weathering change

SnowChange Project

Documenting Indigenous observations of climate change in northern regions

TERO MUSTONEN, PROJECT MANAGER, SNOWCHANGE PROJECT

The SnowChange Project, which began in early 2001, is a multi-year education-

oriented initiative to document Indigenous observations of climate change in northern regions, coordinated by the Department of Environmental Management and Engineering of Tampere Polytechnic School of Technology and Forestry in Tampere, Finland.

The goals of the project are to collect and document climate change observations of northern Indigenous peoples in ways that will enhance and support Indigenous participation and work in climate change issues

Indigenous viewpoints in the media, educational spheres and research

> Finland, Russia, and Scandinavia. In addition, the project works on the circumpolar level, engaging and working with various partners in the North American Arctic and Russian Arctic, including Siberia and the Far East.

communities in

The goals of the project are to collect and document climate change observations of northern Indigenous peoples in ways that will enhance and support Indigenous participation and work in climate change issues. To disseminate the collected observations, the project has established a website to present them in a manner that will be effectively heard by southern peoples and decision-makers.

The majority of regional traditional knowledge documentation is taking place in the Sami communities of Scandinavia and of the Murmansk Region of the Kola Peninsula in the Russian Federation. On the national level, the project promotes

SnowChange works with various partner organizations, Indigenous groups, the scientific community, and other stakeholders. Many of the partnerships were formed during a series of visits to Canada and the United States in 2002. which included Whitehorse, Yukon; Inuvik and Tuktoyaktuk, Northwest Territories; Igaluit, Nunavut; and communities in Alaska.

The project relies on a ground-up approach to material collection and sharing. Care is being taken to ensure careful and respectful relations with Elders and other advisors. In practice, this means that local participants and communities are trusted to prioritize

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Introduction

MICHAEL SALOMONS, MANAGER, RESEARCH PROGRAMS, AURORA RESEARCH INSTITUTE

Canada is in the midst of a national debate about ratifying an agreement that would legislate the reduction of greenhouse gases, one of the major suspects in global climate change. Arguments against ratifying the Kyoto Protocol tend to focus on economic models of what effects the agreement would have on the Canadian economy. What is often forgotten in the incessant deliberations on Kyoto is that climate

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A note from the editor

This issue of *Weathering Change* is pleased to be a vehicle for several summaries of climate change observations collected by the SnowChange Project in 2001 and 2002. Project manager Tero Mustonen (tero.mustonen@tpu.fi) has provided the edited material, as part of the project goal is to make the observations widely known and available to interested individuals and decision-makers.

Written permission for reprinting quotations has been obtained by the SnowChange Project from the interviewed individuals, and permission to reproduce them has been granted to *Weathering Change* by the SnowChange Project. Please note that nothing in these articles represents the views of Tampere Polytechnic School of Technology and Forestry or snowchange.org website management.

Bot Van Jup

weathering change

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Canada

SNOWCHANGE PROJECT

which local observations of climate change are most relevant.

Project assistants are using open-ended, semi-directive interviews to collect and document such observations. Oral stories and observations in plain language are encouraged, and submissions may be made in any convenient format. Interviewed people have shared ownership of the material at all times, effective immediately after the interview, and can withdraw their statements or ask for them to be corrected.

The first documentation work took place in September 2001 among the Sami people in the reindeer-herding village of Purnumukka in northern Finland. In 2002, SnowChange researchers visited Cape Dorset, Nunavut; Holman, Inuvialuit Settlement Region, NWT; Tsiigehtchic, Gwitchin, NWT; Whitehorse, Yukon; Dease Lake, Tahltan, BC; Unaklakleet, Bering Inupiaq, Alaska; Sapmi, Utsjoki and Purnumukka, Finland; Lovozero, Murmansk Region, and Sirma, Norway.

In 2002, World Wildlife Fund Finland gave the SnowChange Project the Panda Prize, its most important environmental award. SnowChange, which won out over dozens of other candidate projects, was cited as being the most innovative environmental initiative.

The project maintains a website where further information on the work is available, along with related papers. Visit the site at www.snowchange.org.

