Compendium of Research Undertaken in Nunavut 2003

Nunavut Research Institute

Foreword

The Nunavut Research Institute was created in 1995 when the Science Institute of the NWT was divided into eastern and western operations. In the Eastern Arctic, the re-named institute was amalgamated with Nunavut Arctic College.

The Nunavut Research Institute focuses on supporting scientific research and technology development across a broad spectrum of issues and concerns. The Institute's interpretation of research is broad – incorporating Inuit Qaujimanituqangit, social sciences, and natural sciences. The following mission statement guides the activities and services provided by the Institute:

> *The mission of the Nunavut Research Institute is to provide leadership in developing, facilitating and promoting Inuit Qaujimanituqangit, science, research and technology as a resource for the well being of people in Nunavut.*

Institute services are guided by the core values of Nunavut Arctic College - strong communities, cultural appropriateness, partnerships, quality, access, responsiveness and life-long learning. The Nunavut Research Institute places emphasis on brokering northern-based research, which is linked to community needs, and making greater use of Inuit Qaujimanituqangit in research projects.

This Compendium of Research has been produced as part of the Institute's effort to communicate information about research projects, which have recently taken place in Nunavut under the authority of the Nunavut Scientists Act.

FOR MORE INFORMATION

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TABLE OF CONTENTS

-2003 Health Related Research Projects-

A Snapshot of Home Support from the Consumer Perspective 7
Inuit Bronchiolitis Cost Analysis Study 8
Wellness In Adults 9
Effects of prolonged endurance in the extreme cold (Arctic) on humans 10
Usage of the Nunavut Kamatsiaqtut Help Line 11
Mental Health Research Projects 12
Health Care Decision Making of Inuit 13
Examining Midwifery-Based Options to Improve Continuity of Maternity Care Services in Remote Nunavut Communities 14
Hepatitis B Follow-up Study 15
Baffin Island Disablement Study 16
Hydrological Response of High Arctic Wetlands to Local and Regional Environmental Settings 17
Parasites of Biting Flies in Nunavut 18
Validation of CryoSat Satellite - New Techniques for Glacier Mass Balance Observation 19
Field Investigation of a potential Impact Crater 20
Trophic structure of aquatic communities in shallow Arctic water and their response to climate change 21
High Arctic Waste Contamination Over Terrestrial-Aquatic Interfaces 22
New Energy Options For Northerners (NEON) GSC Project 8046 23
Evolutionary ecology and conservation biology of Atlantic cod from landlocked fiords on Baffin Island 24
Meadowbank Baker Lake Gold Project 25
Spatial Variations of Climatic Conditions, Cornwallis Island 26
Fish from high arctic lakes- cumulative effects of contaminants and climate warming 27
Water assessment and climate history of lakes and ponds in northern Ellesmere Island 29
How volcanism might have affected climate. 30
Ground Based Observations of Upper Atmosphere Ozone 31
Contaminants in Arctic Seabirds 32
The Mars Society "Flashline" Mars Arctic Research Station :An International Research Station at Haughton Crater, Devon Island, To Support Human Mars Exploration Research 33
The Hydrology and Dynamics of John Evans Glacier, Ellesmere Island(2 34
The Hydrology and Dynamics of John Evans Glacier, Ellesmere Island (1) 35
Glacier Mass Balance and Pollution 36

New Energy Options for Northerners (NEON) GSC Project 8046 (Smith Sound Aeromagnetic Survey) **37**
Reconstructing Weather from the sediments at Cape Bounty, Melville Island and North Lake, Cornwallis Island **38**
Glacier-climate studies on Grinnell ice cap **39**
Systematics and Evolution of Arctic Alkali Grasses (Puccinellia) **40**
Causses of long-Term Changes in the Geometry of Devon Ice Cap and Prince of Wales Icefield **41**
Validation of CryoSat Satellite -- New Techniques for Glacier Mass Balance Observation **42**
Varves and Varve Forming Processes at Lake Tuborg, Ellesmere Island **43**
Physical and Biological Implications of Permafrost and Ground Water Dynamics in a High Arctic Polar Desert Ecosystem **44**
Mars Deep Drill - Planned Science and Technology Field Research **45**
An Investigation of the Impacts of Global Change on Permafrost in High Arctic Polar Desert Ecosystems **46**
Mass Balance Measurements of White and Baby Glaciers, Axel Heiberg Island NU **47**
Northern Ice Shelf Community Dynamics **48**
Ecosystem Study of Deglaciated Arctic Areas **49**
Variability & Forcing of Fluxes through Nares Strait and Jones Sound. **50**
Mercury in Amituk Lake Sediment, Cornwallis Island **51**
NASA Haughton-Mars Project **52**
Environmental Effects Monitoring Program(EEM) Polaris Mine Nunavut **53**
Diversity and evolution of fungal endophytes in plants and lichens **54**
Chemical Sampling and Analysis **55**
High resolution Aeromatic survey, Boothia, Kitikmeot Region, Nunavut conducted by the Geological Survey of Canada **56**
Biocomplexity of Frost Biol Ecosystems **57**
Glacier-climate studies on Grinnell ice cap **58**
Plankton organisms (graptolites, radiolarians, acritarchs) biostratigraphy, taxonomy, pleoecology and evolution **59**
Trends of PCB's and Metals in ringed seals from the Canadian Arctic. **60**
Sample collection for CanZinco Limited, July 2003 ..... **61**
Field Measurements on the Strength of Decaying Sea Ice **62**
Iqaluit Invertebrate Project **63**
Testing Proterozoic continental recontructions through plaeomagnetism and geochronology **64**
Effects of climatic forcing on spring production in the High Arctic **65**
The transmission of an Inuit Sensorial Memory in the Belcher Islands. **66**
Evolutionary ecology and conservation biology of Atlantic cod from landlocked fiords on Baffin Island. **67**

The Hydrology and Dynamics of John Evans Glacier, Ellesmere Island **68**
"Methyl Mercury Formation in the High Arctic" **69**
Permafrost Monitoring-High Arctic Observatories **70**
Arctic Ocean Climate Change Project **71**
Aquatic surveys and advanced exploration activities in the Hope Bay Belt **72**
Coastal hazards, relative sea-level change and climate impacts on northern coasts and seaways **73**
Peleoenvironmental Reconstruction from Laminated Sediments in coastal lakes and marine inlets, Nunavut **74**
How important is channel smitching in river systems draining land-ice: Clyde River, Baffin Island? **75**
Microbial investigations of perennial springs, permafrost and ground ice in the high Arctic **76**
Impact of biology and photochemistry on mercery cycling in fresh and saltwaters of the high arctic **77**
Lithologies in four areas of Axel Heiberg Island **78**
Paleomagnetic, U-Pb geochronology and geochemical studies of Proterozoic dykes in Greenland and Nunavut, Canada and their bearing on the Nares Strait Controversy **79**
Permafrost Monitoring-High Arctic Observatories **80**
Kitikmeot Place Name Atlas Project **81**
"Integration of the Elders in Schools" **82**
Indigenous and Scientific Knowledge of Caribou Migration in Arctic Canada. **83**
Inuit Knowledge of Polar Bears **84**
" Regional Identity and sustainable development in Nunavut" **85**
Experiences in Auyuittuq and Quttinirpaaq National Parks. **86**
Information Clarification Project concerning History of Simon Shaimaiyuk of Pangnirtung. **87**
Collaborative Approaches to Ecosystem Management in Indonesia: Learning From Experience in Canada's North **88**
Meadowbank Baker Lake Gold Project **89**
"Documenting the Knowledge of Baker Lake and Arviat Elders about Caribou and Change" **90**
Inuit Discourse and Identity After the Advent of Nunavut **92**
The Social, Cultural and Economic Role of the Sea in Arviat, Nunavut **93**
After Informatic Stratification: Resignifying Disc Numbers **94**
The Social Impact of Mining on Traditional Structures **95**
Engaging the Community in the Evaluation of the Community Planning Advisor Program **96**
Inuit Representation of the Night: Linguistic and Anthropological Features **97**
Inuit Discourse and Identity After the Advent of Nunavut **98**
Working with elders and photographs from Pangnirtung **99**
Civil Justice System and the Public **100**
The Collection Of Wolverine (Gulo gulo) Aboriginal Traditional Knowledge(ATK) from Northern Canadian Communities for Species Assessment: A Case Study **101**

Teaching and Learning Technology; Enhancing Equity for Canadian Youth **102**
Website Development: Ivory Sculptures from the Eastern Canadian Arctic **103**
Experiences Protocols Practices and Beliefs: About Tuberculosis in the Canadian Arctic **104**
Words in Inuktituk **105**
Social and Cultural Influences in Grizzly Bear Conservation in Canada **106**
Ethnological Research on Traditional Knowledge and Environmental Management in the Inuit Society of Pelly Bay **107**
Changes to Inuit family life. **108**
Discourse and the Function of Case marking in Inuktitut **109**
Re-inventing tradition: Aboriginal self-government and women. Canada and Mexico in a comparative per **110**
Speech Data Collection **111**
National Identity and the Public Sphere in Nunavut **112**
St. Luke's Mission Hospital Medical History 5,000 word essay **113**
The Politics of Language Policy in the Territory of Nunavut **114**
Development of a Coastal Community Climate Change Action Plan **115**
Social Integration Among the Inuit of the Canadian North **116**

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Location/Region: **Baffin**

Project Title:

A Snapshot of Home Support from the Consumer Perspective

Summary:

The Council of Canadians with Disabilities (CCD), a cross disabilities advocacy association of persons with disabilities in partnership with Ryerson University and Dr. Kari Krogh is presently undertaking research to look at the home support policies and programs that are in place in each province and territory. This project has several objectives including developing a national "snapshot" of the home support policies affecting persons with disabilities. The project will result in the identification of variations in home support policy related to eligibility, assessment procedures, levels of service delivery and levels of consumer control options in each provincial and territorial jurisdiction.To obtain concrete examples through interview and videotaped demonstrations that illustrate how home support policies and services affect the everyday lives of people with disabilities and to produce a national analysis of issues and a set of policy recommendations that emphasize the perspective of people with disabilities who require home support.

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Location/Region: **Baffin Regional Hospital, Iqaluit**

Project Title:

Inuit Bronchiolitis Cost Analysis Study

Summary:

This study is designed to estimate the total annual costs to the health care system associated with hospital admissions for bronchiolitis in Inuit infants living in the Baffin Region of Nunavut, Canada. Inclusion criteria:

- Infants from birth to 364 days of age at time of hospital admission
- Home residence in Nunavut
- Admitted to hospital to Baffin Regional Hospital (Iqaluit, Nunavut) or the Children's Hospital of Eastern Ontario (Ottawa, Ontario), from August 1998 up to and including the most recent data available.
- Most responsible diagnosis of bronchiolitis or viral pneumonia

Costs to be tabulated will include: the cost of transporting the patient to Iqaluit*; the cost of the family's transport to Iqaluit*; accommodation and meal costs of the family's stay in Iqaluit*; costs of in-hospital care of the patient at Baffin Regional Hospital; the cost of transporting the patient and family from Iqaluit to Ottawa; costs of the in-hospital care of the patient at Children's Hospital of Eastern Ontario (CHEO); the cost of the family's meals, accommodation, and transportation to and from the hospital; and the travel costs for the return journey of the patient and family from Ottawa to the home community.

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Location/Region: **Kivalliq**

Project Title:

Wellness In Adults

Summary:

The research project "Wellness in Adults" is a quantitative inquiry that will examine the impact of an education program using the enneagram model on the wellness of participants in Rankin Inlet, Nunavut, Canada, as measured by two questionnaires, the Health Promoting Lifestyles Profile II and the perceived Stress scale. This population to be studied in this research project, adult students of Nunavut Arctic College in Rankin Inlet, will involve approximately 60 adult volunteers, representative lists of Nunavut Arctic College, used with the permission of the Campus Director of the Kivalliq Region, Nunavut Arctic College, Michael Shouldice. Prospective volunteers from these regristration lists will be sent a letter from the researcher outlining the research project. They will be asked to sign and return the attached form, indicating wether or not they wish to participate. Those who agree to participate will be assigned number codes to protect their identities and confidentiality. They will then complete two information forms. All participants will be requires to completet two wellness questionnaires at the start of the reseach, and after six months. Thelf of the participants will attend a 90-minute education program after the completion of the first set of questionnaires. Six months later, the researcher will send to all participants the two wellness questionnaires for completion. These are to be returned to the researcher in the self addressed stamped envelope. Data will be disposed of seven years after the project has been cocluded. The researcher will make available the results of this study to those participants who have indicated by checking the appropriate box in the consent form. Only group summary data will be provided in a written report.

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Location/Region: **North Baffin**

Project Title:

Effects of prolonged endurance in the extreme cold (Arctic) on humans

Summary:

The effect of prolonged endurance in the extreme cold have received relatively little scientific attention. This is interesting as there is a plethora of books concerning the early exploration conducted under these conditions by Captain Robert Falcon Scott and Ernest Shakelton. The "Arctic" area of wilderness over that past ten years has had a greatly increased number of visitos due to the expansion available of small companies offering an "expedition tour" Package. The overall number of visitors is therefor increasing year on year and the same sort of magnitude of increase and trend can be seen in the Arctic, although recent figures are hard to come by. If more and more of these individuals are undertaking "adventure based" holidays the effect of exercise in this "extreme" cold on these individuals warrants more investigation. The specific research questions that are to be investigated include: 1. What is the acute effects on thermoregulation (1-10 days after arrival) over a 24h period wherein subjects man-haul sledges for ~5-8 hous a day. 2. What is the chronic effects on thermoregulation (40 days after arrival and 30 days after start of the sledge haul) over a 24 h period, where in subjects man-haul sledges for ~5-8 hours a day. 3. What is the effect of man-hauling on hormonal profile, appetite of food, and functional capacity of the heart, body composition, bone mineral density, aerobic fitness and indirect markers of cardiac fatigue? This entails 8-10 subjects man-hauling sledges for a period of ~16 days with blood samples taken every morning and evening, urine every day and questionnaires asked regarding their mood, health and food interest. The change in their physiology will be assessed by pre-post measures taken in the laboratories in the UK University on their return.

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Location/Region: **South Baffin**

Project Title:

Usage of the Nunavut Kamatsiaqtut Help Line

Summary:

The Nunavut Kamatsiaqtut Help Line (NKHL) has collected data based on the crisis calls received over the previous 2 years for which they would like to analyze. They approached the present researcher for assistance and have agreed to have the project carried out. The research questions have yet to be finalized with the NKHL Board of Directors. Some potential questions include the demographics of the callers, types of calls received (e.g. problem type, severity), assistance that was required, assistance that was offered, recommendations/referrals that might have been given, and a temporal analysis of the usage of the Help Line. This project will involve 2 people going to Iqaluit to access the database. The data will be coded in the computer for information that is required to answer the research questions. No identifying information will be recorded. The coded data will then be brought back to Lakehead University for data analysis. A report will be written for the NKHL. Any publications in scholarly journals that may come out of this project will be written after full consultation with the NKHL Board of Directors so that they will have input into the dissemination of the results.

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Location/Region: **South Baffin**

Project Title:

Mental Health Research Projects

Summary:

There are 9 projects in total, based on chart reviews. The source of data come from consultations I have done at the Baffin Regional Hospital from 1999-2002. 1) A review of the consultation series done in 1999-2000 with information on the demographic, clinical and service utilization charactersitics of patients (n>110), this will likely be informative for current mental health workds and future consultants. 2) A review of the homeless mentally ill clients' demographic and clinical characteristics and service utilization patterns, as compared to the average hospital user. 3) A study of the suicide attempters over one of the consultation period on their life circumstances, methods, and stressors and diagnoses at the time before their suicidal crises. 4) A case-samply study on the theme of cross-cultural interpretation of psychiatric symptoms, focusing on psychosis. 5) A case-sample study on the theme of teenage suicide, with some focus on impulsiveness associated with suicide in teens. 6) A case-sample study on the theme of social disadvantages surrefed by the mental health patient. 7) A write-up on the role of a psychiatrist working in the remote aboriginal setting and special attention to the need for cultural understanding. 8) A study of the kind of patients who require high levels of attention from the nursing staff in communities but may be helped by certain community-based services. 9) A review or areas of the Mental Health Act that require revision or updating in order to suit the special circumstances of the North/Nunavut.

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Location/Region: **Kitikmeot**

Project Title:

Health Care Decision Making of Inuit

Summary:

The purpose of this study is to identify and describe health care decision making of the Inuit of Kugaaruk, Nunavut. Health care decision making refers to those choices made which related to the management of illness, and illness prevention. Health and illness take place within a cultural context, which influences and directs behavious and activities. The researcher, while participating in the daily life of the community, will observe activities within the community and take with people, focusing on health activities. Fieldnotes will be kept to document any observation of, or interaction with community members. These notes will consist of : observations about the event or interaction, a description of the setting, non-verbal behaviours, conversations, and activities (and kinship ties) of the individuals present. Formal interviews will take place with selected individuals, based on questions arising from informal conversations, field notes, and other sources of information. The focus of these interviews will be to identify the health care decision making process and the meanings behind the activities identified in the process. Other sources of data will include the anaylsis of external sources of health information such as health bulletins, radio programming, newspaper articles, historical records, and service utilization information. Data analysis is an ongoing process. As there are multiple methods of data collection, each is analyzed separately and then compared during the analysis process. Fieldnotes are reviewed regularly, in order to identify health related behaviours and to derive questions to be asked about those behaviours in order to understand the meanings underlying behaviour. Transcripts from interviews will be analyzed to identify and confirm repetitive health related themes, and to identify future questions. Other data will be analyzed for patterns and congruence with the data being generated by the researcher. This study will identify and define the process of health care decision making through the examination of the alternatives available, the choices made between and among alternatives, and the explanations given for why a particular choice was made. Such information will be useful to health professionals in the planning and delivery of services, which are culturally appropriate.

