

Research Needs Survey

Literature Review: Previously Identified Research Needs

**CANADIAN CLIMATE IMPACTS AND ADAPTATION
RESEARCH NETWORK
*NORTH REGION***

March 31, 2004

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Research Needs Survey, Literature Review
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Foreword

C-CIARN North is not the first organization to think about research needs related to climate change in the Canadian North. In fact, a number of organizations, agencies, and government departments have drawn up lists of climate change research needs over the past few years.

Too often these lists are buried in proceedings, workshop reports, and research plans with a broader focus. To avoid losing the earlier efforts and going over the same ground again, C-CIARN North has conducted a literature review of existing expressions of research needs related to climate change impacts and adaptation.

The results of the literature review are available in this report and will be incorporated into the overall report on the C-CIARN North Research Needs Survey. In addition, the literature review is available as a searchable online database. The database will be updated as required and revised print reports will be produced periodically.

The most recent version of the literature review database is available at yukon.taiga.net/knowledge/research.html. The database is linked from the C-CIARN North website (www.taiga.net/c-ciarn-north) and the Northern Climate ExChange website (www.taiga.net/nce).

Date 1990

Title Global Warming: Implications for Canadian Policy

Leader Jackson, C. Ian (The Institute for Research on Public Policy)

Partners Environment Canada - Atmospheric Environment Service

Description Report contributing to State of the Environment reporting and based on literature review. Broad look at policy implications for all of Canada, primarily by sector but with some reference to regions. Findings most specifically applicable to the North relate to sea ice.

Publications Summary report in Climate Change Digest CCD 92-01

Web Location

Ordering Information Climate Change Digest is a publication of Environment Canada.

Summary Recommendations with particular northern relevance: (1) Canada should review the state of sea ice research, nationally and internationally, especially within the framework of the Global Change Program, and should consider initiating research and monitoring of sea ice related to research on the character and impact of global warming. The need for such research should be evaluated in social, economic and political terms, as well as in relation to the state of the basic science. (2) A detailed review should be undertaken of the potential impact of climate change on fires in the boreal forest and on methods of reducing fire risk, or of fighting fires, in remote areas.

Keyword(s) Marine, boreal, forestry, community health, infrastructure, transportation

Region(s) All

Date 1991

Title A Program for Coping with Climate Variability in Yukon: a paper to stimulate discussion

Leader Charles Howard & Associates Ltd.

Partners Indian and Northern Affairs Canada, Northern Affairs Program, Yukon Region

Description Discussion paper prepared for Indian and Northern Affairs Canada, Yukon Region, on the sensitivities of hydrological systems and water resource activities to climate variability and change in the Yukon. Provides background to climate variability in the Yukon, discussion of potential climate change, and suggested research. Paper prepared by Chris Burn (University of British Columbia), Uri Shamir (Technion); Charles D. D. Howard (consulting engineer, Victoria). Includes extensive bibliography and a list of researchers known to be active in hydroclimate research in 1991.

Publications Unpublished report

Web Location

Ordering Information Available from Energy, Mines and Resources Library, Whitehorse, Yukon. Dated 10 May 1991

Summary The discussion paper includes a detailed set of research activities related to the hydrological regime and climate change. Many are costed out in 1991 dollars. Although some have been undertaken in the intervening years, most have not or have not been completed. Among the specific research activities recommended and highlighted by the authors: (1) Three drainage basin studies to monitor the hydrological response of characteristic Yukon basins to climate changes; (2) Extension of weather observation network to include sites at elevation; (3) Field studies of infiltration and soil temperature to determine the ability of Yukon terrain units to absorb increased snow accumulation during spring; (4) an active layer transect from Carcross to northern Yukon, along Klondike and Dempster Highways, to monitor long-term active layer response to climate change; (5) extension of current permafrost temperature monitoring program; (6) determination of climate/forest fire relationship; (7) monitoring glacier mass movement; (8) examination of long-term hydroclimatic data through use of hydrologic models; (9) literature review of climate-related research in Yukon to develop specific and relevant research for Yukon; (10) remote sensing coordination; (11) hydrologic design sensitivity; (12) a planning and implementation workshop.

Keyword(s) All

Region(s) Yukon

Date 1992

Title Impacts of Climate Change on Resource Management in the North: A combined Fourth Canada-United States Symposium & Biennial AES/DIAND Meeting on Northern Climate

Leader Canadian Climate Centre

Partners Environment Canada, Indian and Northern Affairs Canada, U.S. Department of Commerce, National Oceanic and Atmospheric Administration

Description International symposium, held in Whitehorse, 11-14 May 1992. Participants reviewed current state of knowledge regarding climate change and resource management, current research, adaptation needs. Working groups discussed impacts, knowledge gaps, potential actions or responses.

Publications Proceedings published as Impacts of Climate Change on Resource Management in the North, ed. Geoffrey Wall. Department of Geography Publication Series, Occasional Paper No. 16, University of Waterloo, 1993. ISBN 0-921083-47-5

Web Location

Ordering Information

Summary Most working groups identified research and policy needs related to climate change impacts and adaptation. Some lists are extensive. Groups focused on marine, freshwater, and terrestrial systems. Broad recommendations from the symposium as a whole were: (1) Greater knowledge of arctic ecosystems and their interrelationships with the atmosphere should be acquired; (2) Techniques and methods for assessing the impacts of climate variability and change on human activities should be improved; (3) Means of communication between scientists, decision makers, and residents of the North should be enhanced; (4) Circumpolar cooperation should be extended if northern concerns are to be addressed adequately, and participation by northerners is an essential component of such a process.

Keyword(s) All

Region(s) All

Date 1993

Title Impacts of Climatic Change on the Beaufort Sea-Ice Regime: Implications for the Arctic Petroleum Industry

Leader Canadian Climate Centre

Partners Contractors: The MEP Company and CANATEC Consultants Ltd. Authors of summary report: McGillivray, D.G.; Agnew, T.A.; McKay, G.A.; Pilkington, G.R.; Hill, M.C.

Description Study of potential impacts of climate warming on offshore ice and waves as they might affect the offshore oil and gas industry in the Canadian Sector of the Beaufort Sea. Three scenarios used, two based on models and one based on 1989 instrument readings. A half-day workshop with industry representatives was convened to discuss impacts under the three scenarios, adaptation strategies, and research needs.

Publications Summary report: Climate Change Digest, CCD 93-01, 1993. ISBN 0-662-59584-x ISSN 0835-3980

Web Location

Ordering Information Climate Change Digest is a publication of Environment Canada.

Summary Recommendations for future study: (1) Efforts should be made to better identify and understand roles and feedback linkages between the atmosphere, cryosphere and ocean, in particular those relating to albedo, cloud cover, baroclinicity, and to oceanic circulation, salinity and thermal inertia. Such studies should consider critical thresholds as well as intensities of individual processes and the net effect of several of these processes acting in concert. (2) Strong initiatives should be taken in developing higher spatial and temporal resolution Global Circulation Model (GCM) products and better estimates of storm frequencies and intensities under a future warmer climate. (3) An improved program of pack-ice observation and coincident climate is needed for model validation and to develop functional relationships needed in impact studies. (4) More attention should be given to predicting the transitional climate, particularly in terms of altered variability and hazards to offshore operations. (5) Concurrent studies needed to improve interpretation include: (a) application of more sophisticated sea-ice models that include advection, to investigate the impact of warming trends on the Beaufort sea-ice regime; (b) application of wave climate models to investigate the deep and shallow water wave regime as well as the problem of coastal erosion and permafrost melt near the coast; (c) application of storm surge models to investigate how sea level rise would impact coastal areas. (6) It is also recommended that the dialogue between industry and the research community continue to help focus climate change studies on the main industrial concerns.

