



# Northern Climate ExChange

Independent Information - Shared Understanding - Action on Climate Change

NCE Update February 24, 2010



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## Announcements

### 1. TONIGHT: Adaptation and Activism: Climate Change Lecture Series - *Polar Bears, Sea Ice and Climate Change* by Vicki Sahanatien

The Northern Climate ExChange, Yukon College in association with the MacBride Museum of Yukon History will be hosting a series of speakers to present talks on Climate Change. This will provide an opportunity for the public to learn about climate change research and related work through informal yet informative lectures.

The 'Adaptation and Activism: Climate Change Lecture Series' will run every Wednesday night from 7:00 - 8:00 pm at the McBride Museum from February 3rd until March 3rd 2010.

- **February 24: Vicki Sahanatien - Polar Bears, Sea Ice and Climate Change**
- **March 3:** Meghan Larivee - Coping with a Changing World: Adaptation and Plasticity in Kluane Red Squirrels

To view bios of presenters and descriptions of the lectures please visit McBride's website at: [www.macbridemuseum.com](http://www.macbridemuseum.com)

For more information please contact Meghan Larivee, NCE Communication and Outreach Coordinator, at 456-8694 or [mlarivee@yukoncollege.yk.ca](mailto:mlarivee@yukoncollege.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](mailto:chris@yukonwildlife.ca) or Clare Daitch, Program Manager, [clare@yukonwildlife.ca](mailto:clare@yukonwildlife.ca). Phone: 867-456-7400

### 3. March Polar Week 2010: *What Happens at the Poles Affects Us All*

**IPY March Polar Week 2010** runs from **March 15 to 19th**. March Polar Week will provide an opportunity for researchers,

## Quick Links

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educators, early career scientists, and students from across the globe to celebrate the partnerships, outreach, and scientific outcomes IPY has enabled regionally, nationally and internationally as well as to explore the many changes in polar regions.

Click on the following links for: [classroom activities](#), [virtual balloon launches](#), [public lectures](#), [events](#) and [links and resources](#)!

Download the [March Polar Week flyer](#) (pdf 491 kb)

[www.ipy.org](http://www.ipy.org)

#### 4. NASA releases new climate change video and image gallery

"NASA has released a new video and image gallery that illustrate how NASA satellites enable scientists to observe climate change today and make predictions for the future.

The video, "**Piecing Together the Temperature Puzzle**," explores possible causes for rising global temperatures. It explains what role fluctuations in the solar cycle, changes in snow and cloud cover, and rising levels of heat-trapping greenhouse gases play in contributing to global warming.

The new gallery consists of ten spectacular satellite images of our warming planet captured during the hottest decade since modern record keeping began. The images show the kinds of events -- including melting glaciers, heat waves, and floods -- that many scientists predict will become more frequent in coming decades due to climate change.

Both the video and the image gallery are part of a new multimedia collection available with the launch of the "**Our Warming World**" Web page on **NASA's Global Climate Change Web site**".

[www.climate.nasa.gov](http://www.climate.nasa.gov)

#### 5. On-line Survey: Whitehorse Green Guide Survey 2010

**Whitehorse Green Guide Survey 2010**  
The Whitehorse Green Guide Survey is now available! If you are a business or organization that offers green products or services in Whitehorse, click here to fill out the survey!

Emphasis is placed on attributes and certifications which support increased energy efficiency, reduction of greenhouse gas emissions, waste, and toxins.

**Information collected in the survey will be used to develop an on-line search tool to green products and services available in Whitehorse.**

**The survey link for the first edition will close on March 15th.**

**Whitehorse Green Guide Partners: Northern Climate ExChange** (Yukon College), **City of Whitehorse**, **Energy Solutions Centre** (Energy, Mines, and Resources, Yukon Government), **Climate Change Secretariat** (Yukon Government), and the **Yukon Federal Council**.

