

# Northern Climate ExChange

*Independent Information - Shared Understanding - Action on Climate Change*

NCE Update June 17, 2009

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## Announcements

### 1. Climate in Peril: A Popular Guide to the Latest IPCC Reports (UNEP, May 2009)

This resource presents the substance of the Climate Change 2007 Synthesis Report of the Intergovernmental Panel on Climate Change (IPCC) in simplified language and structure. The guide, intended for lay readers, is a joint publication of UNEP GRID-Arendal and SMI Books, supported by the Norwegian Pollution Control Authority and the Swedish Environmental Protection Agency. It includes chapters on: robust findings and key uncertainties; present changes, causes and observed impacts; projected climate change and its impacts; adaptation and mitigation; mitigation options; adaptation options; the potential of international and regional cooperation; the limits of adaptation and mitigation; costs of impacts, mitigation and long-term stabilization targets; sustainable development, environmental protection and climate change; and long-term perspectives on key vulnerabilities, impacts and risks. Download [guide](#).

[www.iisd.ca](http://www.iisd.ca)

### 2. Global Climate Change Impacts in the United States - June 16

The **Global Climate Change Impacts in the United States Report** released on June 16, summarizes the science and the impacts of climate change on the United States, now and in the future. It focuses on climate change impacts in different regions of the U.S. and on various aspects of society and the economy such as energy, water, agriculture, and health. It's



also a report written in plain language, with the goal of better informing public and private decision making at all levels.

[Download the Report](#)

[www.globalchange.gov](http://www.globalchange.gov)

### **3. Second Circumpolar Conference on Geospatial Sciences and Applications - August 4-6, 2009, Fairbanks, Alaska**

The Second Circumpolar Conference on Geospatial Sciences and Applications is a unique opportunity to discuss issues and present current research related to geospatial activities in the Arctic environment. This conference provides an opportunity to present results associated with the International Polar Year, environment and climate change monitoring and geographic analysis, geospatial standards and their application, and the construction of virtual collaborative networks including Arctic mapping and the virtual Arctic Spatial Data Infrastructure (ASDI).

[www.alaska.usgs.gov](http://www.alaska.usgs.gov)

## **Articles**

### **1. Caribou herds worldwide experiencing serious decline: Study**

By Randy Boswell,  
Canwest News Service  
*Calgary Herald*  
June 11, 2009

A Canadian study of global caribou populations has produced what scientists are calling a "dramatic revelation" that numbers of the iconic species - pictured on the Canadian quarter - have plunged 60 per cent in the past 30 years.

The study, co-authored by University of Alberta biologists Liv Vors and Mark Boyce and published in the journal *Global Change Biology*, also shows that most of the dozens of distinct caribou herds in Canada and each of the four subspecies - Woodland, Barren-ground, Grant's and Peary - are experiencing serious declines due to climate change and habitat pressures from humans.

"The future seems very bleak for the species if things don't change," Vors told Canwest News Service on Thursday, describing the caribou as "one of the last symbols of wild Canada."

Previous studies have raised alarms about the state of the species in this country - particularly the threatened Peary caribous' plight in Canada's High Arctic islands, where warming temperatures are increasingly leaving the vegetation they need to survive encased in ice.

A major Environment Canada report issued in April also concluded that half of the caribou herds living in Canada's vast boreal forest region could soon die off without urgent habitat-protection initiatives, including restrictions on logging and mining.

But the U of A study is the first to integrate population research on caribou - or reindeer, as they are called in Europe and Asia - from across the circumpolar world, the researchers say.

Vors said the species has traditionally been so central to life among northern indigenous people, as a source of food, clothing and tools, that human migration to the Arctic realm might never have occurred without the caribou.

"While global attention focuses on the increasing effects of climate change in polar regions, caribou and reindeer have not received the international attention of other northern fauna, such as polar bears," the study states.

Caribou, however, form "the cultural and socioeconomic cornerstone of northern peoples throughout the circumpolar north and, through herding and hunting, permitted these cultures to survive in a harsh and unpredictable environment."

But the species' struggle is not only being witnessed in the Far North.