Keyword(s) Coast, marine, energy

Region(s) Yukon, Northwest Territories

Date 1994

Title Potential impacts of climate change on petroleum production in the Northwest Territories, Mackenzie Basin Impact Study (MBIS), interim report #2

Leader Environment Canada

Partners Mackenzie Basin Impact Study (MBIS)

Description This paper describes a research project to assess the potential impacts of climate change on the economic viability of oil and gas production in the Northwest Territories.

Publications Mackenzie Basin Impact Study (MBIS), interim report #2 : proceedings of the Sixth Biennial AES/DIAND Meeting on Northern Climate & Mid Study Workshop of the Mackenzie Basin Impact Study, Yellowknife, Northwest Territories, April 10-14, 1994 / Edited by J. Cohen. - Downsview, Ont.: Environment Canada, 1994, p. 433-441, maps

Web Location

Ordering Information

Summary The paper discusses three kinds of climate change impacts that might affect the economics of oil and gas production - changes in sea ice, changes in the length of operational seasons, and changes in permafrost. It sets out a research strategy for assessing the impacts of these changes on the economic viability of five oil production scenarios.

Keyword(s) Energy, infrastructure, marine, fresh water

Region(s) Northwest Territories

Date 1995

Title Human Ecology and Climate Change: People and Resources in the Far North

Leader Peterson, David L., and Darryll R. Johnson, editors

Partners

Description This book grew out of a 1993 workshop involving scientists from both Canada and the United States. Many of the workshop participants contributed chapters. The book examines the relationship between climate and human populations, methods of predicting environmental change, natural resources and human institutions, and potential conflicting social values. It includes a section on searching for solutions in which a number of research needs are listed and discussed.

Publications Human Ecology and Climate Change: People and Resources in the Far North. David L. Peterson and Darryll R. Johnson, eds. Taylor & Francis, 1995. ISBN 1-56032-404-X

Web Location

Ordering Information

Summary Research needs and goals are identified under scientific and managerial subcategories. The scientific section identifies a range of research needs covering collection of baseline information about natural and human systems in the North, vulnerabilities of plant, animal and human populations to climate change, and human/social mechanisms for adapting to a changing North. The managerial section looks specifically at research approaches to developing resilient government and management systems in the North.

Keyword(s) All

Region(s) All

Date 1996

Title Traditional Ecological Knowledge of Environmental Changes in Hudson and James Bays. Part 1

Leader Environmental Committee of Sanikiluaq

Partners Canadian Arctic Resources Committee

Description Report on the results of a TEK study conducted with 29 Hudson Bay Cree and Inuit communities to document environmental baseline conditions and changes in the Hudson Bay bioregion.

Publications McDonald, M., Arragutainaq, L., and Novalinga, Z. 1995 and forthcoming. Traditional Ecological Knowledge of Environmental Changes in Hudson and James Bays, Parts 1 and 2. Canadian Arctic Resources Committee.

Web Location

Ordering Information Canadian Arctic Resources Committee, 1276 Wellington Street , 2nd Floor, Ottawa, Ontario K1Y 3A7 Tel: (613) 759-4284 Fax: (613) 759-4581 Toll Free number: (866) 949-9006

Summary The report summarizes a range of climate impacts as observed by Inuit and Cree hunters. The report also identifies the need for research to assess the combined effect of low river levels and warmer water temperatures on the health and reproduction of sea-run charr. The report also notes that many Inuit and Cree do not feel that they are adequately informed of research results.

Keyword(s) Fresh water, tundra, boreal, coast, marine, hunting/trapping, fisheries, community health

Region(s) Nunavut

Date 1997

Title Nunavut Research Agenda: Research Policy and Needs for Nunavut

Leader Nunavut Research Institute

Partners

Description Report on the process and results of a comprehensive effort undertaken by NRI to identify research needs and interests in Nunavut in various disciplines (physical, social, and medical sciences). Specific research needs and priorities are identified for each discipline.

Publications

Web Location www.nunanet.com/~research

Ordering Information Contact Nunavut Research Institute, Phone 867-979-7279, Fax 867-979-7109, PO Box 1720 Iqaluit, NU X0A 0H0

Summary The report calls for a broad range of research and technology development to assess and help mitigate potential climate change impacts, particularly impacts related to northern engineering and construction. Research priorities include: * Continued monitoring of mass balance dynamics of Nunavut's ice sheets and glaciers; * Studies of the effects of increased ultraviolet radiation; * geophysical and permafrost effects on minerals development, road construction, housing development, waste site locations, etc.; * electrical grounding in permafrost; * cold region construction and transportation technologies

Keyword(s) coast, marine, community health, mining, transportation, infrastructure, waste management, energy

Region(s) Nunavut

Date 1997

Title Mackenzie Basin Impact Study (MBIS)

Leader Environment Canada

Partners Cohen, Stewart (project leader), various federal government departments, Northwest Territories government, First Nations and aboriginal groups, community members, academic researchers, non-governmental agencies.

Description The Mackenzie Basin Impact Study was a pioneering attempt to take an integrated, multidisciplinary approach to assessing the impacts of climate change at a regional level. The region in question, the Mackenzie River basin comprises 1.8 million square kilometres in western and northern Canada. Part of the study's innovative approach was the close involvement of communities and groups actually living in the affected area.

Publications Mackenzie Basin Impact Study (MBIS) Final Report. Cohen, Stewart, Ed. Environmental Adaptation Research Group, Climate and Atmospheric Research Directorate (Environment Canada), 1997. A number of interim reports were also published.

Web Location yukon.taiga.net/knowledge/resources/mbis/index.html

Ordering Information A printable version is available electronically at the website indicated. Hardcover copies are widely available in libraries across Canada. 20-page summaries of results, in both English and French, are also available electronically from the website indicated in this entry.

Summary While the main goal of the study was to assess the potential impacts of climate change on the region as comprehensively as possible, it inevitably triggered many recommendations for future research, identification of areas of uncertainty, and suggestions for effective adaptation. These are scattered through the final report and through the summary report on the closing workshop. The 20-page summary document highlights many of them. A principal outcome of the study was the recognition of the value of integrated studies, which include active community involvement, in assessing cross-cutting influences like climate change. In addition, an early workshop in the project focused specifically on identifying the most important questions needing to be answered.

Keyword(s) All

Region(s) Northwest Territories

Date 1998

Title Nunavut General Monitoring Program (NGMP) Technical Workshop

Leader Indian and Northern Affairs Canada

Partners Nunavut Planning Commission

Description Workshop (April 21-22, 1998, Yellowknife) to discuss the design of a comprehensive environmental and socio-economic monitoring program for Nunavut as mandated under the 1993 Nunavut Land Claim Agreement. Attendees included approx. 30 managers, researchers and technical staff from relevant government and Inuit organizations.

Publications Summary Report of workshop published by GeoNorth Ltd. under title NGMP Workshop Summary Report. Full report entitled Nunavut General Monitoring Program: final report technical workshop April 21-22, 1998. Yellowknife: GeoNorth , 1998

Web Location

Ordering Information GeoNorth Ltd., Yellowknife, NWT

Summary The report summarizes the key components of Nunavut's natural, economic, and community environment where long term monitoring is needed; potential indicators (measurement tools) to monitor natural (e.g. climate) and anthropogenic change in the components are identified and prioritized.

Keyword(s) All

Region(s) Nunavut

Date 1999

Title Inuit Observations on Climate Change

Leader Riedlinger, Dyanna

Partners Community of Sachs Harbour NWT, International Institute for Sustainable Development, Government of Canada, Northwest Territories Government, Walter & Duncan Gordon Foundation

Description A collaborative research project in Sachs Harbour, NWT, documenting Inuvialuit knowledge of climate change and the contributions of this knowledge to climate change research.

