

Silak: Ice and Consciousness.¹ The Arctic and Climate Change²

By

Lori Lambert, PhD³

Abstract: *Climate change is the number one threat to the 22,000 polar bears that remain in the world. Currently, polar bears are suffering from a loss of summer sea ice in the Arctic. Polar bears are dependent upon an Arctic sea ice environment for their continued existence. As sea ice is being reduced in the Arctic, the polar bears' basis for survival is being threatened. Because the sea ice is melting earlier in the spring, polar bears are being forced to the land without building up sufficient fat reserves to survive until the next freeze up. By the end of the summer they are skinny bears and in places like the Hudson Bay in Canada their ability to successfully raise a litter is being jeopardized. Inuit people are also affected by warming climate. Their way of life and their culture is based on sea ice.*

“Inuit are going to have to find new ways to make a living from the land,” said Jose A. Kusugak, a Canadian Inuit and former president of the Inuit Tapirit Kanatami.⁴ He continued that, “our millennia-old traditions are already being altered because of the warming Arctic, and we face the possibility of having to completely reinvent what it means to be Inuit. This is a prospect we fear.” (Unikkaaqatigiit)

The Problem:

Since 1988 this author has had the honor and privilege to work with Dr. Chuck Jonkel, polar bear biologist from the University of Montana, as he studies and teaches arctic field ecology and polar bear biology of Manitoba's northwestern edge of Hudson Bay. We live and work at the Churchill Northern Studies Centre, which is 23 kilometers out of the town of Churchill, Manitoba, Canada.

¹ Silak is an Inuit word meaning wild, untamed places. Consciousness means being aware and alert about one's surroundings.

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³ Dr. Lori Lambert is an enrolled member of the Abenaki Tribe and a descendent of Mi'kmaq and French Acadians. Her tribe is an Atlantic salmon tribe. She teaches at Salish Kootenai college on the Flathead Indian Reservation in Montana.

⁴ Inuit Tapiriit Kanatami, is the national voice of Canada's Inuit. Founded in 1971, the organization represents and promotes the interests of the Inuit.

Dr. Jonkel was the first polar bear biologist to work for the Canadian National Wildlife Service, which he did for 30 years. He was instrumental in tagging bears, locating the dens of pregnant females, changing the behavior of the residents in Churchill to be more accepting of the bears, closing the Churchill dump so bears won't be acclimated to eating from the dump or going into town. He was also instrumental in setting up the polar bear jail⁵ where nuisance bears are located instead of being shot. When ice freezes in Hudson Bay, "Bear Jail Bears" are tranquilized and air lifted in a rope net by helicopter to the frozen ice. Thirty years ago, when Dr. Jonkel began his investigations of polar bears in Churchill, the ice freeze-up occurred in mid October. Today, it is mid November. The bears will not have not eaten since June. Five months is a long time for a polar bear to fast.

There are several major problems embedded in this case. The first problem is that of climate change and the effect it is having on the bears across all polar regions of the globe.

With climate change, the Hudson Bay population of polar bears migrating through Churchill has been greatly reduced in numbers. The ice conditions have changed over time and will continue to change as the climate warms. In order to access their principle food source, ringed seals, polar bears need an ice platform called sea ice. If sea ice melts, that sea ice platform is removed then polar bears will be forced to swim longer and farther to access food, thus expending valuable energy. As well, bears could starve and populations around the world could become extinct.

Another problem is the loss of Inuit culture if the sea ice melts. The Inuit will no longer be the People of the Ice. Their concerns over this loss were recently documented in a report entitled *Unikkaaqatigiit: Putting the Human Face on Climate Change – Perspectives from the Inuit in Canada*.

....It is the Inuit, living in the vast Arctic regions, who are feeling the first and substantial effects of global warming. Forces mostly outside of the Arctic have caused climate change, manifested in the Arctic by changing sea-ice, tundra, and wildlife patterns. And the traditional Inuit way of life

⁵ The polar bear jail is a Quonset building located near the Churchill Airport that can hold 40 bears. Bears are kept in the jail, given water, no food nor contact with any humans. When freeze up starts the bears are tranquilized and air lifted by helicopter to the frozen ice. Bears go to the jail if they are too close to town, in town, or have invaded someone's dwelling.

is threatened (Kusugak, *Unikkaaqatigiit*)

Although their names were unrecorded in this Report, their words were:

“The berries don’t grow sometimes now. The sun burns them.”

