years and research biologist Dani Evenson said large-size mesh is likely part of the cause for the decline in bigger, older fish, but biologists have no way of gauging other factors, such as climate change, ocean conditions and competition from hatchery fish, she said.

The department opposes the proposal for a 6-inch mesh requirement out of concern for how many summer chum salmon might be caught. With an average return of around 1.5 million fish, the summer chum run is much larger than the chinook run, which averages between 100,000 to 200,000 fish. Subsistence fishermen catch approximately 50,000 king salmon each year from the Yukon River, making it the state's largest such fishery.

"The potential to catch a lot of chum (in 6-inch mesh nets) is really high," she said. "When people get more than they need, what are they going to do with those fish?"

"We're open to the idea the proposal champions but we're opposed to it as it is written," she said.

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5. Global warming opens up Arctic for undersea cable

By Dan Joling
Associated Press
Alaska Daily News
January 14, 2010

Global warming has melted so much Arctic ice that a telecommunication group is moving forward with a project that was unthinkable just a few years ago: laying underwater fiber optic cable between Tokyo and London by way of the Northwest Passage.

The proposed system would nearly cut in half the time it takes to send messages from the United Kingdom to Asia, said Walt Ebell, CEO of Kodiak-Kenai Cable Co. The route is the shortest underwater path between Tokyo and London.

The quicker transmission time is important in the financial world where milliseconds can count in executing profitable trades and transactions. "Speed is the crux," Ebell said. "You're cutting the delay from 140 milliseconds to 88 milliseconds."

The project, while still facing many significant obstacles, also serves as an example of how warming has altered the Arctic landscape in profound ways.

The loss of summer sea ice prompted the U.S. to list polar bears as a threatened species in May 2008. Walrus in two of the last three years gathered by the thousands on Alaska's northwest shore rather than ride pack ice to unproductive waters beyond the outer continental shelf.

Summer sea ice melted to its lowest recorded level ever in late 2007, and most climate modelers predict a continued downward spiral. The result is a path through the Northwest Passage, the Arctic route connecting the Atlantic and Pacific that has fascinated explorers for centuries.

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"That opens up the construction window to actually do something like this without the need of heavy icebreakers," Ebell said. "On the other side, you've got the market part of it and the increasing demand we're seeing for lower and lower latencies, or transmission times."

But the project, called ArcticLink, is not without hurdles -- namely the estimated construction price of \$1.2 billion, said Alan Mauldin, research director at TeleGeography Research, a Washington, D.C.-based telecommunications market research company.

"That's not a cheap project," he said by phone from the Slovak Republic.

By comparison, a line beginning service next month between Japan and the U.S. West Coast was built for \$300 million, he said.

The leaders of the project will need to persuade telecommunications companies to buy a piece of the capacity created by the cable. Telecom companies will make that decision largely based on demand from financial companies.

"What we've seen is just because you have a diverse path does not mean that you can necessarily sell that capacity for much more than the current market price," Mauldin said.

Ebell uses the analogy of building a shopping mall to describe the financing process: Secure some initial investments and then lure an anchor tenant to really drive the project forward.

The cable will cut a 10,000-mile path across half the world: It would be laid in deep water from Japan to the Aleutian Islands, then traverse north through the relatively shallow waters of the Bering Sea.

The line would need a regeneration station -- essentially a booster of the signal to compensate for the long distance -- on the northern coast of Alaska, probably at Prudhoe Bay. From there, it will wend its way through the Northwest Passage, then dip around the southern tip of Greenland and across the North Atlantic to the United Kingdom.

Branches off the line would provide access to the East Coast of the U.S., ensuring quicker transmission times between Tokyo and New York, Ebell said.

"It will provide the domestic market an alternative route not only to Europe -- there's lots of cable across the Atlantic -- but it will provide the East Coast with an alternative, faster route to Asia as well," he said.

The cable would pass mostly through U.S., Canadian international waters and avoid possible trouble spots along the way.

"You're not susceptible to 'events,' I should say, that you might run into with a cable that runs across Russia or the cables that run down around Asia and go up through the Suez Canal into the Mediterranean Sea. You're getting away from those choke points."