Publications Primary product of project was a video, which can be ordered from the referenced website. Ashford, Graham, and Castleden, Jennifer. Inuit observations on climate change: final report, June 1999 - June 2001. International Institute for Sustainable Development, June 2001. Available in electronic form at the referenced website. Report contains a list to publication date of journal papers arising from the project.

Web Location www.iisd.org/casl/projects/inuitobs.htm

Ordering Information All primary materials associated with this project are available through the International Institute for Sustainable Development, either through the website referenced in this entry or by contacting International Institute for Sustainable Development, 161 Portage Avenue East, 6th Floor, Winnipeg, Manitoba, Canada, R3B 0Y4. Tel: 204-958-7700 Fax: 204-958-7710 E-mail: info@iisd.ca

Summary The project's main goals were to document Inuvialuit observations of climate change, raise international awareness of the issue, and document adaptive measures being taken by the community of Sachs Harbour. In the course of pursuing these goals, a number of knowledge gaps and research needs were identified. In addition, the project highlighted the value of traditional and local knowledge in understanding and assessing climate change, the need to find ways to use both TK and scientific knowledge side by side, the close relationship between changes on the land and community activities, and the need for collaborative research, advocacy and action in dealing with climate change in the North. Papers arising from this project have discussed some of these findings in more detail.

Keyword(s) Tundra, coast, fresh water, marine, fisheries, hunting/trapping, community health, transportation, infrastructure, waste management

Region(s) Northwest Territories, Nunavut

Date 1999

Title Issue Scan: Climate change and ecosystem research in Canada's North, A report to the Northern Ecosystem Initiative Management Team

Leader Clair, Thomas - Environment Canada - Atlantic Region

Partners Northern Ecosystem Initiative, Environment Canada

Description Prepared at request of NEI management - a report scanning available information regarding climate change and ecosystems in the North. The objective of the work was to identify what has been done on the subject and what main research needs exist. The author based much of the report on the Canada Country Study

Publications

Web Location

Ordering Information Contact form for Northern Ecosystems Initiative is available at www.mb.ec.gc.ca/nature/ecosystems/nei-ien/dh00s09.en.html or contact Carey Ogilvie, National Coordinator, Northern Ecosystem Initiative, Suite 301 5204 50 Avenue, Yellowknife, NT X1A 1E2 Telephone (867) 669-4737

Summary Specific recommendations are set out at the beginning of the report. Briefly, they are: (1) NEI should provide a forum to expose members of the ecological and aboriginal communities to the latest climate modeling, climatology and hydrology interpretation results, along with a chance to question modelers; (2) There is a need for better interpretation of historical climatological and hydrological databases for the North, and NEI should commission a report describing the current and predicted climate of the region; (3) Local and traditional knowledge of ecosystems should be incorporated into NEI's planning and research; (4) NEI should open a dialogue with other government, academic, and NGO agencies involved in climate change work.

Keyword(s) Boreal, fresh water, tundra, coast, marine

Region(s) All

Date 2000

Title 2000 Yukon North Slope Conference: The Challenge of Change

Leader Yukon Renewable Resources (now Yukon Environment)

Partners Wildlife Management Advisory Council (North Slope)

Description Sixth Yukon North Slope Conference, convened 18-20 Sept. 2000 under provisions of the Inuvialuit Final Agreement. One discussion thread focused specifically on climate change, and the topic arose during other discussions as well.

Publications 2000 Yukon North Slope Conference: The Challenge of Change. Summary Report. Whitehorse: Yukon Renewable Resources, 2001. 172 pp.

Web Location www.taiga.net/wmac/northslopeproceedings/n2.pdf

Ordering Information Department of Environment, Government of Yukon, Box 2703, Whitehorse, Yukon, Canada Y1A 2C6 Phone: (867) 667-5652; Toll free (in Yukon): (1-800) 661-0408, local 5652; Fax: (867) 393-6213; Email: environmentyukon@gov.yk.ca

Summary Specific recommendations and priorities arising from the workshop on climate change: (1) Coordinate existing and future data and make it available to researchers, decision-makers and interested people. (2) There is a need for traditional knowledge to be brought into the data and used, particularly in the establishment of benchmarks for climate change. (3) Local communities need a stronger advocacy role in discussions on climate change. (4) Move the climate change discussion more towards adaptation. There is a need to accept that changes are happening and to think about what we can do to adapt to these changes. (5) We need to continue to draw on the traditional body of knowledge and integrate it into the scientific realm of research and monitoring on climate change.

Keyword(s) Fresh water, tundra, coast, marine, mining, tourism, fisheries, hunting/trapping, community health, energy

Region(s) Yukon, Northwest Territories

Date 2000

Title Porcupine Caribou Management Plan

Leader Porcupine Caribou Management Board

Partners Council of Yukon First Nations, Yukon Government, Inuvialuit Game Council, Northwest Territories Gwich'in, Government of the Northwest Territories, Federal Government

Description A rolling three-year plan for management of the Porcupine Caribou Herd in Canadian territory. The herd's range extends from the western Northwest Territories, across the Yukon North Slope, to northeast Alaska and the Arctic National Wildlife Refuge. Aboriginal groups relying on the herd include the Vuntut Gwitchin, Tetlit Gwich'in, and Inuvialuit.

Publications Porcupine Caribou Herd Management Plan 2000/2001 to 2002/2003

Web Location www.yfwmb.yk.ca/comanagement/mgmtplans/pcmbplan/Caribou.pdf

Ordering Information Porcupine Caribou Management Board, Box 31723, Whitehorse, Yukon Y1A 6L3. Phone/Fax: 867-633-4780. Email pcmb@polarcom.com

Summary The Plan expresses particular concern about the possible impacts of climate change on herd size. Actions identified include: (1) Continue to analyze climate information to find out how the climate has changed and assess how these changes are affecting the herd and its habitat; (2) Encourage the International PCB to do studies on how climate change is affecting the herd; (3) Support the work of the National Science Foundation and the Arctic Borderlands Ecological Knowledge Co-op on climate change; (4) Monitor weather events such as fall storms and the timing of spring thaw and relate these to herd size; (5) Get information on the condition of other seasonal ranges, and find out how caribou are affected; (6) Compare the results with other herds to see if the PCH is different. Broad goal is "To be able to predict how climate change may affect the herd."

Keyword(s) Boreal, tundra, hunting/trapping, community health

Region(s) Yukon, Northwest Territories

Date 2000

Title Climate Change and Canada's National Park System

Leader Scott, Daniel, and Roger Suffling (Eds)

Partners Parks Canada, Environment Canada, University of Waterloo

Description A broad impact assessment related to climate change and Canada's national parks, including nine national parks located within the three northern territories.

Publications Report published by Environment Canada.

Web Location www.msc-smc.ec.gc.ca/airg/research_projects/index_view_e.cfm?IdKey=1

Ordering Information Contact Meteorological Service of Canada, 4905 Dufferin Street, Downsview, Ontario M3H 5T4. AIRG Contact: Indra Fung Fook, Phone: 416-739-4436, Fax: 416-739-4297, Email: Indra.FungFook@ec.gc.ca

Summary Potential climate change impacts are summarized for each of the northern parks, and some knowledge gaps and research needs are identified for each park. In addition, the report sets out next steps for Parks Canada as a whole, in management, monitoring, and further research.