INTRODUCTION

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change is not just a potential doomsday scenario that may start to affect us in the far-off future. For people in Canada's North, climate change has already become an alarming reality of day-to-day life.

People in the North rely heavily on the land and on their knowledge of it. Traditional knowledge—knowledge and learning built up and passed down from generation to generation—is an essential part of living on the land. Traditional knowledge includes vital information for hunters and trappers, such as knowing when the ice is thick enough to cross and where and when to find specific animals and plants. However, people in the Northwest Territories have begun to notice changes in their environment-for example, differences in animal numbers and migration patterns, the arrival of new species, and changes in ice phenology and thickness.

The Aurora Research Institute (ARI), located in the town of Inuvik in the Northwest Territories (NWT), is the scientific research branch of Aurora College. The ARI's mandate is to improve the quality of life for NWT residents by applying scientific, technological, and Indigenous knowledge to solve northern problems and advance social and economic goals. The ARI has been a supporter of the SnowChange Project since its inception because SnowChange is attempting to address two major concerns of people in the Northwest Territories: the loss of traditional knowledge and concern over the impacts of Climate Change. SnowChange is doing this by assisting groups to collect traditional knowledge related to climate change and making this knowledge available to others locally, nationally, and internationally.

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Sami experiences of climate and ecological change in Norway, Sweden, Finland, and Russia

The Sami have an

ecological knowledge of

their own, rooted in the

traditional way of life

TERO MUSTONEN, PROJECT MANAGER, SNOWCHANGE PROJECT

The Indigenous people of the European North, the Sami, have expressed their concerns over ecological and climatic changes. The Sami homeland, which extends across the northern part of Scandinavia, Finland and the Russian Kola Peninsula, is known as Sapmi. Issues such as Indigenous rights, comanagement and self-governance manifest themselves in different ways in the four countries in which the Sami live. The SnowChange Project has organized various interviews and community visits with Elders, reindeer herders and fishers in Sapmi over the past two years.

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In some interviews, discussion of traditional knowledge has been of particular importance. In an interview in March 2002 in Sirma, Sapmi (Norway), Niillas Somby asserted that "traditional knowledge is a really, really valuable thing, because it's . . . knowledge about everything. Of food and material and storytelling, symbols, you name it. It's

everything." He noted, however, that much is in danger of being lost. He spoke about the skill of an old man who could predict winter weather from a variety of signs, and he thinks that young

people are less in touch with traditional skills and knowledge, partly as a result of their schooling. The complete interview is available on the project website at www.snowchange.org/views/indigenous/ mustonen_en.html.

Reindeer herder Stefan Mikkaelsson is a vice-president of the Sami Council in Sweden. He observed that "weather conditions change from one year to another." Because of Sami dependence on renewable natural resources, the Sami Council is particularly concerned about the effects of climate change and/or climate variability.

"Will foreign trees and methods of growing them be introduced?" he wonders. "Higher temperatures will probably cause stress on both local flora and fauna." Such changes, he predicts, "will most probably not be an advantage for reindeer herding." Another potential hazard are "diseases that are not found at higher latitudes today." Uncertainty makes the situation more worrisome: "What happens to reindeer, other animals, plants, and trees when they are exposed to new bacteria, viruses, and parasites? I am not sure the scientists can tell us exactly what will happen."

Sami reindeer herder Pentti Nikodemus of Purnumukka, Finland expressed his concerns for the sudden variation of climate conditions and the effect of unpredictability. He described sudden, extremely cold weather, close to -50°C in the region in the previous winter, which

> prevented the use of motor transportation in reindeer herding. Nikodemus commented that this was a good occasion to use the reindeer as a means of transportation. As

well, the late and heavy snowfall has been troubling the Purnumukka region.

Elina Helander, a Sami from the Ochejohka [Utsjoki] region of Sapmi, Finland, noted that "people in the villages are worried as they face the global [climate] changes." The Sami, like many other circumpolar peoples, combine different economic activities over the year, "such as berry picking, reindeer herding, fishing, hunting, trapping and handicraft." The Sami, says Helander, "have an ecological knowledge of their TERO MUSTONEN



Sami Reindeer Herder Aslak Antti during the community visits in Skallovaara, Finland.

own, rooted in the traditional way of life." This knowledge "goes beyond observation and documentation because it is a precondition for survival." Indeed, she notes that Sami traditional knowledge also contains evidence of "long-term experience in adaptation."