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Location/Region: **Nunavut**

Project Title:

Examining Midwifery-Based Options to Improve Continuity of Maternity Care Services in Remote Nunavut Communities

Summary:

Gaps in maternity care in Nunavut and the North often force women to bear children without support from family and community. The intent of this project is to examine the appropriateness and potential of midwifery-based models of care. This project will examine: (1) What factors contribute to gaps in maternity care in remote Nunavut communities? (2) What are appropriate and sustainable models of maternity care for remote, Northern and Aboriginal communities? (3) How can these models be implemented to ensure sustainability? The participatory approach will employ interviews and community consultation workshops. Interviews will be conducted with health care planners, planners and consumers of maternity care. Workshops will be open to all community members. Questions perceived gaps in maternity care, proposed solutions, community needed and capacities.

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Location/Region: **Kivalliq**

Project Title:

Hepatitis B Follow-up Study

Summary:

In 1979, sera from 720 residents of Baker Lake were tested for evidence of hepatitis B infection. Approximately 35 individuals were found to be chronically infected with moderate to large amounts of virus while an additional 50 had much lower levels of the virus in their blood. The purpose of this follow-up study is to determine whether the risk of cirrhosis (extensive scarring of the liver) and liver cancer is higher in either of these two groups, compared to a similar number of individuals who tested negative for hepatitis B infection. The study will consist of a nurse and physician visiting the Baker Lake Nursing Station and conducting history and physical examinations on those individuals with hepatitis B infection who are still residing within the community. The control group (those never infected with hepatitis B) will also be interviewed and examined for evidence of liver disease. In both survivors and those who have passed away, their charts will be reviewed to determine if there are signs of cirrhosis or liver cancer and in those that died, the cause of death. The results of this work will be presented at scientific meetings and published in the medical literature. However, the identity of those involved will be hidden and referred only by a code system (ex. Patient A or B, etc.). The results of this study will help determine whether individuals who have low levels of hepatitis B in their blood are at the same risk of developing cirrhosis and/or liver cancer as those with high levels of hepatitis B and those who have never been infected with the virus. This information is required for determining whether treatment and/or long-term follow-up are required.

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Location/Region: **North and South Baffin**

Project Title:

Baffin Island Disablement Study

Summary:

National and regional studies show that Inuit and aboriginal Canadians experience higher levels of disablement than non-aboriginal Canadians. However, qualitative methodology has rarely been used to explore the impact of this discrepancy. This project will use qualitative methods in order to understand the impact of disability on community participation in the Baffin region. The aims are to understand, from the perspective of Inuit people, what constitutes disablement, what affects community participation, and what Inuit feel would help people with disabilities in the future. Focus groups and interviews will take place in three of ten Baffin communities. Qualitative content analysis will be used to obtain rich descriptions of Inuit experience. Ongoing communicatin and feedback from local health councils, will take place. Recommendations will be provided to communitiy representatives, to the department of Health and Social Services and to the Qikiqtani Inuit Association. This information will help with a collaborative effort to develop sustainable community based rehabilitation programs in the future.

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Location/Region: **North Baffin**

Project Title:

Hydrological Response of High Arctic Wetlands to Local and Regional Environmental Settings

Summary:

Wetlands are important ecological niches in High Arctic environments providing habitats for fauna and migratory birds. However these sites are sensitive to change initiated by northern development or climatic variability. Insufficient information exists about Arctic wetlands and there is a real need to make an inventory of wetlands and relate their form and function to large scale patterns of snow, permafrost and climate. These types of information will improve our understanding of their ecology and determine their susceptibility to future environmental changes. The present project will examine the role of regional and local environmental conditions on the hydrology of High Arctic wetlands. The immediate objectives of this project are: 1) to identify wetlands using remote sensing and relate them to factors such as climate, frost, snow and ecology; 2) examine the impact of climate variability on snowmelt, ground thaw, flooding/drying on wetlands; 3) assess regional versus local water sources in sustaining wetlands; 4) employ a permafrost model to predict susceptibility of wetlands to terrain disturbance, climate variability and climate change. Presently, a great deal of environmental data (water, energy, vegetation) has been collected at a wetland site near Resolute Bay and this research will continue. In addition, several target wetlands will be selected from areas of the High Arctic which experience cool/wet/cloudy environments (Cresswell Bay,. Somerset) versus warm/dry/sunny areas (East Wind Lake, Ellesmere)/. Satellite imagery will help us to map these wetlands in terms of their form, snowcover, vegetation and flooding or drying conditions. Fieldwork will confirm the accuracy of the satellite images. We will carry out snow surveys in early May, before snowmelt and we will re-visit sites in late summer to download meteorological information (air/surface temperature, precipitation), determine maximum ground thaw and note maximum and minimum water levels in a series of water wells.

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Location/Region: **Nunavut Wide**

Project Title:

Parasites of Biting Flies in Nunavut

Summary:

This is a project on the distribution and biology of parasitic organisms in biting flies especially mosquitoes. I propose to visit Baker Lake, Coral Hrbour, and Iqaluit to collect mosquito larnae from the local snow melt pools. Approximately four visits are anticipated (2003-2006). Round worm infections have been reported from these locations in 1954 (Coral harbour and Iqaluit) and 1976 (Baker Lake). Last year, I found roundworms in mosquitoes in one pool and ciliated protozoans in mosquitoes from a second pool in Baker Lake. Basically, I will collect larvae in small containers until the parasites kill the mosquito larvae or disect the mosquito larvae to recover parasites. The parasites will be either frozen or preserved in alcohol for future studies on the morphology of the parasites. These studies will be valuable for developing a better understanding od the distribution of these parasites in bitting flies. In addition, I hope to develop a better understanding of natural control mechanisms in populations of biting flies.

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Location/Region: **NB**

Project Title:

Validation of CryoSat Satellite - New Techniques for Glacier Mass Balance Observation

Summary:

Glacier and ice cap changes are recognized as very good indicators of climate change. The GSC has collected and assessed mass balance data from numerous ice caps in Nunavut for over 40 years. This information had provided the basis for a number of important investigations concerning climate change. The data and assessments will be discussed in the Arctic Council's Arctic Climate Impact Assessment (ACIA). Traditional glacier and ice cap mass balance measurements conducted on the ground are very reliable, however, there is a need to improve our ability to measure and assess glacier changes over wider areas and regions where glaciers are found. To do this we are developing new techniques and evaluating existing aircraft and from space to extend over large areas the manual (by-hand) observations made at single points on the ground. It is also important to determine with greater confidence why these glaciers are changing. The goals of this investigation, therefore, are to: 1. Develop new methods for measuring glacier mass balance on the ground, from aircraft and from space. 2. Validate a new satellite sensor (CryoSat) that will assist in mapping ice cap elevation and snow accumulation changes. 3. Determine if snow accumulation has been increasing on the ice caps due to climate warming. 4. Contribute to efforts that are determining where the ice caps of Nunavut are growing or shrinking The work will be conducted out of a single main camp (4 people) with field parties traveling periodically along measurement lines from this camp to the ice cap edges. We will be testing our methods and conducting ground measurements on Agassiz Ice Cap in the spring of 2003 (6-8 weeks). Ground and aircraft measurements will be conducted on Devon Ice Cap in the Spring and Fall of 2004 and 2006. For 2003, we will consider Devon Ice Cap as a suitable alternate to Agassiz if weather prevents access to Agassiz. We will be living and working out of 2 portable man tents and 1 portable lab/communal tent. All can be assembled and disassembled quickly. No permanent structures will be left.

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Location/Region: **North Baffin**

Project Title:

Field Investigation of a potential Impact Crater

Summary:

This project will determine the origin of a 40-50 wide crater in Canada's arctic. The crater possesses features consistent with formation by a meteorite impact. The study of young, uneroded impact craters is important as they can preserve morphologic detail that is typically obscured in older craters. We will fully characterize the morphology of this feature. This crater occurs on sediment, not rock, and can be used as a comparison for craters produced by laboratory impact and nuclear explosion experimeTnts. We will determine the age of the crater in a novel way, using cosmogenic necleides and possible using C14 of sediment in the lake. We aim to use a magnetometer and radar to locate and retrieve meteoritic material for further studies in Canada that may elucidate the origin of the impacting body. Any collected material will ultimately be donated to the National Collection of the Geological Survey of Canada.

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Location/Region: **North Baffin**

Project Title:

Trophic structure of aquatic communities in shallow Arctic water and their response to climate change

Summary:

The Arctic Tundra is spotted by thousands of shallow lakes and ponds. Unlike water bodies to the south, the life is mainly confined to the bottom of the water body, instead of the water column. The high transparency of arctic water, I.e. light can penetrate to the bottom, allows microscopic algae to grow on the sediment and form thick mat-like structures. We think that all other life in the water body are dependant and feed on these microbial mats. Algae and large particles from the sediment may provide food for plankton in the water column, however no previous studies have addressed such processes in this vast biome. The project aims to find links between the sediment and water column using natural stable isotopic signals that can be measured from individuals. This involves a collection of samples from the microbial mat, water and plankton of the ponds for later analysis in the laboratory. In addition we plan to study the pigmentation pattern of zooplankton in these clear water bodies. Zooplankton protect themselves from the harmful ultraviolet radiation by creating pigments that act as sunscreens. These can be measured in the living organisms and potentially, from the fossil remains found in the bottom sediments of the water body. This would give information of the past UV-conditions since pigments are produced in relation to the intensity of UV radiation. The field work will take place in Resolute and in the area near the Lake Hazen and in Ward Hunt Island, Ellesmere.

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Location/Region: **North Baffin**

Project Title:

High Arctic Waste Contamination Over Terrestrial-Aquatic Interfaces

Summary:

Municipal waste disposal sites are local sources of pollutants, and are generally located in close proximity to the ocean and other aquatic environments. Very little research has been done to determine the contamination risks involved with these types of dumps. I propose to study the tendency of cadmium and lead to leach from waste disposal sites into aquatic ecosystems. These metals are of concern because they can accumulate in the liver and kidney's of mammals, which poses a serious health risk to upper trophic level species. The objective of this research is to quantify the rates of which trace metals enter aquatic ecosystems from municipal waste sites in the High Arctic. The pathways of metal movement (I.e. on the surface or beneath the surface) will be investigated using a non-reactive chemical tracer such as Lithium Bromide. Dilute concentrations of this salt will be introduced onto the dump site to determine the water flow occurring from the dump to the ocean. Preferential flow pathways will be examined, as the extensive spatial heterogeneity of this perma- frost landscape will make these pathways an important hydrologic factor controlling contaminated flow. For this study experiments will be set up at a waste dump in Resolute Bay on Cornwallis Island. Water and soil samples (from the surface and at depth) will be taken along transects projected through the waste disposal sites. A control plot will be established away from the waste disposal site to determine the concentration of metals that are naturally occurring in the area. All soil and water samples will be analyzed for trace metals and tracer concentrations in a lab. A survey of the waste being disposed of in the community dumps must be conducted to determine the sources of the trace metals.

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Location/Region: **North Baffin**

Project Title:

New Energy Options For Northerners (NEON) GSC Project 8046

Summary:

In 2001, a joint Canadian-German scientific expedition was carried out in the Nares Strait region of Northeastern Nunavut (Research Licence: 0202301N-A). A component of this expedition was acquisition of aeromagnetic data to map plate tectonic boundaries. The results from the 2001 field program identified a critical area (Smith Sound) to quantitatively map these tectonic boundaries. This current field program is therefore a continuation of the 2001 Nares Strait Project, jointly operated by the Geological Surveys of Canada and German Department of Geology (BGR). Aeromagnetic data will be acquired over Smith Sound and coastal Ellesmere Island during a four-week period in May-June, 2003, operating out of Alexandra Fiord. The objective is to map the possible continuity of geological structures from Canada to Greenland and if geological features are offset, the amount of strike-slip faulting between the two continental plates will be quantified.

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Location/Region: **South Baffin**

Project Title:

Evolutionary ecology and conservation biology of Atlantic cod from landlocked fiords on Baffin Island

Summary:

This project concerns Atlantic cod populations in Ogao, Qasigialiminiq, and Tariuja lakes on Baffin Island. The goals will be to understand where these cod come from , how fast they grow, how old they are, what they eat, how many are in each lake and how much harvest they can support. The lakes will be studied to try to find other similar lakes that might also contain Atlantic cod. Adult and Juvenile Cod will be collected from each lake by grill net and/or angling. Tissue samples, ear bones, stomach contents, and various measurements will be taken. Some cod will be tagged and released alive to estimate the number of fish in each population. Lake depth, temperature and salinity will be measured. Plankton will b collected using a plankton net. An underwater camera will be used to observe cod to see what other fish and invertebrates live in the lakes. We have obtained some samples of ear-bones taken from previous studies and test-fisheries to minimize lethal sampling. An underwater camera system will be used instead of more damaging methods to see what other fish and invertebrates occupy the lakes.

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Location/Region: **Kivalliq**

Project Title:

Meadowbank Baker Lake Gold Project

Summary:

Cumberland Resources Ltd. has conducted mine exploration activities at the Meadowbank Property since 1995. The property is located approximately 70km north of Baker Lake. Previous resesarch has focused on the aquatic environment. The objective of the 2003 program is to gather additional information on existing environmental conditions in support of future environmental assessment and long-term monitoring for the mine. The following activities are proposed for the 2003 research program: 1) collect additional information on lake water and sediment quality and aquatic plants and animals, including fish populations. Field work will be scheduled to gather seasonal data (spring/fall). Sampling sites will be located in 4 lakes around the mine area, and a comparison lake in the Meadowbank River drainage. 2) Collect new information on site hydrology, including snow levels, lake ice/water levels, runoff, and discharges. Monitoring will begin in early spring to capture melt conditions, and will continue to late summer. Sampling sites will be located in 4 lakes around the mine area. 3) Collect new information on plant, wildlife, and habitat features around the mine. Plant surveys will be conducted in mid-summer, and wildlife fieldwork will be scheduled to gather seasonal data. Work will focus on the local study area, but some information will also be collected along an existing winter road corridor and in Chesterfield Inlet. 4) Conduct a field survey (aerial and foot) of archaeological resources and traditional use areas. The survey will document sites of significance near the mine area and along an existing winter road corridor. No excavation is proposed as part of this study.

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Location/Region: **North Baffin**

Project Title:

Spatial Variations of Climatic Conditions, Cornwallis Island

Summary:

The overall of the study is to investigate the spatial variations in climatic conditions of Cornwallis Island in order to model snow distribution and snowmelt in a High Arctic environment. Climatic conditions of arctic weather stations, usually located along the coasts, are often different from those of inland sites, raising the question that the data collected may not be representative of the larger hinterland areas. This has major implications on using the weather station data as inputs to hydrological and climatological models. The present study will be a multi-year investigation to examine the spatial variability of climate over a High Arctic island, particularly during the snowmelt season because snowmelt is the main hydrological even for the polar environment. Three automatic weather stations will be established on a flat site in the McMaster River Basin, in the interior and near the center of Cornwallis Island, and at Stewart Bay. Each station will measure air temperature, relative humidity, wind speed and direction and various radiation variables. The data will be downloaded at the end of the summer and will be subject to quality control prior to being archived for future analysis. Snow surveys will be conducted at the end of winter near each weather station. Information obtained will clarify the variation in snow distribution and melt at various scales. This study, when completed, will enable upscaling of point observations of climatic variables for use in hydrological models to study snow distribution and melt in a High Arctic environment.

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Number in Party: **5**
Location/Region: **North Baffin**

Project Title:

Fish from high arctic lakes- cumulative effects of contaminants and climate warming

Summary:

For 2003-03 our plan is to continue to analyze fish from Resolute and Amituk lake and add Hazen Lake to the list of lakes in this study. We have previous data on contaminants in char from Hazen Lake. We are particularly concerned that climate warming may result in an increase in mercury in some lakes, for example, those that are glacier fed and have long water residence times. Sampling of char in Lake Hazen in northern Ellesmere Island is proposed for 2003 and results would be compared with previous work. Sampling will be carried out by hand methods or gill nets are only catching fish at the 7+ year classes and beyond. The fishing effort on the lakes near Resolute will utilize the traditional knowledge of local people in the community. We will limit total fish collected to a maximum of 20 per lake. The project budget also includes funding to hire a local person to help with fish sample collection and sample preparation. Fishing will be conducted in the first two weeks of August. It would involve day trips by helicopter to lakes near Resolute and a one week trip to Hazen Lake assuming that we have aircraft support from the Polar Continental Shelf Project. Results of the project will be reported to the hunter and trapper committees of communities of Qaussuittuq and Grise Fiord in 2004.