“Our plants burn before they go into full bloom now .”

“This isn’t out weather. Where does it come from? The floe edge⁶ is closer than ever.”

“We need to be more careful when pursuing animals because of thinner ice and changing ice conditions.”

“The water from some rivers and ponds smells and tastes bad, particularly when it does not rain for quite some time. We do not want to drink this water.”

“Caribou are a lot skinnier and, they don’t look as healthy as they used to.” (*Unikkaaqatigiit*)

A third problem is seen through the eyes of the residents of Churchill, Manitoba. Churchill is called the “polar bear capital of the world.” If the polar bears disappear how will Churchill survive without the revenue from tourism?

There are also ethical concerns associated with the extinction of a species that defines the northern polar area. Will future generations continue to see the great white bears? Will they ask, “How did this happen?” “How did people allow this to happen?”

Background

Polar bears are completely reliant on their Arctic frozen sea ice habitat. They need the ice to hunt, to breed, and the females need cold places to den up during gestation periods. In the United States polar bears (which are classified as marine mammals) are protected under the Marine Mammal Protection Act. In May, 2008 the United States Fish and Wildlife Service listed the polar bear as a “threatened species” under the Endangered Species Act. (US Fish & Wildlife Service)

In Canada, polar bears are listed as a species of “Special Concern” under the Canadian Species at Risk Act. In Manitoba, Canada, polar bears are protected under the Manitoba Polar Bear Protection Act⁷

⁶ The floe edge: where the frozen ocean meets the open ocean, as opposed to fast ice which, is the other end of the floe edge where the frozen ocean is connected to the shore line.

Their Latin name is *Ursus Maritimus* or The Great Sea Bear. They are perfectly adapted for life in the water and on the ice. Their bodies are streamlined for swimming and have a layer of fatty blubber that keeps them warm. Like otter feet, their toes are connected with webs, which enhance their swimming ability. They are classified as marine mammals even though they do not live in the water full-time like whales, dolphins, manatees, and other marine mammals. However, even with adaptations that make them exceptional swimmers, recently polar bears have been found drowned for the first time. (author's research)

“Because the bears now have to swim farther to find the next piece of sea ice, some become exhausted during the long journey and drown”. (Windows to the Universe)

Like other species of bears, they mate in fall, have delayed embryo implantation, and give birth in March. Gestation takes about eight months. Pregnant females begin denning up as early as August. They den up all winter until their cubs are born in the spring. Cubs open their eyes within the first month and begin walking while in the den at about two months. By this time, they also have thick, whitish fur and their teeth have erupted. By the time the mother and cubs emerge from the den in late March or April, the cubs weigh 10 to 15 kg (22-33 lb.). (Chuck Jonkel, personal communications)

Mother and cubs remain around the den for about 12 more days, sometimes longer, which enables the cubs to acclimate to the colder weather and develop their walking muscles. During this time the cubs still spend about 85% of their time in the den, sleeping there at night. When ready, the mother polar bear leads her cubs to sea ice. Travel is slow with frequent rest and nursing stops. A mother will sometimes carry her cubs on her back through areas of deep snow or water. Cubs begin eating solid food as soon as their mother

⁷ Manitoba Polar Bear Protection Act: The Polar Bear Protection Act, was given Royal Assent on August 2, 2002. The act;

- establishes the grounds under which a live polar bear may be procured or considered for placement in a captive situation, (educational, scientific or other purpose deemed to be in the public interest), and the prioritization for such placement (provincial, national or international);
- establishes prohibitions, to the extent that a provincial authority is empowered to regulate such matters, respecting off-shore issues such as use of a live polar bear in contravention of Manitoba policies or laws;
- establishes provision for regulations by the minister respecting matters such as permit eligibility and facility and care standards that must be met by any agency in order to be eligible to receive a polar bear.