Helander also reported that people are noticing evidence of climate change: "Many claim that the weather has become warmer, and especially the fall and early winter are warm. During the recent years, the ground has not frozen properly in the fall, and there has been little rain in September." In addition, she reports that "many herders and subsistence hunters claim that there are no winds anymore." This is an important concern: "Wind has some positive effects. For instance, wind gathers the snow to certain spots. In other spots there is little snow and it is then easy for the reindeer to dig through where the amount of snow is small. The wind can also make the snow soft, but on the other hand, the extremely strong wind-'guoldu' in Sami-makes the snow hard."

Inuit and Inuvialuit experiences of climate and ecological change

TERO MUSTONEN PROJECT MANAGER, SNOWCHANGE PROJECT

In mid-May 2002, the SnowChange Project visited the Nunavut communities of Igloolik, Cape Dorset, and Iqaluit. A few days were spent visiting people in Iqaluit, organized by Joe Tigullaraq from the Department of Sustainable Development, Government of Nunavut. A community visit to Cape Dorset was made, and some interviews and overall documentation were carried out. The project team observed a striking similarity of concerns in local conditions over

TERO MUSTONEN



Inuit Hunter on the Sea Ice in Holman, NWT

contributors this issue

Amanda Graham Tero Mustonen Michael Salomons winds, ice, and snow. Peter Irniq, Commissioner of Nunavut, stressed the importance of snow: "Snow is survival. Snow is very important to us here in Nunavut. Without it, we cannot live and we cannot survive in Nunavut."

Cape Dorset hunter Jimmy Manning noted, "We have experienced over the last couple of years much less snow in our area here and also kind of bad ice conditions. [Ice is] breaking up, and freezing of the ice has been very different from all the other years."

In June, the team visited the Western Arctic. Interviews were conducted at the Inuvialuit Settlement Region village of Holman. There, reports project manager Tero Mustonen, one-on-one interviews were conducted with two respected community Elders and one hunter. Additional documentation of ice conditions, and wildlife, especially seals, was carried out by interviewers Tero Mustonen and Kaisu Pulli of the Circumpolar SnowChange Initiative from Finland and Alisha Chauhan of the Inuvialuit Joint Secretariat from Inuvik. Northwest Territories. The Inuvialuktun translator was Susie Malgokak from Holman, Northwest Territories.

Sam Oliktoak, the oldest Elder in Holman, noted that when he was young, "the weather was very cold: it was so cold so we didn't see many animals in winter. When it was very cold we could hear the sound of the snow when we walked. When I was young, when we hunted caribou during the cold days, we didn't see the caribou, we just saw their tracks because the caribou heard us because of our walking noise. We only saw caribou when it was blowy windy and a little soft snow moved. Then it was good to hunt because we could see them and they didn't hear us." He also noted, "The melting in the past went very slow."



Sam Oliktoak, the oldest Elder in Holman, NWT

Today, by contrast, "it's cold but it's not as cold. I noticed . . . that the melt is quicker now.

Walter Olifie, a Holman hunter, also noted warmer temperatures: "I noticed a change. The weather used to be cold. When I was young, the summer was not as hot as it gets today. Yes, I noticed a change in the ice and snow. When I was young, it was very cold and the ice and snow were thick, but now the ice and snow are thinner." He recalled seal hunting with his father: "The ice used to be thick. When I was young, there were no danger areas on the ice. Now we have to be careful because of the thin ice areas." Olfie also noted snow changes: "Long ago, when I grew up in an igloo, there used to be a lot of snow, but now the snow igloos are easy to break."