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Location/Region: **North Baffin**

Project Title:

Reconstructing Weather from the sediments at Cape Bounty, Melville Island and North Lake, Cornwallis Island

Summary:

Our work is intended to develop a long record of past weather and river conditions using lake sediments. Our work will involve obtaining sediment from the lakes and measuring processes that control sediment deposition at Cape Bounty. We have chosen these lakes because the rivers appear to supply abundant sediment and deep lakes are needed to preserve the sediments for our research. We will complete the work at North Lake in several days and then establish a small camp at Cape Bounty. We will collect samples from the lake through holes in the ice. We will study sediments in the laboratory and measure the amount of sediment that has accumulated each year in the past. We will also look for evidence of major rainfall events during the summer and late fall. To measure weather and sediment deposition in the lake during the summer, we will place instruments in the lake and on the river to tell us how the rivers respond to weather and how much sediment is transported. Additionally, we will collect vegetation samples and measure the amount of vegetation to compare with satellite images to determine if vegetation can be mapped this way. This work is also important for understanding where wildlife are found and how vegetation changes

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Location/Region: **South Baffin**

Project Title:

Water assessment and climate history of lakes and ponds in northern Ellesmere Island

Summary:

We propose to survey present day water quality and to obtain long-term environmental data from sediment cores from sites on northwestern Ellesmere Island. We (M. Douglas, University of Toronto and J. Smol, Queens University) have been working primarily in Nunavut since the early 1980's, studying lakes, ponds, and streams in the High Arctic. Our overall goals are to characterize the freshwater systems of these regions, and to try to determine if environments are changing in these sensitive area's. Of particular interest to residents of the region may be the large database of water quality variables that we are assembling for a large number of sites in the Arctic. We are also attempting to assess how this part of the Arctic may be changing due to climate change attempting to assess how this part of the Arctic may be changing due to climate change and other factors, and how these changes differ from elsewhere in the Arctic. In the 2003, season, we would like to focus our work on a short trip to sample about 20 lakes and ponds within walking distance of Hazen Camp. We will remove a small sample of water from each pond, as well as a small amount of mud for analysis of indicators of environmental change. We do not sample or disturb any wildlife or fish. In addition, we hope to use the PCSP helicopter to undertake several transects from out base camp to sample a wider diversity of sites. We would like to sample north toward Ward Hunt Island and the Marvin Peninsula, east toward Fort conger, and southwest toward Tanquary Fiord and the Neil Peninsula. At present, we cannot outline exactly which transects we could do, as this involves guidance and approval from several regulatory agencies, as well as logistical concerns. We will be course abide by all restrictions and local concerns for these flight paths. We understand concerns about wildlife etc., and we will after our work accordingly.

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Location/Region: **North Baffin**

Project Title:

How volcanism might have affected climate.

Summary:

Our research focuses on ancient volcanism in the Arctic, between 300 and 65 million years ago. We are studying rocks sections found on Axel Heiberg and Elesmere Islands, which preserve information about the past location of the land masses, and how volcanism might have affected climate. For example, our past research has indicated that Axel Heiberg and Ellesmere Islands were at high latitudes 95 million years ago, but that the climate was much warmer that it is today. The tremendous volcanic activity of the past in the Arctic may have contributed to this warm climate. The main tool in our work will continue to be "paleomagnetism", which is the study of the Earth's ancient magnetic field. When rocks form they can preserve a record of the ancient magnetic field which we can analyze using magnetometers in the Paleomagnetic Laboratory at the university of Rochester. This data can help us determine the exact age of the rocks (and the age od any information on past climate the rocks may contain) and the latitude at which they formed. The data also contain valuable information on the nature of the past magnetic field of the Earth. Som of the rock sections we study contain fossil plants and animals that provide the climate information. We collaboate with Canadian Museums \, particularly the Tyrrell Museum of Paleontology (Alberta), in these studies. We hope to operate small camps composed of 5-6 people and plan to be in the field between 4 and 6 weeks between June and August each year. We will reach Axel Heiberg Island and Ellesmere Island from Resolute Bay using aircraft operated by the Canadian Polar Shelf Project.

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Number in Party: **1**
Location/Region: **North Baffin**

Project Title:

Ground Based Observations of Upper Atmosphere Ozone

Summary:

My project is to design, conduct and operate a near infrared ground based detector that measures ozone in the upper atmosphere. The High Arctic Weather Station in Eureka is an extremely suitable and desired location for the planned observations of high latitude upper atmosphere ozone. The proposed ground based measurements afford a unique opportunity to validate the satellite data. The time to collect the data of interest for the study of possible ozone depletion is the period just before the first sunrise, through the first sunrise (after the end of winter darkness) and for several weeks following. The method of data collection will consist of a stationary detector box situated outside with a data control station inside.

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Location/Region: **North Baffin**

Project Title:

Contaminants in Arctic Seabirds

Summary:

The primary research objective is to monitor changes in levels of contaminents in seabirds eggs as representative of the marine environment in the Canadaian Arctic. In this year, the objective is to collect eggs from five species of seabirds from Prince Leaoplod Island, murre eggs from Coats Island and fulmar eggs from Cape Vers for analysis of chemical residues. We will also sample some shellfish and zooplankton to assess where contaminants can build from in the food chain. This work will be conducted in collaboration with thte existing projects (Cape Vera, East Bay) and the information will be distributed through the communications plan with those studies.

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Location/Region: **North Baffin**

Project Title:

The Mars Society "Flashline" Mars Arctic Research Station :An International Research Station at Haughton Crater, Devon Island, To Support Human Mars Exploration Research

Summary:

The Mars Society is a private international society dedicated to furthering the human exploration and settlement of the planet Mars. In July 2000, the Mars Society established a research facility at the Mars-like Haughton impact crater site on Devon Island, called the Flashline Mars Arctic Research Station (FMARS). Designed to simulate a landed spacecraft on Mars, the FMARS project serves three goals: 1) To provide a testbed for studying the many aspects of field exploration operations on a human mission to Mars; 2) To provide a capable field research laboratory to help further our understanding of the Arctic, the Earth, Mars and the possibilities and limits of life on our planet and beyond; 3) To inform and inspire people around the world to greater interest in space and science by bringing before them in a tangible form the vision of human exploration of Mars. This unique program entails a six person crew of scientists and engineers attempting to conduct field exploration in Devon Island's polar desert, while working under the same constraints as a human expedition exploring Mars. The crew lives in a combination habitat/laboratory module that is an architectural duplicate of a Mars mission unit. Anyone leaving the station to do field research needs to wear a simulated spacesuit, that limits the mobility, agility, dexterity, and sensory abilities of the wearer much as a real spacesuit would. While in the station, crewmembers also perform laboratory analyses of samples brought in from the field, repair equipment, write reports (exchanged with Mars Society's Mission Support via a satellite link that imposes a Mars-like delay on communications), and engage in the chores of daily life living together as a team. The purpose of conducting such simulated operations is to gain essential knowledge of Mars exploration tactics, human factors issues, and engineering requirements - in short, to start learning how to explore Mars.

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Location/Region: **North Baffin**

Project Title:

The Hydrology and Dynamics of John Evans Glacier, Ellesmere Island(2

Summary:

Our aim is to investigate interactions between John Evans Glacier, Ellesmere Island, and the climate system. Our approach involves a combination of field monitoring and field experiments designed to develop and test numerical models of glacier flow and exhanges of mass and energy with the atmosphere. The research focuses on direct ice-atmosphere interactions (mass balance and ice-albedo feedback), and indirect interactions between glaciers and climate (such as feedbacks involving glacier hydrology, ice flow dynamics, evolving glacier geometry and glacier surface climate). It also investigates potential biogeochemical feedbacks on the climate system, such as the consumption of atmospheric CO2 by chemical weathering, the cycling of organic carbon in glacial systems, and the potential release of CO2 and CH4 produced by subglacial microbiological activity to the atmosphere following deglaciation. The long-term objective is a comprehensive assessment of the relationships between arctic glaciers and recent and future climate change. Major activities during the 2003 field program will be: 1) continued climate monitoring with five automatic weather stations on the glacier; 2) stake-based surveys of glacier mass balance and radar measurements of snow depth distribution on the glacier; 3) investigations of the effects of re-freezing of melt-water in surface snow and firn on glacier mass balance, using snowpit surveys and snowpack temperature monitoring; 4) surveys of glacier surface velocity at annual and seasonal time scales; 5) excavation of a 25m long, 2m high tunnel beneath the frozen margin of the glacier, to study the stress-strain behaviour of basal ice, and its role in ice-flow dynamics at the glacier terminus; 6) determination of the origin and characteristics of basal ice (gas, solute, organic carbon and sediment content, isotopic composition, crystal size and fabric, and strength); 7) sampling of basal and glacier ice exposed in the tunnel for analysis of the character of microbial communities contained within them.

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Location/Region: **North Baffin**

Project Title:

The Hydrology and Dynamics of John Evans Glacier, Ellesmere Island (1)

Summary:

This project aims to investigate the hydrology and flow dynamics of John Evans Glacier, their role in its response to climate change, and processes of carbon cycling in a high Arctic glacial environment. Major objectives for 2001-2003 are: a) mass balance and snow depth surveys b) Climate monitoring with 3 automatic weather stations on the glacier) an investigation of the role of re-freezing of melt-water in surface snow and firn in the mass balance of the glacier d) surveys of glacier surface velocity at annual, seasonal and daily time scales e) a study if the supra-glacial hydrology of the glacier, to determine the causes and controls on the timing of major discharge inputs into the sub-glacial drainage system g) dye tracer investigations of the structure and dynamics of the sub-glacial drainage system h) monitoring of the amount and chemistry of water drainage from the glacier I) a study of the organic carbon budget of the glacier designed to determine whether microbial mineralisation of organic carbon is occurring under the glacier and j) a study of the CO2 fluxes over recently deglaciated surfaces to determine whether these are a source or sink of CO2 to the atmosphere.

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Location/Region: **North Baffin**

Project Title:

Glacier Mass Balance and Pollution

Summary:

The programme is an ongoing one started in the early 1960s to monitor glacier health and climatic change in the Eastern Arctic. Beginning in early April, 2003, we will re-measure the mass balance (amount of snowfall between August 2002 and April 2003, and the amount of ice melt in the 2002 summer) or Agassiz (N Ellesmere), Meighen, Melville South, northwest Devon Ice Caps, and a small Glacier near Grise Fiord. There are automatic weather stations on each ice cap and these will be downloaded and re-set. Campbell Scientific will again send a technician to check and download the 3 Agassiz automatic weather stations. If convenient, he will also check out and download the AWS on Meighen Ice Cap. At the same time, snow samples will be collected from each ice cap as part of a continuing programme to monitor any changes in the amounts of pollution coming into the high Arctic. Campbell Scientific will send an employee to download three stations on Agassiz Ice Cap, and Jocelyn Bourgeois (GSC) will collect samples for snow biology there.

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Location/Region: **North Baffin**

Project Title:

New Energy Options for Northerners (NEON) GSC Project 8046 (Smith Sound Aeromagnetic Survey)

Summary:

In 2001, a joint Canadian-German scientific expedition was carried out in the Nares Strait region of northeastern Nunavut. A component of this expedition was acquisition of aeromagnetic data to map plate techtonic boundaries. The results from the 2001 field program identified a critical area (Smith Sound) to quantitatively map these tectonic boundaries. This current field program is therefore a continuation of the 2001 Nares Strait Project, jointly operated by the Geological Survey of Canada and German Department of Geology (BGR). Aeromagnetic data will be acquired over Smith Sound and coastal Ellesmere Island during a 4-week period in May-June 2003, operating out of Alexandra Fiord. The objective is to map the possible continuity of geological structures from Canada to Greenland and if geological features are offset, the amount of strike-slip faulting between the two continental plates will be quantified.

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Location/Region: **North Baffin**

Project Title:

Reconstructing Weather from the sediments at Cape Bounty, Melville Island and North Lake, Cornwallis Island

Summary:

Our work is intended to develop a long record of past weather and river conditions using lake sediments. Our work will involve obtaining sediment from the lakes and measuring processes that control sediment deposition at Cape Bounty. We have chosed these lakes because the rivers appear to supply abundant sediment and deep lakes are needed to preserve the sediments for our research. We will complete the work at North Lake in several days and then establish a small camp at Cape Bounty. We will collect samples from the lake through holes in the ice. We will study sediments in the laboratory and measure the amount of sediment that has accumulated each year in the past. We will also look for evidence of major rainfall events during the summer and late fall. To measure weather and sediment deposition in the lake during the summer, we will place instruments in the lake and on the river to tell us how the rivers respond to weather and how much sediment is transported. Additionally, we will collect vegetation samples and measure the amount of vegetation to compare with satellite images to determine if vegetation can be mapped this way. This work is also important for understanding where wildlife are found and how vegetation changes

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Location/Region: **South Baffin**

Project Title:

Glacier-climate studies on Grinnell ice cap

Summary:

This is a proposed extension of the monitoring program of glaciers we (Geological Survey of Canada) have been conducting in the high Arctic since the early 1960's. We want to establish a site on Grinnell ice cap to monitor the status of the ice cap for detecting and measuring climatic change in the southeastern Arctic. In the first year (2003) we will evaluate if the ice cap is suitable for this work. If it is, we will set up snow depth poles to measure annual snow accumulation and loss during future visits, and we will install an automated weather station to collect year-round weather information. We will also collect some snow samples to measure levels of air pollutants deposited in snow. We are applying for a multi-year license (2003-2006) to include future follow-up work of the same nature.

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Location/Region: **North and South Baffin**

Project Title:

Systematics and Evolution of Arctic Alkali Grasses (Puccinellia)

Summary:

We are studying the morphology and genetic variation of actic alkali grass (Puccinellia, also called "goose grass"). These grasses are important as food for geese and as colonizers of disturbed habitats. However, these plants are often difficult or impossible to identify and their origins are unknown. This research will investigate their range of variation and evolutionary origins. Our main goal is to make arctic plants easier to identify, important for conservation and environmental impact studies. Our study involves visiting four main sites that are known to have several different species of alkali grass. At each site we will make observations on the reproductive stage, morphology, habitat, and distribution of each species. Population samples of about 25 plants from 8 species in total (2-4 species per site) will be collected. We will not remore whole plants from the environment, but will take pieces from each plant whenever possible. A few leaves of each plant will be preserved alive for greenhouse experiments on effects of environment. Another part of each plant will be pressed and dried as a research voucher to be deposited at McGill University.

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Location/Region: **North Baffin**

Project Title:

Causses of long-Term Changes in the Geometry of Devon Ice Cap and Prince of Wales Icefield

Summary:

The aims of this research will be to: a) retrieve data from temperature loggers deployed during spring 2000 at 3 sites across Devon Island Ice cap to determine how air temperature varies spatially and for input to computer models of ice cap surface melting b) measure spatial patterns of glacier surface velocities across Devon Ice cap and Prince of Wales ice field c) determine the spatial pattern of long tern ice accumulation across Price of Wales ice field by shallow ice coring d) determine ice thickness across several profiles of Prince of Ales ice field for comparison with measures of volume and geometry changes of the ice cap as identified from satellite data sets.

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Location/Region: **North Baffin**

Project Title:

Validation of CryoSat Satellite -- New Techniques for Glacier Mass Balance Observation

Summary:

Glacier and ice cap changes are recognised as very good indicators of climate change. The GSC has collected and assessed mass balance data from numberous ice caps in Nunavut for over 40 years. This information has provided the basis for a number of important investigations concerning climate change. The data and assessments will be discussed in the Arctic Council's Arctic Climate Impact Assessment (ACIA). Traditional glacier and ice cap mass balance measurements conducted on the ground are very reliable, however there is a need to improve our ability to measure and assess glacier changes over wider areas and regions where glaciers are found. To do this we are developing new techniques and evaluation existing technologies related to remote sensing. This will involve using instrumentation on the ground, aboard aircraft and from space to extend over large areas the manual observations made at single points on the ground. It is also important to determine with greater confidence why these glaciers are changing. The goals of this investigation therefore, are to: 1) develop new methods for measuring glacier mass balance on the ground, from aircraft and from space; 2) validate a new satellite sensor (CryoSat) that will assist in mapping ice cap elevation and snow accumulation changes; 3) determine if snow accumulation has been increasing on the ice caps due to climate warming; and 4) contribute to efforts that are determining where the ice caps of Nunavut are growing and shrinking.

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Location/Region: **North Baffin**

Project Title:

Varves and Varve Forming Processes at Lake Tuborg, Ellesmere Island

Summary:

In the near future, the Arctic is expected to warm much more than the rest of the globe. To put this anticipated warming in a long-term context, researchers study natural climate archives. One of the most promising archives in the High Arctic is lake bottom sediments. However, lake bottom sediments often contain signals from many sources besides climate, which complicates interpretations. The only solution to this problem is to monitor modern weather, sedimentation, and lake processes, and then compare the monitored conditions with the cored sediments. Air temperature and precipitation are being recorded at Lake Tuborg to monitor modern weather. To monitor modern sedimentation and lake processes, sediment traps (funnels attached to bottles) are being deployed and retrieved on weekly intervals, and an instrument called a CTD is being used daily to record 'snapshots' of water temperature, conductivity, and cloudiness (which approximates the amount of sediment in the water column). Two years of research have already taken place at Lake Tuborg. It has unique sediment sources, and chemical and thermal stratification. Therefore, the responses to climate and weather are unique at Lake Tuborg.

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Number in Party: **9**
Location/Region: **North Baffin**

Project Title:

Physical and Biological Implications of Permafrost and Ground Water Dynamics in a High Arctic Polar Desert Ecosystem

Summary:

This research licence application is for the continuation of our investigations of high Arctic perennial springs. Our research is entering into a new phase that focuses on the biological and physical connections of these spring systems and their interaction with the surrounding polar desert ecosystem. We plan to continue our research on the hydrologic, geomorphic, and geological processes however by also looking at their microbial ecology (microscopic communities) and the various products of biological activity (biogenic mineralization, gases, biofilms) we hope to characterise a potentially unique microvial ecosystem. The 2003 field season we will continue to document and refine our understanding about hydrological and biological processes of spring systems at Expedition Fiord as well as spring sites occurring at Whitsunday Bay, Strand Fiord and investigate new sites including Middle and Bundle Fiords and Northern Ellesmere islang. We will continue to look for other active and relic spring sites. We propose to (a) examine the microbial communities found in association with the springs, including the composition and distribution of the microbiota along environmental gradients particularly with respect to changes in redox, PH, temperature, light and dissolved gases, (b) test our glacial lake-subglacial recharge hypothesis, © develop thermodynamic and flow models for the different spring systems, and (d) continue physical and chemical studies of brine icing formation. Two periods of field work and planned, (1) 2 weeks in April and (2) 4weeks in June/July. The main field work are planned, (1) 2 weeks in April and Whitsunday Bay and Ward Hunt Island. Samples from springs, lakes, surface runoff and precipitation will be collected for geochemical analyses. To determine the origin of the spring water we will measure the total dissolved gases in the spring water and compare it with those water in local lakes and glacial meltwater. We will continue high resolution GPS mapping of spring outlets, flow paths and structures. These data will be used by N. Martineaux to test different hydrologic models for these springs. Andersen will characterize the abundance, distribution and composition of the active bacterial communities in the springs and the runoff areas. The effects of environmental gradients on the microbial community will be investigated. He will also focus on the processes controlling microbially induced biomineralization. Andersen will use these data to develop models of this permafrost spring system that can be extrapolated to Mars in order to aid in site selection and experiment development for future Mars missions.