http://www.gov.mb.ca/conservation/wildlife/managing/polar_bears/pl_polleg.html

makes her first kill on the sea ice (about three to four months of age). Polar bears eat only the skin and fat layer of the seals. The fat and skin provides all the nutrition they need and by not eating the meat and muscle, they have no need to drink fresh water. Arctic foxes follow the bears and eat what the bear does not. (Chuck Jonkel, personal communication)

Polar bears are excellent and attentive mothers and will defend their young from danger. Because there are no trees in the Arctic, unlike in the temperate forests where black bears can easily escape danger by climbing trees, polar bear mothers generally stay to defend their cubs for up to two years. Today, young bears are foraging and hunting with their mothers for up to three years. In the past, it was not uncommon to see females with three cubs. Today, it is extremely rare to see females with twins

This year in Churchill, (2009) a mother and her cub killed several sled dogs. The year before, bears also killed sled dogs. The reason for this unusual event is the musher who owns the dogs over feeds them and the bears can smell the dog food and they come to eat. The dogs sometimes play with the bears, other times the dogs will defend the food and bears will kill them. Polar bears are also known to kill snow geese, but this behavior of killing other animals is not usual behavior for polar bears; however the species of animals they are killing is unusual for the population of bears in the Hudson Bay. The bears are hungry, leaving the melting ice floes ice in June and their food source, the ringed seal, and these days, the polar bears can't return to the ice until early November. (author's research)

In other areas of the Arctic, Alaska for example, polar bears are moving to land on the north coast because the sea ice is melting and no longer connects to shore. This separates the bears from their preferred hunting grounds, the sea ice. With less sea ice, polar bears cannot hunt for food as often, and so they wind up with less to eat. Alaskan polar bears, it has been reported, occasionally eat land animals like reindeer and musk oxen. Even so, scientists have found that Alaskan polar bears weigh less than they used to and that polar bear cubs off the north coast of Alaska are less likely to survive. Between 1987 and 2004, in Canada's Hudson Bay the number of bears has dropped 22 percent. It is all due to changing climate in the Arctic. (Obbard et al., 2007)

Polar bears are flexible and adaptable, but 400,000 years of evolutionary adaptations for the polar bear from the original bear is not going change polar bears back into a plant eating grizzly bear in so short amount of time, although some people hope for that. Populations of polar bears all across the Arctic are changing because of changing sea ice conditions. We are seeing skinnier bears, more male-cub mutilation, and fewer cubs accompanying females and fewer bears in general. (Ian Stirling, public lecture, Churchill, 2008)

Related to that is the depletion of a resources that Indigenous peoples of the area depend on to preserve their culture. Shelia Watt-Cloutier, Canadian Inuit has stated: “We are a people of the land, ice, snow, and animals. Our hunting culture thrives on the cold. We need it to be cold to maintain our culture and way of life.” (Watt-Cloutier, 2006)

What is Climate Change?

A French scientist named Jean-Baptiste Fourier was the first to suggest (in 1824) that the earth’s atmosphere functioned like the glass in a greenhouse to regulate the earth’s climate. Though Fourier’s theory was not quite correct, the name “greenhouse effect” has remained. “This is the name that most non-scientists use to describe the process by which atmospheric gasses trap heat rising from the earth’s surface and prevent it from escaping into space. Life on the planet actually needs a natural ‘greenhouse effect’ which keeps the earth 33 degrees warmer than it would be otherwise.” (Dotto, p. 33)

Even during the ice ages, the temperature of the earth was only 4 degrees C colder than today’s temperatures.

The presence of naturally occurring gases in the atmosphere such as carbon dioxide-CO₂, methane, and nitrous oxide allow roughly three quarters of the sun’s energy to pass through the upper atmosphere to the lower atmosphere and the earth’s surface. This causes heating, which sets in motion air and ocean currents that redistribute energy around the globe and this process causes day-to-day weather. The term “climate” refers to averages of day-to-day conditions that include sunlight, rainfall, and temperature. (Dotto, 2000, p. 31)

It is the difference we see among desert regions, tropical rainforests and the tundra of the Arctic as evidenced by the following three examples.