Earlier this week, Alberta conservation experts warned that caribou could disappear from much of that province because of habitat incursions from oil and gas development and the construction of roads and hydro corridors.

"Several Alberta herds are at high risk of extinction," said co-author Boyce, a board member with the Alberta Caribou Committee. "Clearly industrial development is the threat to all of Alberta's caribou herds. Alberta has slashed funding for caribou conservation and the future is in limbo. The situation is grim at best."

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

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## **2. UAF researcher studying climate change in Greenland**

By Michael P. Koshmrl,  
News-Miner  
June 17, 2009

FAIRBANKS - Sebastian H. Mernild has determined the Greenland ice sheet is melting - and sliding into the ocean - faster than it was only a decade and a half ago. Now he's setting off to learn how and why.

For the past seven years Mernild, a postdoctoral fellow at the University of Alaska Fairbanks, has studied and projected surface melt in Greenland. His most recent study, published in the journal Hydrological Processes, linked the ice sheet's disappearing mass directly to rising ocean levels. It was the first study to make the connection.

He discovered that Greenland, which is shedding an average of 86 cubic miles of ice annually, also is directly contributing 0.7 millimeters to the ocean level.

That's nearly 25 percent of the annual total global sea rise.

Mernild, a 36-year-old Denmark native, was drawn toward researching the world's second largest and northernmost ice sheet by his interest in the impacts of climate change. He has traveled to Greenland, barren and desolate even by Alaska standards, every year since 2002 to gather data for his studies.

"Ten percent of all ice on the Earth is actually located on the (Greenland) ice sheet," Mernild said. "That means if the ice sheet melts completely, the sea level will rise around seven meters. We need to know what is going on here and how fast the ice is going out."

In order to pinpoint exactly what is going on, and acquire the data he needs, Mernild spends two to three weeks each summer camped out atop the mountain-sized blanket of ice. The accommodations are not always plush.

"Sometimes it's quite primitive, actually," Mernild said. "It's like going out into the wilderness and bringing your own tent and your own food ... You're outside, using your body and muscles, and running up and down. You really need to be in good shape. You go places that other people really don't go."

The Greenland ice sheet and Arctic ice cap have been the subject of increasing attention from climate researchers in recent years. Larry Hinzman, who directs the International Arctic Research Center at UAF, calls Greenland "the tail wagging the dog of the Arctic."

"It's a big deal," Hinzman said. "Greenland creates its own weather because it is so high. It's like Mount

McKinley in that regard. Lately the snow melt line has been moving higher and higher. We're getting a lot more calving of glaciers around the sides and we're also seeing more sub-glacial outflow of liquid water. There's a lot going on."

Mernild is far from the only researcher trying to make sense of the changing conditions. His last study relied on data amassed at 25 different research stations located around the country. He said that by next year there will be 35 stations recording information on ice depth, temperature and precipitation, and taking in other measurements. Much of the reason for the surge in research is the disproportionate impact of climate change in the northern latitudes.

"The air temperatures in the arctic areas are changing by a factor of two compared to the global average," Mernild said. "The changes in the arctic areas are happening much faster, and that is true not only in Greenland, but also in northern Canada and Alaska."

To date most of Mernild's research in Greenland has involved surface phenomenon, primarily melt levels and the loss of ice mass via icebergs. Mernild said there is great deal of interplay between the two. He explained that melt percolates down into the center of the ice sheet through natural fissures, moving mostly horizontally through "drainpipes" down to the bedrock, and eventually out to the ocean. The torrent of water serves as a lubricant for the ever-moving ice field. In Greenland, where ice can exceed two miles in depth in the interior and 100 yards along the outer fringes, this can be a sight to behold.

"At one famous place to watch the icebergs, it moves around 40 meters on average per day," Mernild said. "You can actually see it. If you stand there for one hour you can see that this is some kind of ice stream. It moves down and breaks off, forming into icebergs. You can see it and you can also hear it."

Next year at Las Alamos National Laboratory in New Mexico, Mernild will turn the page with his research, focusing his investigation more exclusively on the impact warming temperatures project to have on the lubrication effect. If the international community does not take significant strides to curb CO2 emissions, Mernild's research suggests the impact will be profound.