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Number in Party: **10**
Location/Region: **North Baffin**

Project Title:

Mars Deep Drill - Planned Science and Technology Field Research

Summary:

This is a new project that has only recently received funding under NASA's Astrobiology Science and Technology Instrument Development Program. The ultimate goal of this research is to develop and field test technologies that can collect micro-organisms present in the ancient Martian ground ice and to provide a science base for this investigation by the direct examination of analogue permafrost environments on Earth. Field testing will be carried out for 3 consecutive springs. This research will characterize the stratigraphic nature and distribution of massive ground ice, the age of the ice and characterize the abundance, distribution and composition of the active bacterial communities in the active layer, sediments overlying massive ground ice, in the massive ground ice, and in the poorly consolidated Tertiary bedrock that underlies the ground ice. To ensure that drilling/coring systems are capable of operating successfully on the surface of Mars, we propose to characterize relevant physical properties of rocks and of drill bits in the laboratory under Mars-like conditions of temperature, pressure and atmospheric composition. We propose to develop sampling technologies for aseptic drilling in permafrost. We plan to work in Eureka for 3 reasons, first because of the widespread occurrence of ground ice conditions; second because the area represents one of the coldest and driest ground ice environments in the Arctic; and thirdly because of the available logistical infrastructure.

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Location/Region: **North Baffin**

Project Title:

An Investigation of the Impacts of Global Change on Permafrost in High Arctic Polar Desert Ecosystems

Summary:

This is an ongoing study of high Arctic polar desert ecosystems and the analysis of ice-rick permafrost and the impacts of climate change. This project has two main objectives: first, to assess and detect landscape changes associated with warming permafrost and melting ground ice. And second, to assess the nature and role of micro-organisms inhabiting frozen ground and rock and to assess how climate change will effect their ecology. The data collected in this study will improve our understanding of climate-permafrost interaction and provide the basis for models predicting landscape response for a range of climate warming scenarios. This project focuses on 2 areas, the first is the Fosheim Peninsula area of central Ellesmere and Axel Heiberg Islands. This area contains extensive ground ice deposits and has a 50-year climate record. The second area is Lake Hazen and Northern Ellesmere area which also is known to contain considerable ground ice. Theh aims of this year's research are: a) to assess the sensitivity of permafrost landscapes based on ground ice distribution and climate model predictions, b) establish baseline sites conforming to established climate change protocols, c) characterise the behaviour of key permafrost features (ice wedges, icings, frost mounds), and d) to determine the nature and extent of bacterial communities in permafrost and bedrock surfaces.

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Location/Region: **North Baffin**

Project Title:

Mass Balance Measurements of White and Baby Glaciers, Axel Heiberg Island NU

Summary:

Our research objective is to continue monitoring the mass balance of White and Baby Glaciers. Present computer models suggest that the Arctic regions will get warmer first and will provide the first definitive proof of global warming. Monitoring these glaciers and improving our measurement techniques may provide first hand evidence of any such warming. Essentially the mass balance of a glacier is determined by measuring the amount of snow that falls and accumulates on the upper parts of the glacier. Depending on which is bigger, accumulation or melt, the glacier gains or loses mass. We need a very long record of annual measurements of accumulation and melt to be able to distinguish whether the glacier is reacting to normal weather variations or because the climate is changing.

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Number in Party: **2**
Location/Region: **North Baffin**

Project Title:

Northern Ice Shelf Community Dynamics

Summary:

Arctic ice shelves can only be found along the northern coast of Ellesmere Island. These unique features are typically formed by a long-term thickening of landfast sea ice. Communities, composed of many kinds of microscopic algae, can be seen entrapped in the surface of these ice shelves. When summer comes, melt pools form around the organisms and the tiny algae are free to photosynthesize and grow. Until recently, scientists have overlooked the microbial communities on northern ice shelves. This study site offers insight into how organisms can tolerate extreme cold but also how they may respond to a changing environment given issues such as global climate change and long-range transport of pollutants. This project aims to find out how much biological material exists on the ice shelves and estimate its overall productivity. Previously, all five of Canada's major ice shelves were sampled for biomass, community analysis and water chemistry. In addition, light and temperature sensors were installed and are currently recording conditions on the ice shelf. This summer, we plan to carry out surveys and experiments on the Ward Hunt Ice Shelf to further our research. By taking samples and using water chemistry probes, it is possible to see differences between the numerous melt pools where these communities persist. By using a radiocarbon tracer, the productivity of the communities can be established, thereby giving an estimate of growth.

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Number in Party: **6**
Location/Region: **North Baffin**

Project Title:

Ecosystem Study of Deglaciated Arctic Areas

Summary:

This project will describe the response of Arctic plants to melting glaciers and observe the characteristics of plants, mosses, and lichens under different climate conditions. Plants will be observed in the field with respect to their physical and chemical composition, and distance to nearby glaciers. Soil mapping will be done at various distances from glaciers. Observations of different mosses and lichens species along glaciers will be recorded. The temperature, amount of water, and soil conditions will be measured underneath mosses. The rate of growth for mosses in light and dark conditions will be measured with special equipment. In 2001, a group of researchers traveled to Ellesmere Island looking for an appropriate base site. This year's experimental sites will be established and may continue for 2 more field seasons. The projected outcome of the site will be the project's completion in 2004.

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Location/Region: **North Baffin**

Project Title:

Variability & Forcing of Fluxes through Nares Strait and Jones Sound.

Summary:

Our Science goal is to determine how much seawater and ice flow south through Nares Strait and how that flow varies over a three year period. We will use satellite information, models and ocean observations to do this. Ocean studies will begin from the USCG Icebreaker Healy in late July to mid August, 2003. We will examine water properties, take water samples and place instruments on the seafloor in Baffin Bay, Kane Basin and Kennedy Channel. The instruments will measure currents, sea level, temperature and salt content and are designed and placed to avoid damage from deep iceberg keels. We intend to retrieve and redeploy the equipment using helicopter and Twin Otter in April 2005. We would retrieve the equipment in April 2007. Aircraft based work would be conducted from camps lasting about 6 weeks and made of temporary structures. These camps will be located on the Greenland side of Kennedy Channel. We are also proposing to study past flow conditions in two ways. Clams lay down their shells in distinct annual layers and can live to be 40 years old. We will test the idea that the chemistry of clamshell layers can teach us about how the flow changed over past decades. For this purpose, divers will collect about 100 clams and water samples at about 8 locations distributed along the Canadian and Greenland sides of Nares Strait. To study past flow changes over hundreds and thousands of years, we will collect 4 sediment cores from the seafloor in Northern Baffin Bay. Provided the ship's unique mapping system is working well, we will collect detailed maps of the seafloor over the regions that we travel and make this data available.

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Number in Party: **3**
Location/Region: **Amituk Lake, Cornwallis Is.**

Project Title:

Mercury in Amituk Lake Sediment, Cornwallis Island

Summary:

This research will help us to understand wether air pollution from distant industries and cities has significantly increased the concentrations of mercury in the air, snow and rain of the central Arctic. Mercury is a naturally-occurring metal in the environment, and is also emitted from some pollution sources (power plants, cars, incinirators) into the air where it can be transported long distances. Has this pollution had an effect on mercury levels around Cornwallis Island, or are present-day levels entirely natural? The sediment in the bottom of lakes can act as an archive of airborn metals, trapping them in the mud and burying them after they have been deposited by rain and snow. By looking at the variations of the metal concentrations down a core, we can reconstruct the history of mercury deposition over hundreds of years. We plan to remove small cores of sediment (10cm diameter, 50 cm long) from the deep part of Amituk Lake and measure the mercury levels in small slices down the cores. If pollution had affected mercury levels in the air over Cornwallis Island, then recent sediments will contain more mercury than older sediments that were laid down before the Industrial Revolution in about 1800 AD.

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Location/Region: **North Baffin**

Project Title:

NASA Haughton-Mars Project

Summary:

The nasa haughton-Mars Project (HMP) is an international interdisciplinary field research project centered on the scientific study of the haughton meteroite impact crater and surrounding terrain, Devon Island, Nunavut, Canadian Arctic,viewed as place similar to the planet Mars. The HMP research prgram has two components : Science and Exploration. The Science prgram studeis geology and biology, specifically the rock, snow, and ice features of the land, and the forms of microbial life in the arctic polar desert. The Exploration program studies new technologies and strategies for the future exploration of Mars by robots and humans. The propsed field season will run from July 1, 2003 to August 5, 2003. This years research activities will include automation of the Mars Greenhouse established at the HMP Base Camp last summer, tests of spacesuit components and systems for future astronauts on the Moon or Mars, tests of a future small remote-controlled Mars airplane, and visits to remote parts of Devon Island using the new "MARS-1" Humvee rover. As in previous years, several students and young adults from the communities of Resolute Bay and Grise Fiord will be hired as participants in the proposed field research program.. The NASA HMP is managed by the SETI Institute and is headquartere at NASA Ames Research Center in Mountain View, California, USA. Other major research organizations participating in the project include the canadian Space Agency, the Mars Institute, and Simon Fraiser University (Vancouver BC) Logistical support is provided in part by the Polar Contintal Shelf Project of Natural Resources Canada.

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Location/Region: **Little Cornwallis Island**

Project Title:

Environmental Effects Monitoring Program(EEM) Polaris Mine Nunavut

Summary:

Teck Cominco Ltd.'s Polaris Mine is located on Little Cornwallis Island, Nunavut. Situated at about latitude 75°N and longitude 97°W, Polaris is about 100 km northwest of Resolute Bay and is the world's most northerly lead zinc mine. Underground mining operations ceased in September, 2002 and is currently going through a two-year reclamation and decommissioning phase that will conclude in fall 2004. As part of the closure studies, Teck Cominco is required to conduct biological studies in Garrow Lake on behalf of the Department of Fisheries and Oceans and in the marine environment, Garrow Bay, on behalf of Environment Canada, under the Environmental Effects Monitoring (EEM) program for mines.

Teck Cominco has retained Azimuth Consulting Group to conduct these studies. We are required to collect fish and invertebrates from Garrow Lake and Garrow Bay in August 2003. The objective of the studies is to determine baseline environmental conditions now that mining has ceased (DFO) and to determine if the effluent from the mine has any harmful effects on the marine environment (Environment Canada).

Specifically, we propose to collect the following biological samples:
· Ten samples of zooplankton and of benthic invertebrates from Garrow Lake (freshwater) for taxonomic identification.
· Fifteen sculpins (Myoxocephalus quadricornis) from Garrow Lake for analysis of diet, age, maturity, and tissue metals concentration.
· Forty sculpins from Garrow Bay (marine) for analysis of tissue metals concentration.
· Forty clams (Mya truncata) from Garrow Bay for tissue metals concentration.
This information will be used to modify the study design for environmental sampling in Garrow Bay in 2004 to satisfy Environment Canada's EEM requirements and will provide an environmental baseline of post-mining conditions at Polaris Mine, Nunavut. Existing camps, transportation, infrastructure etc. of the mine site will be utilized.

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Location/Region: **South Baffin**

Project Title:

Diversity and evolution of fungal endophytes in plants and lichens

Summary:

The main goal of this project is to discover and understand the diversity of fungi living in plants and lichens. Endophytes refer to fungi living plants that cause no detectable damage to the plant. A tremendous diversity of such fungi have been found in tropical plants. We want to know if this diversity is more or less that same across different lineages of plants or if there is plants. We also want to know to what extent the bioclimatic zones are shaping this diversity of endophytic fungi. We have discovered that endophytic fungi are also frequently found in lichens. By sampling endophytes in lichens, this allows us to compare the diversity of endophytic fungi found in one genus of fungi (Peltigera across a South-North transect. We have samples of Peltigera from Costa Rica and North Carolina. This summer, in addition to Iqaluit, we will sample endophytes from Peltigera growing in the northern temperature, Boreal, and subarctic region of Quebec. The sampling lichens with obvious fungal infections (fruiting bodies at the surface of the thallus producaed by the endophytes. Finally, we will also sample lichens for the project "Assembling the Fungal Tree of Life". No detectable damage to the environment will result from this sampling.

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Location/Region: **South Baffin**

Project Title:

Chemical Sampling and Analysis

Summary:

The Analytical Services Unit, Queen's University will have a team on site at Resolution Island over the next few years. Our work is to support the major cleanup being undertaken by Qikiqtaaluk Corporation for Indian and Northern Affairs Canada. The majority of the work will involve sampling and analysis of soil, barrel contents and miscellaneous items such as concrete, insulation materials and sludges. Work will continue this year with the removal of the PCB-contaminated soil from the S1/S4 buildings and valley areas where we will test soils to ensure cleanup is complete and also map the locations. Other work we will be undertaking includes testing the lake and drinking water, continuing with the environmental assessment of the airstrip dump, setting up thermistors to test freeze back into landfills under various conditions, leachate testing, monitoring the performance of the existing barriers in drainage pathways and testing new barrier and silt control systems.

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Location/Region: **Boothis Peninsula**

Project Title:

High resolution Aeromatic survey, Boothia, Kitikmeot Region, Nunavut conducted by the Geological Survey of Canada

Summary:

The purpose of the survey is to improve public knowledge and understanding of the geology of this area, as no publicly-available magnetic coverage exists. Survey lines will be flown at a spacing of 400m (1/4 mile) and a 150m (500 feet) mean terrain clearance (where possbile, given safety considerations dut to rugged terrain). The purpose of this survey will be to record the variation in the earth's magnetic field caused by magnetic minerals contained in the rocks of the earth's crust. The patterns obtained are indicative of the subsurface geological structure and are used as an important element od geological mapping and resource exploration. This program of Regional Aeromagnetic Mapping has been carried by the Geological survey contract, monitoring of the survey operation and the public destribution of the results to the public handled by the GSC Geophysical Data Centre. The designated airborn Geophysical Survey company , (to be designated, will acquire the data, under contract to the GSC. The data will be published at completion of the project and will be made available for current scientific research projects. This is an entirely airborn survey, so there will be no land access. No new technology will be implementes for this survey. The aircraft will be equipped with state-of-the-art magnetometer and navigation systems includign Global Positioning system (GPS). The fixed wing aircraft will be operating from existing runways and re-fueling at airports in the area (mina base of operations and an alternate will be estabiched at one of the following airports; Gjoa Haven , Taloyoak, or Pelly Bat, Nunavut

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Location/Region: **Eisachsen**

Project Title:

Biocomplexity of Frost Biol Ecosystems

Summary:

What we would like to do is to spend a few hours at eisachesen on Ellef Ringnes Island in July 2003, looking at, measuring and sampling the siols and vegetation near the airstrip. We are interested in the interactions between the siols, the climate and the vegetation, and the way that these interactions control the patterns of bare soil and vegetation that are found in the Arctic. Often these patterns form circulat features called frost biols. This summer will be the second year of a five-year research project. We spent last summer doing similar work on the Alaskan North Slope. Thie yeas we will be working on Banks Island . We would like to visit Eisachen to see if some of the interesting relationships between the vegetation, the soils, and the permafrost still hold true in a colder climate. Out goal is to find moderately well-drained, fine grained soils that we could compare to similar areas on Banks Island. Out group will include a vegetation scientist who will look at the plants growing in idfferent area a soil scientist who will describe and sample the soils; and a permafrost scientist who will look at the soil ice, and air ground temperatures. During our visit, we will examine the plants and soils. IF we find a suitable area, we would like to mark a 10 x 10m gris and describe and map the vegetation. We would dig a few small holes (less than 50 cm diameter) to sample the soils. We would put some temperature sensors at the grid, which would collect a small amount of vegetation (only enough for identification of unusual plants) and soil (less than 2kg of samples for chemical analysis).

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Location/Region: **South Baffin**

Project Title:

Glacier-climate studies on Grinnell ice cap

Summary:

This is a proposed extension of the monitoring program of glaciers we (Geological Survey of Canada) have been conducting in the high Arctic since the early 1960's. We want to establish a site on Grinnell ice cap to monitor the status of the ice cap for detecting and measuring climatic change in the southeastern Arctic. In the first year (2003) we will evaluate if the ice cap is suitable for this work. If it is, we will set up snow depth poles to measure annual snow accumulation and loss during future visits, and we will install an automated weather station to collect year-round weather information. We will also collect some snow samples to measure levels of air pollutants deposited in snow. We are applying for a multi-year license (2003-2006) to include future follow-up work of the same nature.

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Location/Region: **North Baffin**

Project Title:

Plankton organisms (graptolites, radiolarians, acritarchs) biostratigraphy, taxonomy, pleoecology and evolution

Summary:

My group, consisting of 6 geologists (four professional geologists, plus two graduate students), plans to visit Cape Sir John Franklin (Grinnell Peninsula), and Rookers Creek and Snowblind Creek, Cornwallis Island, to sample a series of Upper Silurian rocks (rocks about 415-425 million years old) for fossils known as graptolites, radiolaria (tiny animal microfossils with silica skeletons), and acritarchs (very tiny plans microfossils). These fossils are particularly abundant and beautifully preserved in the Arctic, although they can only be seen after the rock is dissolved in acid, and all are excellet inicator of geolocial time, since they eveolved very quickly. We are particularily interested in two extinction events and the organnism pattern changes during about the middle of the Silurian. These events while not large in terms of what are known as "mass extinctions",nevertheless appear to be worldwide in nature; the first even wiped out about 95% of the graptolites and had a strong negative effect on the other two fossi lgroups whereas the second (younger) event while less severe, never theless lead to profound evolutionary changes in these organisms

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Project Title:

Trends of PCB's and Metals in ringed seals from the Canadian Arctic.