1. Arctic Tundra

Photo Frank Tyro: Used with permission



2. Tropical Rainforest

Photo Frank Tyro: Used with permission



3. Harsh Desert

Photo: Frank Tyro: Used with permission

The Industrial Revolution which began in the 18th century and gained momentum in the 19th century in Europe and North America was characterized by the introduction of machinery to manufacture goods. These machines ran initially on energy from steam, but soon switched to coal, and later to oil, natural gas, and electricity. Thus there was a dramatic increase in the use of fossil fuels since the 19th century. Since then, “the concentration of carbon dioxide in the atmosphere rose from its pre-industrial level of about 274 parts per million (ppm) to 315 ppm in 1958.” Therefore it has been human actions, such as the burning of fossil fuels (oil, coal and gas), and deforestation that has caused this increase. “The concentration of carbon dioxide in the atmosphere rose to 370 ppm in 2004. The methane concentration has already doubled from its pre-industrial levels and is increasing at 1% every year.” (Gettis, Gettis, & Feldmn 2006, p. 126.)

While making up less than 1% of volume of the atmosphere (nitrogen = 78% and oxygen 21%) the greenhouse gases exert a powerful influence on the climate of the earth. (Dotto, 2000)

It is precisely because the natural occurrences of these greenhouse gases are so minute to begin with that relatively small, added dose can effect changes in the climate of the earth. It is the effect of these tiny amounts of greenhouse gases from human activities that science is concerned about when they talk about global warming or the greenhouse effect which is another word for climate change. (Dotto, 2000)

Evidence that the climate is changing is all around us:

“The 20th century was the hottest on record and the 1990s were the hottest decade. Winter temperatures in the Arctic have risen 7 Degrees Fahrenheit since the 1950s.” (Getis, Getis & Fellman, 2006)

On every continent, glaciers are thinning and retreating. (Getis, Getis & Fellman) Nowhere is that more evident than in the Arctic of Canada and Alaska. Even in Montana’s Glacier National Park, the larger glaciers are now approximately 1/3 their size in 1850 (range - 23-38%) and numerous smaller glaciers have disappeared. There has been a 73% reduction in the area of Glacier National Park covered by glaciers from 1850-1993. Only 27 km² of glaciers remain from the 99 km², which previously existed. (U.S. NASA, Earth Observatory, Glacier National Park).

Most climatologists agree that certain consequences will occur if climate warming continues, consequences such as melting of the polar ice caps causing ocean waters to expand. Other problems such as changes in precipitation would speed evaporation where regional rainfall would increase. There would also be changes in plant and animal habitat.