<http://taiga.net/nce/>

#### 6. UNEP Year Book 2010: New Science and Developments in Our Changing Environment - Feb 23, 2010

**"The UNEP Year Book 2010 reports on new environmental science and recent developments in our changing environment.** It looks at progress in environmental governance; the effects of continuing degradation and loss of the world's ecosystems; impacts of climate change; how harmful substances and hazardous waste affect human health and the environment; environmentally related disasters and conflicts; and unsustainable use of resources. The chapters correspond to UNEP's six thematic priorities".

Click [here](#) to download the UNEP Year Book 2010

Click [here](#) to download Chapter 4 - Climate Change

[www.unep.org](http://www.unep.org)

## Articles

### 1. Alaska's climate refugees build new village

By Yereth Rosen  
Reuters  
February 23, 2010

Residents of a tiny Yup'ik Eskimo village in Alaska are preparing to become the United States' first climate refugees and flee their homes as the thawing permafrost beneath washes away.

Residents of Newtok, a settlement of 350 people on the banks of the rapidly eroding Ninglick River in western Alaska, feel fortunate.

They are building a new village called Mertarvik, at an elevation of about 300 feet (91 meters) on adjacent Nelson Island, with help from military personnel under a U.S. Defense Department training program. Many residents expect to be living there by 2012.

"It's a rolling hill, with a good water source. It's really nice and high," said Stanley Tom, administrator of the Newtok tribal government.

Newtok, about 500 miles (805 km) west of Anchorage and far from the state's road system, is among the nearly 200 Native villages the federal government has found to have serious erosion or flooding problems, many linked to rapid warming. In the worst cases, softened permafrost is being eaten away by big waves unleashed in waters newly free of sea ice.

Newtok is not alone in its quest to move to safer ground.

At four sites, including Newtok, conditions are so perilous that entire villages have plans to relocate entirely, according to the U.S. Army Corps of Engineers. The Corps estimated in 2006 that those villages had as few as 10 years until their homes completely wash away. Several other villages have plans to relocate at least partially, moving homes and key facilities to safer ground.

But scant relocation progress has been made by any of the hard-hit villages except Newtok, the Government Accountability Office reported last year.

The GAO blamed the huge cost estimates -- as much as \$200 million per village -- and the failure of any government agency to take responsibility for moving such tiny villages where, in some cases, the only local authority is tribal.

#### Training for Iraq

Sticker shock has been a big impediment in Kivalina, an Inupiat Eskimo village on the northwest coast of Alaska, where huge storm waves are carving chunks of land off into the sea.

Millie Hawley, environmental coordinator for the Kivalina tribal government, said villagers worry that their home will disappear before any replacement is found.

"Am I going to pass away before that happens?" she asked at a recent meeting in Anchorage of local, state and federal officials addressing climate problems in villages. "People have been planning for more than 20 years, and they have battle fatigue."

For Newtok, the cost of moving to a safer, more inland site was estimated several years ago to be as much as \$130 million.

By collecting funds from a patchwork of sources -- from major federal departments to small Alaska non-profits -- and doing much of the labor themselves, Newtok villagers are striving to make the move much affordable.

Villagers have tackled the problem in phases and secured the help of U.S. Navy and Marine Corps personnel taking part in the Defense Department's Innovative Readiness Training program.

Servicemen arrived in Newtok last year, launching a construction program intended as training for rebuilding projects in war zones like Afghanistan and Iraq. Last summer they built a barge landing site. This year they will start building an evacuation road, a project that will make use of modular mats placed on the soggy tundra, and an emergency shelter.

Newtok villagers have done a lot of the labor, too, such as erecting houses funded through Bureau of Indian Affairs grants.

The campaign to move Newtok began decades ago. Villagers in the early 1980s convinced the state legislature to fund a detailed erosion assessment. In 1996, they voted overwhelming to relocate to Mertarvik. They convinced Congress in 2003 to authorize a land swap needed to acquire title to the new village site. And they are working through a multi-agency Newtok Planning Group set up in 2006 to get a variety of necessary relocation tasks accomplished.