Summary:

The objective of this project is to determine the changes in concentrations of contaminants such as PCB's and Mercury in blubber and liver of ringed seals from locations where samples were previously taken in the 1970's, 1980's nad early 1990's. During 2002 the project analysed samples of ringes seal blubber from Arviat collected bt the Arviat hunters and Trappers Association for Dr. Ian Stirling in 1998. A list of all communities in which we have collected seal samples with the help of our HTA partner organizations is shown in the Table below. In each community the HTA office was provided with a sampling kit consisting or pre-labelled plastic bags, a mearuring taps and instructions in Inuktituk and English. Collections consisted of blubber, liver, muscle, kidney, toough/lower jaw (for aging) from 25 seals, most being adults and about half female. We also ask hunters to rpovide information on length, girth, blubber thickness and sex of each of the animals. All samples are held in a freezer in the community and then shipped by the HTA office to Burlington or Kuujjuaq for processing. Results for PCB's from female ringes deals in Arviat show that amounts in blubber samples from 1998 than from 1992. However, amounts of PCB's were lower in ringed seal blubber collected in 1986 at Rankin Inlet, which Ian Stirling believes to be the same population hunted at Arviat. Therefor analysis of more samples from 2003 would help to confirm the downward trend of BCB's. At Ausuittaq and Ikajutit show amounts of PCB's and DDT in blubber deceased from the 1970's to the 1990's with most of the change occuring in the 1970's and 1980's. We havef found no clear increasing or decreasing trend of mercury in ringed seals liver. Trends for mercury vary Widely amoung locations. Mercury increased 3x in seals in Pond Inlet from 1976 - 2000; amn 2x in Hudson Strait and 2.5x at Holman during the 1990's. Mercury declined by 1.5 -2x at Resolute, Kangiqsualujjuaq and Sachs Harbour during the 1990's. The year to year variation seen at several sites, E.G Holman and Ungava, which suggests that ringed seals can vary anually in Hg levels in liver. The information available for most locations is based on samples collected at only two ot three time points in time as shown in the graphs below. We are now hoping to extend our study to generate a 3rd and 4th time point winthin the next 1-4 years at many other communities. That wouls yeild a span of almost 20 years as showin in the table.

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Location/Region: **NB**

Project Title:

Sample collection for CanZinco Limited, July 2003

Summary:

Three sampling activities are planned during the week beginning July 9 and ending July 16, 2003, in or near the Nanisivik Mine site. These are follow -up activities related to the Human Health and Ecological Risk Assessment (HHEA) conducted by Jacques Whitford Environmental Limites (JWEL) for the Nanisivik Mine (JWEL) 2003, which is owned and operated by CanZinco LTD. (CanZinco), a division of breakwater Resources. These activities are considered important in addressing existing and anticipated questions raised as part of the review process by the Nunavut Water Board, as well as to verify assumptions made in the ecological risk assessment component of the HHERA regarding metal uptake. The HHRA was commisioned by CanZinco to develop surface Siol Quality Remedial Objectives for the Nanisivik Mine site on Baffin Island. The study addresses concerns regarding exposure to pootentially hazardous metals in surface soil and was prepared in partial fulfillment of the requirements of the Site Closure and Reclamation Plan, which was developed in accordance with the "Guidelines for an accepted risk assessment standards including those published by Health Canada, the Canadian Council of Ministers of the Environment (CCME), and the United States Environmental Protection Agency. As part of the HHERA, local residents in Nanisivik and the nerby hamlet of Arctic Bay were consulted in September 2002 regarding current and future use of the lands, and existing wildlife resources.

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Location/Region: **North Baffin**

Project Title:

Field Measurements on the Strength of Decaying Sea Ice

Summary:

For the past three summers, we have measured the seasonal decrease in strength of first-year ice around Resolute. Last year we also examined second-year ice in Templeton Bay, Little Cornwallis Island, as well as several multi-year floes in Wellington Channel. Our measurements have been used by the Canadian Ice Service to generate their Ice Strength Charts for level first-year ice. The measurements have also played an important role in the Arctic Ice Regime Shipping System, which is used by Transport Canada to ensure that ships travel safely through ice-covered waters. The ice thickness will be measured with an auger, several ice cores will be extracted with a mechanical coring device and the strength of the ice will be measured with a borehole jack. Some of the ice cores will be transported to our base at the Polar Continental Shelf Project for analysis and any extra cores will be placed back into the holes from which they came. No structures will be erected during the testing. The test site will be left as we found it, minus several 10cm diameter ice cores.

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Location/Region: **Iqaluit, South Baffin**

Project Title:

Iqaluit Invertebrate Project

Summary:

This research will describe the benthic macroinvertebrate diversity of a typical small Arctic stream. Several replicate samples of invertebrates will be collected from the Peterhead River near Iqaluit Nunavut using a non-intrusive, kick-net methodology. Sampling will involve collection of basic physical and chemical data from two distinct microhabitats; one pool and one riffle. Invertebrate communities in each microhabitat will described and compared. The project will produce refernece baseline data on stream invertebrate diversity that will enable an assessment of change in invertebrate community composition over time. Benthic invertebrates are sensitive to small purturbations in water quality and are commonly used to monitor and evaluate stream ecosystem health in temperate environments - this study will also determine whether invertebrates can be similarly used to monitor changes in the health of small Arctic streams. Nunavut Arctic College students and the general public of Iqaluit Nunavut will be involved in the collection, sorting, and preliminary identification of stream invertebrates. The project will develop a reference collection of invertebrates, including a digital photo gallery, for educational and research purposes.

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Location/Region: **Baker Lake, Thelon River, Long Lake, Thirty Mile Lake, Tebesjuak Lake**

Project Title:

Testing Proterozoic continental recontructions through plaeomagnetism and geochronology

Summary:

The exceptionally well preserved rocks in a large region aroun Baker Lake allow geological studies of their magnetization and age-dating. In order to determine where the Morth American continent drifted over the globe in ancient times (1.8-1.7 billion years ago: in the Proterozoic Eon). Results can be compared to those from the same age on other continents, to test hypothesized supercontinent reconstructions. The proposed study involves collection of small (finger-sezed) samples will be collected throughout the area of about 5-10 km2 in each of 5 regions, listed in on the on-line application form. Several additional hand-sized rock samples may be collected at one or two sites for age-dating at research laboratories in the USA and Australia. Field parties will consist of 3-4 scientists, camping in tents. We will be dropped off at each camp by Twin-Otter out of Baker Lake and picked up several days later, removing all traces of our camps. Local transportation around the sampling areas will be by foot or 15" inflatable motorboat. All proposed campsites are on Corwn Land, as indicates on the application form and the appended 1:250 000 scale maps. Boris Kotelewetz, at the Baker Lake Lodge, will be our primary local coordinator for our field logistics. We may be contacted through him during our field season of 26 June to 30 July, 2003 The Results of this academic study will be published in international scientific journals (anticipated for 2005 or 2006.)

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Location/Region: **Resolute passage**

Project Title:

Effects of climatic forcing on spring production in the High Arctic

Summary:

The Arctic marine food chain is based on the producation of small algae. These algae grow in spring and summer at the bottom of seasonal sea ice, and in the water column after ice melt. They are food for small animals, which are eaten by fishes, then seals and other mammals. The sea-ice algae are very important for the Arctic marine food chain, because they are the only food for small animals during the spring. If climate change affects annual sea ice, it will directly affect these small algae and the whole ecosystem. This project looks into the production of these small algae and potential effects of climate change. The project is planned to be carried out in the Resolute passage area, from the end of April to early July (until ice selt). Our research team includes 3 or 4 persons at the camp. Our work is done from Parcoll tents on the ice to attach instruments in the water column and one tripod for a meterological station". We planned to transport our equipment to camp mainly by Twin Otter. After set up, we will not travel to Resolute very often, since we will live and work at the ice camp. Our work consists mainly in taking ice cores and water samples that we preserve for later analyses. We do not take fish or marine mammals. At the end of the field season, we remove everything and leave the site intact. We really hope to be able to continue this project on the long term (monitoring), to help evaluate the potential effects of climate change on the sea ice ecosystems.

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Location/Region: **South Baffin**

Project Title:

The transmission of an Inuit Sensorial Memory in the Belcher Islands.

Summary:

This project wishes to highlight the Inuit world of senses within the study of their transmission and sharing. Indeed, senses provide to think identity and otherness. The collection of data will look like a participant observation of the day life, related to the consumption of food, hunting, fishing. Thus children, adults and elders could be consulted, in semi directed interviews, about their tastes, likes and dislikes concerning food for example. This sensorial education could play an interesting part in schools to make Inuit children and even adults becoming sensitive. This other dimension is indeed part of the Inuit collective memory. That's why by the end of her fieldwork the researcher will put in disposal to people interested in, her data gathered, and conclusions, as a source of cultural learning.

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Location/Region: **South Baffin**

Project Title:

Evolutionary ecology and conservation biology of Atlantic cod from landlocked fiords on Baffin Island.

Summary:

This project concerns Atlantic cod populations in Ogao, Qasigialiminiq, and Tariuja lakes on Baffin Island. The goals will be to understand where these cod come from , how fast they grow, how old they are, what they eat, how many are in each lake and how much harvest they can support. The lakes will be studied to try to find other similar lakes that might also contain Atlantic cod. Adult and Juvinile Cod will be colloected from each lake by grill net and/or angling. Tissue samples, ear bones, stomach contents, and various measurements will be taken. Some cod will be tagged and released alive to estimate the number of fish in each population. Lake depth, temperature and asalinity will be measured. Plankton will b collected using a plankton net. An underwater camera will be used to observe cod to see what other fish and invertabrates live in the lakes. We have obtained some samples of ear-bones taken from previous studies and test-fisheries to minimize lethal sampling. An underwater camera system will be used instead of more damaging methods to see what other fish and invertabrates occupy the lakes.

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Location/Region: **North Baffin**

Project Title:

The Hydrology and Dynamics of John Evans Glacier, Ellesmere Island

Summary:

Our aim is to investigate interactions between John Evans glacier, Ellesmere Island and the climate system. Our approach involves a combination of field monitoring and field experiments designed that allow us to develop and test of numerical models of glacier flow and exchanges of mass and energy with the atmosphere. The research focuses on direct ice atmosphere interactions and indirect interactions between glaciers and climate. It also investigates potential biogeochemical feedbacks on the climate system, such as the consumption of atmospheric CO 2 by chemical weathering, the cycling of organic carbon in glacial systems, and the potential release of CO2 and CH4 produced by sub glacial microbiological activity to the atmosphere following deglaciation. The long term objective is a comprehensive assessment of the relationships between arctic glaciers and recent and future climate change

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Location/Region: **North Baffin**

Project Title:

"Methyl Mercury Formation in the High Arctic"

Summary:

This study will evaluate the levels of methyl mercury in High Arctic wetlands and lakes and further investigate whether wetlands are sources of methyl mercury to Arctic aquatic systems as they commonly are in southern environments. Processes responsible for the formation of methyl mercury will also be examined. Methyl mercury is the most toxic form of mercury and it biomagnifies in food chains causing the top consumers (including people) of having high concentrations of methyl mercury. High concentrations of methyl mercury can cause neurological damage and death in severe cases.

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Location/Region: **North Baffin**

Project Title:

Permafrost Monitoring-High Arctic Observatories

Summary:

The project consists of visiting and servicing existing research sites where observations of permafrost temperatures are being recorded. These permafrost observatories are some of the northernmost in the circumpolar arctic and the continued long term operation makes an important contribution to monitoring and understanding, both nationally and internationally, the response of permafrost to climate change. Climate models predict that the greatest increase in air temperature will occur in the Arctic regions over the next several decades. The permafrost regions therefore will be among those most affected by climate warming.

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Location/Region: **Barrow straight, Wellington Channel**

Project Title:

Arctic Ocean Climate Change Project

Summary:

An oceanographic study in the eastern end of Barrow Strait has provided continuous measurements of water current, temperature and salinity from August 1998 to present, under research livenve 0204802N-M. The objective of the work is to develop an understanding of the the circulation in the area, and to quantify the heat and fresh water movement between the Arctic Ocean and the Northwest Atlantic so that the coupling between these two oceans is better understood. Measurements, combined with modeling studies, are being used to determine how this coupling affects the local, regional and global climate systems. The data collected also provides a baseline for furthur studies. A continuuation of this program has been funded to provide an extended continuous time series of data that can be examined for trends that may be linked to climate change. Quantified change in the fresh water outflow through Barrow Strait would be a useful global warming indicator. The principal method of data collection is 10 moorings that support current meters for measuring the speed and direction of the water flow, and "CTDs" for measuring salinity and temperature. The tops of all of the moorings are well below the surface (deeper than 25m). They are deployed by Canadian Coast Guard ship in August, left on site for one year, and then recovered the following August. The ship also conducts a "CTD" survey, which involves loowering an instrument over the side of the ship to measure salinity, temperature and depth, at specific locations. Plans are to continue the program for 3 more years, replacing the mooring array and completing the CTD survey in August of each year, until the final recovery in 2006.

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Location/Region: **Little Roberts Lake, Roberts Lake, Roberts bay, Tail Lake**

Project Title:

Aquatic surveys and advanced exploration activities in the Hope Bay Belt

Summary:

Miramar Hope Bay Ltd. Plans to carry out additional baseline aquatic investigations during the 2003 field program. The program for 2003 is considered an extension of the work done in 2002 and the data information collected is required to fill in some information gaps as we continue our advanced exploration activities in the Hope Bay Belt. A considerable amount of aquatic surveys heave been completed on the belt since 1992 under a previous owner. The program in 2003 will focus on the Roberts Bay Belt with the closest community being Umingmaktok. Community visits to Bathurst Inlet and Imigmaktok during the summer of 2000 summarized the program anticipated in 2000 and what we might expect to do in 2003. As mentioned the study program for 2003 is designed to compliment existing information and fill in data gaps on aqautic habitat and fish populations in the study area. The work will include both spring and fall surveys, focusing on Arctic char spawning locations and migration patterns in ans out of Roberts Lake. Tissue samples will be collected from approximately 100 fish (sculpin and stickleback) and analyzed for metal concentrations. Where possible, fish tagging will be undertaken to enable longer term monitoring. In addition, sediments samples will be collected in Roberts Bay and Roberts Lake to determine the present concentrations of metals and organice contaminants.

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Location/Region: **Resolute**

Project Title:

Coastal hazards, relative sea-level change and climate impacts on northern coasts and seaways

Summary:

Climate warming in the western Arctic is associated with rising sea levels, rising ground temperatures, decreased sea-ice thickness and extent, and increased open-water wave energy. Among other effects, these changes are expected to result in increased thaw subsidence and accelerated coastal erosion in some areas. Thinner, more mobile sea ice will increase hazards of over-ice travel in winter, increase marine navigability in summer, and may lead to increased incidence of onshore ice ride-up and pile-up. Some previously ice-bound shores may be destabilized by increased exposure to open water and waves. Storm-surge flooding may increase, particularly where crustal subsidence enhances the apparent rate of sea-level rise. Other areas where relative sea level has been falling in the past due to crustal uplift may begin to experience rising water levels if future rates of sea-level rise exceed the rate of uplift. This may affect some communities in Nunavut as the area of submergence expands toward the central Arctic.

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Location/Region: **Devon Island, Cornwallis Island, Bathurst Island**

Project Title:

Peleoenvironmental Reconstruction from Laminated Sediments in coastal lakes and marine inlets, Nunavut

Summary:

IN this field season we propse to complete field work associated with a 5-year study of climate change of the last 1,000 years. Over the past 5 years we have collected sediment cores from a transect of lakes from Devon to Bathurst Islands. The cores are finely laminated and preserve an annual record of climate change that extends back at least several thousand years for each basin. At one basin (Cape Hurd), we hae installed a weather station and liked video camera to record detailed climatology information that controls the sediment flow into the lake. In some lakes temperature sensors were set up at Eardley Wilmot and Danielle Point Lake. In some lakes temperature guages and sediment traps recorded the conditiond and amount of sediment deposited annually. In May June we propose to retreive the weather stations and other instumentation that was deployed adjacent to or in the lakes. In addition we will measure present ice thickness, temperature and oxygen concentrations in the water column of each lake. We will recover a sediment core that will correspond to the latest climate data that was recorded. The fild work will be staged from Resolute bay with the assistance of Polar Continental Shelf Project. We will land on the frozen lake with twin otter or helicopter and carry out the work on each lake. Depending on time available, camps will be needed at Cape Hurd and Sohpia Lake where multiple days will be necessary to retreive the gear and carry out measurements. Other sites (Depot Point, Eardley Wilmot, Danielle Point) will be carried out in one day. Field work is out in one day. Field work is low impact. Camps will be made on gravel terraces adjacent to the lakes. All waste and trash will be carries out. All sampling equipment is small scale and done by hand. Small water and mud core samples will be taken from each lake site. This research is done with collefe undergraduate students and trains them in arctic field work but also gives them an appreciation to the high arctic environment and allows them to study potential impacts due to climate change.

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Location/Region: **NB**

Project Title:

How important is channel smitching in river systems draining land-ice: Clyde River, Baffin Island?