Using the Intergovernmental Panel on Climate Change's scenario that projects minimal reductions in carbon-dioxide levels, Mernild determined that by 2077, 66 percent of the surface of the Greenland ice sheet would be subject to seasonal melting and lubrication. In 2007, only 50 percent of the ice sheet regularly breached the freezing point, and experienced seasonal melting.

The actual field work his new research will entail is not limited to ice-core drilling, meter-reading and modeling. In order to best understand the lubrication effect, Mernild dumps tubs of powdered yellow dye into the inland fissures of the ice sheet. He then then scoots over to the outlet along the coast, where he can measure how quickly the water tunneled through and calculate the overall outflow based upon the dye's endpoint concentration. Remarkably, even after traversing three to four miles through a raging torrent, the water remains visibly yellow.

Hinzman stressed the importance of Mernild's research.

"People in the Netherlands and other low-elevation countries, they're very concerned about what's going on in Greenland," he said.

Fittingly, Mernild's homeland, Denmark, is just down the road, and is a very low-lying country itself. After a two-year stint researching in New Mexico, he plans to return.

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

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### **3. New Report Provides Authoritative Assessment of National, Regional Impacts of Global Climate Change**

*Details Point to Potential Value of Early, Aggressive Action*

NOAA

June 16, 2009

Climate change is already having visible impacts in the United States, and the choices we make now will determine the severity of its impacts in the future, according to a new and authoritative federal study assessing the current and anticipated domestic impacts of climate change.

The report, "Global Climate Change Impacts in the United States," compiles years of scientific research and takes into account new data not available during the preparation of previous large national and global assessments. It was produced by a consortium of experts from 13 U.S. government science agencies and from several major universities and research institutes. With its production and review spanning Republican and Democratic administrations, it offers a valuable, objective scientific consensus on how climate change is affecting-and may further affect-the United States.

"This new report integrates the most up-to-date scientific findings into a comprehensive picture of the ongoing as well as expected future impacts of heat-trapping pollution on the climate experienced by Americans, region by region and sector by sector," said John P. Holdren, Assistant to the President for Science and Technology and director of the White House Office of Science and Technology Policy. "It tells us why remedial action is needed sooner rather than later, as well as showing why that action must include both global emissions reductions to reduce the extent of climate change and local adaptation measures to reduce the damage from the changes that are no longer avoidable."

The report, which confirms previous evidence that global temperature increases in recent decades have been primarily human-induced, incorporates the latest information on rising temperatures and sea levels; increases in extreme weather events; and other climate-related phenomena. Adding greatly to its practical value in the realm of policy and planning, it is the first such report in almost a decade to break out those impacts by U.S. region and economic sector, and the first to do so in such great detail.

"This report stresses that climate change has immediate and local impacts - it literally affects people in their backyards," said Jane Lubchenco, under secretary of commerce for oceans and atmosphere and administrator of the National Oceanic and Atmospheric Administration. "In keeping with our goals, the information in it is accessible and useful to everyone from city planners and national legislators to citizens who want to better understand what climate change means to them. This is an issue that clearly affects everyone."

A product of the interagency U.S. Global Change Research Program, the definitive 190-page report, produced under NOAA's leadership, is written in plain language to better inform members of the public and policymakers. Commissioned in 2007 and completed this spring, the science-based report is a consensus product spanning two presidential administrations and transcends political leanings or biases. It underwent intensive review by scientists inside and outside of government and includes information more recent than that incorporated into the last major report on global climate change released by the Intergovernmental Panel on Climate Change.

The report is not intended to direct policy makers to take any one approach over another to mitigate climate change or adapt to it. But it emphasizes that the choices we make now will determine the severity of climate change impacts in the future. "Implementing sizable and sustained reductions in carbon dioxide emissions as soon as possible would significantly reduce the pace and the overall amount of climate change," the report states, "and would be more effective than reductions of the same size initiated later."

The study finds that Americans are already being affected by climate change through extreme weather, drought and wildfire trends and details how the nation's transportation, agriculture, health, water and energy sectors will be affected in the future. The study also finds that the current trend in the emission of greenhouse gas pollution is significantly above the worst-case scenario that this and other reports have considered.