As for why Newtok has been successful while other villages' relocations have stalled, part of the reason may be cultural, said Sally Russell Cox, an Alaska Department of Commerce planner involved in the Newtok project.

Newtok has been very isolated, with very little outside contact until recently, she said. "They've kept a lot of traditional cohesiveness," she said. "It's been really bred into the people of the Nelson Island area to be very self-sufficient."

Tom said he hopes the villagers will start to occupy the new site by 2012. The first homes built in Mertarvik -- which translates as "getting water from the spring" -- have been reserved for elders, so some young residents will have to accompany them when people make the move for good, he said.

As for the ultimate cost of the relocation, "I don't have any idea," Tom said. "Once we relocate, we'll come up with a figure."

(Editing by Bill Rigby and Cynthia Osterman)

[www.reuters.com](http://www.reuters.com)

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## 2. Arctic Glacial Dust May Affect Climate and Health in North America and Europe

ScienceDaily  
February 20, 2010

Residents of the southern United States and the Caribbean have seen it many times during the summer months -- a whitish haze in the sky that seems to hang around for days. The resulting thin film of dust on their homes and cars actually is soil from the deserts of Africa, blown across the Atlantic Ocean.

Now, there is new evidence that similar dust storms in the arctic, possibly caused by receding glaciers, may be making similar deposits in northern Europe and North America, according to Joseph Prospero from the University of Miami in a February 19 presentation to the American Association for the Advancement of Science.

"Our recent work in Iceland has shown that most of the dust events there are associated with dust emitted from glacial outwash deposits, which may be carried into the northern latitudes and into Europe by synoptic weather events," says Prospero, professor of marine and atmospheric chemistry at the University of Miami Rosenstiel School of Marine and Atmospheric Science, in his talk "Intercontinental Dust Transport: The Linkage to Climate and its Environmental Impact."

Satellite data have shown large dust plumes in the arctic, but persistent cloud cover has made finding the origins difficult. The glaciers have been retreating in Iceland for decades, and the trend is expected to continue with the changing climate. Prospero predicts that dust activity from the newly exposed glacial deposits will most likely increase in the future in Iceland and possibly from other glacial terrains in the Arctic.

Prospero's lifelong work has been to measure the effects of airborne dust. Since 1965, he and his colleagues have been measuring dust particles in Barbados, West Indies, thus creating the longest dust measurement data set in science. They found that dust transport increased greatly during the late 1960s and early 1970s at the same time as a severe drought in Northern Africa.

"The first 30 years of the dust record showed a strong relationship between dust transport across the ocean to rainfall amounts in the Sahel and Soudan regions of Africa," says Prospero. "It's important to note that the level of dust transport is not necessarily related directly to rainfall but possibly to other climate factors associated with the variability of rainfall."

Some of the most intense periods dust transport are associated with strong El Nino events, which may affect such factors as wind speeds and variability as well as rainfall -- the same factors that affect dust mobilization and transport. However, since the late 1990s, the pattern of drought and dust transport has been disrupted -- dust transport rates were actually greater than what Prospero's earlier model would indicate.

"We still have work to do to understand the fundamental processes and relationship between climate, rainfall, and dust transport," says Prospero. "Predicting the long-term effects of climate and dust transport is exacerbated by the fact that many of the climate prediction models for lower latitude Africa are not consistent."

Also needing more study is whether the dust particles pose any health threat to the people below. More than half of the particles in the dust mass transported over the Atlantic to the Americas is smaller than 2.5 microns, defined as "respirable particles" by the United States Environmental Protection Agency. Over the Caribbean region, the atmospheric concentration of fine dust particles frequently is within the range of and sometimes exceeds the US EPA's standards for respirable particles.

"Although to date there is no strong evidence that African dust constitutes a health hazard, this possible impact would seem to warrant study especially since some climate change projections show increased dust transport in the future," concludes Prospero.