Summary:

Computer models of sediment supply to the Artic coastal zones predict sharp increase of sediment carried by the rivers as a result of global warming. This may influence coastal ecology? Yet, estimates are uncertain, because 1. The computer climate-sediment is stored in the riverplain itself. Higher riverfloods 2. We do not know how much sediment is stored in the riverplain itself. Higher riverfloods due to climatic warming causes the river channel to switch more and to increase dumpong of sediment, so the sediment may not reach to coast? We expect that these model uncertainties have the most important effect for drainage basins with gentle topography, as for example rivers draining a hinterland land-ice cap. This project proposes to improve our hydrological model, Hydrotrend, to incorpeak events. Computer simulated daily water discharg and sedimentary model, SedFlux3D. Previous theoretical experiments show that the more seiment is carried by the rive, the more channel switches occur and this reduces the built-up river and deltas into the offshore. These ideas will be tested against field data of Clyde River, which drains a land ice-cap, the Barnes Ice Cap. Firstly, we will collect data from weather and river stations. Subsequently, we will use aerial photos and satellite images to find output for HydroTrend. We will visit the Clyde River Delta, about 100km from Clyde Village. We will travel to the fjordhead per boat (and with the AVON boats of the University of Colorade) and set up a small field camp for 2 persons about 3 weeks in July-August 2003. Field measurements of sediment grainsize trends, river floodplain sedimentration, and channel width and depth of the Clyde River can be compared with output of SedFlux3D. The work will have an exploratory character and serve as a "ground truthing" of the computer modeling, because it is essential for medellers to base their models on "real world" data.

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Project Title:

Microbial investigations of perennial springs, permafrost and ground ice in the high Arctic

Summary:

Relatively few reports are found describing the ecology and biodiversity of microbial communities in the Canadian high Arctic where unique habitats exist including cold perennial salt springs, glacial ice and sub glacial soil, permafrost and ground ice, and cryptoedoliths (mocrobial communities within rocks). Little is knows about the traits that enable such microorganisms to survive and trhive in these extreme habitats. Therefor, I am presently developing and expanding a research program foceused on Arctic mocrobial biodiversity and ecology studies in these habitats to expand our basic knowledge of Arctic microbial communities, to determine the utility of these unnique environments as analogs to those which may exist or existed on Mars, and, in the longer term, the potential biotechnological applications of cold adapted microorganisms (examples: antifreeze protiens, polyunsaturated fatty acids.) In 2003, small representative samples (~2 kg of soil/ permafrost or 2-4 L of water) of the mocrobial populations will be obtained from the Eureka and Axel heiberg sites. Micrbial biodiverstiy research will be conducted in my lab at McGill University on the collected samples These data will provide information on the mocrobial populatios associated with these sites, the physiological types that ate involved in biogeochemical processes and hopefully establish which organisms become fossilized or preserved in the sytem.

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Location/Region: **NB**

Project Title:

Impact of biology and photochemistry on mercery cycling in fresh and saltwaters of the high arctic

Summary:

Because it is very toxic and accumulates in organisms, particularily in fish mercury is an important pollutant. Elemental mercury is efficiently transported as a gas around the globe, and even remote area show evidence of mercury pollution orginating from industrial sources. Once emitted in the atmosphere, mercury takes past in a complex chemistry that can lead to it's deposition onto snow packs, lakes and oceans. These compartments can be seen as reservoirs of mercury. Recent studies have shown that once deposited, mercury can go back to the atmosphere under the influence of sunlight rediations. However, the mechanisms involved and the extent of this phenomenon remain poorly known. During the snowmelt period, biology became an important component of winter's ecelogical cycles and is thought to greatly influence mercury cycling. This project aims at clearly identifying mechanisms involved in the formation of volatile elemental mercury in fresh ans salkted snow packs and aquatic systems. No perturbations will be brought to the ecosystem: we will just collect snow and water. We will use snowmobiles to reach our sampling sites, as our work deal with ultratrace levels of mercury, the use of combustion engines will be as moderate as possible. We will study freshwater lakes of the Resolute Bay area (Meretta lake, North Lake and Small Lake) and some of the satlwater sites located in the Barrow straits. We would use PCSP laboratories to perform our analysis and carry out the experiments. This project will last for three years (from May 2003 to May 2006) as we wish to assess mercury cycling during spring, summer and wintertime in the above-cited sites.

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Project Title:

Lithologies in four areas of Axel Heiberg Island

Summary:

The field work proposed for this summer is the first in a four-year collaborative effort to advance geoscience knowledge in Nunavut, specifically related to the discovery of new material and hydrocarbon resources. The two scientists leading the roject have together logged over then seasons of land-based research in Nunavut. The Strand Fiord region displays a unique geological environment that includes sedimentary and volcanic rocks locally intruded by evaporite (gypsum) structures. We will map and sample these lithologies in four areas of Axel Heiberg Island, between July 5 and 23, 2003; Strand Fiord, Expedition Fiord, Eureka Pass, and Geodetic Hills. The long-term project has scientific, applied and outreach objectives. The scientific objectives are to better understand the history of this region, and the development of the pre-glacial landscape, using geochemical, mineralogical, and rock-dating tools. We will investigate three aspects of the geological history that couls result in economic benefits for this region:(1) the posibility that yet undiscovered metallic concentrations of nickel, copper, and platinum were trapped in the feeder conduits (exposed as dykes) through which basaltic lavas flowed before erupting unto the earth's surface; (2) the manner in which metals were transported and concentrated by fluids that circulated during dyke intrusion or the development of faults; (3) and the role played by the faults or evaporite structures during the accumulation and giration of oil and gas deposits through time. Our outreach activities will be initieted in July 2003 by a visit to Grise Fiord, Ellesmere Island. Our plan is to introduce our scientific work to the local community, and discuss training opputunities for student assistants. We will hake a first donation of books to the library of the Umimmak School, Grise Fiord; these books will have been collected by the Dawson Northern Educational Foundation, Department of Earth Sciences, Dalhousie University, Halifax.

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Location/Region: **North Baffin**

Project Title:

Paleomagnetic, U-Pb geochronology and geochemical studies of Proterozoic dykes in Greenland and Nunavut, Canada and their bearing on the Nares Strait Controversy

Summary:

In 1915 Alfred Wegener proposed a major transcurrent fault along the Nares Strait between Greenland and Ellesmere Island in Canada to account for the separation of Greenland from Labrador. Te existence of this fault is controversial; plate tectonic reconstrucations using marine magnetic anomalies indicate a sinistral offset of about 200km, but observations on Paleozoic sedimentary rocks along the Nares Strait limit displacement to less than 25 km. A major E-W trending dyke swarm (about 700 million years old) extends for more than 200 km as required by plate tectonics, appears in southern Ellesmere and Devon Islands. If the two swarms can be correlated it would raise the issue of whether the Paleozoic rocks in Nares Strait were thrust over the transcurrent fault during the Eurekan orogeny, about 35 million years ago, when the Ellesmerian mountains rose in response to a the final convergence with Greenland. We plan to use paleomagnetism, geochemistry and U-Pb geochronology.

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Project Title:

Permafrost Monitoring-High Arctic Observatories

Summary:

The project consists of visiting and servicing existing research sites where obserations of permafrost temperatures are being recorded. These permafrost observatories are some of the northernmost in the circumpolar arctic and the continued long-term operation makes an important contribution to monitoring and understanding, both nationally and internationally, the response of permafrost to climate change. In the early 1990's, the Geological Survey of Canada, obtained authorization from the National Energy Board to install ground temperature observation equipment in two former hydrocardon exploration well sites in the Arctic. Ground temperature cables (to depths of 60m) And data loggers were installed inside the wellheads. The sites were accessed for data retreival and servicing in 1992 and 1994. Through support from Canada's Climate Change Action Fund, data retreival and data logger upgrading was conducted in July 2000. The instrumentation remains inside the well. Miniature air temperature and ground surface temperature data loggers were installed on top of the well castings. With funding from the Geological Survey of Canada and the federal government's Action Plan 2000, data retreival and data logger maintenance will be conducted in 2003.

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Location/Region: **Kitikmeot**

Project Title:

Kitikmeot Place Name Atlas Project

Summary:

The Kitikmeot Heritage Society is undertaking Phase II of the Kitikmeot Place Name Atlas Project. Phase II involves: Comleting maps for Kugaaruk and Cambridge Bay; videotape interviews on meanings; drafting Kugaaruk volume; producing sheet maps for Kugaaruk and Cambridge; working on the development of a CD ROM; and submitting place name databases to GN and/or Inuit Heritage Trust.

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Location/Region: **Kivalliq Region**

Project Title:

"Integration of the Elders in Schools"

Summary:

Our objective is to understand the transmission of Inuit knowledge in an educational institution. Applying the principles of educational Anthropology, this research focuses on the role of Elders in schools of Arviat I will do interviews only with people who want to talk to me about the oral projects in the schools of Arviat. I will not use any correlation mechanisms as such but rather simple content analysis. I choose to do my research in Arviat because a tradition of the integration of Elders in schools has been running for many years in this community through several projects such as The Classroom in the Iglu. The raw data will be kept in a locked drawer in the GETIC laboratory of Laval University as long as any other potential use has not been decided upon with the informants, the Inuit Elders Society and the School Board of Arviat. The information obtained is intended to be used in writing a master thesis, and in the publication of articles in scientific journals, and for presentations in conferences. A copy of the info collected will be sent to the Inuit School Board of Arviat, and the Inuit Elders Society of Arviat.

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Location/Region: **Kitikmeot**

Project Title:

Indigenous and Scientific Knowledge of Caribou Migration in Arctic Canada.

Summary:

To compile Inuit knowledge of Dolphin Union caribou. To study the processes by which Inuit come to know about the Dolphin Union caribou herd. To study processes by which scientific researchers come to know about the Dolphin Union caribou. To attempt a long term account of the movements and dynamics of the Dolphin Union caribou herd based on Inuit knowledge. To draw more general implications for the better integration of the knowledge of local people with scientific research.

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Location/Region: **Kitikmeot**

Project Title:

Inuit Knowledge of Polar Bears

Summary:

The Taloyoak Hunters and Trappers Organization proposes to collect the Inuit knowledge or Inuit Qaujimajangit of polar bears, and contribute this information to the project Inuit Qaujimaningit Nanurnut completed by the Gjoa Haven Hunters and Trappers Organization in 2002. The HTO would like the knowledge of the people of Taloyoak to be communicated, and added to the knowledge of Gjoa Haven hunters so that a more complete record of Inuit knowledge of polar bears will be achieved.

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Location/Region: **South Baffin**

Project Title:

" Regional Identity and sustainable development in Nunavut"

Summary:

The Research project focuses on the relation between the inhabitants of Nunavut and their area, the newly formed region of Nunavut in the Canadian Arctic. The interest lies not only in their identification with the formal region but also more fundamentally in their relation to the physical environment of this Arctic region. A first aim is to analyze the processes of region formation and regional identity by focusing on the different meanings the people of Nunavut and others give to the region. The related research question is how the inhabitants of Nunavut insiders and outsiders ascribe identity and meaning to Nunavut. Analyzing place identity within the context of an indigenous hunter gatherer society is in particular interesting in the light of academic discussions on the precise relation between cultural identity and regional identity. A second aim of this research project is to gain insight into the more practical relation between human activity and the natural environment by studying sustainable. development.

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Location/Region: **North and South Baffin**

Project Title:

Experiences in Auyuittuq and Quttinirpaaq National Parks.

Summary:

This research seeks to develop a more complete understanding of the experiances and meanings of visitors and other users to Auyuittuq and Quttinirpaaq National Parks of Canada, Nunavut. The primary objective of this research is to identify and describe the range of expectations, experiances and related definitions and meanings associated with the use of the parks for visitors and users. More specifically, the research objectives are to address the following questions: 1) What do visitors and users expect to find when they visit experiances In Auyuittuq and Quttinirpaaq National Parks? 2) What are the dynamics of visitor and user experiances in Auyuittuq and Quittinirpaaq National Parks? 3) How do visitors and users describe the landscapes of these parks and what meaning characterize their experiances? The reseach will be undertaken in conjunction with in support a current Parks Canada program with an intrest in the above research objectives in order to better understand these landscapes and monitor influences in the future. The research outlined in this study plwn would provide a component to a Parks Canada planning process that describes the meaning and modes of experianceing landscapes within the parks. This study is the first part of multi-year project involving three phases. The first phase is outlined in this application. The second phase involves a quantitative methodology building upon the results from Phase 1 and would seek to develop a demographic profile of visitors and users to each park, to describe the visit and use patterns in each park, and visitors' and users' expectations of and experiances in each park. The last phase of the research does not necessarily involve sampling in the parks but rather synthesizes that could be monitored to understand the trends and conditions of the quality of the wildernedd experiances in each park.

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Location/Region: **South Baffin**

Project Title:

Information Clarification Project concerning History of Simon Shaimaiyuk of Pangnirtung.

Summary:

The purpose is to confirm accurate sicription of the oral and written history of the late Simon Shaimalyuk of Pangnirtung concerning the self amputation of his toes. The information will be referened In a medical history essay of 8,000 word length titles, Pilattuiniq: Two views. Internal and External Influences. The purpose of this paper is to establish a ommentary on the internal cultural influenced of butchering pilaniq on surgical pilattuniq and the external influences. The purpose of this paper is to establish a commentary on the internal cultural influences of butchering pilaniq on surgical pilattuniq and the external influences of colonial medical science by comparing an account of the lancing of an abcess from, Among Unknown Eskimo, by W. Julian Bilby, 1923 and the self amputation story of Simon Shaimiayuk published in the Inuit Art Quarterly, 1997

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Project Title:

Collaborative Approaches to Ecosystem Management in Indonesia: Learning From Experience in Canada's North

Summary:

In Indonesia, indigenous groups are articulating a demand for rights, and a greater say in processes of development and change. There is also an increasing emphasis on negotiating partnerships and collaborative management arrangements that will be necessary for ecosystem management. At the same time, certain First nations groups and communities in Canada have successfully negotiated Land Claims Agreements that return their right and obligation to manage natural resources and make economic development decisions in their territories. This has been accomplished in part through the establishment of co-management boards with the legislated authority to manage natural resources. In an effort to understand the co-management experience in selected areas of Canada's North and explore hoe this experience may help inform an emerging process in Indonesia, I propose to undertake the following activities: 1) I will undertake small focus groups and/or semi-structures interviews with staff and officials and 2) integrate the knowledge and analysis of experience Central Sulawesi with that of Canada's North to develop conclusions and recommendations for planning and management.

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Location/Region: **Kivalliq**

Project Title:

Meadowbank Baker Lake Gold Project

Summary:

Cumberland Resources Ltd. has conducted mine exploration activities at the Meadowbank Property since 1995. The property is located approximately 70km north of Baker Lake. Previous social resesarch activities in support of this development have been informal (I.e. meetings, site visits). The objective of the 2003 program is to gather information on existing social conditions, community issues and traditional knowledge in support of future environmental/social assessment for the mine. The following activities are proposed for the 2003 research program: 1) Collect information on traditional ecological knowledge in support of scientific studies. Interviews and meetings will be held with Baker Lake Elders to document their unique understanding of their local environment (I.e. wildlife movement, fish migration, natural resource use, etc.). 2) Collect information on community conditions, concerns, resource use, land use, etc. Public meetings, open houses, household surveys, targeted meetings with specific stakeholder groups and interviews will be used to gather socio-economic and community information.

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Location/Region: **Kivalliq**

Project Title:

"Documenting the Knowledge of Baker Lake and Arviat Elders about Caribou and Change"

Summary:

This project focuses on documenting the knowledge of Baker Lake and Arviat Elders about caribou and the effects of change on caribou. Of particular interest is Elders knowledge of caribou calving grounds and the effects of change in environmental conditions on herd health and community caribou hunting success. This project is intended to complement the ongoing work of the Beverly and Qamanirjuaq Caribou Management Board community based caribou monitoring project, by offering a long term perspective on change and insights into traditional understandings of caribou. Proposed topics will include Historical changes in distribution and movements of caribou: Effects of environmental conditions on location and quality of calving areas: Implications of changing conditions on caribou availability to local communities: Observable early warning indicators of important change.

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Location/Region: **South Baffin**

Project Title:

Sikusilarmiut Placename Project

Summary:

This project seeks to document place names in the Sikusilarmiut land use area as a way to understand how Inuit environmental perceptions of their physical geography, ecology and climate transform from observation and experience to memory. The geographic areas and their associated place names will be recorded by hand on maps along with the Inuktitut name and related information. The project will use the knowledge to create new maps for the community with the aid of a "Geographic Information System Database. Research will be collected using one on one interviews and group workshops in the community. Ms. Henshaw plans to travel on land with Inuit guides to photograph some of the areas identified during the project for her research on Inuit perceptions of climate change.

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Location/Region: **South Baffin**

Project Title:

Inuit Discourse and Identity After the Advent of Nunavut

Summary:

The objective of this project is to understand the way through which speakers of Inuktitut living or staying in Iqaluit think about the present and future language situation in the territory after the advent of Nunavut, and how these reflections play a part in the construction and practice of Inuit identity in general and, more particularly, of an Inuit-based territorial identity. We want to know how the creation of a new political entity with an Inuit majority has influenced this majority's language attitudes. We presume that the advent of Nunavut has heightened the expectations of many speakers of Inuktitut in terms of the practical usefulness of their language, a fact that might help reinforcing Inuit ethnicity. The research we propose results from a long-term collaboration between Université Laval and Nunavut Arctic College (Nunatta Campus), and it will involve the cooperation of Statistics Nunavut. It should play a crucial part in informing governmental and educational authorities about possible language policies. Data will be collected by way of interviews conducted by NAC students in Iqaluit,with a total of 45 adults, including 30 Iqaluit residents, 10 visitors from Igloolik and Kimmirut, and 5 individuals officially involved in language planning and development. Data will be correlated manually and compared with relevant scientific literature and language statistics (provided by Statistics Nunavut), in order to elaborate a model of the evolution of language attitudes and identity in eastern Nunavut, based on Inuit reflections and expectations.