Holman hunter Anyd Akoakhion has also seen changes in the weather: "The weather warms up right away. When I was young, the melting started in June. Now the melting starts in May." He also stated that there is less snow now: "The snow used to reach up past my ankles, but now there is not as much snow." It is also warmer in winter: "The land doesn't freeze up as cold as it used to get." Akoakhion also explained that weather

Haida Nation perspectives of climate and ecological change

TERO MUSTONEN, PROJECT MANAGER, SNOWCHANGE PROJECT

The Haida People of the northwest coast of North America are participating in the SnowChange Project. Amanda Bedard, (Haida name: Jusquan) of the Haida Nation, spoke to the SnowChange 2002 conference on "Haida Gwaii [the Haida homeland] Climate Change

Observations." In her presentation, she explained that "climate change is a looming threat that is a danger to the land, air, and water of Haida Gwaii, [which is] located outside the

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territorial sea [the 13-mile limit] off of the west coast of Canada and includes islands now claimed as part of the state of Alaska by the United States of America." The Haida understand that "without the land and resources and life forms that come from it, the Haida would not be Haida" as

INUIT AND INUVIALUIT EXPERIENCES

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conditions are more variable: "The weather was easy to predict when we were young. We could tell the weather by the clouds, but now the weather is hard to predict for the young people. One minute the weather will be nice and clear, and then in a matter of hours there will be a blizzard."

The transcripts of the Holman interviews are posted on the SnowChange website at www.snowchange.org/views/ indigenous/holman_june2002.html.

The SnowChange Project is planned to continue through 2004. For more information, visit the website, or contact project manager Tero Mustonen at tero@snowchange.org. SnowChange Conference 2003 is being held in Murmansk, Russia in February 2003. they are extremely dependent on the oceans for their food and economy. That deep connection to the ocean means they are extraordinarily sensitive to changes in marine climate.

"Historically, we have recognized the importance of things from the land and

The Haida understand that without the land and resources and life forms that come from it, the Haida would not be Haida waters. The Haida have many narratives and accounts that define this critical relationship between the environment and us as one rather old, human society. Our heritage is of the land.

Land gives us life, shapes our history, and shapes our future."

Community members have cited increased storminess, greater instances of toxic red bloom, as well as declining salmon stocks as local indicators of

SAMI EXPERIENCES

continued from page 3...

Murmansk Kola Sami, too, expressed concern over weather-related changes in the community interviews. For example, Larisa Avdejeva stated that sudden

periods of above-zero temperatures followed by a quick freeze overnight make it difficult for reindeer to reach the lichens upon which they feed. Local reindeer herders have witnessed the arrival of new species of insects, plants, and birds, which

in the past were

common only in the more southern parts of Russia. People also noted that because of the late freeze-up, movement is becoming more difficult on the tundra.



Drilling Rig, Canadian Arctic

climate change. The community also recognizes other threats to Haida Gwaii. Bedard explains that the community is willing to defend its values and the environment: "The canoe that we use to harvest from the waters is the same vessel that we fight from. We are fighting these threats on many different levels, and our strongest paddle is knowledge. Education needs to be paramount in teaching our people and our allies the real, potential, disastrous impacts of current corporate, foreign, and even tribal practices on the ability of future generations to live a clean life."

You can read Amanda Bedard (Jusquan)'s presentation on the SnowChange website at www.snowchange.org/ proceedings/amanda_bedard.html.

Murmansk reindeer herder Arkady Khodzinsky stated in an interview in April 2002, "This year, I think, snow will melt later, but last year it melted very early.

> But there wasn't any snow last year. Not a trace of the snow remained because there was no snow cover. The ice cover is necessary. This year it exists; that is why the snow will stay longer this year. It will stay till the end of June, in my opinion."

Once translated, transcripts of the Murmansk region interviews will be posted on the SnowChange website in 2003.

Tsiigehtchic experiences of climate and ecological change

MICHAEL SALOMONS, MANAGER, RESEARCH PROGRAMS, AURORA RESEARCH INSTITUTE

For summertime tourists driving the Dempster Highway, one of the first views of the traditional lifestyle in the Northwest Territories is a collection of fish-drying tents near Tsiigehtchic. Formerly known as Arctic Red River, Tsiigehtchic is a small Gwitchin community located where the Arctic Red and Mackenzie rivers meet. Although the site was used as a seasonal fishing camp for centuries, it is only in the last several decades that the population has risen to anything more than a few families. The traditional economy of hunting, trapping and fishing are still mainstays of life for most people in the community, and most people still spend extended periods of time each year 'out on the land.'