Prospero is a panelist in a symposium called "Dust in the Earth System," which will examine dust and its effects in the Earth system while considering societal impact at the local and global levels by exchanging information, ideas, and perspectives across diverse disciplines.

[www.sciencedaily.com](http://www.sciencedaily.com)

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## 3. Missing 'Ice Arches' Contributed to 2007 Arctic Ice Loss

NASA Jet Propulsion Laboratory  
February 18, 2010

In 2007, the Arctic lost a massive amount of thick, multiyear sea ice, contributing to that year's record-low extent of Arctic sea ice. A new NASA-led study has found that the record loss that year was due in part to the absence of "ice arches," naturally-forming, curved ice structures that span the openings between two land points. These arches block sea ice from being pushed by winds or currents through narrow passages and out of the Arctic basin. Beginning each fall, sea ice spreads across the surface of the Arctic Ocean until it becomes confined by surrounding continents. Only a few passages -- including the Fram Strait and Nares Strait -- allow sea ice to escape.

"There are a couple of ways to lose Arctic ice: when it flows out and when it melts," said lead study researcher Ron Kwok of NASA's Jet Propulsion Laboratory in Pasadena, Calif. "We are trying to quantify how much we're losing by outflow versus melt."

Kwok and colleagues found that ice arches were missing in 2007 from the Nares Strait, a relatively narrow 30- to 40-kilometer-wide (19- to 25-mile-wide) passage west of Greenland. Without the arches, ice exited freely from the Arctic. The Fram Strait, east of Greenland, is about 400 kilometers (249 miles) wide and is the passage through which most sea ice usually exits the Arctic.

Despite Nares' narrow width, the team reports that in 2007, ice loss through Nares equaled more than 10 percent of the amount emptied on average each year through the wider Fram Strait.

"Until recently, we didn't think the small straits were important for ice loss," Kwok said. The findings were published this month in Geophysical Research Letters.

"One of our most important goals is developing predictive models of Arctic sea ice cover," said Tom Wagner, cryosphere program manager at NASA Headquarters in Washington. "Such models are important not only to understanding changes in the Arctic, but also changes in global and North American climate. Figuring out how ice is lost through the Fram and Nares straits is critical to developing those models."

To find out more about the ice motion in Nares Strait, the scientists examined a 13-year record of high-resolution radar images from the Canadian RADARSAT and European Envisat satellites. They found that 2007 was a unique year - the only one on record when arches failed to form, allowing ice to flow unobstructed through winter and spring.

The arches usually form at southern and northern points within Nares Strait when big blocks of sea ice try to flow through the strait's restricted confines, become stuck and are compressed by other ice. This grinds the flow of sea ice to a halt.

"We don't completely understand the conditions conducive to the formation of these arches," Kwok said. "We do know that they are temperature-dependent because they only form in winter. So there's concern that if climate warms, the arches could stop forming."

To quantify the impact of ice arches on Arctic Ocean ice cover, the team tracked ice motion evident in the 13-year span of satellite radar images. They calculated the area of ice passing through an imaginary line, or "gate," at the entrance to Nares Strait. Then they incorporated ice thickness data from NASA's ICESat to estimate the volume lost through Nares.

They found that in 2007, Nares Strait drained the Arctic Ocean of 88,060 square kilometers (34,000 square miles) of sea ice, or a volume of 60 cubic miles. The amount was more than twice the average amount lost through Nares each year between 1997 and 2009.

The ice lost through Nares Strait was some of the thickest and oldest in the Arctic Ocean.

"If indeed these arches are less likely to form in the future, we have to account for the annual ice loss through this narrow passage. Potentially, this could lead to an even more rapid decline in the summer ice extent of the Arctic Ocean," Kwok said.

