

Northern Climate ExChange

Independent Information - Shared Understanding - Action on Climate Change

NCE Update October 21, 2009

Article Headlines:

- [1. Baffin Island reveals dramatic scale of Arctic climate change](#)
- [2. Arctic Now Traps 25 Percent of World's Carbon -- But That Could Change](#)
- [3. Climate change in Russia's Arctic tundra: 'Our reindeer go hungry...](#)
- [4. Arctic to be 'ice-free in summer'](#)
- [5. NOAA: Global Surface Temperature Was Second Warmest for September](#)
- [6. Polar leader issues climate change plea](#)
- [7. Melting glaciers bring 1980s pollution revival](#)
- [8. Water demand puts Canadian rivers at risk](#)

Quick Links

[NCE Website](#)
[What's New](#)
[About NCE](#)
[Climate Change North Website](#)
[Impacts & Adaptation](#)

Distribution List

[Join Our Mailing List!](#)

Announcements

1. New Study Says Arctic Could Become Emitter of Carbon Dioxide - Audio October 15, 2009

A study that looks at the Arctic's role in absorbing carbon dioxide finds that the job of storing CO₂ could be over in coming decades and the Arctic may become an emitter of carbon dioxide and methane.

David McGuire is a USGS and University of Alaska Fairbanks scientist who reviewed past studies and compiled the latest findings. He says since the end of the last ice age, the Arctic has absorbed about 800 million metric tons of global carbon.

Lori Townsend, APRN - Anchorage

[Download Audio \(MP3\)](#)

2. 'Hug the Legislature' for Action on Climate Change - October 24

Bringing Youth Towards Equality (BYTE) and the **Canadian Youth Climate Coalition** invite Whitehorse citizens of all ages to stand in solidarity with tens of thousands of Canadians in Ottawa and across the nation as part of a global campaign to request that our national governments take decisive action on Climate Change at the upcoming UN Climate Conference in Copenhagen this December 2009.



On October 24th at noon, 350 people in Whitehorse will gather together to form a standing circle, hand-in-hand, around the Yukon Legislative Building on 2nd Avenue to send a powerful message to our government that Yukoners want Canada to take responsibility and leadership on acting to curb climate change.

350 is the number that climate scientists say is the acceptable upper limit for carbon dioxide-measured in "parts per million" in our atmosphere.

Sign up and commit to be one of the 350!

To get your designated number;

1. drop by the **BYTE** office (#2-407 Ogilvie Street),
2. phone 667-7975,
3. visit www.yukonyouth.com or
4. e-mail events@yukonyouth.com.

For more information, please contact: Matthew Koop-Pearce
Bringing Youth Towards Equality at 867-667-7975

www.350.org/node/7609

3. "Live from IPY: Polar Bear Response to Sea Ice Loss" - October 22, 2009

Talk to PolarTREC Teacher Cristina Galvan and the University of Wyoming polar bear research team during an upcoming free real-time live event from the USCGC Polar Sea in the Arctic Ocean!

"Live from IPY: Polar Bear Response to Sea Ice Loss"

Thursday, October 22, 2009

8:00 am Alaska Daylight Time (6:00 am HST, 9:00 am PDT, 10:00 am MDT, 11:00 am CDT, 12:00 pm EDT)

[Register here.](#)

www.polartrec.com

4. Call for Proposals 2010-2011: The Climate Change and Health Adaptation Program - Northern First Nations and Inuit Communities.

The Climate Change and Health Adaptation Program is now accepting proposals from Northern First Nations and Inuit Communities for the 2010-2011 fiscal year. The Climate Change and Health Adaptation Program funds community-centred research, where the research is done by community members/organizations for the benefit of their community.

For more information and how to apply, contact:
Erin Myers, Program Officer, Health Canada
(613) 957-2490 or e-mail erin_myers@hc-sc.gc.ca

Deadline for Applications is January 24th, 2010

Articles

1. Baffin Island reveals dramatic scale of Arctic climate change

Study delves back into 200,000 years of history to demonstrate the devastating impact of global warming

By Steve Connor

The Independent
October 20, 2009

A frozen lake on a remote island off Canada's northern coast has yielded remarkable insights into how the Arctic climate has changed dramatically over 50 years.