Keyword(s) Boreal, fresh water, tundra, coast, marine, tourism, infrastructure

Region(s) All

Date 2000

Title Aklavik Hunters and Trappers Committee Priority List

Leader Aklavik Hunters and Trappers Committee

Partners Aklavik HTC was established under the Inuvialuit Final Agreement

Description Research priority list developed by the Aklavik Hunters and Trappers Committee, applicable to Inuvialuit Settlement Region on Yukon North Slope and northwestern NWT. Likely to be reviewed and revised periodically.

Publications

Web Location www.taiga.net/wmac/researchplan/htcpriorities.html

Ordering Information Aklavik Hunters and Trappers Committee, President, P.O. Box 133, Aklavik, NT X0E 0A0 Phone: (867) 978-2723; Fax: (867) 978-2661; e-mail: akl-htc@jointsec.nt.ca

Summary Entry for climate is "Climate: Fully incorporate local knowledge; examine climate change observed by elders."

Keyword(s) Hunting/trapping, tundra, coast

Region(s) Yukon, Northwest Territories

Date 2000

Title Exchanging Ideas on Climate Change in the Yukon

Leader Northern Climate ExChange

Partners Government of Yukon, Government of Canada Climate Change Action Fund

Description In the summer and fall of 2000, the Northern Climate ExChange visited Yukon communities to discuss observations and concerns about climate change, and solicit suggestions about what should be done to address climate change in the Yukon. The summary report provides background information on the ecosystems and climate of the Yukon, and projections for future climatic conditions, as well as the comments and concerns arising from discussion in various Yukon communities.

Publications Summary report of the community tour was published by the Northern Climate ExChange

Web Location yukon.taiga.net/knowledge/initiatives/exchanging_ideas.pdf

Ordering Information Northern Climate ExChange, Northern Research Institute, Yukon College, PO Box 2799, 500 College Drive, Whitehorse, Yukon, Y1A 5K4. Report is available online at the web address indicated.

Summary Although much of the report is devoted to observations of climate change brought up at the local meetings and workshops, a variety of research needs are also enunciated. Among the broad conclusions are the need for information to help communities with understanding and preparing for climate change, and research at a scale that is useful to community-level decision-making processes. Local and regional expressions of research needs included (among others) the following: * participants in Dawson expressed uncertainty about whether the town dyke will be adequate to withstand future flood levels; * participants in the Central Yukon saw a need for information to determine safe harvest levels in the light of climate change; * most communities saw need for continued and improved monitoring to establish rates of change, and for the collection of local and traditional knowledge related to climate and climate impacts; * participants in the southeast Yukon in particular expressed a need for more information about potential changes to forests, including fires, insect outbreaks, and changing vegetation mix.

Keyword(s) All

Region(s) Yukon

Date 2000

Title Yukon North Slope Long-term Research and Monitoring Plan

Leader Wildlife Management Advisory Council (North Slope)

Partners Inuvialuit, federal government, territorial government, and Alaska agencies and communities. For complete list, see www.taiga.net/wmac/researchplan/intro.html#intro

Description Originally developed in 1996; updated 2000. Web-based plan identifies needs and priorities for environmentally-related research and monitoring in the far northern region of the Yukon. The Plan was developed to direct and support planning and research activities of resource managers and researchers, while addressing the information needs of people in the region. The Plan also identifies important information gaps and opportunities to use existing data, provides a guide to community involvement in projects, including the use of traditional and local knowledge, and addresses topics such as how to communicate information to local residents and what is expected of both researchers and the communities. Information is also provided on what opportunities exist for partnerships, how to get research permits and on possible sources of funding.

Publications Associated document: Yukon North Slope Research Guide, Wildlife Management Advisory Council (North Slope), June 2001; available at www.taiga.net/wmac/researchplan/researchguide.pdf

Web Location www.taiga.net/wmac/researchplan/index.html

Ordering Information Plan is web-based and available at location cited. For further information, contact Wildlife Management Advisory Council (North Slope), Box 31539, Whitehorse Y1A 6K8 or email wmacns@web.net

Summary Plan includes detailed list of issues and actions specifically related to climate change impacts on the Yukon North Slope, both land-based and marine. Actions are identified as short-term, mid-term, and long-term; responsible agencies are identified and status noted. The plan was developed through an extensive consultative process in 1995, followed by a review in 2000. Specific climate change listings can be found in the Issues and Actions section of the plan, under the following systems: Coastal Ecosystems, and Land and Freshwater Ecosystems. More climate change research needs are identified within issues listings for other systems. While the jurisdiction of WMAC(NS), the co-management board that generated the plan is limited to the Yukon North Slope, the issues and actions identified are also generally applicable to the broader Inuvialuit Settlement Region, which extends into the Northwest Territories.

Keyword(s) Fresh water, tundra, coast, marine, fisheries, hunting/trapping

Region(s) Yukon, Northwest Territories

Date 2000

Title Northern Ecosystem Initiative Biodiversity Issue Scan: Final Report

Leader McFarland, Fred

Partners Northern Ecosystem Initiative, Environment Canada Prairie and Northern Region

Description One of four major issues scans prepared for the Northern Ecosystem Initiative.

Publications Unpublished report: October 2000

Web Location

Ordering Information Contact form for Northern Ecosystems Initiative is available at www.mb.ec.gc.ca/nature/ecosystems/nei-ien/dh00s09.en.html or contact Carey Ogilvie, National Coordinator, Northern Ecosystem Initiative, Suite 301 5204 50 Avenue, Yellowknife, NT X1A 1E2 Telephone (867) 669-4737

Summary Although the focus of the issue scan is biodiversity, climate change is recognized as a major threat. One of the general conclusions states that "Global climate change is predicted as the major driver of biodiversity change in the circumpolar arctic region." Specific research needs and priorities associated with climate change are scattered through the report, particularly in sections on marine and freshwater systems.

Keyword(s) Boreal, fresh water, tundra, coast, marine

Region(s) All

Date 2000

Title Climate change impacts and adaptation strategies for Canada's northern territories : final workshop report, February 27-29, 2000, Explorer Hotel, Yellowknife, N.W.T.

Leader GeoNorth Ltd.

Partners Natural Resources Canada, Environment Canada

Description The Workshop on Climate Change Impacts and Adaptation Strategies in Canada's Northern Territories took place in Yellowknife in February 2000, funded under the Government of Canada's Climate Change Action Fund (CCAF). The overall goal of the workshop was to gain an understanding of the data and research required for developing appropriate adaptations to climate change, depending on the responsibilities of affected sectors and the quality of climate change forecasting available. This workshop was part of the process of developing the Canadian Climate Impacts and Adaptation Research Network (C-CIARN).

Publications

Web Location sts.gsc.nrcan.gc.ca/clim/work2000/index.asp

Ordering Information Report is available online at address above. Also linked from C-CIARN North's Projects page: www.taiga.net/c-ciarn-north/projects.html

Summary The focus of the workshop was the development of a northern climate change impacts and adaptation research network. In the course of the workshop, participants discussed a variety of research needs, as well as communication, organization, and infrastructure requirements related to the development of a research network. Specific research needs are found throughout the report. The general discussion also provides a sense of how a fairly broad selection of northerners feels climate change impacts and adaptation research should be pursued in the North.

Keyword(s) All

Region(s) All

Date 2000

Title Northern Science and Technology in Canada: Federal Framework and Research Plan, April 1, 2000 - March 31, 2002

Leader Interdepartmental Committee on Northern Science and Technology

Partners Indian and Northern Affairs Canada

Description Report describes key programs of federal departments and agencies that support Northern science and technology. Also outlines general goals, long-term objectives, and two-year objectives for federally supported research in a variety of fields, including climate change.