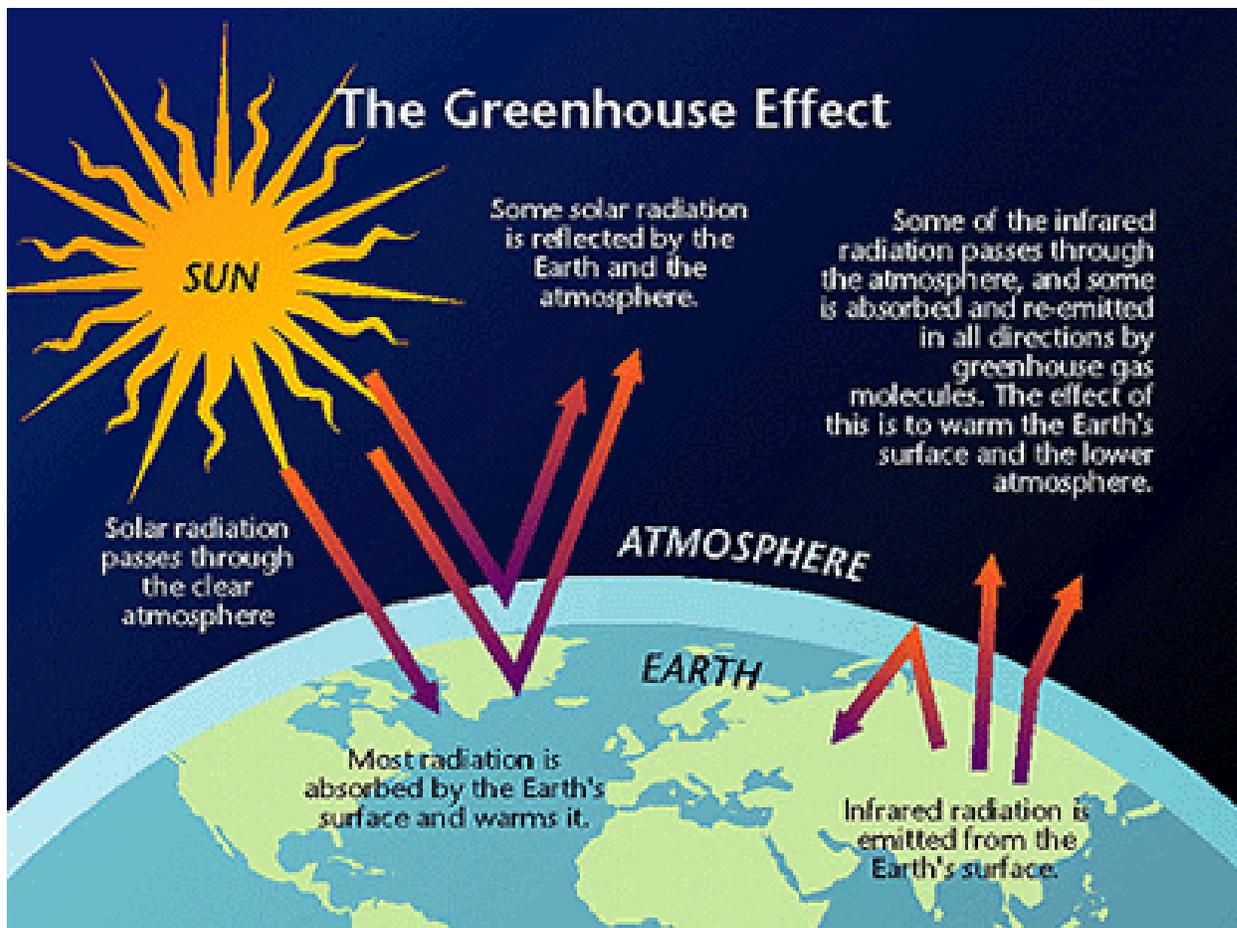


Figure Courtesy of the Environmental Protection Agency

The Overarching Effects of Climate Change in the Arctic

The Arctic is a special part of the world, although it is changing rapidly. These changes are expected to affect the Indigenous peoples of the Arctic through physical, ecological, social, and economic effects. Rising temperatures favor taller, denser vegetation promoting expansion of forests into the tundra:⁸ and turning the tundra into boreal forests.

If humans are to protect the polar bear, the polar bears' habitat must be protected as well. As has been said previously, pregnant polar bears need denning areas off the ice, and other areas to raise their young until they are mature enough to go out on the ice.

⁸ Tundra: the coldest biome on earth is called the tundra or a treeless plain. The word comes from the Finnish word Tunturi

Polar bears are marine mammals, dependent on sea ice where they hunt ice living seals and travel along ice corridors to move. Polar bears are also at the top of the arctic food chain where pollutants concentrate. The health and welfare of these bears are thought to be a "litmus test" of arctic health. If there is complete loss of sea ice, it is unlikely that polar bears will survive as a species. Polar bears are adapted to an arctic and aquatic existence. If climate changes occur too quickly for the bears to find new niches to adapt to the bears will perish. The decline and loss of the polar bear will devastate arctic environs, but will also be a profound loss to all people, if we allow this species to die.

Measures to preserve the Hudson Bay population of polar bears have been incorporated into the Manitoba Legislation. Manitoba does not permit the harvesting of polar bears in the province either for commercial or recreational purposes. The species is protected under the Wildlife Act and is consistent with the agreement on the Conservation of Polar Bears and their Habitat.⁹

Ice Dependent Seals

Ice dependent seals are important both to the Indigenous peoples of the Arctic and to the polar bears. The ringed seal, bearded seal, and ribbon seal give birth and nurse their pups on ice. They also rest on ice platforms. The sea ice and snow protect the seals from predators. The seals eat polar and arctic cod and a variety of crustaceans. Adapting to land may be unlikely for them. Climate change and the melting of arctic ice is thus also a severe threat to the seals. If ringed seals become extinct, polar bears will lose their primary food source.