Among the main findings are:

- Heat waves will become more frequent and intense, increasing threats to human health and quality of life. Extreme heat will also affect transportation and energy systems, and crop and livestock production.
- Increased heavy downpours will lead to more flooding, waterborne diseases, negative effects on agriculture, and disruptions to energy, water, and transportation systems.

- Reduced summer runoff and increasing water demands will create greater competition for water supplies in some regions, especially in the West.
- Rising water temperatures and ocean acidification threaten coral reefs and the rich ecosystems they support. These and other climate-related impacts on coastal and marine ecosystems will have major implications for tourism and fisheries.
- Insect infestations and wildfires are already increasing and are projected to increase further in a warming climate.
- Local sea-level rise of over three feet on top of storm surges will increasingly threaten homes and other coastal infrastructure. Coastal flooding will become more frequent and severe, and coastal land will increasingly be lost to the rising seas.

By breaking out results in terms of region and economic sector the report provides a valuable tool not just for policymakers but for all Americans who will be affected by these trends. Its information can help:

- Farmers making crop and livestock decisions, as growing seasons lengthen, insect management becomes more difficult and droughts become more severe;
- Local officials thinking about zoning decisions, especially along coastal areas;
- Public health officials developing ways to lessen the impacts of heat waves throughout the country;
- Water resource officials considering development plans; and,
- Business owners as they consider business and investment decisions.

Responses to climate change fall into two categories. The first involves "mitigation" measures to limit climate change by reducing emissions of heat-trapping pollution or increasing their removal from the atmosphere. The second involves "adaptation" measures to improve our ability to cope with or avoid harmful impacts, and take advantage of beneficial ones. "Both of these are necessary elements of an effective response strategy," said Jerry Melillo of the Marine Biological Laboratory in Woods Hole, MA, a report co-chair.

"By comparing impacts that are projected to result from higher versus lower emissions of heat-trapping gasses, our report underscores the importance and real economic value of reducing those emissions," said Tom Karl, director of [NOAA's National Climatic Data Center](#) in Asheville, N.C. and one of the co-chairs of the report. "It shows that the choices made now will have far-reaching consequences."

The report draws from a large body of scientific information, including the set of 21 Synthesis and Assessment reports from the U.S. Global Change Research Program. The government agencies affiliated with the program include the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Interior, State, and Transportation; the Environmental Protection Agency; NASA; National Science Foundation; Smithsonian Institution; and the United States Agency for International Development.

The report is available for [download online](#).

Accompanying video will be available on NASA TV June 16 at 1:30 p.m. and 3:30 p.m. Eastern Daylight Time. For coordinates and schedule information, please see the [NASA TV Web site](#).

[www.noaanews.noaa.gov](http://www.noaanews.noaa.gov)

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#### **4. Another critical minimum of Arctic sea ice to be expected in 2009: new prognoses**

*Researchers from DAMOCLES and KlimaCampus of the University of Hamburg agree upon a continuing negative trend. Another critical level of Arctic sea ice extent is to be expected in the late summer of 2009.*

Damocles  
June 14, 2009

Climate researchers from the Alfred Wegener Institute for Polar and Marine Research and KlimaCampus of the University of Hamburg participate for the second time in an international scientific competition.

Some of the most renowned climate research institutes worldwide fathom possibilities for seasonal

prognoses of Arctic sea ice cover by means of different methods and climate models. The declared aim of all participants is to find the best method for reliable prognoses.

"We have computed in this year's first prognosis that the ice cover of the Arctic Ocean will lie at the end of the summer with at least 28 % probability under that of 2007 - the year with the lowest-ever measured ice extension", explained Prof. Dr. Rüdiger Gerdes from the Alfred Wegener Institute.

"The new prognosis is to be repeated each month. It was developed in cooperation with staff from the scientific companies OASys and FastOpt (Hamburg) within the framework of the EU project DAMOCLES. The uncertainty of the prognosis is still very great because the Arctic melting period has just started. We expect increasing accuracy when the start date of the prognosis comes nearer to the target time period in September", continued Gerdes.