Ebell's Anchorage-based company is partnering with KhaNNet, part of Khanjee Holdings, Inc., on the project, and the partners are pursuing financing.

The company also hopes to link rural Alaska communities to the cable. It has applied for \$350 million in federal stimulus money, nearly 5 percent of that total for broadband grant and loan program, for lines to eight hub communities in western and northern Alaska. The Asia-Europe line does not depend on stimulus money, Ebell said.

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6. Fewer temperature reports could underestimate warming trend, Environment Canada says

By Richard Foot
Canwest News Service
January 23, 2010

Environment Canada says climate scientists who track global temperature trends may be underestimating the amount of warming in the Canadian Arctic, because they are working with data from a declining sample of weather stations across the region.

A U.S. government agency, the National Oceanic and Atmospheric Administration, compiles an important database of historic surface temperatures, based on readings from thousands of local weather stations across the planet. The raw data is obtained from the World Meteorological Organization, which receives temperatures from national governments around the world.

The number of local stations

included in that database has dropped precipitously in recent years. In Canada, for example, temperature measurements for the 1970s were sampled from nearly 600 stations across the country, compared to only 35 stations today.

Only one station -- Eureka, on Ellesmere Island -- is included in the 2009 database to measure the temperature for all Canadian territory above the Arctic Circle, even though the federal government still operates more than 100 stations in the high Arctic.

Environment Canada says while a smaller sample of stations may not prevent a clear understanding of the planet's overall temperature changes, it could create an inaccurate picture of the changes in a critically-sensitive region such as the Arctic.

"Missing observations in an area where the climate is expected to respond more quickly to external influences, such as the Arctic, may, however, result in underestimates of the amount of climatic change," said Sujata Raisinghani, a spokesperson for Environment Canada, in an e-mail to Canwest News Service on Friday.

"The Arctic is expected to warm more quickly than other parts of the globe as a result of human induced greenhouse gas emissions. Thus, if stations are missing in the Arctic, the Arctic contribution to warming will be underestimated."

It's not clear why fewer Canadian weather stations are being included in global temperature records than in the past. Neither Raisinghani nor other officials or experts from Environment Canada were available for an interview on the subject.

Two U.S. researchers claim that scientists at NOAA and at NASA's Goddard Institute for Space Studies are deliberately dropping weather stations from the data, particularly stations in colder locations such as northern Canada, as a way of cherry-picking records to produce warmer-than-actual mean temperature trends.

On Friday, Gavin Schmidt, a senior climatologist at the Goddard Institute for Space Studies, said NOAA and NASA don't choose which stations to include in their database -- that's decided by national bodies such as Environment Canada that feed information to the World Meteorological Organization.

Schmidt denied that he and other scientists had cherry-picked the data to manipulate the outcome.

"The idea that we're fraudulently cutting out stations is appallingly defamatory and ignorant," he said. "These people are desperate to come up with some hint of impropriety. The allegations are absolutely without foundation and based on profound ignorance."

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7. 2009: Second Warmest Year on Record; End of Warmest Decade

NASA
January 21, 2010

2009 was tied for the second warmest year in the modern record, a new NASA analysis of global surface temperature shows. The analysis, conducted by the Goddard Institute for Space Studies (GISS) in New York City, also shows that in the Southern Hemisphere, 2009 was the warmest year since modern records began in 1880.

Although 2008 was the coolest year of the decade -- due to strong cooling of the tropical Pacific Ocean -- 2009 saw a return to near-record global temperatures. The past year was only a fraction of a degree cooler than 2005, the warmest year on record, and tied with a cluster of other years -- 1998, 2002, 2003, 2006 and 2007 -- as the second warmest year since recordkeeping began.

"There's always an interest in the annual temperature numbers and on a given year's ranking, but usually that misses the point," said James Hansen, the director of GISS. "There's substantial year-to-year variability of global temperature caused by the tropical El Niño-La Niña cycle. But when we average temperature over five or ten years to minimize that variability, we find that global warming is continuing unabated."