Publications Plan published: Ottawa: Northern Affairs Program, Indian and Northern Affairs Canada, Government of Canada, 2000. ISBN 0-662-65049-2

Web Location www.inac.gc.ca

Ordering Information Order through Government of Canada Publications, www.gc.ca

Summary Goals and objectives for federally sponsored climate change research in the North are summarized on pp. 13-15. The shorter-term objective is a clearer understanding of the response to climate change of the physical environment of the North, to be used eventually as underpinning for impacts assessments and adaptation strategies related to affected sectors of northern society. The Plan sets out a number of research objectives, mainly related to improved monitoring and clearer understanding of the physical processes of northern climate-related systems. Specific requirements to achieve these objectives: (1) Continued and enhanced surface and upper-air observation networks in northern Canada; (2) Improved long-term monitoring of the three-dimensional physical and chemical characteristics and movement of waters of the North Atlantic, North Pacific and Arctic Ocean, and within the Canadian Arctic Archipelago; (3) Improved information on sea ice, snow cover and glaciers in northern Canada and changes in northern forests; (4) Refined coupled ocean-atmospheric-ice climate models specific to high latitudes and northern Canada, together with the increased ability to factor ice and snow cover, coastal effects, sea ice, river and lake break-up and freeze-up, and the effects of vegetation into meso-scale predictive models.

Keyword(s) All

Region(s) All

Date 2000

Title An Assessment of Documented Traditional and Local Knowledge and Perspectives on the Impacts of Climate Change within Nunavut Territory, the Northwest Territories, Northern Alberta, Manitoba, Ontario, Quebec and Labrador

Leader Thorpe, Natasha; Dyanna Riedlinger; Shari Fox (GeoNorth Limited, Yellowknife, NWT)

Partners Northern Climate ExChange, Whitehorse, Yukon

Description A literature review conducted as part of the Northern Climate ExChange's Gap Analysis Project.

Publications Available online, as hard copy, or on a CD as part of the Northern Climate ExChange Gap Analysis Project report, published by the Northern Climate ExChange, March 2002.

Web Location yukon.taiga.net/knowledge/gap/geonorth.pdf

Ordering Information Order online at yukon.taiga.net/knowledge/initiatives.html#publications or contact the Northern Climate ExChange, Northern Research Institute, Yukon College, Box 2799, 500 College Drive, Whitehorse, Yukon Y1A 5K4. Tel. (867) 668-8874.

Summary The literature survey found very few sources of documented traditional and local knowledge. The authors identified: (1) a need for more projects that specifically explore and document traditional and local knowledge of climate change in the North; (2) a need for more projects at the community level; (3) linking of traditional knowledge and science-based research to get a more comprehensive picture of climate change. The authors set out a list of 13 recommendations, touching on research needs, approaches to research and to involving communities, and adaptation related both to mitigation of greenhouse gases and to dealing with the impacts of climate change.

Keyword(s) Boreal, fresh water, tundra, coast, marine, community health, energy, infrastructure, transportation

Region(s) Northwest Territories, Nunavut

Date 2000

Title An Assessment of Documented Yukon First Nations Traditional and Local Knowledge and Perspectives on the Impacts of Climate Change within the Yukon Territory and Northern British Columbia

Leader LegendSeekers (Whitehorse, Yukon)

Partners Northern Climate ExChange, Whitehorse, Yukon

Description A literature review conducted as part of the Northern Climate ExChange's Gap Analysis Project.

Publications Available online, as hard copy, or on a CD as part of the Northern Climate ExChange Gap Analysis Project report, published by the Northern Climate ExChange, March 2002.

Web Location yukon.taiga.net/knowledge/gap/legends.pdf

Ordering Information Order online at yukon.taiga.net/knowledge/initiatives.html#publications or contact the Northern Climate ExChange, Northern Research Institute, Yukon College, Box 2799, 500 College Drive, Whitehorse, Yukon Y1A 5K4. Tel. (867) 668-8874.

Summary The literature review found that documented traditional knowledge about climate change is generally included incidentally in documented traditional knowledge with a broader focus and is therefore difficult to find and extract. The authors recommend conducting oral history research aimed exclusively at climatic and environmental change.

Keyword(s) Boreal, fresh water, hunting/trapping, community health, transportation

Region(s) Yukon

Date 2001

Title Wildlife Management Priorities Workshops

Leader Nunavut Wildlife Management Board

Partners Kitikmeot Hunters and Trappers Association, Keewatin Wildlife Federation, Qikiqtaaluk Wildlife Board

Description The Nunavut Wildlife Management Board is the main instrument of wildlife management in the Nunavut Settlement Area. The board establishes wildlife management and research priorities through a system of periodic regional workshops. Three regional workshops were held in 2001. A full set of regional workshops is scheduled for 2004. The board prepares reports and lists of research priorities from these workshops. The 2001 workshops are for the Keewatin, Kitikmeot, and Qikiqtaaluk (Baffin) regions.

Publications Reports: Wildlife Management Priorities Workshop, Kitikmeot Hunters and Trappers Association, Gjoa Haven NU, May 2-3, 2001; Wildlife Management Priorities Workshop, Keewatin Wildlife Federation, Arviat NU, Aug. 28-29, 2001; Wildlife Management Priorities Workshop, Qikiqtaaluk Wildlife Board, Iqaluit, NU, September 2001.

Web Location www.nwmb.com/

Ordering Information Nunavut Wildlife Management Board, P.O. Box 1379, Lot 924 Parnaivik Building, Iqaluit, Nunavut X0A 0H0 Phone: (867) 975-7300 Fax: (867) 975-7320

Summary Wildlife management and research priorities are identified for communities within each region and for the region as a whole. A number of the research priorities are related specifically to climate change impacts and adaptation. Following are some examples. * Kitikmeot: decreasing length of ice cover may negatively affect species like polar bears and walrus that depend on ice cover, but might benefit beluga and bowhead whales; possible impact of climate change on M'Clintock Channel polar bear population; role of climate change in mortality of Dolphin Union caribou. * Keewatin: need climate change studies related to environmental impacts of mining and roads; changing migration patterns of Qamanirjuaq caribou and relation to climate change * Qikiqtaaluk: effect of changes in sea ice conditions on marine mammal movements; general effects of climate change on wildlife and habitat

Keyword(s) Coast, marine, hunting/trapping

Region(s) Nunavut

Date 2001

Title Elders Conference on Climate Change

Leader Nunavut Tunngavik Incorporated

Partners Kivalliq, Qikiqtani and Kitikmeot Inuit Associations

Description Two-day conference in March 2001, held to discuss climate change in Nunavut; attended by 18 elders from throughout Nunavut

Publications Report

Web Location www.polarnet.ca/ntilands/DownLoadPDF.htm

Ordering Information Available as downloadable PDF file from Nunavut Tunngavik Inc. website - address above.

Summary The Workshop report contains a wealth of information on elders' observations and experiences related to climate change, and elders' hypotheses as to what might be driving climate change. Elders identify various impacts and adaptation research and technology development needs, such as: * New construction methods (pilings) to reduce building foundations' vulnerability to increasing permafrost loss; * Stronger, more effective sun screens for hunters that are less irritating to the eyes (to reduce risks associated with increasing intensity of solar radiation); * Research on alternative modes to generate power; * Community-level disaster preparedness planning; * Studies to assess the health impacts of abrupt temperature changes associated with entering/exiting warm houses during cold weather conditions; * Need for an analytical lab/ research facility in Nunavut to ensure faster return of research results (particularly contaminant analyses of animal tissues) to communities that provided research samples

Keyword(s) Community health, infrastructure, energy, transportation, waste management, hunting/trapping

Region(s) Nunavut

Date 2001

Title Inuit Knowledge of Climate Change in Arviat and Baker Lake

Leader Government of Nunavut (Department of the Environment)

Partners

Description Research project, completed March 2001

Publications

Web Location

Ordering Information Nunavut Department of the Environment, Iqaluit, Nunavut, Document is awaiting translation. For information about availability, contact department.