The prognosis of the team from KlimaCampus of the University of Hamburg is slightly more positive:

"We estimate a probability of 7 % that this year will fall below the negative record of 2007 - with an increasing tendency", reported Prof. Dr. Lars Kaleschke from the Institute of Oceanography.

There is no doubt regarding the long-term trend for him neither:

"The Arctic sea ice will also melt extremely in this year - with far-reaching consequences for the global thermal and radiation balance."

The researchers expect a long-term decrease of sea ice cover in the North Pole region in the summer of the coming decades. An exact prognosis for the respective next late summer is not possible, however. This is based on two factors: ice thickness at the end of the winter in its spatial distribution is unknown - in contrast to the degree of ice cover. "The knowledge of it, however, is of decisive importance for a good prognosis", explained Gerdes from the Alfred Wegener Institute.

In addition, a prognosis over the summer is made more difficult by the fact that the short-term development of sea ice is dependent on the actual weather over the Arctic Ocean. This is not predictable over many months, however.

Both research teams have approached this problem with different methods. Prof. Gerdes and his team have included additional measurement data into their model in this year. They utilized a variational data assimilation system developed by OASys and FastOpt within the framework of DAMOCLES. The simulation with their model (NAOSIM) orients itself on measurement data gained in the Arctic during the last months as closely as possible. Included are oceanic measurement data from drift buoys, such as brought out in the ice by the Alfred Wegener Institute, and also data on ice cover and ice movement measured from satellites. It is intended to take ice thickness measurements gained by the Alfred Wegener Institute and the Canadian University of Alberta with the research aircraft Polar 5 in later prognoses into account.

The prognosis of the Hamburg researchers around Prof. Lars Kaleschke is based upon an extrapolation of satellite data from the last 36 years. This is the longest global climate time series among all satellite measurements.

"Our latest studies show that there is no conclusive interrelation between the frozen surface measured in the winter and in spring and the expected minimum for the late summer", reported Kaleschke.

Different statistical prediction methods were tested. The most precise methodology is currently the analysis of the respective minima, this means the data from September regarding the whole time span. This shows the highest correspondence compared to real data measured later.

"Even if we do not wish a new record minimum of ice extent - we nevertheless hope that our prognosis will be near to the actual data in September, just like last year", said Rüdiger Gerdes.

You can find information on the international scientific contest [here](#).

You can find an animation regarding the current sea ice development from KlimaCampus Hamburg [here](#) (January 2000 - May 2009 in English) and [here](#) (January 2001 - September 2008 in German with an explanation).

## Downloads:

[Sea ice outlook \(SIO\) 2009 - AWI/FastOpt/OASys contribution](#)

[www.damocles-eu.org](http://www.damocles-eu.org)

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## 5. New Russian Arctic Park to protect key polar bear habitat

*Russia will create a new 1.5 million hectare park in the Arctic, a central area for the Barents and Kara Sea polar bear populations.*

World Wildlife Fund (WWF)

June 16, 2009

The 'Russian Arctic' park is located on the northern part of [Novaya Zemlya](#), a long island that arcs out into the Arctic Ocean between the Barents and Kara Seas. It also includes some adjacent marine areas.

WWF has long been lobbying for the park, which is also a key area for walrus, wild reindeer and bird population. The park creation excludes all industrial activities.

"This is exactly the sort of thing we need to see from Arctic governments," says Neil Hamilton Director of WWF International's Arctic Programme.

"The only way these Arctic populations are going to survive the ecological havoc caused by global warming is by providing them with enough breathing room."

"If industrial activity is kept far enough from key habitat, the animals have a chance."

"We also need urgent global action on climate change to ensure that the parks stay cold enough for animals such as polar bears and wild reindeer."

While WWF is pleased with the park creation, it notes that the protected area is smaller than the 5 million hectares initially planned.

"Despite the fact that the Russian Arctic Park is our big achievement, we're sorry that not all planned territories were included in the park area," says Oleg Sutkaitis, Head of the Barents Sea Ecoregional Office for WWF Russia.

" [Franz Josef Land](#) and [Victoria Island](#) were crossed out from the project, but we will now work on widening the park's borders."

When announcing the park, Prime Minister Vladimir Putin said he hoped it would be a major attraction for tourism, and announced that he personally plans to vacation there.