Scientists world-wide have almost unanimously agreed that global climate change is a reality. Scientists have also



Curtis Rattray, Tahltan Nation, December 2000

predicated that the Mackenzie Valley is one of the areas where these changes will be most pronounced and, in fact, have already measured an average increase in temperature over the past 50

Draft Declaration on Traditional Ecological Knowledge from SnowChange 2002 Conference

Below is an excerpt of the Draft Declaration on Traditional Knowledge from the SnowChange 2002 Conference, which will be taken to the United Nations' Framework Convention on Climate Change and to the Minister of Environment of Finland, Ms. Satu Hassi. The full text is available at www.snowchange.org/proceedings/ declarationdraft.html.

Various international fora, such as the Intergovernmental Panel on Climate Change and other forums are urged to validate the Traditional Ecological Knowledge as a recognised vehicle of knowledge in the assessment, research and other scientific work on Climate Change. More broadly, the same recognition is needed worldwide in all environmental and resourcemanagement work. There is a need of peace, power and righteousness in finding answers to the challenges of the climate change. The initial impacts of the climate change will be on the Indigenous peoples, and therefore there is a clear need for a direct participation to bring awareness. There is a need to develop an active, ongoing circumpolar Indigenous community-based monitoring network to share information and to develop local adaptations to climate change.

The representatives of the SnowChange Workshop feel that the urgency of climate change requires immediate action from the scientific community in multiple forums to recognise Traditional Ecological Knowledge as an equal system of knowledge. years. While we are hearing more and more about these types of observations and predictions, what do they really mean on a practical level? Are temperature rises part of a long-term trend? Will they make a difference to the natural ecosystem or to people's lives? Elders and traditional knowledge specialists in communities like Tsiigehtchic are providing us with some answers to these questions.

In June of 2002, representatives from the SnowChange Project travelled to Tsiigehtchic to inform residents about the project and to record Elders' knowledge about the changing climate in the Mackenzie Valley. With help from the Gwitchin Social and Cultural Institute, community Elders-whose direct, observational knowledge goes back at least 50 years and whose knowledge of information passed on from their parents and grandparents goes back hundreds of years—were interviewed at length about a wide variety of natural systems. Elders commented about seeing new species of animals, changes in vegetation types and patterns, changes in animal habits, thinner ice, later freeze-ups, and warmer winters. The information collected in these interviews is invaluable to us all. For future generations of Gwitchin, it allows the archiving of information that is slowly being lost; for scientists, it allows a fine-tuning of our knowledge of the effects of climate change; and for the general public, it puts a human face on a pressing global issue.

Information collected in Tsiigehtchic will be presented at the second annual SnowChange Conference in Murmansk, Russia and will be included on the SnowChange website (www.snowchange.org).

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www.snowchange.org

TERO MUSTONEN, PROJECT MANAGER, SNOWCHANGE PROJECT

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The SnowChange Project has created a website to introduce the project, provide background and contact information, and disseminate the results of the community research.

The website is divided into five main sections. On the home page are links to Project Info, Views, Online, About, and Postcards.

- **Project Info** presents conference information about SnowChange 2002 and 2003, an explanation of the project and proceedings—online texts from the SnowChange 2002 conference.
- Views presents Indigenous Views, a collection of transcripts and papers, links, and audio files that have arisen from the community visits and discussions with project partners. The Student Views area will have content added once the material is prepared. A third area provides a home for Tero Mustonen's *Diaries from the Road*, a series of short postings documenting the SnowChange North American community visits between May and August 2002.
- Online is the portal to the website's discussion forum. Participation is encouraged. Participants must register, for free, to take part.
- About presents contact information for the project officials, a summary of site updates, and a site map.
- **Postcards** offers 16 images that visitors may use as virtual greeting cards. The photographs include (snow covered!) landscapes, communities, and Russian icebreakers.

The SnowChange website also provides information about the SnowChange Online Course 2002, an online course for young environmentalists, both Indigenous and



Banks Island Slump, NWT

STEVEN BARYLUK

non-Indigenous, which ran from October 2002 to December 2002. Participating institutions were Murmansk Humanities Institute and Murmansk State Technical University in Murmansk, Russia; Aurora College in Inuvik, NWT, Canada; and Tampere Polytechnic School of Technology and Forestry in Tampere, Finland. The student groups conducted community studies on climate change and will present their findings in the next SnowChange Conference in Murmansk, Russia in February 2003.