[www.jpl.nasa.gov](http://www.jpl.nasa.gov)

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#### **4. Climate change melts Antarctic ice shelves - USGS**

By Deborah Zabarenko  
Reuters  
February 22, 2010

Climate change is melting the floating ice shelves along the Antarctic Peninsula, giving scientists a preview of what could happen if other ice shelves around the southern continent disappear, the U.S. Geological Survey (USGS) said on Monday.

The ice has retreated so far from the land mass that Charcot Island, which has long been connected to the peninsula by an ice bridge, emerged as a real island again last year, a USGS scientist said.

"This is the first time since people have been observing the area, since the 1800s, that that ice shelf has not hitched together Charcot Island and the peninsula," scientist Jane Ferrigno said in a telephone interview.

The Antarctic Peninsula extends further northward than the rest of the roughly circular ice-covered continent, and it is warmer than the rest of Antarctica. But even in the peninsula's coldest, southern part, ice shelves are vanishing.

Research by the USGS was the first to show that every ice front on the southern section of the peninsula has been retreating from 1947 to 2009, with the most dramatic changes since 1990.

A study of the phenomenon by the USGS in collaboration with the British Antarctic Survey and assistance from the Scott Polar Research Institute and Germany's Bundesamt für Kartographie und Geodäsie was posted at [pubs.usgs.gov/imap/i-2600-c/](http://pubs.usgs.gov/imap/i-2600-c/) in February; a statement was released on Monday.

##### **Ice Shelves act as Glacier Dams**

Ice shelves act as dams to keep land-based glaciers from flowing unimpeded into the sea; when ice shelves melt, glaciers can move more quickly into ocean waters.

If all the land-based ice in Antarctica melted, scientists have estimated sea levels worldwide could rise from 213 to 240 feet (65 to 73 metres), according to the study. If just the ice in West Antarctica melted, there would be a sea level rise of about 20 feet (6 metres), threatening coastal communities and low-lying islands.

The land-based ice on the Antarctic peninsula is not enough to fuel a major rise in sea level, Ferrigno said. However, the dramatic disappearance of ice shelves there could give a clue of what could happen when glaciers are free to flow seaward.

This is important because the Antarctic ice sheet contains 91 percent of Earth's glacier ice, Ferrigno said.

Unlike Antarctic land-based ice, the ice that covers much of the Arctic Ocean would not contribute to sea level rise if it all melted, in much the way that a melting ice cube in a glass of water would not make the glass overflow.

But both the Arctic and Antarctic have major impact on weather in the temperate parts of the world.

Link to [Coastal-Change and Glaciological Map of the Palmer Land Area, Antarctica: 1947-2009](#) Geologic Investigations Series Map I-2600-C

[uk.reuters.com](http://uk.reuters.com)

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#### **5. Climate change could be accelerated by 'methane time bomb'**

*Climate change could be accelerated dramatically by rising levels of methane in the Earth's atmosphere, scientists will warn today.*

By Heidi Blake  
Telegraph  
February 22, 2010

Atmospheric levels of the greenhouse gas, which is as much as 60 times more potent than carbon dioxide, appear to have risen significantly for the past three years running, scientists say.

Experts have long feared that vast amounts of the natural gas trapped in the frozen tundra of the Arctic could be unlocked as the permafrost is melted by rising temperatures, triggering a "methane time bomb" that could cause temperatures to soar.

More melting of the Arctic ice caused by accelerating warming would release further gases, setting off a "feedback" mechanism which could send climate change spinning out of control.

Methane (CH<sub>4</sub>) traps solar heat in the earth's atmosphere even more effectively than CO<sub>2</sub>, which has been the focus of climate change fears for decades. Scientists believe it could cause 60 times more warming than carbon over a period of 20 years, though it also decays more quickly.

Atmospheric methane levels began rising in 2007, when an Arctic heatwave caused sea ice to shrink significantly. Now new preliminary results suggest levels have continued to rise through 2008 and 2009. The new figures will be disclosed this morning at the start of a two-day conference on greenhouse gases at the Royal Society in London.