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

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## 6. Arctic researchers leave 'tremendous' footprint

By Martin Mittelstaedt

Globe and Mail

June 13, 2009

Scientists investigating the effects of global warming on the Arctic have a dirty little secret: They're big polluters themselves.

Flying to remote Arctic locations, hop-scotching over the tundra by fuel-guzzling helicopters and smashing through polar seas in ice-breakers all produce large amounts of the carbon-dioxide emissions blamed for climate change.

Few scientists have publicly raised the apparent contradictions between conducting research into the effect of climate change on the Arctic and what their own activities contribute to the problem.

But University of Calgary caribou researcher Ryan Brook has done just that, outlining his outsized emission tallies in the journal *Arctic*. By his calculations, he has been producing about 8,300 kilograms of carbon dioxide a year - or about the weight of three Hummers - over the past decade. He suspects the amount "is about average, if not on the low side" compared to other scientists in the North.

His tally came from such sources as helicopters and airplanes for travel in the North, along with attending an average of four conferences in North America each year to discuss his findings with colleagues.

For scientists, there is a huge lure in going to the Arctic. It is considered the region of the world on the front line of climate change, where computer models project the highest amount of warming. In recent years, scientists have made path-breaking discoveries on the disappearance of sea ice, the status of polar bears and the extent of permafrost melting.

Dr. Brook, a postdoctoral fellow at the university's faculty of veterinary medicine, said he thinks scientists conducting Arctic research have an image problem because their work has large carbon footprints, and they aren't doing much to bring them down. Meanwhile, their research is being used by environmentalists to advocate that everyone make deep cuts in emissions of planet-warming gases.

Dr. Brook said he started doing the calculations after "realizing through my own activities I produce a tremendous amount of carbon."

One of his recent trips to a remote camp on the Hudson Bay coast had a research team of 20. Over a week, the fuel for the helicopter ride and other uses clocked in at 3,500 kg of carbon dioxide emissions. Part of the problem is that helicopters are big fuel users, getting only about a third of the mileage of the worst fuel-hogging cars.

Scientists have to "recognize that yes, the research is important, but yes, it also has an impact," he said. "If we're saying that everyone in the globe has to reduce how much carbon you should produce, then we have to do the same as well."

The air travel industry has tried to deal with its image as a big greenhouse-gas polluter by setting up ways for passengers to buy credits to offset emissions through such projects as tree planting that remove carbon dioxide from the air.

But scientific researchers generally haven't been able to get money added to their budgets for such expenditures.

The Natural Sciences and Engineering Research Council of Canada, the largest federal body providing research funds, doesn't approve offsets under a government-wide policy from the Treasury Board.

"It's just not considered from a federal funding point of view to be a prudent investment of taxpayers' funds at this point," said Natasha Gauthier, a spokesperson for the council. She said the council has had "a few" such requests, but had to reject them.

John Smol, a professor in the biology department at Queen's University in Kingston, made a worrisome Arctic discovery two years ago. Shallow ponds that had existed for thousands of years on Ellesmere Island had suddenly dried up, indicating a dramatic change in the climate. This summer he's going back to the area by Twin Otter plane and helicopter.

He said he thinks alerting the public to what is happening in the Arctic means the emissions are worth the cost, and will help create pressure for policies that ultimately lead to reductions in greenhouse gases.

Dr. Brook agrees that Arctic research is making important discoveries, but says scientists need to devote some of their talents to developing ways of having "the minimum impact possible."

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## **7. Delta victim of rapid coastal erosion**

By Andrew Rankin  
Northern News Services  
June 4, 2009

INUVIK - A senior polar researcher says the speed with which permafrost thaw and coastal erosion is occurring along the coast of the Mackenzie Delta could dramatically affect the ocean's ecosystem.

"It will change the composition of the water. Some species will like it; some species will not. The next step will be to talk to biologists to figure out which species will be taking over," said Dr. Hughes Lantuit of the Alfred Wegener Institute for polar and marine research in Germany.

Lantuit, along with a three-person team, was briefly stationed at the Aurora Research Institute building last month to continue his research in the region, which stems back to 2003.