Climate Change. Are you doing your bit?



Did you know?

For species like swans which travel between winter and summer habitats, climate change can have negative effects on their winter habitat, migration, food sources or nesting areas.

For more tips from the NCE's Bob and Dog Mackenzie go to www.taiga.net/nce/doyourbit.html

a Northern **view**

Doing research

AMANDA GRAHAM, YUKON COLLEGE

I've been interested in northern research for quite some time now. Many years ago, as a Northern Studies student at Yukon College, I was introduced to a small, blue booklet that contained the Association of Canadian Universities for Northern Studies' "Ethical Principles for the Conduct of Research in the North." The

booklet contained a handful of statements, printed in English, French, and Inuktitut, to guide researchers in doing respectful, ethical research in Canada's North.

Research in the Canadian North had,

by the 1970s, acquired something of a bad reputation among Indigenous northerners. Numerous critics had come to believe that researchers benefited unfairly from local knowledge. Not every researcher was suspect, but the megaproject developments that were planned for northern Canada at the time seemed to be directed by agencies and companies located outside the region. Research was being done, but the results, and even the purposes, were not clear to the people who were potentially going to be affected. The ACUNS principles were one attempt to address these community concerns.

The principles have not remained static. They were revisited and revised in the late 1980s to reflect the huge changes that have occurred in the Canadian North with respect to land ownership, interest, and control. Land claims in parts of the North have altered the research landscape. Today, there is a clear movement towards partnerships in research. Northerners are now more likely to be initiators of research and collaborators in the projects than before,

when their most likely role in research was as informants or quides.

Most researchers working in the Canadian North today, and I imagine this is becoming true in other parts of the Circumpolar North, are working with local people to design, conduct, publish, and benefit from research projects. The work

Research is more likely to answer questions northern communities want to ask, and results are more likely to be of use in improving local conditions.

of the SnowChange Project is an excellent example of this.

In reading through the project website, I was struck by the priority given to discussions and statements about the importance of

respecting traditional knowledge. For some scientists, this is hard to understand. Their disciplines often rely on certain formal types of data, and human testimony is not usually among them. Their training does not include techniques of interviewing. Furthermore, they may not realize that their research activities can raise concerns in communities. To be fair to researchers. however, this state of affairs is much less likely these days.

As a result of the work of northern governments and organizations like the Aurora and Nunavut Research Institutes, ACUNS, and a host of others, including the US National Science Foundation, a researcher in northern North America is now more likely than not to be working in partnership with a community or its designated agent.

A decade of declining budgets has meant less funding for research, even to the point of crisis. Formal partnerships and the pooling of research needs, resources, and efforts are practical ways of ensuring defined benefits for all involved. Research is more likely to answer

questions northern communities want to ask, and results are more likely to be of use in improving local conditions.

Climate change research seems to me to offer important opportunities for the intersection of traditional knowledge and scientific study. Northern Canadians have, for some time now, been exposed to discussions about traditional knowledge, its value and values, its ethical use and how to understand its meaning and context. It's been an integral part of the ongoing negotiations we're having while we're building a "new North." Internationally, we're seeing assertions of the vital importance of traditional, local and Indigenous knowledge. We're hearing discussions about ownership and benefit. Clearly, this is an issue that is beginning to be acknowledged.

In many ways, developments in the Circumpolar North, particularly as they relate broadly to the respectful and meaningful inclusion of Indigenous peoples, are at the cutting edge. In many respects, northerners are leaders in reaching multilateral accommodations on a variety of fronts. Some of them are



the results of land claims, others stem from a recognition that we must work together to ensure the improvement and sustainability of our way of life, and still others arise from local desires to find answers to pressing

questions and issues that affect the daily lives of individuals.

The SnowChange Project is a fine example of what can be accomplished when people work together towards a common goal. I'm going to be teaching a course on "Research in the North" this winter, and you can be sure I'm going to have my students look at this fascinating project.

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