Professor Euan Nisbet, of Royal Holloway College of the University of London, and Dr Ed Dlugokencky of the Earth System Research Laboratory in Boulder Colorado, will set out their findings in a presentation on "Global atmospheric methane in 2010: budget, changes and dangers".

After a decade of near-zero growth in methane levels, the two scientists will reveal that: "globally averaged atmospheric methane increased by [approximately] 7 ppb (parts per billion) per year during 2007 and 2008."

They will go on: "During the first half of 2009, globally averaged atmospheric CH<sub>4</sub> was [approximately] 7 ppb greater than it was in 2008, suggesting that the increase will continue in 2009. There is the potential for increased CH<sub>4</sub> emissions from strong positive climate feedbacks in the Arctic where there are unstable stores of carbon in permafrost ... so the causes of these recent increases must be understood."

Professor Nisbet told The Independent at the weekend that the new figures did not necessarily mark a departure from the trend. "It may just be a couple of years of high growth, and it may drop back to what it was," he said. "But there is a concern that things are beginning to change towards renewed growth from feedbacks."

[www.telegraph.co.uk](http://www.telegraph.co.uk)

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## **6. EPA Petitioned to Reduce Black Carbon "Soot" Under Clean Water Act**

*Potent Global Warming Pollutant Accelerates the Melting of Sea Ice and Glaciers*

Matt Vespa  
Center for Biological Diversity  
February 22, 2010

Today the Center for Biological Diversity petitioned the Environmental Protection Agency to take action to reduce [black-carbon pollution](#) under the federal Clean Water Act. The petition is the first to explicitly seek protection of water in its solid form; it asks EPA to set water-quality criteria for concentrations of black carbon on sea ice and glaciers under the Clean Water Act - the first step toward reducing black-carbon emissions from diesel engines and other sources due to their role in accelerating the loss of sea ice and glaciers.

"Black carbon, or soot, is not only dangerous to breathe but also a potent global warming pollutant that is greatly accelerating the melt of Arctic sea ice and glaciers around the world," said Matt Vespa, a senior attorney with the Center. "The Clean Water Act provides important tools to reduce this dangerous pollutant, which will slow global warming and protect public health."

Generated from the incomplete combustion of fossil fuels, biofuels, and biomass, black carbon is a solid particle that warms the atmosphere in two ways. In the atmosphere, its dark color absorbs heat and raises the temperature of the air. When it lands on ice and snow, it darkens these surfaces, thereby absorbing heat and increasing melting. Over the course of the Arctic spring, black-carbon-contaminated snow and ice can melt weeks earlier than clean snow and ice. Due to its warming effects in the air and on ice and snow, black carbon is considered one of the largest contributors to global warming after carbon dioxide pollution. In addition to its strong warming effect, black carbon also has profound impacts on public health, contributing to hundreds of thousands of premature deaths each year.

If current trends continue, many of the glaciers in the continental United States, including all of the glaciers in Glacier National Park, will disappear within the next 25 to 30 years. Scientists believe the Arctic could be ice free in the summer by 2030. Summer sea ice has already decreased by nearly 40 percent, or one million square miles, from what was present in the 1970s.

Because black carbon stays in the atmosphere for less than a month, however, reductions in black-carbon emissions yield immediate environmental and public health benefits. "Reducing black-carbon pollution today buys critically needed time to achieve the deep reductions in carbon dioxide and other greenhouse gases that are ultimately necessary to preserve sea ice and glaciers," said Vespa. "But the window of opportunity to act, like the sea ice, is shrinking rapidly."

If EPA were to adopt water-quality criteria for black carbon, each state with glaciers (Alaska, California, Colorado, Idaho, Montana, Oregon, Nevada, Utah, Washington, and Wyoming) or sea ice (Alaska) would either need to adopt the EPA standard or set their own. Those standards then become the basis for developing controls on the release of black carbon in order to protect sea ice and glaciers from this dangerous pollutant. Emissions from diesel engines, particularly from ships and older heavy-duty vehicles and construction equipment, is a primary domestic source of black carbon.