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Location/Region: **Kivalliq**

Project Title:

The Social, Cultural and Economic Role of the Sea in Arviat, Nunavut

Summary:

As part of a PhD program, my research will be carried out for a period of one year in Arviat. The research focuses on Inuit use and knowledge of the sea. I will investigate the economic, social and cultural role of the sea in the community, and in particular, relationships with marine mammals such as ringed and bearded seals and beluga whales. I will deal with the changing role of the sea on community life throughout the seasons, in particular, how individuals and the community in general adjust to seasonal changes from open water to sea ice and back again. By recording this aspect of Inuit life and traditional knowledge, I hope to determine its compatibility with official Nunavut policies regarding the sea as a sustainable resource. The objective of this project is to conduct interviews with local people on traditional knowledge of the sea and sea-related activities and to record daily activities related to the sea and produce from the sea. I will ask individuals to share their knowledge of the sea, their memories of past experiences at sea, stories and myths they are familiar with, and any other information they have pertaining to the sea. An underlying goal is to determine ways in which research will inform policies on resource management of marine resources both within Nunavut and internationally. An important outcome of these methods will be to compile a list of words relating to the sea. I believe a linguistic study of the Kivalliq dialect will greatly contribute to the research. I may announce words on a radio show, with the participation and assistance of elders. By the end of one year of fieldwork, I hope to have obtained an understanding of the role the sea plays in the life of the community.

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Project Title:

After Informatic Stratification: Resignifying Disc Numbers

Summary:

This research project looks at contemporary survivals of the personal identifiers issued by the Federal Government in the 1940s-1970s for all Inuit within the context of a study of the historical dimension of privacy in Canada as it relates to governmental practices concerning Inuit and First Nations peoples. The goal is to understand how this numeric replacement of a traditional naming system is being reinterpreted and recontextualized - resignified or given new meaning - today in everyday and popular cultural practices of Inuit people, with a focus on Iqaluit. These survivals differ from traces of disc numbers in legal records, for instance or from from their use as signatures on works of art. The reuse of these numbers in ironic, interactional and oppositional-critical ways are of particular interest. This project is undertaken in conjunction with an analysis of the Indian Register in the Indian Act and other 'Big Brother' databases affecting the definition of First Nations in Canada. The methodology employed is derived from the cultural studies tradition, and involves socio-semiotic interpretation of contemporary artifacts and participant observation of social interactions in everyday life.

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Project Title:

The Social Impact of Mining on Traditional Structures

Summary:

The objective of this research is to study the impact mining has on traditional family and community structures in Baker Lake, Nunavut. Specifically, the research will focus on the effects mining has on: a) family relationships, this is of critical importance as many mines in the North operate on the "two-week-on-two-week-off" schedule. What effect does this have on relationships within the family structure; b) traditional economic activities, much of the economy of Baker Lake is non-wage based. Land use and subsistence harvesting are highly critical and significant activities. How are they disrupted by introduction of the wage economy on which the mines operate? Furthermore, are skills developed in the mines transferable to other economic activities? c) traditional values. The residents of Baker Lake place a strong emphasis on traditional knowledge. The values which underlie such knowledge may be challenged by the way the mining industry views resource exploitation, and its approach to the environment. What is the nature of the conflict between the concept of resource extraction and the manner with which the Inuit have traditionally managed their natural resources? The research will involve surveying and interviewing: current and former mining employees, family members of current and former employees, and other community members. Baker Lake was selected as the research site because of the significant number of people employed or formerly employed by mining operations residing in the community. Secondly, mining exploration has occurred in very close proximity to the community. Thirdly, I am familiar with the community, thus reducing the familiarization process often required for fieldwork.

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Project Title:

Engaging the Community in the Evaluation of the Community Planning Advisor Program

Summary:

The objective of the proposed project is to engage communities in developing an evaluation for the Community Planning Advisor (CPA) program that has been implemented in Kivalliq communities since 1997. The goal is to look at the effectiveness of the CPS program from the perspective of the community while creating a framework for the development of future planning initiatives that are based upon the shared interests and priorities of the community. The research will be conducted in the community of Whale Cove where the researcher worked as a CPS in the summer of 2002 and has an ongoing relationship with the community. The research uses qualitative research methods that define the criteria for evaluation and public participation places a value on the effectiveness of the CPA program. A community focus group will define the parameters for the evaluation based upon processes of consensus building and communicative action. Once developed, the evaluation will be given to a wide sample of the community population as well as to the representatives from the Dept of Sustainable Development who are reponsible for the coordination and implementation of the CPA program. As this research proceses is based upon communicative action, the protocol for communication will include both aural and visual mediums to ensure that information is effectively and appropriately shared between the participants and the researcher. After involving the community in the development of the evaluation framework, the researcher will present the recordings back to the community to ensure contextual appropriateness and community consensus. The community involved will own the data.

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Project Title:

Inuit Representation of the Night: Linguistic and Anthropological Features

Summary:

The night is universally the period of the daily cycle that man devotes largely to sleep. However, if all societies are subjected to the alternation of day and night, the peoples living at high latitudes experience particular situations with, as first approximation, a (quasi) continuous daylight summer and a long dark winter. This raises a number of questions among which are the following: For the Inuit, what does "the night" mean in summer? When, where, how and with whom does one sleep when the sky (almost) never darkens? When people do not sleep, what do they do during this continous clarity? Conversely, if it is roughly always dark in winter, is it still always "the night"? How do the sleep practices change in relation to those of the summer? What about "other" night activities? From one season to another, do words always express the same concepts? Obviously the latitude where people live will strongly contribute to the perception of night . Research will be organized around the following themes: 1) A bibliographic survey on mythical, sacred and individual night experiences; 2) An ethnography of night practices, sleep habits and sleep-related phenomena (eg. recording of the oniric activity and its related manifestations), other night activities, questionning the "night" environment in its variability: the polar day, winter night, daily night, northern lights, etc.; 3) The investigation of the semantic fields of the night, of its practices and representations (what do we learn from language?).

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Number in Party: **11**
Location/Region: **South Baffin**

Project Title:

Inuit Discourse and Identity After the Advent of Nunavut

Summary:

The objective of this project is to understand the way through which the speakers of Inuktitut living or staying in Iqaluit think about the present and future language situation in the territory after the advent of Nunavut, and how these reflections play a part in the construction and practice of Inuit identity in general and, more particularly, of an Inuit-based territorial identity. We want to know how the creation of a new political entity with an Inuit majority has influenced this majority's language attitudes. We presume that the advent of Nunavut had heightened the expectations of many speakers of Inuktitut in terms of the practical usefulness of their language, a fact that might help reinforce Inuit ethnicity. The research we propose results from a long-term collaboration between Université Laval (Quebec City) and Nunavut Arctic college (Nunatta Campus), and it will involve the cooperation of Statistics Nunavut. It should play a crucial part in informing governmental and educational authorities about possible language policies. Data will be collected by way of interviews (cf. appended questionnaire) conducted by NAC students in Iqaluit, with a total of 45 Inuit adults, including 30 Iqaluit residents, 10 visitors from Igloolik and Kimmirut, and 5 individuals officially involved in language planning and development. Data will be correlated manually and , then, compared with relevant scientific literature and language attitudes and identity in eastern Nunavut, based on Inuit reflections and expectations. The participants anonymity and confidentiality will be protected (cf. assent form). Data will be kept in a secure place at NAC and Université Laval, and will only be accessible to researchers working for the project. Data will be destroyed after the end of the project. Participants will receive, if they wish, a summary of the research results, and the project's final report, in both English and Inuktitut, should be posted on the NRI website and made available to any interested individual or organization. There should also be interviews on northern radio.

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Location/Region: **Pangnirtung**

Project Title:

Working with elders and photographs from Pangnirtung

Summary:

This project entails talking with Elders from Pangnirtung to locate and describe the, people subject matter and historical significance of thirty-two photographs taken in and around St. Luke's Mission Hospital in Pangnirtung, Nunavut. These photographs have been housed in the Anglican General Synod Archives and have minimal information describing them. Elders in Pangnirtung possess the knowledge to expnad on the information in these photgraphs by contributing to identifying who, and in what context these photographs were taken. This project is a couse partially fullfilling my Masters program requirements in Native Studies at the University of Manitoba, as well as contributing to the archival record of Pangnirtung and the expansion of photographic databases for the Anglican General Synod Archives and the Prince Of Wales Heritage Centre Archives. The purpose is to return portion of the archival record to Pangnirtung and to use this as means to encourage Elders to tell stories about this era in Pangnirtung's history. I feel it is important to record information about these photographs with the skill and knowledge of elders in Pangnirtung. The goals of this project are to both return copies of these photographs to the Angmarlik Cultural Centre in Pangnirtung as well as contibute to the photographic database in the Anglican General Synod Archives. Under the deposit agreement between the Anglican General Synod and the Prince of Wales Heritage Center a database transfer with all of the information will be given to the prince of Wales Heritage Centre.

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Location/Region: **Iqaluit**

Project Title:

Civil Justice System and the Public

Summary:

The Canadian Forum on Civil Justice is an independent organization working to improve the way the civil justice system in Canada meets the needs of the people who use it. The civil justice system helps individuals, corporations, and even the government, to resolve disagreements and determine rights in non-criminal issues. We believe that the system could be improved and an important first step is to find out about your experience being involved with the system. If you have been involved in things like an adoption, child custody, divorce, disputes about damages to property, injuries from accidents, or claims about land, the Civil Justice System and the Public research project wants to hear about that. We want to know how you got the information you needed and communicated with people working in the system. For example, who did you ask? Did you use the telephone, or go somewhere to get information? What was it like if you talked to a lawyer or went to the courthouse? We want to know what worked well, what didn't work, and how communication could be made better.

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Number in Party: **1**
Location/Region: **Arviat, Kugluktuk, Baker Lake**

Project Title:

The Collection Of Wolverine (Gulo gulo) Aboriginal Traditional Knowledge(ATK) from Northern Canadian Communities for Species Assessment: A Case Study

Summary:

The intent of this project is to document a major portion of the available wolverine ATK from northern communities. A report on wolverine ATK will be prepared by gathering knowledge in the Yukon, Northwest Territory and Nunavut. Existing information from studies in Labrador will be included. The information will be collected via a series of interviews with knowledge holders using the semi-directive interview approach. The interviewees will be chosen with the help and the cooperation of the Wildlife Management Boards(WMB), Aboriginal Communities and the Hunters and Trappers Organizations(HTOs) in the various regions. It's estimated that 20-30 1-2 hour interviews will be completed. A translator will be used in some of the interviews. The interviews willthen be transcribed, compiled and analyzed in both a qualitative and quantitative manner.

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Project Title:

Teaching and Learning Technology; Enhancing Equity for Canadian Youth

Summary:

The research attempts to document the "digital divide" between Inuit and non-Inuit youth; identify links between access to and facility with ICT and other aspects of youths' lives(educational and occupational plans self-image); identify resources and programs in the Department of Education, schools, the Arctic College, nad youth oriented community organizations that encourage or inhibit equity in access to and facility with ICT.

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Location/Region: **Pangnirtung, Nunavut**

Project Title:

Website Development: Ivory Sculptures from the Eastern Canadian Arctic

Summary:

In 1933-34 and 1940-42, Dr. Jon A. Bildfell served as medical doctor at St. Luke's Anglican Church Hospital in Pangnirtung, Baffin Island. While Dr. Bildfell served during these two periods, he collected ivory sculptures carved by local artists. When he finally left the Arctic in the fall of 1942, he left with a collection of more than 200 sculptures in addition to an associated collection of letters, reports, journals, photographs and film. In 1997, the Royal Ontario Museum (ROM) acquired Dr. Bildfell's collection of sculptures and archival documentation. In October 2002, and exhibition based upon the Bildfell collection titled "Tuugaaq: Ivory Sculptures from the Eastern Canadian Arctic" is scheduled to open at the ROM in the "Gallery of Indigenous Peoples". The exhibition will highlight Eastern Canadian Arctic Inuit sculptures from the early twentieth century and the Bildfell collection from Pangnirtung will be the exhibition's primary focus. As part of the development of this exhibition, the applicant would like to visit Pangnirtung to meet with elders to discuss plans for the exhibition, listen to memories about Dr. Bildfell, and discuss the nature of Inuit art that was produced in the first half of the 1900s. To facilitate discussions, the applicant will produce a CD-ROM of the Bildfell collection for the community of Pangnirtung. The CD-ROM will include images of all of the sculptures and photographs in the collection. In addition, copes of the 8 mm films that Dr. Bildfell took while in residence at Pangnirtung will be available for viewing. This material is directly related to Pangnirtung heritage and it is hoped that elders will desire to become involved in discussing the collection, as well as discussing the nature of life and art in Pangnirtung during the 1930s and 1940s.

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Location/Region: **South Baffin**

Project Title:

Experiences Protocols Practices and Beliefs: About Tuberculosis in the Canadian Arctic

Summary:

Tuberculosis is much more prevalent in Canada's small northern communities than in southern Canada. This is a strain on individuals, families, communities and the health care system. Understanding the reason for this will help reduce the emotional, social and financial costs. It is thought that differences in the way Qallunaat and Inuit perceive TB may negatively affect the way that TB programs are delivered and received. The goal of this study is in part to describe how Inuit experience TB, and in part to uncover how particular practices and beliefs within the health care system influence the Inuit experience of TB. The last part of the study is to reveal the emotional, social and practical consequences of the TB protocols and regimens which are currently in use. Thus the study will create knowledge that will serve as a reference for health program planners and health care workers. This will enhance the ability to create culture-sensitive health care programs and services, and contribute to reducing the incidence of TB in Nunavut. In order to carry out this research, I will live in the community from early October, 2003, through late January, 2004. During this time I will tape individual stories about TB, and interviews with people from the general community as well as those within the health care field. When needed, I will employ an interpreter. I will also take part in community activities, and will employ an Inuktituk instructor in order to begin to learn the language. The collection of individual stories and interviews, and participating in the community, will allow Inuit voices to be heard. All participants will be volunteers who will have the study explained, and be asked to sign the letter of consent. All data will be confidential and will be securely stored.

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Location/Region: **Iqaluit**

Project Title:

Words in Inuktituk

Summary:

The main objective of this study is the grammer of inuktituk, especially work structure and word formation. Fields of intrest are 1. How do verbs like tuni- as in "he gives it to her", but also complex verbs with -tit-, he makes him do something, behave? How can the people things involved be expressed? Who can be expressed by the inflectional ending tunijanga, taktitanga, but what about the third one? 2. So far I have isolated four different types of verbs with respect to their grammatical bahavior a) type aaniaqtunga; b) type aktuqtara; c) type kuvijuq and d) type takuvunga I would want to check this hypotheses and furthurmore, I would like to identify the features of a larger number of verbal roots and possibly asign them to one of the types. 3) Investigation of the behavior of verbal affixes (or in Mick Mallon's terminology chunks) like -qaq-, -gi-/ri-, -lil-, -jaqtuq-, -niraq-, -galuak-, -rasugi-, -ngnguaq-, -viniq-/-miniq, -ksaq and other. I would like to investigate to what ectent affixes like -jaqtuq-, -niraqtau-, -muaq-, and other are "frozen" in their composed meanings, and to what extend they are still perceived as consisting of two (independent) parts. This is especially interesting since standard theories deny the possiblity of such word internal compositionality. The combing of affixes into new ones with a different meaning seems to be rather uniques and deserves a solid description. Finally, I would like to get instruction concerning the composition of longer "texts": marratives, but also ordinary speech. I would like to investigate the information flow within the text.

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Project Title:

Social and Cultural Influences in Grizzly Bear Conservation in Canada

Summary:

Grizzly bears range over large distances-often across the boundaries of provinces, territories and parks. The organizations that manage grizzly bears, but also coordinate efforts among agencies and communities that may have very different values. Government agencies responsible for grizzly bear management have learned much about them from biological research, but conservation programs based just on biology and without clear understanding of the human setting often run into problems including conflict, loss of trust and wasted time and mone. Wildlife management is evolving in different ways in northern and southern Canada, which provides oppurtunities to study how a range of social and cultural factors might influense grizzly bear management. I plan to work in lovations in Nunavut, the Nothwest territories, Yukon, and Alberts where grizzly bear management has developed in different ways. I will interview people involved in and affected by grizzly bear management, and review government and scientific documents. I will not compare these cases to each other directly to determine which is "best" since each is very different. Instead, I will examine how the different mixtures of social and cultural factors in those places have influenced how grizzlies are managed. I will concentrate on learning how people in grizzly bear management systems work together. I am especially interested in how traditional knowledge is used in these management processes, but my goal is not to document traditional knowledge of grizzly bears

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Location/Region: **Kitikmeot**

Project Title:

Ethnological Research on Traditional Knowledge and Environmental Management in the Inuit Society of Pelly Bay

Summary:

The general aim of this project is to study and understand Inuit traditional knowledge, especially concerning ecological environment (nuna), and consider how to apply this knowledge to management of the environment. The project is composed of the following parts; field research on 1) language, 2) traditional technology of subsistence activities, 3) traditional ecological knowledge of animals and plants, 4) gender. Based on this research, we hope to find a way to apply Inuit traditional knowledge to environmental management, and examine the possibility of Inuit traditional knowledge to contribute to environmental problems. I plan to continue the study on Inuinaqtun by formal interviews with several elders in order to learn the basis of traditional knowledge. A series of participant observations and interviews on hunting, fishing and gathering activities and food sharing practices in daily life will be done to understand the traditional technology of subsistence activities. The traditional ecological knowledge of plants and animals will be sought through interviews with several elders. Women's activities and social roles will be recorded and analyzed in order to study the role of women in the environmental management system of Inuit and the new political environment of Nunavut. We believe that audio, visual and written records on traditional knowledge and traditional subsistence technology will make a significant cultural heritage not only for Inuit but also for all of us. Furthermore, to consider the way to apply Inuit traditional knowledge to environmental management will contribute to solving environmental problems.