Migrating Birds

Migrating birds will also be impacted by global warming. With warming, the tree line is expected to advance northward encroaching on the tundra. Migrating bird flocks will have to go further and their arrival may not coincide with the abundant insect food sources in

⁹ Manitoba Conservation Wildlife. Government of Manitoba. In 1973 Canada, Denmark/Greenland, Norway, Russia, and the United States signed the Conservation of Polar Bears treaty agreeing to protect polar bears and their habitat. (Environment News Service)

their breeding and nesting areas. Rising sea levels will also encroach on the tundra from the north.

Southern bird populations are dependent on the success of birds breeding and nesting in the north, and migrating patterns may suffer. Many bird species (eagles, whooping cranes) were threatened with widespread use of DDT. Since DDT has been banned populations have recovered, but pollutants still threaten them. Migrating birds are expected to lose 50% of their breeding area by 2100. DDT has been reconsidered for resurgent malaria. This line of thinking must be strongly opposed due to the established toxicity on wildlife. (Poldosky)

Caribou and Reindeer

The tundra vegetation available for the migrating herds of caribou and reindeer are expected to decrease as trees shift northward because of climate change. The decrease in tundra plants will likely starve the caribou and reindeer herds. “Declining populations of animals who depend on the tundra vegetation will directly affect human populations” (Podolsky)

Indigenous People

Who are the world’s Indigenous peoples? What makes a people indigenous? What is culture and how is it passed down from each generation?

In 1977, the Second General Assembly of the World Council of Indigenous Peoples (WCIP) passed a resolution declaring that only Indigenous peoples could define themselves. The formal political definition developed by WCIP is:

Indigenous peoples shall be peoples living in countries, which have populations, composed of different ethnic or racial groups who are descendants of the earliest populations which survive in the area, and who do not, as a group, control the national government of the countries within which they live (WCIP¹⁰)

¹⁰ The World Council of Indigenous Peoples (WCIP) was a formal international body dedicated to having concepts of aboriginal rights accepted on a worldwide scale. The WCIP had observer status in the United Nations, a secretariat based in Canada and represented over 60,000,000 Indigenous peoples worldwide. Although it made much progress for the rights of Indigenous peoples and groups, the WCIP dissolved in 1996 due to internal conflict. (Center for World Indigenous Studies)

Traditional/ Indigenous knowledge is local knowledge unique to a given culture or society. Indigenous knowledge is an immensely valuable resource that provides humankind with insights on how communities have interacted with their changing environment.

By careful observation of the ecosystems in which they live, listening, and waiting, Indigenous peoples understand the cycles of the earth, the roll of the tides, the times to gather and hunt. Early Indigenous peoples have given us the basis for our relationships with the environment and with our belief system. The oral tradition, including Indigenous languages, passes those skills on to the next seven generations. Like all peoples throughout the world, Indigenous peoples seek their own way to explain origins and destinies, to face the unknown and learn the power and meaning of natural laws and forces. But climate change is disrupting those century old cultural views.

Many Indigenous groups in the Arctic depend on hunting arctic animals, herding reindeer, fishing and gathering. The Inuits' cultural identity depends on their interaction with the Arctic landscape. Their food supplies and their culture will be threatened as temperatures rise. (Podolsky, 2000) Everywhere across the polar north, climate change is affecting the animals and the culture of the Inuit. Robins are showing up in the high Arctic and there is no word in Inuktitut¹¹ for them. Culture is not feathers and bells, or bones and beads. It is not trivial. Culture is a way that helps a people make sense of the world around them and the melting ice world of the Inuit is changing their culture.