A copy of the petition and other information on black carbon can be found at [http://www.biologicaldiversity.org/programs/climate\\_law\\_institute/global\\_warming\\_what\\_how\\_why/black\\_carbon/pdfs/EPA\\_CWA\\_Black\\_Carbon\\_Petition\\_2-22-10.pdf](http://www.biologicaldiversity.org/programs/climate_law_institute/global_warming_what_how_why/black_carbon/pdfs/EPA_CWA_Black_Carbon_Petition_2-22-10.pdf).

[www.biologicaldiversity.org](http://www.biologicaldiversity.org)

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## 7. Permafrost rapidly deteriorating in northern Quebec: Study

By Randy Boswell  
Canwest News Service  
*Leader-Post*  
February 17, 2010

The thawing and decay of telltale, reddish mounds along the eastern shore of James Bay have led a team of Quebec researchers to conclude that the region's permafrost line has moved rapidly northward - about 130 km in just 50 years - as part of a broader transformation of Canada's sub-Arctic frontier in the age of climate change.

And the University of Laval researchers are warning that "if the trend continues, permafrost in the region will completely disappear in the near future."

The study, carried out by biologists Simon Thibault and Serge Payette, is published in the scientific journal *Permafrost and Periglacial Processes*.

The researchers used red-tinged landforms called "palsas" - small, lichen-covered hills that form over frozen peat bogs - as an indicator of the state of the permafrost in an area along the southeast coast of James Bay.

Described as "easy to spot in the field," the palsas were observed by helicopter and compared with records from 1957 that showed the distinctive mounds were present in seven out of seven representative bogs between the 51st and 53rd parallels.

The researchers found palsas in only two of the seven bogs during the 2004 field season. By the following year, the number of palsas in those two bogs had decreased by 86 per cent and 90 per cent respectively.

"Helicopter flyovers between the 51st and 55th parallels also revealed that the palsas are in an advanced state of deterioration over the entire James Bay area," states a summary of the team's research. "While climate change is the most probable explanation for this phenomenon, the lack of long term climactic data for the area makes it impossible for the researchers to officially confirm this."

However, the researchers found that the average annual temperature in the area had increased by 2 C over the past 20 years.

"If this trend keeps up, what is left of the palsas in the James Bay bogs will disappear altogether in the near future, and it is likely that the permafrost will suffer the same fate," Payette stated.

Read Université Laval [press release](#).

[www.leaderpost.com](http://www.leaderpost.com)

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## 8. Barents Sea: An Effective Ocean Cooler

ScienceDaily  
February 24, 2010

The Barents Sea is a robust and effective ocean cooler. Despite its fairly shallow depth of 230 meters, it releases more energy to the atmosphere than any other sea around the Arctic.

A new study by four oceanographers in Bergen shows how the Barents Sea responds to variation of heat transport by the ocean. Results show that the northwards migration of the sea ice, and the larger open ocean areas in the south, can compensate for much of the increase in ocean heat transport since the mid 1990's.

The paper, published in *Ocean Science*, describes a new approach for understanding the Barents Sea. First, an overall heat budget had to be produced, including mean monthly ocean transport and atmospheric forcing. New estimates including the Norwegian Coastal Current makes the total transported heat to the Barents Sea about 70 TW. The researchers have divided the Barents Sea into a northern and southern area, and show that all of the heat is lost to the atmosphere in the south.

The heat is lost by the ocean in the southern Barents Sea through evaporation and sensible fluxes, as there is an approximate balance between the incoming solar, and the outgoing long wave, radiation. The northern Barents Sea receives little ocean heat transport, leading to early sea ice formation during winter.