He's currently paying more attention to erosion rates along the Delta coast, but much of his research centres on studying permafrost along the Yukon coast and Herschel Island. The island experiences some of the highest amounts of landslide activity in the Arctic, amounting to 18 dump truck loads of sediment being dumped into the ocean every day.

He said because of the warming period the polar region is experiencing, melting permafrost is triggering landslides, which deposit in the water huge amounts of nutrient-rich sediments, much of which is made up of plant and animal remains.

Though he can't pinpoint exactly how these deposits will affect ocean ecosystems, he said they are significant and occur regularly enough to disrupt the natural species balance.

"It will affect the distribution of resources," he said.

"For example, if you have more seals in a certain location, then how will that affect traditional fishing grounds?" he said.

Levels of coastal erosion in the region between 1950 and 2000 have been stable, but Lantuit said those levels have increased significantly in recent years and he anticipates they will climb even more along the rural Mackenzie Delta coastline.

Though erosion levels along the Yukon coast have been closely documented, the same can't be said for the Arctic Coast, of which only one per cent has been recorded.

During his visit last month, Lantuit and his researchers spent several days on Hershel Island studying sediment found in ground ice, which will help them understand climate patterns for the region. The process involves analyzing isotope levels and vegetation. Lantuit said this will help forecast future climate patterns, which are generally cyclical.

Lantuit will return to ARI in July to continue his research.

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## **8. Russia to rebuild stations, dispatch scientists to bolster claim to Arctic riches**

By Vladimir Isachenkov,  
Associated Press

*Winnipeg Free Press*  
June 10, 2009

MOSCOW - Russia will rebuild its Soviet-era network of polar stations and use its icebreaker fleet to help support its claim to the vast resources of the Arctic, the man who led a mission to plant a Russian flag on the Arctic seabed said Wednesday.

Artur Chilingarov, a famed polar scientist who was recently appointed the Kremlin's point man for Arctic issues, said Russia will gather data and resubmit its claim to the United Nations that an underwater mountain range crossing the polar region is part of Russia's continental shelf.

Under a U.N. treaty, that would make the shelf Russian territory and Russia would have ownership of any of its natural resources.

"Russia won't leave the Arctic, we will build up our economic and scientific presence in the region," Chilingarov told reporters. "I'm confident that our claim is fully legitimate."

Russia, the United States, Canada, Denmark and Norway have all been trying to assert jurisdiction over parts of the Arctic, which is believed to contain as much as 25 per cent of the Earth's undiscovered oil and gas. The dispute has intensified amid growing evidence that global warming is shrinking polar ice, opening up new shipping lanes and new resource development possibilities.

Chilingarov said Russia will rebuild a network of polar stations whose number has dwindled from about 100 during Soviet times to just about a dozen now.

Russia's fleet of six nuclear-powered icebreakers also give it an edge in polar exploration, he said, because they are bigger and more powerful than ships from other Arctic nations.

"Russia has a powerful atomic icebreaker fleet which can get to any area of the Arctic and fulfil any task," he added. "No other Arctic nation has such potential."

In 2007, Chilingarov led two Russian mini-submarines on a mission to stake Russia's claim to the region. The two subs descended 2.5 miles (4 kilometres) to the Arctic seabed, where they collected geologic and water samples and dropped a titanium canister containing the Russian flag.

Chilingarov said putting a flag on the Arctic seabed had a symbolic meaning, but Russia now needed to back up its claim with scientific data.

Moscow first submitted the claim to Arctic seabed in 2001 to the United Nations, but it was rejected for lack of evidence. Chilingarov said Russia may resubmit the claim in 2013 after collecting more data.

A Kremlin strategy paper signed by President Dmitry Medvedev last month singled out the Arctic as one of the areas of fierce competition for energy resources - and even said that battles over energy riches may trigger military conflicts near Russian borders.

But Chilingarov downplayed the danger of military confrontation in the Arctic, voicing confidence that Arctic nations will divide the region's riches in line with international law.

"We will defend our economic interests, but I don't foresee any conflicts in the future," he said.

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*The next Update from the Northern Climate Exchange will be sent out **Wednesday, June 24, 2009***