The climate of the Arctic region is warming quickly, faster than other places on Earth, and the Inuit who live there have been noticing substantial changes to the environment. Shiela Watt-Cloutier, Canadian Inuit environmental activist, past chair of the Inuit Circumpolar Conference, and a nominee for the Noble Peace Prize with Al Gore in 2007 said, "Climate change is amplified in the Arctic.... What is happening to us now will happen soon in the rest of the world," she added "our region is the globe's climate change' barometer'. If you want to protect the whole planet, look to the Arctic and listen to what Inuit are saying. "The polar ice cap ice is forming much later in the year and breaking up earlier in the spring

¹¹ Inuktitut is the language spoken by the Inuit.

causing havoc for both man and animals. The sea-ice season is a lot shorter than it used to be. And as a result we have less time to hunt on the ice. Our wildlife, the polar bear, has a lot less time so they're become a lot thinner." (Inuit Circumpolar Council, 2005)

Streams on traditional hunting routes that were once fordable have become torrents that claim lives every year. The icepacks have become so unpredictable that even seasoned hunters with knowledge of the land and the cycles, have fallen through and drowned. .What you see on the surface is no longer what it is underneath. The arctic sink is warming from under, and the ice is changing from under as well. The rules have all changed and so has the wisdom we pass on to our young people. (The Great Warming, Local Heroes.)

The damage caused by rising temperatures is evident all around north, although not all regions are affected in the same way. Many Inuit elders are perplexed by it, because it is so unpredictable.

Inuit culture is closely connected to the Arctic environment. The skills and knowledge that Inuit developed over thousands of years as a part of their culture are uniquely adapted to the Arctic's cold and harsh climate. Changes to the natural environment such as melting sea ice, thawing permafrost, and change to Arctic tundra species are threatening traditional Inuit ways of life.

"The costs of climate change are already being paid by the peoples and communities of the Arctic," said Achim Steiner, Executive Director of the United Nations Environment Programme (UNEP). "The communities and indigenous peoples of this region are skilled in adapting to harsh and often dramatic changing conditions," he continued, "including sharp fluctuations in the scarcity and in the abundance of land and marine resources. However, the rapid changes likely in the future may overwhelm traditional coping strategies."(United Nations, Environment Programme) 2007)

Indigenous observations include changes in ice and snow conditions. This has had an impact on travel routes. "We need to be more careful when pursuing animals because of thinner ice and changing ice conditions," said an anonymous Inuk from the Nunavut Territory.

Inuit from all of the regions across the Canadian Arctic reported a decrease in the quality and quantity of drinking water.

“The water from some rivers and ponds smells and tastes bad, particularly when it does not rain for quite some time. We do not want to drink this water,” said the Nunatsiavut Inuit. This is because changes in precipitation patterns are causing changes in lakes and rivers. (undocumented names in Unikkaaqtigiit):

Some of the observations are more complex. For example, more freezing rain covers low growing lichens with a layer of ice. The lichens are the primary food source for caribou. Caribou have to travel into new areas to find food. Caribou have become thinner. Inuit, who hunt the caribou, have noticed that they are harder to find. “Caribou are a lot skinnier,” noted an Inuit. “And the caribou don’t look as healthy as they used to.” (undocumented names in Unikkaaqtigiit):

Inuit also reported other negative impacts such as an increase in sunburns and a decrease in their ability to predict the weather. But not all of their observed changes told of dire consequences of climate change. Some observations were positive. For example, warmer climate has led to the introduction of species that typically live further south and these species can be new food sources for the Inuit. (undocumented names in Unikkaaqtigiit)

Commercial fishing and oil exploration were already eroding Inuit cultural practices. Now, traditions like hunting marine mammals, which depends on plentiful sea ice, are on the decline. "The collapse of the traditional subsistence culture has left despair and hopelessness among the young." In March of 2007 fourteen teenage boys in a town of 5,000¹² committed suicide. (Kelsey, 2007)

Climate change has cast a cloud of mystery and misery over the essential survival of Arctic natives. The *Times* of London detailed how industrial pollution has tainted the traditional Inuit diet of seal and whale across the Arctic. Researchers think this may have lead to Inuit

¹² Illulissat, Greenland

women, from Canada to Russia, having very few male babies -- a perplexing development that could spell a demographic and cultural crisis. (TimesOnLine, 9/12/07)

What do these changes to the environment mean for the Inuit way of life? “Inuit are going to have to find new ways to make a living from the land. And whatever form that takes, it will not be what Inuit would have wished for, it will not be ideal, and it will not be an uninterrupted continuation of the traditional ways,” said Jose A. Kusugak, past president of the Inuit Tapiriit Kanatami, Canada’s Inuit Organization. He continued that, “our millennia-old traditions are already being altered because of the warming Arctic, and we face the possibility of having to completely reinvent what it means to be Inuit. This is a prospect we fear.” (Windows to the World).