Muddy sediment from the bottom of the lake, some of it 200,000 years old, shows that Baffin Island, one of the most inhospitable places on Earth, has undergone an unprecedented warming over the past half-century. Scientists believe the temperature rise is probably due to human-induced warming. It has more than offset a natural cooling trend which began 8,000 years ago.

Instead of cooling at a rate of minus 0.2C every 1,000 years - a trend that was expected to continue for another 4,000 years because of well-known changes to the Earth's solar orbit - Baffin Island, like the rest of the Arctic, has begun to get warmer, especially since 1950. The Arctic is now about 1.2C warmer than it was in 1900, confirming that the region is warming faster than most other parts of the world.

Baffin Island, the largest island in the Arctic Canadian Archipelago, is subjected to prevailing northerly winds that keep average temperatures at about minus 8.5C, well below similar Arctic locations at a comparable latitude. Polar bears, arctic fox and arctic hares walk the island's territory while narwhal, walrus and beluga whale patrol its coastline.

The island is dotted with lakes, the bottoms of which have been periodically scoured by glaciers with each passing ice age. However, scientists have found that the sediments at the bottom of some of the lakes, which build up each year rather like tree rings, have survived this scouring process intact.

This has enabled the scientists to take core samples going back tens of thousands of years. One such lake on Baffin Island, known as CF8, has been found to have layers of sediment dating back 200,000 years, which makes it the oldest lake sediment bored from any glaciated parts of Canada or Greenland, according to the study published in the journal Proceedings of the National Academy of Sciences.

It is the CF8 lake that has provided scientists with the sediment core showing the unprecedented warming of Baffin Island over the past few decades, compared with a time span going back 200,000 years, a period which included two ice ages and three interglacial periods - and roughly the time that Homo sapiens has been on earth.

"The past few decades have been unique in the past 200,000 years in terms of the changes we see in the biology and chemistry recorded in the cores," said Yarrow Axford of the University of Colorado at Boulder. "We see clear evidence for warming in one of the most remote places on earth at a time when the Arctic should be cooling because of natural processes." The scientists found that certain cold-adapted organisms in the layers of sediment have decreased in frequency since about 1950. Larvae from species of Arctic midge, which only live in cold conditions, have abruptly declined and two species in particular have disappeared altogether.

Meanwhile, a species of lake alga or diatom that is better suited to warmer conditions has increased significantly over the same period, indicating longer periods when the lake's surface was free of ice, the scientists said. Other sediment measurements support a dramatic reversal of the natural cooling trend, they said.

As part of a 21,000-year cycle, the Arctic has been receiving progressively less summertime energy from the Sun for the past 8,000 years because of a well-established "wobble" in the Earth's solar rotation - the Earth is now 0.6 million miles further from the Sun during an Arctic summer solstice than it was in 1BC. This decline will not reverse for another 4,000 years, but changes to the climate of Baffin Island show that the cooling it should have caused has gone into reverse in the past few decades.

A separate team of scientists analysing Arctic lakes in Alaska found a similar warming trend in recent years compared to sediment records going back a few thousand years. They, too, concluded that the warming was unprecedented and could be explained by human activities, namely the build of man-made carbon dioxide in the atmosphere.

"The amount of energy we're getting from the Sun in the 20th century continued to go down, but the

temperature went up higher than anything we've seen in the last 2,000 years," said Nicholas McKay of the University of Arizona in Tucson .

"The 20th century is the first century for which how much energy we're getting from the Sun is no longer the most important thing governing the temperature of the Arctic," said Dr McKay, when the study was published last month in the journal Science.

Baffin Island: An ancient trading post

Baffin Island lies between Greenland and the northern coast of Canada and, for all its remoteness and inhospitable climate, it may have played an important role as a staging post on the first-ever transatlantic trade route.

Archaeologists have found wooden items and a length of yarn at Nunguvik in the south which they believe indicate that visiting Vikings were interacting with the local natives, known as the Dorset people, who lived on Baffin Island between 500BC and AD1500.

The scientists believe that the Dorset, who dressed in animal skins, did not know how to spin yarn, unlike the Vikings. The three-metre strand, found frozen in the tundra, was spun from arctic hare fur mixed with goat hair, similar to yarn found at Viking settlements on Greenland. There are no goats on Baffin Island.