January 2000 to December 2009 was the warmest decade on record. Throughout the last three decades, the GISS surface temperature record shows an upward trend of about 0.2°C (0.36°F) per decade. Since 1880, the year that modern scientific instrumentation became available to monitor temperatures precisely, a clear warming trend is present, though there was a leveling off between the 1940s and 1970s.

The near-record temperatures of 2009 occurred despite an unseasonably cool December in much of North America. High air pressures in the Arctic decreased the east-west flow of the jet stream, while also increasing its tendency to blow from north to south and draw cold air southward from the Arctic. This resulted in an unusual effect that caused frigid air from the Arctic to rush into North America and warmer mid-latitude air to shift toward the north.

"Of course, the contiguous 48 states cover only 1.5 percent of the world area, so the U.S. temperature does not affect the global temperature much," said Hansen.

In total, average global temperatures have increased by about 0.8°C (1.4°F) since 1880.

"That's the important number to keep in mind," said Gavin Schmidt, another GISS climatologist. "In contrast, the difference between, say, the second and sixth warmest years is trivial since the known uncertainty -- or noise -- in the temperature measurement is larger than some of the differences between the warmest years."

Decoding the Temperature Record

Climate scientists agree that rising levels of carbon dioxide and other greenhouse gases trap incoming heat near the surface of the Earth and are the key factors causing the rise in temperatures since 1880, but these gases are not the only factors that can impact global temperatures.

Three other key factors -- including changes in the sun's irradiance, oscillations of sea surface temperature in the tropics, and changes in aerosol levels -- can also cause slight increases or decreases in the planet's temperature. Overall, the evidence suggests that these effects are not enough to account for the global warming observed since 1880.

El Niño and La Niña are prime examples of how the oceans can affect global temperatures. They describe abnormally warm or cool sea surface temperatures in the South Pacific that are caused by changing ocean currents.

Global temperatures tend to decrease in the wake of La Niña, which occurs when upwelling cold water off the coast of Peru spreads westward in the equatorial Pacific Ocean. La Niña, which moderates the impact of greenhouse-gas driven warming, lingered during the early months of 2009 and gave way to the beginning of an El Niño phase in October that's expected to continue in 2010.

An especially powerful El Niño cycle in 1998 is thought to have contributed to the unusually high temperatures that year, and Hansen's group estimates that there's a good chance 2010 will be the warmest year on record if the current El Niño persists. At most, scientists estimate that El Niño and La Niña can cause global temperatures to deviate by about 0.2°C (0.36°F).

Warmer surface temperatures also tend to occur during particularly active parts of the solar cycle, known as solar maximums, while slightly cooler temperatures occur during lulls in activity, called minimums.

A deep solar minimum has made sunspots a rarity in the last few years. Such lulls in solar activity, which can cause the total amount of energy given off by the sun to decrease by about a tenth of a percent, typically spur surface temperature to dip slightly. Overall, solar minimums and maximums are thought to produce no more than 0.1°C (0.18°F) of cooling or warming.

"In 2009, it was clear that even the deepest solar minimum in the period of satellite data hasn't stopped global warming from continuing," said Hansen.

Small particles in the atmosphere called aerosols can also affect the climate. Volcanoes are powerful sources of sulfate aerosols that counteract global warming by reflecting incoming solar radiation back into space. In the past, large eruptions at Mount Pinatubo in the Philippines and El Chichón in Mexico have caused global dips in surface temperature of as much as 0.3°C (0.54°F). But volcanic eruptions in 2009 have not had a significant impact.

Meanwhile, other types of aerosols, often produced by burning fossil fuels, can change surface temperatures by either reflecting or absorbing incoming sunlight. Hansen's group estimates that aerosols probably counteract about half of the warming produced by man-made greenhouse gases, but he cautions that better measurements of these elusive particles are needed.

Data Details

To conduct its analysis, GISS uses publicly available data from three sources: weather data from more than a thousand meteorological stations around the world; satellite observations of sea surface temperature; and Antarctic research station measurements. These three data sets are loaded into a computer program, which is available for public download from the GISS website. The program calculates trends in temperature

anomalies -- not absolute temperatures - but changes relative to the average temperature for the same month during the period of 1951-1980.