Summary The study report documents local observations of climate change in Arviat and Baker Lake and discusses challenges faced by community members due to climate change. Local adaptations to current climate change, and research needed to reduce current and future climate vulnerabilities are also addressed.

Keyword(s) Tundra, coast, hunting/trapping, community health, energy, infrastructure, transportation

Region(s) Nunavut

Date 2001

Title Uncertain Future, Deliberate Action: Proceedings of the Circumpolar Climate Change Summit, Whitehorse, Yukon, 19-21 March 2001

Leader Northern Climate ExChange

Partners Climate Change Action Fund, Natural Resources Canada, Environment Canada, Yukon College, Yukon Government

Description Proceedings containing reports of plenary sessions, theme session speakers and discussion, panels and discussion, and a number of original papers prepared for the summit. Includes the Whitehorse Declaration, a consensus document that expresses a set of broad requirements to enable the North to respond to climate change. The Circumpolar Climate Change Summit drew 300 scientists, policy-makers, industry representatives and community leaders from around the circumpolar North.

Publications Proceedings published in a special edition of The Northern Review, Number 24, Winter 2001

Web Location www.taiga.net/nce/circumpolar/proceedings.html

Ordering Information Printable order form at www.taiga.net/nce/circumpolar/proceedingsform.txt. Orders should be mailed or faxed to Bob Van Dijken, Northern Climate ExChange, c/o Northern Research Institute, Yukon College, Whitehorse, YT Y1A 5K4 Phone: (867) 668-8874 Fax: (867) 668-8734

Summary Climate change impacts and adaptation research took up a substantial portion of discussion at the summit. Expressions of research needs appear in the formal presentations, in discussions, and in the original papers reproduced in the Proceedings.

Keyword(s) All

Region(s) All

Date 2001

Title The Nunavut General Monitoring Program: Discussion Paper

Leader Government of Nunavut (Department of Executive and Intergovernmental Affairs)

Partners Nunavut Planning Commission, Indian and Northern Affairs Canada

Description The discussion paper defines an implementation strategy for the NGMP

Publications Bainbridge, J and D. Boyes. 2001. The Nunavut General Monitoring Program: Discussion Paper. Department of Executive and Intergovernmental Affairs, Government of Nunavut, Iqaluit, NU. 19pp.

Web Location

Ordering Information Department of Executive and Intergovernmental Affairs, Government of Nunavut, Iqaluit, NU

Summary The need to monitor and assess climate change impacts across Nunavut in a systematic manner is identified as one of the prime reasons for implementing the NGMP. The document also identifies a range of priority research questions for the NGMP, some of which address climate impacts (e.g. has change in river flows and water levels altered fish habitat or affected river based travel patterns?)

Keyword(s) Fresh water, tundra, coast, marine, fisheries, hunting/trapping, community health, transportation

Region(s) Nunavut

Date 2001

Title Central Yukon Climate Change Workshop, February 19-20, 2001

Leader Northern Climate ExChange

Partners Village of Mayo, Nacho Nyak Dun First Nation, Government of Yukon

Description A two-day workshop, held in Mayo in the central Yukon, to look at historic climate trends, both scientific and local/traditional evidence of climate change, and possible responses for the community (primarily Mayo and Nacho Nyak Dun First Nation).

Publications Detailed workshop report published by Northern Climate ExChange

Web Location yukon.taiga.net/knowledge/initiatives/Mayo_workshop_report.pdf

Ordering Information Northern Climate ExChange, Northern Research Institute, Yukon College, PO Box 2799, 500 College Drive, Whitehorse, Yukon, Y1A 5K4. Report is available online at the web address indicated.

Summary The second day of the workshop was entitled "Where do we go from here?" and focused on next steps in infrastructure planning, emergency response planning, regional land use planning, and forest, fish and wildlife management. Subjects requiring further research were identified in each of these discussions. The wrap-up discussion produced another substantial list of research needs and potential actions directed toward both adaptation and mitigation.

Keyword(s) Boreal, fresh water, hunting/trapping, forestry, infrastructure, energy

Region(s) Yukon

Date 2001

Title State of Knowledge: Impacts of Climate Change on Biophysical Systems

Leader Hik, David (University of Alberta)

Partners Northern Climate ExChange, Whitehorse, Yukon

Description A literature review conducted as part of the Northern Climate ExChange's Gap Analysis Project.

Publications Available online, as hard copy, or on a CD as part of the Northern Climate ExChange Gap Analysis Project report, published by the Northern Climate ExChange, March 2002.

Web Location yukon.taiga.net/knowledge/gap/biophys.pdf

Ordering Information Order online at yukon.taiga.net/knowledge/initiatives.html#publications or contact the Northern Climate ExChange, Northern Research Institute, Yukon College, Box 2799, 500 College Drive, Whitehorse, Yukon Y1A 5K4. Tel. (867) 668-8874.

Summary The literature review was based on 456 entries in the Northern Climate ExChange's bibliographic database on climate change in 2000. The author assessed the current state of knowledge about climate change and biophysical systems in the North. Several recommendations for future research or action arose from the analysis: (1) Long-term monitoring, preferably based out of communities, is required to obtain a description of the long-term processes that drive ecosystems and to assess the health of the systems; (2) integrated regional impact studies are required to assess the level of risk associated with global change for environment and socio-economic systems in the North; (3) there is an urgent need for more geographically specific data collection throughout the North; (4) greater utilization of Traditional Ecological Knowledge and active involvement of northerners in climate change impact research is essential; (5) data should be made available at the community or regional level to facilitate decision-making.

Keyword(s) Boreal, fresh water, tundra, marine, coastal

Region(s) All

Date 2001

Title State of Knowledge: Impacts of Climate Change on Human Activity

Leader Duerden, Frank (Ryerson University)

Partners Northern Climate ExChange, Whitehorse, Yukon

Description A literature review conducted as part of the Northern Climate ExChange's Gap Analysis Project.

Publications Available online, as hard copy, or on a CD as part of the Northern Climate ExChange Gap Analysis Project report, published by the Northern Climate ExChange, March 2002.

Web Location yukon.taiga.net/knowledge/gap/humanact.pdf

Ordering Information Order online at yukon.taiga.net/knowledge/initiatives.html#publications or contact the Northern Climate ExChange, Northern Research Institute, Yukon College, Box 2799, 500 College Drive, Whitehorse, Yukon Y1A 5K4. Tel. (867) 668-8874.

Summary The literature review was based on 456 entries in the Northern Climate ExChange's bibliographic database on climate change in 2000. The author assessed the current state of knowledge about climate change and human systems, and listed several specific information needs revealed by the review: (1) strategies for dealing with uncertainty, specifically attuned to northern Canada; (2) existing information should be made more accessible to the public, and local information should be made more accessible to those building climate scenarios; (3) the expectations, knowledge, and experience of northern practitioners and decision-makers should be incorporated into climate change science, especially adaptation science; (4) much more hard, geographically precise information is needed for building scenarios; (5) need to identify possible risks associated with climate change at the community level.