Further evidence comes from one of the wooden carvings which shows two faces chin to chin. One has the features of indigenous North Americans, whose ancestors had an Asian origin, while the other shows a long, narrow face and nose with a heavy beard - a portrait perhaps of a visiting Viking.

www.independent.co.uk

[back to top](#)

2. Arctic Now Traps 25 Percent of World's Carbon -- But That Could Change

USGS News Release
October 14, 2009

The arctic could potentially alter the Earth's climate by becoming a possible source of global atmospheric carbon dioxide. The arctic now traps or absorbs up to 25 percent of this gas but climate change could alter that amount, according to a study published in the November issue of Ecological Monographs. In their review paper, David McGuire of the U.S. Geological Survey and the University of Alaska at Fairbanks and his colleagues show that the Arctic has been a carbon sink since the end of the last Ice Age, which has recently accounted for between zero and 25 percent, or up to about 800 million metric tons, of the global carbon sink. On average, says McGuire, the Arctic accounts for 10-15 percent of the Earth's carbon sink. But the rapid rate of climate change in the Arctic - about twice that of lower latitudes - could eliminate the sink and instead, possibly make the Arctic a source of carbon dioxide.

"This study is another example of the important role played by USGS and its partners in providing the scientific research that must be the backbone of any actions related to climate change," said Secretary of the Interior Ken Salazar.

Carbon generally enters the oceans and land masses of the Arctic from the atmosphere and largely accumulates in permafrost, the frozen layer of soil underneath the land's surface. Unlike active soils, permafrost does not decompose its carbon; thus, the carbon becomes trapped in the frozen soil. Cold conditions at the surface have also slowed the rate of organic matter decomposition, McGuire says, allowing Arctic carbon accumulation to exceed its release.

But recent warming trends could change this balance. Warmer temperatures can accelerate the rate of surface organic matter decomposition, releasing more carbon dioxide into the atmosphere. Of greater concern, says McGuire, is that the permafrost has begun to thaw, exposing previously frozen soil to decomposition and erosion. These changes could reverse the historical role of the Arctic as a sink for carbon dioxide.

"In the short term, warming temperatures could release more Arctic carbon to the atmosphere," says McGuire. "And with permafrost thawing, there will be more available carbon to release."

On the scale of a few decades, the thawing permafrost could also result in a more waterlogged Arctic, says McGuire, a situation that could encourage the activity of methane-producing organisms. Currently, the Arctic is a substantial source of methane to the atmosphere: as much as 50 million metric tons of methane are released per year, in comparison to the 400 million metric tons of carbon dioxide the Arctic stores yearly. But methane is a very potent greenhouse gas - about 23 times more effective at trapping heat than carbon dioxide on a 100-year time scale. If the release of Arctic methane accelerates, global warming could increase at much faster rates.

"We don't understand methane very well, and its releases to the atmosphere are more episodic than the exchanges of carbon dioxide with the atmosphere," says McGuire. "It's important to pay attention to methane dynamics because of methane's substantial potential to accelerate global warming."

But uncertainties still abound about the response of the Arctic system to climate change. For example, the authors write, global warming may produce longer growing seasons that promote plant photosynthesis, which removes carbon dioxide from the atmosphere. Also, the expansion of shrubs in tundra and the movement of treeline northward could sequester more carbon in vegetation. However, increasingly dry conditions may counteract and overcome these effects. Similarly, dry conditions can lead to increased fire prevalence, releasing even more carbon.

McGuire contends that only specific regional studies can determine which areas are likely to experience changes in response to climate change.

"If the response of the arctic carbon cycle to climate change results in substantial net releases of greenhouse gases, this could compromise proposed mitigation efforts for controlling the carbon cycle," he says.

The article, *Sensitivity of the Carbon Cycle in the Arctic to Climate Change*, was published online today in *Ecological Monographs*. The coordinating lead author is David McGuire, USGS, and the co-authors include internationally renowned scientists from Canada, Germany, Sweden, and the United States. This study was sponsored by the Arctic Monitoring and Assessment Program, the Climate in the Cryosphere Program, and the International Arctic Science Committee.

www.usgs.gov

[back to top](#)

3. Climate change in Russia's Arctic tundra: 'Our reindeer go hungry. There isn't enough pasture'

For 1,000 years the indigenous Nenets people have herded their reindeer along the Yamal peninsula. But their survival in this remote region of north-west Siberia is under serious threat from climate change as Russia's ancient permafrost melts

By Luke Harding
The Guardian
October 20, 2009

It is one of the world's last great wildernesses, a 435-mile long peninsula of lakes and squelching tundra stretching deep into the Arctic Ocean. For 1,000 years the indigenous Nenets people have migrated along the Yamal peninsula. In summer they wander northwards, taking their reindeer with them, across a landscape of boggy ponds, rhododendron-like shrubs and wind-blasted birch trees. In winter they return southwards.