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Location/Region: **North and South Baffin**

Project Title:

Changes to Inuit family life.

Summary:

We are proposing a project in partnership with NSDC, several Inuit communities , and some researchers in the south who have already worked with Inuit on other projects . In this project we plan to collect stories about family from different generations of Inuit, to find out what family life was like for the elders when they were young to what family life has been like for young people. We will ask Inuit of all ages what family life is like today and what they see as the most important things about family life, We will be asking how the family is important, and now we wish to find out what ways it is important.

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Location/Region: **South Baffin**

Project Title:

Discourse and the Function of Case marking in Inuktitut

Summary:

The purpose of this trip is to conduct a preliminary investigation into Inuktitut language structure and the use of Inuktitut in Inuit social life. In addition, preliminary linguistic research will focus on the distribution of case markers in the structure of the Inuktitut languages and in spoken discourse. The central goal of this preliminary research is to develop Inuktitut language skills, describe a portion of the structure of Inuktitut, and through discussion with community members, to pinpoint locally relevant questions about the state of language use for future long term research.

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Location/Region: **Iqaluit**

Project Title:

Re-inventing tradition: Aboriginal self-government and women. Canada and Mexico in a comparative per

Summary:

The objective of this comparative work is to help in understanding the different alternatives Aboriginal people are exploring in exercising their right to self-government. The Canadian cases (Nunavut and Nisga'a), in particular, Nunavut have become one of the major self-government, it's scope and potential in the creation of alternatives to integrate tradition with non-traditional forms of government. In fact, Nunavut is a pioneer not only regarding it's scope of self government but also regarding those attempts to include peer representation from women. Nunavut constitute a very important experiment in implementing Aboriginal rights and it is important to contribute to place this region in the international political debate because this experience could become a model for other countries with indigenous debate because this experience could become a model for other countries with indigenous population overall for those regions where Aboriginal and non-Aboriginal peoples coexist. In addition this project will explore the ways in which Aboriginal women fight gender discrimination within context of Aboriginal self-government and the mechanisms creates to guarantee women's equality. The questions addressed are: What are the political uses Aboriginal women give to tradition in fighting gender discrimination within self-government? In which ways are women transforming traditions to balance gender relation? How do women reconcile their aboriginal identity with their gender identity?

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Location/Region: **Kugaaruk (formerly Pelly Bay), Nunavut**

Project Title:

Speech Data Collection

Summary:

The project is intended to record speech data of the Netsilik dialect for the purpose of linguistic research (grammar analysis) and the recording of the Netsilik dialect for comparison with other dialects of Inuktitut. The collection of data will be by interviews I will conduct. I will ask questions regarding the grammaticality of certain sentences, the use of certain expressions and sentence constructions. In addition, I hope to record some stories told by the consultant. The interviews and stories will be recorded on tapes to remain in my possession. The transcription will be done by myself or by hired native speakers of Nesilik, ideally.

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Location/Region: **Iqaluit**

Project Title:

National Identity and the Public Sphere in Nunavut

Summary:

This project is designed to investigate the nature of the Inuit national identity in Nunavut and the creation of new government structures, which are meant to reflect this identity. Principally, I hope to examine what aspects and whose understanding of Inuit culture are to be incorporated into government structures and how the mechanisms of government can be changed, or perhaps reshaped, to achieve goals. To delve into these questions, I would like to explore understandings of Inuit "national" identity and find out the ways in which Inuit politicains and the general public feel empowered or constrained in incorporating this identity into the public political sphere.

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Location/Region: **South Baffin**

Project Title:

St. Luke's Mission Hospital Medical History 5,000 word essay

Summary:

During the XIXth and early XX centuried, Protestand and Catholic missionaries made inroads into colonies such as Africa, China and India with religion, education and medical care. This approach would later be applied to the Christian expansion tinto colonial North America. Missionarries provided basic medical care in conjuction with their mission to Aboriginal populations throughout Canada in the mid-nineteenth centurey. Two separate Anglican missions came to the Cumberland Sound of Baffin Island. The first ws located near the South Shore, at the Blacklead Island, 1884-1905. The second mission was established in 1925 on the north shore of Pangnirtubg. Here, St. Luke's Mission Hospital was erected in 1930 and served the inuit (eskimo) of this region until 1972. It is the argument in this paper that the Cumberland Sound Inuit experience with missionaryt colonolization is different from other Noth American Native communities. These Inuit ultimately accepted the medicine and religion the missionaries offered them, By contrast, the North American Indians were often skeptical of the missionaries' religious and healing motives. This paper analyzing the Anglican medical services at the Blacklead Island Mission and St.Luke's Hospital in Pangnirtung demonstrates the unique cross-cultural adaptation critical to missionary acceptance.

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Project Title:

The Politics of Language Policy in the Territory of Nunavut

Summary:

The proposed research project addresses the lacuna in the litterature on language and public policy in Canada by examining the institutional, legislative and policy initiatives taken by the first governemtn of Nunavut on questions of language policy. It will involve the following five-stage research process. At each stage the author will assess the effectiveness of the strategy employed to (I) promote the development of Inuit languages in Nunavut; (ii) challenge prevailing assumptions about bilingualism in Canada and (iii) contribute effectively to international strategies to preserve and promote indigenous languages and culture. I will identify and analyse the institutional framework that has been set in place by the government of Nunavut to address issues of language. I will investigate how the Governement of Nunavut has sought to situate it's specific vision of official languages within the broader framework of official languages policy in Canada. I will consider how Governemtn of Nunavut is developing strategies to promote the teaching of Inuktitut and Inuinnaqtun within school curriculum.

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Location/Region: **Kivilliq**

Project Title:

Development of a Coastal Community Climate Change Action Plan

Summary:

This project was initiated by the Hudson Bay Oceans Working group . The group felt that climate change has a large impact on the land and on the people of the north . DFO felt that the information gathered could be used in the development of the Integrated Management Plan for the Hudson Bay. The purpose of this research is: 1) to determine the current understanding of climate change impacts in Northern Canada 2) to determine the place that Traditional Knowledge has in determining climate change impacts 3) To examine social, economic and cultural impacts related to climate change from the perspective of local residents

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Location/Region: **North and South Baffin**

Project Title:

Social Integration Among the Inuit of the Canadian North

Summary:

The objective of this study is to identify the factors at play in the production of social ties among Canadian Inuit today. First, the study will look at community activities of individuals: community organizations (radio, church or youth groups), community events (food sharing, festivals), community or board meetings, and sports events. Second, the study will look at social networks of individuals: with whom they share their daily activities, and when does it happen. First, this study will use the statistically data of the 2001 Aboriginal People Survey. Second, this study will involve interviews with people working on social issues (social workers, teachers, government employees), and with individuals of the general population. This study will provide a better understanding of social ties in the Canadian Arctic. It will represent a tool for policy makers and people interested in social issues. This study is part of the project "Social Cohesion and Living Conditions in the Arctic" directed by Gérard Duhaime (Laval University and involves partnerships with Inuit Tapirisat Kanatami, Nunavut Tunngavik Inc., Makivik Corporation, Inuvialuit Regional Corporation, and the Labrador Inuit Association.

Index

A

Aboriginal self-government and women 110
Aboriginal Traditional Knowledge(ATK) 101
About Tuberculosis in the Canadian Arctic 104
Acadia University 102
Aeromatic survey 56
After Informatic Stratification 94
Alexandre Morin 116
Alfred Lenz 59
Amituk Lake, Cornwallis Is 51
Andrew Lodge 95
Anne Henshaw 91
Anne-Pascale Targe 82
Annis May Timpson 114
aquatic communities in shallow Arctic water 21
Aquatic surveys 72
Arctic Alkali Grasses (Puccinellia) 40
Arctic Ocean Climate Change Project 71
Arctic Seabirds 32
Arviat 60, 82, 90, 93, 101, 102
Atlantic cod 24, 67
Atlas Project 81
Auyuittuq and Quttinirpaaq National Parks 86
Azimuth Consulting Group 53
Baffin Island Disablement Study 16
Baker Lake 101
Barrow straight 71
Bates College 74
Bathurst Island 74
Bedford Institue of Oceanography 78
Bedford Institute of Oceanography 37, 71
Belcher Islands 66
Benjamin Edwards 10
Bettina Spreng 111
Betty Daley 7
Biocomplexity of Frost Biol Ecosystems 57
biology and photochemistry 77
Boothis Peninsula 56
Bowdoin College 91
Bronchiolitis 8
Canadian Wildlife Service 49
CanZinco Limited 61
Caribou and Change 90
Caribou Migration in Arctic Canada 83
Chemical Sampling and Analysis 55
Children's Hospital of Eastern Ontairo 8
Christian Zdanowicz 39, 58
Christine Michel 65
Civil Justice System 100
Collaborative Approaches to Ecosystem Management 88
Collection Of Wolverine (Gulo gulo) 101
Cornwallis Island 26, 74
Craig Goodings 25, 89
CryoSat Satellite 19
Dalhousie University 24, 67, 78, 101
Darren Keith 84
Darren Thomas 115
David Creery 8
David Evans 64
David Lean 69
Decaying Sea Ice 62
Département d'anthropologie 98
Department of Earth and Atmospheric Sciences ..... *See*
Derek Armitage 88
Derek Muir 27, 60
Development of a Coastal Community Climate Change Action Plan 115
Devon Ice Cap 41
Devon Island 74
Dianne Looker 102
Discourse and the Function of Case marking in Inuktitut 109
Donald Forbes 73
Donald Walker 57
Douglas Clark 106
Douglas Watson Fraser Mair 41
Dr. John Poland 55
Duke University 54
Ecosystem Study of Deglaciated Arctic Areas 49
Edward G. Platzer 18
Effects of climatic forcing 65
Effects of prolonged endurance in the extreme cold 10
Eisachsen 57
Elana Wilson 112
Elke Nowak 105
Ellesmere Island ... 23, 29, 30, 34, 37, 43, 48, 49, 68, 78, 79
Emily Cowall Farell 113
Emily Farrell 87
Environment Limited 61
Environmental Effects Monitoring Program 53
Equity for Canadian Youth 102
Ethnological Research on Traditional 107
Evaluation of the Community Planning Advisor Program 96
Field Investigation of a potential Impact Crater 20
Francois Lutzoni 54
Frank Kiss 56
fungal endophytes in plants and lichens 54
Gary Ash 72
Gary Genosko 94
Gary Kofinas 90
Geological survey of Canada 56
Geological Survey of Canada 36, 37, 39, 42, 51, 56, 58, 70, 73, 78, 80
Geological Survey Of Canada 19
Gerald Minuk 15
Gjoa Haven 56, 84, 102
Glacier Mass Balance 36
Glacier-climate studies 39, 58

Golder Associates Lts. 72
Goodings Environmental Inc. 89
Government of Nunavut 12
GSC Project 8046 ..... 23, 37
Guy Bordin 97
H. Ruth Jackson 37
Health Care 13
Helle Moeller 104
Henry Halls 79
Hepatitis B Follow-up Study 15
High Arctic Observatories 80
High Arctic Waste Contamination 22
High Arctic Wetlands 17
History of Simon Shaimaiyuk 87
Hope Bay Belt 72
How volcanism might have affected climate. 30
Hydrology and Dynamics of John Evans Glacier 34
Impacts of Global Change 46
Institute of Anthropology 104
Institute of Arctic Biology 57
Integration of the Elders in Schools 82
Inuit Discourse and Identity 92, 98
Inuit family life 108
Inuit Knowledge of Polar Bears 84
Inuit Representation of the Night 97
Invertebrate Project 63
Iqaluit ..... 2, 8, 11, 12, 18, 54, 63, 92, 94, 98, 100, 102, 105, 110, 112, *See*
Irina Overeem 75
Isabel Altamirano-Jiménez 110
Ivory Sculptures 103
Jamal Shirley 63
James Slotta 109
James Whitehead 20
Janice Seto 9
Jeffrey Hutchings 24, 67
Jill Robison 16
Jim Hamilton 71
JoAnne Zamparo 108
John Buhler Research Centre 15
John Evans Glacier 68
John Smol 29
John Tarduno 30
Jones Sound 50
Josephine Tan 11
K.I.M. Van Dam 85
Kamatsiaqtut Help Line 11
Karen Lund 22
Kathy Young 17
Keiichi Omura 107
Kelly Falkner 50
Kenneth Lister 103
Kim Crockatt 81
King's College 112
Kitikmeot 13, 56, 81, 83, 84, 107
Kitikmeot Heritage Society 81
Kivalliq 9, 15, 25, 82, 89, 90, 93, 95, 96, 106
Kivilliq 115
Kristen Pilz 99
Kugaaruk 111
Kugluktuk 101
Lakehead University 11, 94
Laurie Consaul 40
Laval University 116
Lea Hiram 66
Lithologies 78
Little Cornwallis Island 53
Liverpool John Moores University 10
Louis-Jacques Dorais 92
Louis-Jaques Dorais 98
Lyle Whyte 76
Malcolm Stephenson 61
Manitoba First Nations Centre for Aboriginal Health Research 14
Marc Amyot 77
Marc Brown 96
Marie-Claude Williamson 78
Mark Mallory 32
Mars Arctic Research Station 33
Mars Deep Drill 45
Mars Society 33
Martin Sharp 34, 35, 68
Martina Tyrrell 93
McGill University 44, 45, 46, 76
McGill University, Macdonald Campus 40
McMaster University 26
Meadowbank Baker Lake Gold Project 25, 89
Measurements of White and Baby Glaciers 47
Memorial University 108
Mental Health 12
Mercury in Amituk Lake Sediment 51
Methyl Mercury Formation 69
Michael Demuth 19, 42
Michael Retelle 74
Michael Svoboda 49
Michelle Johnston 62
Microbial investigations 76
Midwifery-Based Options 14
Miles Ecclestone 47
Ming-ko (Hok) Woo 26
Nancy Edgecombe 13
Nares Strait 50
NASA Ames Research Center 52
NASA Haughton-Mars Project 52
Nathan Cardinal 101
National Identity and the Public Sphere in Nunavut 112
National Research Council 62
National Water Research Institute 27, 60
NB 61, 75, 77
North and South Baffin 16, 40, 86, 97, 108, 116
North Baffin 10, 17, 20, 21, 22, 23, 26, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 52, 59, 62, 68, 69, 70, 79
Northern Ice Shelf Community Dynamics 48
Nunavut Arctic College 9
Nunavut Research Centre 63

of Home Support 7
Oregon State University 50
Osaka University 107
Paleomagnetic 79
Pangnirtung 87, 99, 103, 113
Parasites of Biting Flies in Nunavut 18
Pascal Lee 52
Paul Lachapelle 86
Paul Loewen 31
PCB's and Metals 60
Peleoenvironmental Reconstruction 74
Permafrost Monitoring 70, 80
Peter Bates 83
Peter Outridge 51
Physical and Biological Implications of Permafrost 44
Plankton organisms 59
Prince of Wales Icefield 41
Proterozoic continental recontructions 64
Proterozoic dykes in Greenland and Nunavut 79
Queens University 16, 29
Queen's University 38, 55
Randy Baker 53
Raymond S. Bradley 43
Resolute 73
Resolute passage 65
river systems draining land-ice 75
Robert Zubrin 33
Roberts Lake 72
Role of the Sea in Arviat, ... 93
Roy Martindale Koerner 36
Royal Ontario Museum 103
Ruth Jackson 23
Sam Law 12
Sara Tedford 14
School of Forestry 86
Scott Lamoureux 38
sea-level change and climate impacts 73
SETI Institute & Mars Institute 52
Sharon Smith 70, 80
Sikusilarmiut 91
Social and Cultural Influences in Grizzly Bear Conservation in Canada 106
Social Impact of Mining 95
Social Integration Among the Inuit of the Canadian North 116
South Baffin 11, 12, 24, 29, 39, 54, 55, 58, 66, 67, 85, 87, 88, 91, 92, 94, 98, 104, 109, 113
Spatial Variations of Climatic Conditions 26
Speech Data Collection 111
St. Luke's Mission Hospital Medical History 5,000 word essay 113
sustainable development in Nunavut 85
Tail Lake 72
The Hydrology and Dynamics of John Evans Glacier 35
The Politics of Language Policy in the Territory of Nunavut 114
Trent University 47
Univeristy of Alberta 34
Université de Montréal 77
Université de Paris X 97
Universite Laval 21, 66
Université Laval 92
University of Aberdeen 83, 93
University of Alaska Fairbanks 90
University of Alberta 13, 35, 41, 68, 100, 110
University of California 18
University of Chicago 109
University of Colorado 75
University of Copenhagen 104
University of Groningen 85
University of Laval 48, 82
University of Manitoba 15, 96, 99, 115
University of Massachusetts 43
University of New Brunswick 20
University of Ottawa 69
University of Rochester 30
University of Saskatchewan 31
University of Sussex 114
University of Technology 105
University of toronto 79
University of Toronto 87, 111
University of Western Ontario 59
Upper Atmosphere Ozone 31
Validation of CryoSat Satellite 42
Varves and Varve Forming 43
Vincent Warwick 21
Warwick Vincent 48
Wayne Pollard 44, 45, 46
Wellington Channel 71
Wellness In Adults 9
Wilfred Laurier University 88, 106
Words in Inuktituk 105
Working with elders 99
Yale University 64
York University 17, 22