Link to: Heat in the Barents Sea: transport, storage, and surface fluxes ([Ocean Sci., 6, 219-234, 2010](#))

[www.sciencedaily.com](http://www.sciencedaily.com)

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## 9. UN climate chief resigns

*Yvo de Boer, executive secretary of the United Nations Framework Convention on Climate Change (UNFCCC), steps down, effective July 1*

By Moises Velasquez-Manoff  
Christian Science Monitor  
February 18, 2010

The head of the UN body tasked with hammering out an international agreement to limit greenhouse gas emissions and therefore curb their effect on Earth's climate, is stepping down.

Yvo de Boer, executive secretary of the United Nations Framework Convention on Climate Change (UNFCCC) since September 2006, announced his resignation Thursday. It will become effective July 1.

"It was a difficult decision to make," he said in a statement. "But I believe the time is ripe for me to take on a new challenge, working on climate and sustainability with the private sector and academia." Mr. De Boer will join KPMG, a consultancy group, as global advisor on climate and sustainability.

De Boer's resignation wasn't a surprise to many familiar with the UNFCCC process, and especially those who attended the UN Climate Change Conference in

Copenhagen (COP15) this past December.

For many agitating for an international agreement on greenhouse gas emissions, the COP15 meeting fell far short. "Copenhagen took a personal and physical toll on him," says Jake Schmidt, international climate policy director with the Natural Resources Defense Council (NRDC) in Washington.

Experts in international climate policy say that the leaking of e-mails from the University of East Anglia's Climatic Research Unit - dubbed ClimateGate - and criticism of some of the science included in the UN's Intergovernmental Panel on Climate Change's (IPCC) assessment had no bearing on De Boer's resignation.

The IPCC deals with the science of human-caused climate change which, despite recent criticism, is still considered by the vast majority of scientists to be convincing and robust. The UNFCCC, on the other hand, is - or is supposed to be - a political agreement between nations to curb greenhouse gas emissions for the benefit of all.

Many observers say that De Boer is a hard-working, dedicated, and competent bureaucrat thrust into a vexing situation.

"He's done a very good job in an almost impossible situation," says David Victor, a professor at the University of California San Diego's School of International Relations. "But the head is only as strong as the member governments will let him be. And the member governments so far don't really have a very real game plan."

Some 120 world leaders attended the UNFCCC Copenhagen meeting in December, where the lack of concrete progress frustrated many.

Toward the end of the until-then gridlocked meeting, the largest greenhouse gas emitters agreed on emissions reduction goals, with US President Barack Obama leading the way. But those agreements were in no way binding.

Although he denies that he was frustrated by Copenhagen, De Boer has expressed disappointment in its outcome. "Copenhagen wasn't what I had hoped it would be," he told The Associated Press. "We were about an inch away from a formal agreement. It was basically in our grasp, but it didn't happen."

De Boer's resignation comes at a time when many question whether the UNFCCC is the most effective place to wrangle a climate deal. Increasingly, the UNFCCC seems to be too large and too ungainly an organization to negotiate binding international agreements, says Robert Stavins, director of the Harvard Environmental Economics Program in Cambridge, Mass., who adds that Its continued relevancy may well depend on De Boer's successor.

"Some inspired leadership may be required," he says. Otherwise, the UNFCCC will likely be supplanted by smaller, leaner organizations, such as the G20, he adds.

Dr. Victor of UC San Diego agrees. He adds the G8 and the Major Economies Forum to the list of likely arenas for negotiating an agreement on greenhouse gas emissions. "Lots of folks agree that something smaller and more focused is needed," he says. "But nobody has a clear idea yet what that's going to be.

De Boer's replacement will probably hail from the so-called "global south" - the developing world - speculates Mr. Schmit of the NRDC. The rift between developed countries - which are responsible for the bulk of the increase of greenhouse gases so far - and developing countries - which are responsible for fewer gases so far but have much to gain by industrializing and increasing their emissions - proved to be a major stumbling block at the Copenhagen meeting.

"Having a representative from the 'south' as head will give a symbolic signal that it's not just a 'north' initiative," he says.

The next UN climate meeting is scheduled to take place in Cancun, Mexico, in late November and early December.

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