But this remote region of north-west Siberia is now under heavy threat from global warming. Traditionally the Nenets travel across the frozen Ob River in November and set up camp in the southern forests around Nadym. These days, though, this annual winter pilgrimage is delayed. Last year the Nenets, together with

many thousands of reindeer, had to wait until late December when the ice was finally thick enough to cross.

"Our reindeer were hungry. There wasn't enough pasture," Jakov Japtik, a Nenets reindeer herder, told the Guardian. "The snow is melting sooner, quicker and faster than before. In spring it's difficult for the reindeer to pull the sledges. They get tired," Japtik said, speaking in his camp 25kms from Yar-Sale, the capital of Russia's Arctic Yamal-Nenets district.

Herders say that the peninsula's weather is increasingly unpredictable - with unseasonal snowstorms when the reindeer give birth in May, and milder longer autumns. In winter temperatures used to go down to -50C. Now they are typically -30C, according to Japtik. "Obviously we prefer -30C. But the changes aren't good for the reindeer and ultimately what is good for the reindeer is good for us," he said, setting off on his sled to round up his itinerant reindeer herd.

Japtik lives on the tundra in a reindeer-skin tent or chum (ital) with his wife, mother, and three-year-old nephew Albert. There is also baby Pasha. The Japtiks live with three other families; the group has around 600 reindeer. The family slaughters a reindeer every couple of weeks, eating it raw and with pasta. They also catch fish - slicing off filets of sushi-like whitefish, taken from the thousands of virgin-lakes across the peninsula.

Here in one of the most remote parts of the planet there are clear signs the environment is under strain. Last year the Nenets arrived at a regular summer camping spot and discovered that half of their lake had disappeared. It had drained away after a landslide. While landslides can occur naturally, scientists say there is unmistakable evidence that Yamal's ancient permafrost is melting. The Nenets report other curious changes - fewer mosquitoes and a puzzling increase in gadflies.

"It's an indication of the global warming process, like the opening of the Arctic waters for shipping this summer," says Vladimir Tchouprov, Greenpeace Russia's energy unit head. The melting of Russia's permafrost could have catastrophic results for the world, Tchouprov says, by releasing billions of tonnes of carbon dioxide and the potent greenhouse gas methane, that was previously trapped in frozen soil.

Russia - the world's biggest country by geographical area - is already warming at one and a half times the rate of other parts of the world. If global temperatures do go up by the 4C many scientists fear, the impact on Russia would be disastrous. Much of Russia's northern region would be turned into impenetrable swamp. Houses in several Arctic towns are already badly subsiding.

Many Russians, however, are sceptical that climate change exists. Others rationalise that it might bring benefits to one of the world's coldest countries, freeing up a melting Arctic for oil and gas exploration, and extending the country's brief growing season. Russia's scientific community seems sceptical of global warming and the Kremlin doesn't appear to regard the issue as a major domestic problem; public awareness of climate change in Russia is lower than in any other European country.

Western politicians, however, point out that it is in Russia's interests to take action on climate change and to push for ambitious targets at December's Copenhagen summit. "There is 5,000 miles of railway track built on permafrost. It could crumble as a result of melting," Ed Miliband, the secretary of state for climate change, pointed out during a recent visit to Moscow.

However, even Russians working in the Arctic are unconvinced that their country faces a serious climate-change problem. "It's rubbish. It's invented. People who spend too long sitting at home have made up climate change," Alexander Chikmaryov, who runs a remote weather station on the Yamal peninsula, said, standing in his dilapidated station strewn with rusting engine parts and a broken-down wind turbine.

Chikmaryov lives in Marresale, an outpost on the Yamal peninsula's north-west coast overlooking the Kara Sea. A small community of Nenets hunters live nearby; otherwise there's nobody for a hundred kilometres. The weather here is, not surprisingly, bitterly cold; the sea freezes nine months of the year. The word Yamal means "end of the world" in Nenets language, and in Marresale you see why.