Achim Steiner has noted that the traditional Inuit way of life was influenced by the harsh climate and stark landscapes of the Arctic tundra – from beliefs inspired by stories of the aurora to practicalities like homes made of snow. Inuit invented tools, gear, and methods to help them survive in this environment. (United Nations Environment Programme)

High in the Arctic, in Igloolik, Nunavut, Canada and Qaataak, Greenland, the Inuit who live there say, “Without the ice, we are nothing.” The Inuit and polar bears are forced to go farther and farther to hunt. The Inuit are the people of the Ice. If the Ice goes, the culture of the Inuit will go as well, then what of the polar bear?

Churchill, Manitoba: Polar Bear Capital of the World

On the edge of the Arctic, the community of Churchill, Manitoba, Canada, sits right on the ancient migration path of the polar bears. In June, bears ride ice floes south as melting ice in the northern parts of Hudson Bay pushes the bears farther south into the areas near Churchill. The bears pass the time in caves dug into the permafrost on the outskirts of Churchill as they try to keep cool and away from the mosquitoes. By October, the bears have not eaten since June. Their principal food is ringed seals, which can only be taken far out on sea ice in Hudson Bay. By November, the bears know that freeze up is coming and they begin to migrate out of their summer dens through the Churchill area to Gordon Point. The Hudson Bay waters, west of Churchill, near Gordon Point in Hudson Bay are the first to

freeze, but the freeze is occurring later and later. By October, the bears begin to congregate around Gordon Point waiting for the ice to come.

During bear season (October to Mid November) we (the author and Dr. Chuck Jonkel) are based at the Churchill Northern Studies Centre. Founded in 1976, the Churchill Northern Studies Centre is an independent, non-profit research and education facility. The Centre provides accommodations, meals, equipment rentals, and logistical support to scientific researchers working on a diverse range of topics of interest to northern science. The Centre is ideally situated along the Hudson Bay seacoast at the meeting of three major biomes: marine, northern boreal forest, and tundra. To the east lies Wapusk National Park, which protects the inland denning area of the polar bear. Farther to the southeast lies the Hudson Bay Lowland, the largest peat-land in North America. Because of this complex of biomes, one can see a tremendous diversity of plants, birds, mammals and human cultures.

Various nomadic Arctic people have lived and hunted in the region around what is now Churchill. The Inuit people arrived about one thousand years ago. The Indigenous people of the Arctic established trading networks later used by Europeans. Though Europeans arrived in the area in the late 1600's, the first permanent settlement was near the mouth of the Churchill River in 1717. This was part of the extensive fur-trading network established by the Hudson Bay Company. (Dredge)

Today, as a transportation hub for the north, the town of Churchill has a busy rail line and airport. Churchill also has the only inland saltwater port in Canada. Air or rail brings in goods from the south, which are then shipped by barge or sea going vessels to numerous points through the north. The area has a strong research presence. Many scientific professionals use The Churchill Northern Studies Centre and the Institute of Arctic Ecophysiology, as a home base for their studies. The Port of Churchill is a fully functioning seaport, capable of shipping most bulk commodities and many other import and export products. (Dredge)

Churchill attracts tourists from all over the world. They come to see the polar bears, the Northern Lights, birds, and whales. The small business in Churchill such as hotels, restaurants, bakeries, and tourist operators all depend on this year-round influx of tourists. (Cameron, Annis & Everitt, p. 33)

What do these changes to the environment mean for the Inuit way of life and the survival of the polar bear and all other Arctic life as well as survival of the community of Churchill, Manitoba?



Map of Hudson Bay. Churchill, Manitoba is just above the letter B in Manitoba. Igloolik is to the north. Source: <http://en.wikipedia.org/wiki/File:Hudsonbay.png>



Late freeze up on Hudson Bay: November 11th 2008 Frank Tyro photo used with permission



Churchill Meeting Spot: Gypsy's Café at 3:00PM in the afternoon. Frank Tyro photo used with permission



Photo: The Last Polar Bear? Frank Tyro photo used with permission

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