Other research groups also track global temperature trends but use different analysis techniques. The Met Office Hadley Centre, based in the United Kingdom, uses similar input measurements as GISS, for example, but it omits large areas of the Arctic and Antarctic, where monitoring stations are sparse.

In contrast, the GISS analysis extrapolates data in those regions using information from the nearest available monitoring stations, and thus has more complete coverage of the polar areas. If GISS didn't extrapolate in this manner, the software that performs the analysis would assume that areas without monitoring stations warm at the same rate as the global mean, an assumption that doesn't line up with changes that satellites have observed in Arctic sea ice, Schmidt explained. Although the two methods produce slightly different results in the annual rankings, the decade-long trends in the two records are essentially identical.

"There's a contradiction between the results shown here and popular perceptions about climate trends," Hansen said. "In the last decade, global warming has not stopped."

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8. Monitoring Peatland from Earth and Space

Researchers in the UK use images from earth and space to reveal peatland surface patterns.

Sara Uttech
American Society of Agronomy
January 25, 2010

A team of UK scientists led by Dr. Karen Anderson (University of Exeter) has developed a new technique for monitoring the condition of peatlands. The team used a combination of images captured from Earth and space to measure spatial patterning in peatland surfaces as an indicator of their condition. This new method uses a novel coupled approach, using satellite images from space and airborne laser scanning data, and has resulted in improved peatland mapping products.

This new method could help monitor the damage that is being done to peatlands through human activity. Such disruption is contributing to global warming, as peatlands can release the carbon they absorb and store if they are damaged by drainage or peat extraction processes. This research, which appears in the January-February 2010 issue of *Journal of Environmental Quality*, reports that airborne laser scanning instruments are capable of measuring fine-scale peatland structures such as hummocks and hollows that typically measure less than four meters in size.

Lowland rainfed peatlands are recognized as being a globally important environmental resource because they absorb and store carbon. Their unique plant communities and their inherent wetness control their ability to act as carbon stores, but when human disturbance disrupts their surface structure, greenhouse gases are released instead. Many peatlands across the world are affected by drainage, peat removal and ecological disturbance so scientists have been working to develop a robust spatial method for monitoring peatland condition. Remote sensing techniques (where images from satellites in space are analyzed) provide a likely route for this.

The research team used data from an airborne "LiDAR," a laser-scanning instrument, alongside data from the IKONOS satellite. They showed that when LiDAR data were combined with optical images collected from satellites, a powerful method for spatial mapping of peatland quality could be achieved. The paper shows how use of a structural-based approach improved capabilities for mapping and monitoring peatland condition with an improvement in accuracy from 71.8% (without structural estimates) to 88.0% when airborne LiDAR data (which had been spatially preprocessed using a technique called semivariogram analysis) were used. This new approach offers an improved, physically based method for automated peatland condition mapping.

As Dr. Anderson, who led the study, noted, "This work is the first to demonstrate that peatland structures, which are linked to hydrological status and condition, can be measured using remote sensing techniques. Our approach enabled us to draw out the differences in surface pattern across the peatland and resulted in an improved mapping product which is useful for scientists, peatland managers, statutory conservation agencies, and for policy makers."

Research is ongoing at the University of Exeter to investigate broader application of the method to other peatland sites, including an assessment of spaceborne imaging capabilities for global peatland monitoring. The ongoing work will also look at other types of peatlands, including upland peats, which show similar spatial patterning. This work was funded through a UK Natural Environment Research Council research grant to Karen Anderson (2008) and involved scientists from the University of Exeter, University of Southampton, University of East London, and Natural England.

The full article is available for no charge for 30 days following the date of this summary. View the abstract at <http://jeq.scijournals.org/cgi/content/abstract/39/1/260>.

The Journal of Environmental Quality, <http://jeq.scijournals.org> is a peer-reviewed, international journal of environmental quality in natural and agricultural ecosystems published six times a year by the American Society of Agronomy (ASA), Crop Science Society of America (CSSA), and the Soil Science Society of America (SSSA). The Journal of Environmental Quality covers various aspects of anthropogenic impacts on the environment, including terrestrial, atmospheric, and aquatic systems.

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*The next Update from the Northern Climate ExChange will be sent out **Wednesday, February 3, 2010***