In fact, Chikmaryov's own data suggests that global warming is a real problem here too. In 2008 the ice was 164cm thick; this year it is 117cm. Winter temperatures have gone up too - from lows of -50C in 1914, when the station was founded, to -40C today. Every year large chunks of the coast on which the station is precariously perched fall into the sea. On the beach there is a jagged layer of thawing permafrost.

And there are other unnatural signs. On 15 August a large polar bear ambled into Marresale and started rooting through the station's rubbish bin. "It was 7pm. The bear was enormous. We set off a flare. It ran off," she recalled. Polar bear sightings are becoming increasingly common - with the bears apparently venturing south from their far-northern habitat in search of food. "They are an impudent lot. They aren't afraid of humans," Ludmilla says, gleefully recalling how one polar bear ripped the scalp from a Russian scientist living on Franz Josef Land.

Back on the tundra Japitik was rounding up his reindeer. Some were already back at the camp; their munching resembled the soft clicking of a thousand knitting needles. "I've lived all of my life in the tundra," he said.

"The reindeer for us are everything - food, transport and accommodation. The only thing I hope is that we will be able to carry on with this life."

www.guardian.co.uk

[back to top](#)

4. Arctic to be 'ice-free in summer'

By David Shukman
BBC News
October 14, 2009

The Arctic Ocean could be largely ice-free and open to shipping during the summer in as little as ten years' time, a top polar specialist has said.

"It's like man is taking the lid off the northern part of the planet," said Professor Peter Wadhams, from the University of Cambridge.

Professor Wadhams has been studying the Arctic ice since the 1960s.

He was speaking in central London at the launch of the findings of the Catlin Arctic Survey. The expedition trekked across 435km of ice earlier this year.

Led by explorer Pen Hadow, the team's measurements found that the ice-floes were on average 1.8m thick - typical of so-called "first year" ice formed during the past winter and most vulnerable to melting.

The survey route - to the north of Canada - had been expected to cross areas of older "multi-year" ice which is thicker and more resilient.

When the ridges of ice between floes are included, the expedition found an average thickness of 4.8m.

Professor Wadhams said: "The Catlin Arctic Survey data supports the new consensus view - based on seasonal variation of ice extent and thickness, changes in temperatures, winds and especially ice composition - that the Arctic will be ice-free in summer within about 20 years, and that much of the decrease will be happening within 10 years.

"That means you'll be able to treat the Arctic as if it were essentially an open sea in the summer and have transport across the Arctic Ocean."

According to Professor Wadhams, faster shipping and easier access to oil and gas reserves were among short-term benefits of the melting.

But in the longer-term, losing a permanent feature of the planet risked accelerated warming, changing patterns of circulation in the oceans and atmosphere, and having unknown effects on ecosystems through the acidification of waters.

Pen Hadow and his companions Ann Daniels and Martin Hartley endured ferocious weather - including a wind chill of minus 70 - delayed resupply flights and starvation rations during the expedition from 1 March to 7 May.

When I met them on the ice, as part of a BBC team that joined the pick-up flight, all three had lost weight and were evidently tired from the ordeal.

The expedition had been blighted by equipment failures. A pioneering radar system, designed to measure the ice while being dragged over the ice, broke down within days. Another device to measure the water beneath the ice never functioned at all.

A planet transformed

The technical breakdowns forced the team to rely on hand-drilling through the ice which slowed progress and meant the team's planned destination of the North Pole had to be abandoned.

Pen Hadow admitted that the expedition had not led to "a giant leap forward in understanding" but had been useful as an incremental step in the science of answering the key questions about the Arctic.

His view was backed by Professor Wadhams who said the expedition had provided information about the ice that was not available from satellites and that no submarines had been available to science at that time either.

Pen Hadow said he was shocked by the image of how "in my lifetime we're looking at changing how the planet looks from space."

He also described how polar explorers were having to change their methods from the days when sledges could be pulled by dogs over the ice.

"Dogs can swim but they can't tow a sledge through water which is what's needed now."

"Now we have to wear immersion suits and swim and we need sledges that can float. I can foresee needing sledges that are more like canoes that you also pull over the ice."

www.bbc.co.uk

[back to top](#)

5. NOAA: Global Surface Temperature Was Second Warmest for September

NOAA

October 15, 2009

The combined global land and ocean surface temperature was the second warmest September on record, according to NOAA's National Climatic Data Center in Asheville, N.C. Based on records going back to 1880, the monthly National Climatic Data Center analysis is part of the suite of climate services NOAA provides.