Keyword(s) Agriculture, mining, tourism, fisheries, forestry, hunting/trapping, community health, energy, infrastructure, transportation, waste management

Region(s) All

Date 2001

Title Adapting to Climate Change: Social and Ecological Resilience in a Canadian Western Arctic Community

Leader Berkes, Fikret, and Dyanna Jolly (University of Manitoba)

Partners Community of Sachs Harbour NWT

Description A review of local climate change impacts on subsistence harvesting activities and community well-being in Sachs Harbour NWT and an analysis of the adaptive capacity of the community to respond to climate change

Publications Conservation Ecology, volume 5, issue 2 (January 2002)

Web Location www.consecol.org/vol5/iss2/art18/index.html

Ordering Information Free online journal at www.consecol.org/Journal/

Summary Report notes that "in response to increased variability and unpredictability associated with the weather and other phenomena, [Sachs Harbour residents] feel the need to monitor conditions more closely, e.g. , river [ice break up] in spring

Keyword(s) Hunting/trapping

Region(s) Northwest Territories

Date 2001

Title Climate Change in Central Yukon

Leader McCoy, V.M., & Burn, C.R. (Carleton University)

Partners Village of Mayo

Description Report prepared to assist the village of Mayo and the people of the central Yukon in deciding upon a suitable strategy for managing climate change. Served as foundation document for a two-day workshop (Central Yukon Climate Change Workshop) in 2001. Report contains a variety of data related to climate, environment and economy.

Publications Report published by Northern Climate Exchange

Web Location

yukon.taiga.net/knowledge/resources/Climate_Change_in_the_Central_Yukon.pdf

Ordering Information Northern Climate Exchange, Northern Research Institute, Yukon College, PO Box 2799, 500 College Drive, Whitehorse, Yukon, Y1A 5K4. Report is available online at the web address indicated.

Summary The bulk of the report is data and analysis to determine whether climate change is discernable in the central Yukon and what degree of change is occurring. It concludes with a number of recommended topics for further research, related specifically to climate change impacts and adaptation at the local level: (1) Determination of trends and variability in the magnitude of the freezing and growing seasons; (2) Determination of trends and variability in the dates of last frost in spring and first frost in fall, as indicators of the length of the growing season; (3) Determination of dates of freeze-up and break-up of Stewart River at Mayo, as an indication of the extent of the open-water season; (4) Analysis of the variability of weather and the association of changes in weather variability with different climatic regimes; (5) Detailed assessment of village maintenance schedules and energy consumption; (6) Examination of the Fire Weather Index for Mayo and its relation to forest fire occurrence; (7) Classification of the frequency distributions for weather statistics from Mayo, to determine the occurrence and history of extreme events.

Keyword(s) Boreal, fresh water, hunting/trapping, community health, infrastructure

Region(s) Yukon

Date 2002

Title Sea Ice Variability and Climate Change - Two Ways of Knowing

Leader University of Manitoba (Centre for Earth Observation Science)

Partners Natural Resources Institute, University of Manitoba; Canadian Ice Service, Environment Canada; Oceans Program Division, DFO; Joint Secretariat, Inuvialuit Settlement Region

Description On March 7 and 8, 2002, a workshop was held to examine issues pertaining to sea ice variability and climate change in the Western Arctic. Funded by Fisheries and Oceans Canada, the Northern Ecosystems Initiative (NEI) of Environment Canada, and the Centre for Earth Observation Science, this workshop set out to develop a prioritized research agenda and to develop a plan for integrating community-based management into this research agenda. The workshop was attended by Inuvialuit hunters/elders, government scientists and academic researchers.

Publications Manuscript awaiting approval for publication in journal Arctic. Detailed online report available on Internet at address indicated.

Web Location www.umanitoba.ca/ceos/arcticworkshop/

Ordering Information David Barber, Centre for Earth Observation Science, University of Manitoba

Summary Workshop participants developed a prioritized research agenda to address issues pertaining to sea ice variability and climate change in the Western Arctic. 236 research questions and 75 research priorities were generated under three principal themes: 1) regional and hemispheric variability and change; 2) Sea-ice and shoreline dynamics; 3) sea ice and the marine ecosystem. All workshop products are available on the workshop website in pdf format. Research questions are at www.umanitoba.ca/ceos/arcticworkshop/research.html

Keyword(s) Coast, marine, hunting/trapping, transportation, tourism, fisheries, community health

Region(s) All

Date 2002

Title Public Health Planning Workshop on Climate Change and Health & Well-being in the North, July 6-7, 2002, Yellowknife, NWT

Leader Health Canada (Climate Change and Health Office)

Partners

Description Analysis of existing policy and regulatory frameworks to identify key climate change induced health issues

Publications * Climate Change and Health and Well-Being: A Policy Primer for Canada's North. Report on the Public Health Planning Workshop on Climate Change and Health & Well-being in the North, July 6-7, 2002, Yellowknife, NWT * Climate Change and Health & Well-Being in Canada's North: A Workshop Report

Web Location www.hc-sc.gc.ca/hecs-sesc/ccho/publications.htm

Ordering Information Both publications are available in PDF or HTML formats from the web address above. They are also available in hard copy by contacting the Climate Change and Health Office, Sir Charles Tupper Building, 2720 Riverside Drive, A.L. 6604J, Ottawa, Ont. K1A 0K9 Tel: (613) 954-0161 Fax: (613) 957-1886

Summary The report identifies research that will help enable Northern communities adapt to climate-related health impacts. Research needs identified include: * Monitoring wind patterns and how they affect contaminant pathways and fate; * Monitoring air quality, dust and allergens; * Monitoring of water levels, ice cover, and stream flow; * Documentation of abnormalities and disease in hunter-harvested game; * Examine public infrastructure to assess climate vulnerability and make adjustments to ensure public safety; * Improve extreme weather advisories / early warning systems

Keyword(s) Community health, fresh water, hunting/trapping, infrastructure

Region(s) Nunavut

Date 2002

Title Water Resources at Risk due to Climate Change: Final Report

Leader Canadian Climate Impacts and Adaptation Research Network - Water Resources

Partners British Columbia Ministry of Water, Land and Air Protection

Description Final Report on C-CIARN Water Resources Workshop, September 9 & 10, 2002.
Holiday Inn Midtown, Montreal, Québec

Publications Full report available as download from website indicated.

Web Location www.c-ciarn.mcgill.ca/workshopreport.pdf

Ordering Information Ms. Bano Mehdi, M.Sc., Coordinator, C-CIARN Water Resources,
Brace Centre for Water Resources Management, McGill University, 21,111 Lakeshore
Road, Ste. Anne-de-Bellevue, Quebec, H9X 3V9 Tel.: 514-398-7836, Fax: 514-398-
7767, E-mail: bano.mehdi@mcgill.ca

Summary Recommendations relevant to the North are distributed throughout the report. Most notably, they include: *develop viable alternatives to ice roads; *improve understanding of impacts of climate change on arctic sovereignty; *improve understanding of impacts of future water level fluctuations on northern communities; *improve understanding of climate change on northern hydrological systems; *find ways to adapt to impacts of changing ice conditions and flow patterns on wildlife distribution and survival, and consequent subsistence effects on communities of the North.

Keyword(s) Fresh water

Region(s) All

Date 2002

Title North Yukon Fish and Wildlife Management Plan

Leader North Yukon Renewable Resource Council

Partners Vuntut Gwitchin First Nation, Yukon Environment Department, Canadian Wildlife Service

Description Required management plan for the North Yukon region created as part of the Vuntut Gwitchin First Nation Final Agreement. Region covers region south of the Yukon North Slope and extending eastward from the Alaska border, including Old Crow Flats and Vuntut National Park. The current plan goes through the 2004-2005 fiscal year.