NCDC scientists also reported that the average land surface temperature for September was the second warmest on record, behind 2005. Additionally, the global ocean surface temperature was tied for the fifth warmest on record for September.

Global Temperature Highlights

- The combined global land and ocean surface temperature was 1.12 degrees F above the 20th century average of 59.0 degrees F. Separately the global land surface temperature was 1.75 degrees F above the 20th century average of 53.6 degrees F.
- Warmer-than-average temperatures engulfed most of the world's land areas during the month. The greatest warmth occurred across Canada and the northern and western contiguous United States.

Warmer-than-normal conditions also prevailed across Europe, most of Asia and Australia.

- The worldwide ocean temperature tied with 2004 as the fifth warmest September on record, 0.90 degree F above the 20th century average of 61.1 degrees F. The near-Antarctic southern ocean and the Gulf of Alaska featured notable cooler-than-average temperatures.

Other Highlights

- Arctic sea ice covered an average 2.1 million square miles in September - the third lowest for any September since records began in 1979. The coverage was 23.8 percent below the 1979-2000 average, and the 13th consecutive September with below-average Arctic sea ice extent.
- Antarctic sea ice extent in September was 2.2 percent above the 1979-2000 average. This was the third largest September extent on record, behind 2006 and 2007.
- Typhoon Ketsana became 2009's second-deadliest tropical cyclone so far, claiming nearly 500 lives across the Philippines, Cambodia, Laos and Vietnam. The storm struck the Philippines on September 26, leaving 80 percent of Manila submerged.

Scientists, researchers, and leaders in government and industry use NCDC's monthly reports to help track trends and other changes in the world's climate. The data have a wide range of practical uses, from helping farmers know what and when to plant, to guiding resource managers with critical decisions about water, energy and other vital assets.

NOAA understands and predicts changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and conserves and manages our coastal and marine resources.

www.noaanews.noaa.gov

[back to top](#)

6. Polar leader issues climate change plea

By Chris Watt
HeraldScotland
October 20, 2009

Climate change in the Arctic Circle is forcing Inuits to abandon their homeland and move south, a visiting polar leader will tell the Scottish Government today.

Aqqaluk Lyng, vice-chairman of the Inuit Circumpolar Council (ICC), is to lobby Climate Change Secretary Stewart Stevenson on the plight of northern peoples during a meeting at Holyrood.

He told The Herald that Scots must take responsibility for their actions, and realise that emissions are already having a real effect on people in other parts of the world.

Describing the troubles facing the Inuit population, he said: "It really hurts when you know that we didn't create the climate situation we have now. It's you down here - your coal-burning is destroying us."

His words echoed those of Gordon Brown, who yesterday warned Britain will face a "catastrophe" of floods, droughts and killer heatwaves if world leaders fail to agree a deal on climate change in Copenhagen this December.

In a bleak message to a meeting of 17 leading nations, Mr Brown said negotiators had 50 days to save the world from global warming and break the "impasse".

He told the Major Economies Forum in London, which brings together the countries responsible for the

world's biggest greenhouse gas emissions, that there was "no plan B" for the planet.

"If we do not reach a deal at this time, let us be in no doubt: once the damage from unchecked emissions growth is done, no retrospective global agreement, in some future period, can undo that choice," he told delegates.

Mr Lynge, the elected leader of Greenland's 40,000 Inuits and a former head of the world's entire Inuit population, praised Scotland's ambitious targets for energy reduction.

"I think the goal that the Government here have set is an example to the rest of the world," he said.

However, he added that it was up to individual citizens to make the sacrifices necessary for change.

He said: "People themselves have to change their way of thinking, and their lives. For some of us climate change may seem like a theory, but it's an important reality for us now.

"Climate change is visible in our area, and you can see it with changes in the fish and the other living creatures, and changes in the migration of birds and marine animals."

Mr Lynge said the time to act was now. "The answer won't be to live like we are used to," he said "We will be forced to change many things that we can't imagine today."

Mr Lynge was hosted in the country by Mike Robinson, who is chief executive of the Royal Scottish Geographical Society and chairman of the Stop Climate Chaos Scotland Network, an umbrella organisation of environmental campaign groups.

Today's meeting is one of several planned in advance of The Wave, a massive global demonstration timed to coincide with the Copenhagen climate change talks in December.

www.heraldscotland.com

[back to top](#)

7. Melting glaciers bring 1980s pollution revival

By Jessica Hamzelou
New Scientist
October 9, 2009

Bad hair and shoulder pads are not the only things from the 1980s that we'd rather not see again. Nasty chemicals banned in that decade are also on the list. Unfortunately, melting Alpine glaciers are generating a revival of toxic organic pollutants.

Christian Bogdal and colleagues at the Swiss Federal Institute of Technology in Zurich studied levels of pollution in sediment at the bottom of the Oberaar lake in Bern, Switzerland.

The flow of pollutants into the lake peaked in the 1970s, mainly due to the production of plastics, electronics, pesticides and fragrances. The levels declined during the 1980s and 1990s when people realised that these compounds were toxic and they were banned.

However, they found that banned chemicals, such as pesticides that have been linked with Parkinson's disease, have been pouring into the lake at an increasing rate since the 1990s.

Powerless observers

Bogdal reckons that a glacier feeding the lake has been storing these chemicals for decades, and is releasing them as it melts. This process could be dramatically sped up by global warming, he warns.

The problem isn't limited to Alpine glaciers. Since these chemicals would have been transported great

distances via the atmosphere before they were frozen into ice, many other glaciers around the world may be contaminated. Toxic chemicals have previously been found in polar regions - putting arctic wildlife at risk.

There is little we can do about it, however. "Stopping global warming could slow the melting of glaciers, but the chemicals will still be released eventually," says Bogdal.

Many toxic chemicals are still used in plastics and electronic equipment, such as brominated flame retardants. Bogdal warns that these could represent the next generation's problem: "They are deposited on glaciers today and will reappear in our lakes in a few decades."

Journal reference: [Environmental Science & Technology](#), DOI: [10.1021/es901628x](#)

www.newscientist.com

[back to top](#)

8. Water demand puts Canadian rivers at risk

CBC News
October 15, 2009

Increasing demands on Canada's fresh water is putting rivers at risk, according to a new report. Growing more food, generating more electricity, expanding cities and industry are all taking a toll on Canada's rivers, according to the World Wildlife Fund Canada.

The report released Thursday, Canada's Rivers at Risk: Environmental Flows and Canada's Freshwater Future, examines the health of 10 major rivers from the perspective of water flow.

"As temperatures rise, and industrial water withdrawals and interest in hydropower increase, we must start planning now to protect river flows to ensure water security for the communities and economies that depend on them," said Tony Maas, director of fresh water with WWF-Canada.

According to the report, the biggest threats to the flow of Canada's rivers are climate change, growing water demands and the pursuit of low-carbon energy, which is driving the construction of new hydropower projects.

The three factors are causing changes in water patterns, affecting water levels and altering the flow of rivers, the report says.

Flow regimes in some of Canada's most important rivers, such as the South Saskatchewan and the St. Lawrence, have been modified to the extent that ecosystems are in serious trouble, according to the report.

South Saskatchewan River most threatened

The report says the South Saskatchewan River is Canada's most threatened river. Hundreds of dams exist throughout its watershed and about 70 per cent of its flow is being redirected for use by cities and agriculture.

The document warns that other rivers, including some of the planet's increasingly scarce large free-flowing rivers like the Skeena, the Athabasca, and the Mackenzie, could soon be in trouble.

Other rivers in the report include:

- Fraser River
- Nipigon River
- Grand River
- St. Lawrence River
- St. John River
- Ottawa River

The federal government needs to play a much stronger role in Canadian water stewardship, the report says.

WWF-Canada president Gerald Butts said water is Canada's most important national resource and national leadership is required "to steward it wisely to ensure that future Canadians can benefit from it."

Federal and provincial governments must collaborate with a broad range of stakeholders for the conservation, management and development of Canada's water flow, the report says.

The WWF-Canada also recommends that Canada develop a long-term plan regarding river water flow that includes an examination of the effects of climate change.

"Demand for water is expected to increase as temperatures rise, making protection of environmental flows even more challenging," the report says.

Canadians must also be responsible and make efforts to ensure they draw water within sustainable limits, the report says.

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[back to top](#)

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Northern Climate ExChange

[back to top](#)

*The next Update from the Northern Climate ExChange will be sent out **Wednesday, October 28, 2009***