Publications Plan published by Council. ISBN 1-55362-105-0

Web Location www.yfwmb.yk.ca/comanagement/mgmtplans/northyukon.html

Ordering Information North Yukon Renewable Resource Council, 867-966-3034

Summary The report deals specifically with the impacts of climate change on habitat in the Vuntut Gwitchin Traditional Territory. Traditional and scientific knowledge agree that lake levels are generally falling in Old Crow Flats, and some lakes are draining due to melting permafrost. In light of the Council's obligation "to maintain the integrity of the area as one ecological unit" the Plan sets out the following solutions: (1) Keep track of rate of climate change on the Flats; (2) Save some lakes that are particularly important to the people of Old Crow; (3) Document the nature of the Old Crow Flats ecosystem so that its health can be maintained. Specific actions: (1) Monitor permafrost in the Flats; (2) Continue satellite study of Flats to monitor changes to vegetation and lakes; (3) Evaluate effectiveness of dam protecting Drown Lake; (4) Produce an "Old Crow Flats status" statement, a description of the healthy ecosystem to be used as a reference for measuring change and guiding actions.

Keyword(s) Fresh water, boreal, community health

Region(s) Yukon

Date 2003

Title C-CIARN North Online Workshop: Climate Change and Infrastructure

Leader Canadian Climate Impacts and Adaptation Research Network - North

Partners Northern Climate ExChange, Canadian Polar Commission

Description Internet-based workshop held January 8-9, 2003. The online workshop attracted 67 registrants from most parts of Canada, as well as the United States and Europe.

Publications Full transcript of workshop available online at www.taiga.net/c-ciarn-north/online1.html or in hard copy from the Northern Climate ExChange. Summary report published in NCE newsletter *Weathering Change*, Spring 2003, and available online at yukon.taiga.net/knowledge/initiatives/NCE_Newsletter_Spring2003.pdf or in hard copy from the Northern Climate ExChange.

Web Location www.taiga.net/c-ciarn-north/online1.html

Ordering Information Hard copies of all publications are available from Northern Climate ExChange, Northern Research Institute, Yukon College, Box 2799, 500 College Drive, Whitehorse, Yukon Y1A 5K4, or by calling 867-668-8862.

Summary A full listing of recommendations from the workshop is available in the Spring 2003 issue of *Weathering Change*. Recommendations specifically related to impacts and adaptation research needs include: (1) research into changes in sea ice should be expanded; (2) research into alternate modes of transportation, such as hovercraft and airships, should be supported; (3) research is needed into alternate energy sources that would reduce the pressure on winter roads; (4) research needed into implications of climate change for community infrastructure; (5) monitoring networks should be restored and maintained at a level to meet both national and international obligations; (6) vulnerability of Northern communities and systems to environmental change should be assessed; (7) historic permafrost data should be located, collected, and preserved; (8) research associated with the communities of the North should be encouraged and facilitated.

Keyword(s) Transportation, infrastructure, community health, energy, waste management

Region(s) All

Date 2003

Title Toward Integrated Ocean Resource Management in the Baffin Island Region of Nunavut: Results of the Baffin Marine Issues Scan

Leader Department of Fisheries and Oceans

Partners

Description Report on the results of a multi-party consultation to develop a regional integrated ocean management process for the Baffin region of Nunavut; the Baffin Issue Scan sought to document the marine and ocean-related issues of concern, challenges and priorities as identified by local communities and other key stakeholders.

Publications

Web Location

Ordering Information Jeff Maurice, Nunavut Oceans Program Officer, DFO Iqaluit. Phone: 867-979-8000

Summary "Understanding and adapting to climate change" is listed as one of the priority areas of concern addressed through the Issue Scan. Specific community concerns and research needs raised during the issue scan include: * need to better understand implications of climate change for wildlife and harvesting and develop capacity to respond (Grise Fiord, Igloolik) ; * need for studies to assess climate impacts on marine ecosystems (Igloolik) and marine mammal health (Grise Fiord, Clyde River); * need for better communication of information back to communities (Pangnirtung, Resolute)

Keyword(s) Tundra, marine, community health, fresh water, coast, hunting/trapping

Region(s) Nunavut

Date 2003

Title C-CIARN North Online Workshop: Climate Change and Resource Development

Leader Canadian Climate Impacts and Adaptation Research Network - North

Partners Northern Climate ExChange, Canadian Polar Commission

Description Internet-based workshop held February 5-10, 2003. The online workshop attracted 61 registrants from most parts of Canada, as well as the United States and Europe.

Publications Full transcript of workshop available online at www.taiga.net/c-ciarn-north/online2.html or in hard copy from the Northern Climate ExChange. Summary report published in NCE newsletter *Weathering Change*, Spring 2003, and available online at yukon.taiga.net/knowledge/initiatives/NCE_Newsletter_Spring2003.pdf or in hard copy from the Northern Climate ExChange.

Web Location www.taiga.net/c-ciarn-north/online2.html

Ordering Information Hard copies of all publications are available from Northern Climate ExChange, Northern Research Institute, Yukon College, Box 2799, 500 College Drive, Whitehorse, Yukon Y1A 5K4, or by calling 867-668-8862.

Summary A full listing of recommendations from the workshop is available in the Spring 2003 issue of *Weathering Change*. Recommendations specifically related to impacts and adaptation research needs include: (1) There is a need for consistent standards for climate modeling and recommendations for the use of models by environmental assessment practitioners and mining companies; (2) Government should take responsibility for monitoring, collecting baseline information, and disseminating it to industry; (3) Research into ecosystem responses to climate variation should be supported; (4) Forest management techniques should be identified or developed to cope with changing conditions; (5) Governments should nurture efforts currently underway to develop alternative and small-scale energy sources for northern communities; (6) Canada's monitoring system should be maintained and expanded, with long-term stable funding, to track change and improve models; (7) A better understanding of Arctic food chains is required to address potential impacts of climate change on country food species.

Keyword(s) Mining, agriculture, energy, forestry, community health

Region(s) All

Date 2003

Title Annual Gathering: Action Items

Leader Arctic Borderlands Ecological Knowledge Co-op

Partners Members of the Co-op include co-management boards and councils, Inuvialuit and First Nations governments and councils, Canadian and US federal and territorial government agencies, academic and research institutions in Canada and the United States.

Description Every February the Co-op holds a Gathering, reviews the activities of the previous year, and sets action items for the coming year. The action items usually include research goals related to climate change impacts in the Co-op's territory - roughly the range of the Porcupine Caribou herd, in the northern Yukon, northeastern Alaska, and northwestern Northwest Territories.

Publications Action items, monitoring results, and the results of special projects are all available on the Co-op's website.

Web Location www.taiga.net/coop/index.html

Ordering Information Contact the Co-op coordinator at borderlands@taiga.net

Summary Relevant items from the 2003 Action Items: (1) Need information about emerging wildlife diseases. Summarize information on West Nile virus. (2) Co-ordinate with Inuit Tapiriit Kanatami on climate monitoring and youth mentoring (Aklavik and Inuvik). (3) New climate-change-related indicators to explore include permafrost, willows (growth rate and expansion), water levels (particularly in spring), timing of the arrival of insects and animals and of plant flowering, greenhouse gas emissions from communities (tracked through bulk fuel sales and diesel sales records).

Keyword(s) Fresh water, boreal, tundra, energy, community health

Region(s) Yukon, Northwest Territories

Date 2003

Title Canadian Arctic Contaminants Assessment Report II

Leader Indian and Northern Affairs Canada

Partners

Description 960-page report summarizing the results of research conducted under the Northern Contaminants Program from 1997 to 2002.

Publications Five-volume report, including highlights report, published by Indian and Northern Affairs Canada

Web Location www.ainc-inac.gc.ca/ncp/pub/pub_e.html

Ordering Information Report can be ordered in paper copy or CD. Ordering information at above website.

Summary The report stresses that further research is needed to understand how climate factors influence the movement (transport to and within) and bio-availability of long-range contaminants in Arctic ecosystems, and how climate change may alter current modes of contaminant transport and exposure.

Keyword(s) Fresh water, boreal, tundra, marine, coast, waste management

Region(s) All