## Hudson Bay Region Research

	Preface Linda Chow & Kelly McKay	_xvii
	Acknowledgements	_ xix
ı	Atmospheric Sciences & Sea Ice	
	$\it Jessica\ L.\ Banville$ Soil C Quantification and $\rm CO_2$ Efflux from 5 Different Boreal Forest Types: Estimation at a Landscape Level, James Bay, Quebec	3
	David Barber Ocean-Ice-Atmosphere Coupling and Climate Variability	5
	Rick Bello Long Term Carbon Storage and Hydrological Control of CO <sub>2</sub> Exchange in Ponds of the Hudson Bay Lowlands	8
	Rosanne D'Arrigo, Gordon Jacoby & Rob Wilson The Long-Term Context for Late 20 <sup>th</sup> Century Warming	10
	Lynda Dredge & Robert Mott Peat Deposits as Carbon Sinks in the Hudson Bay Lowlands, Manitoba	12
	Jens K. Ehn Radiative Transfer Processes in Sea Ice as Controlled by Biological and Thermo-Physical Characteristics	14
	Ryan Galley Under-Snow Sea Ice Flooding as Detected by Ground Penetrating RADAR	16
	Torsten Gelsetzer Polarimetric Active Microwave Remote Sensing of Snow Covered Sea Ice	18

Klaus Hochheim Atmospheric and Hydrologic Forcing of Sea Ice in Hudson Bay	20
K. Hochheim, D. Barber & J. Lukovich Hudson Bay Sea Ice Motion	22
(Phil) Byong Jun Hwang Sea Ice Monitoring Using Satellite Microwave Radiometry: Impacts of Climate Change	25
Dustin Isleifson Modeling of Electromagnetic Interactions of the Microwave Remote Sensing of Sea Ice	27
G. Peter Kershaw Climate Change at Arctic's Edge	29
Zou Zou A. Kuzyk, Rob Macdonald, & Gary Stern Organic Carbon in Hudson Bay Sediments: Sources, Distribution, Burial, and Potential Consequences of Change	32
Annie Lalonde & Jean-Francois Helie Greenhouse Gas Production from a Young Boreal Hydroelectric Reservoir (Eastern Canada): A Carbon Isotope Approach	35
Alexandre Lanlois Snow Water Equivalent Retrieval Over First-Year Sea Ice Using Passive Microwave Radiometry	37
Patrick Mojdehi Gaseous Carbon ( $\mathrm{CH_4}$ & $\mathrm{CO_2}$ ) Interaction of Tundra Ponds and the Atmosphere in the Hudson Bay Lowlands	39
David Mosscrop Centre for Earth Observation Science	41
Claire L. Parkinson Determination of Sea Ice Changes in Hudson Bay from Satellite Passive-Microwave Data	45
Glenn Scott Inter-Seasonal Air-Surface Flux Variability on Coastal Hudson Bay	47
Chris Stokes New Insights Regarding Rapid Ice Flow from the Thelon River Valley, Nunavut Territory	50
Mario Tenuta Greenhouse Gas Studies in Churchill, Manitoba	53

	Adrienne Tivy Sea Ice in Hudson Bay and the Canadian Arctic: Seasonal Forecasting	_ 55
	Michael Trachtenberg Evaluating the Suitability of Ground Penetrating Radar for Modeling and Predicting Sea Ice Characteristics	_ 57
	John Yackel Active Microwave Remote Sensing of Snow Covered Sea Ice in Hudson Bay	_ 59
II	Birds	
	David E. Andersen Production of EPP Canada Geese Near Cape Churchill, Manitoba	_ 63
	David E. Andersen & Robert R. Nack Brood Movements and Distribution of EPP Canada Geese in Northern Manitoba	_ 66
	David E. Anderson & Matthew E. Reiter Sympatric Nesting EPP Canada Geese and Lesser Snow Geese on the Hudson Bay Lowlands: Nest Predation and Spatial Distribution	_ 69
	David E. Andersen & John E. Sammler Population Trends of Tundra-Nesting Birds in Churchill, Manitoba _	_ 71
	Kate Ballantyne Habitat Change Analysis and Nest Site Selection of Whimbrel (Numenius phaeopus) and Red-Necked Phalarope (Phalaropus lobatus) in Churchill, Manitoba	_ 73
	Tony Gaston & D. Phil Trends in Northern Seabird Populations and What They Can Tell us About Climate Change	_ 75
	Emma J. Horrigan Rising Snow Goose Populations and Implications for their Arctic Salt Marsh and Freshwater Habitats in Churchill, Manitoba, and Bylot Island, Nunavut	_ 77
	Vicky Johnston Arctic Shorebird Monitoring Program	_ 79
	Peter M. Kotanen Interactions Between Snow Geese and their Forage Species	_ 82

	Tracy Maconachie Peregrine Falcon Recovery Project (Manitoba) Provincial Surveys	_84
	Erica Nol Population Dynamics of the Semipalmated Plover in the Churchill Region	_86
	Matthew C. Perry & Robert M. Alison Population Demographics and Breeding Ecology of the Long-tailed Duck (Changula hyemalis) in the Churchill, Manitoba Area	_88
	Andrew Raedeke, John Wollenberg & Brian Lubinski Annual Breeding Ground Survey of Eastern Prairie Population Canada Geese	_92
	Paul Smith & H. Grant Gilchrist Breeding Ecology of Eastern Arctic Shorebirds	_94
II	I Botany	
	Robert C.F. Au Allometric Relationships and Dendroecology of the Dwarf Shrub Dryas Integrifolia Near Churchill, Subarctic Manitoba	_99
	Pierre-Luc Dallaire Use of Ground-Penetrating Radar to Characterize Peat Stratigraphy in Three Boreal Peatlands, Eastmain Region, James Bay, Quebec	102
	Kate Edwards Soil Nutritional Ecology During the Winter-Spring Seasonal Transition Sub-Arctic Sedge Meadows Near Churchill, Manitoba	
	Eleanor Edye Microenvironment Factors Affecting White Spruce (Picea Glauca [Moench] Voss) Seeding Survival and Establishment at the Treeline	106
	R. Jefferies, K. Edwards & E. Horrigan Plant-Herbivore Interactions; Soil-Microbial-Plant Interactions	108
	Peter Kuhry Holocene Peatland Development and Permafrost and Permafrost Dynamics in the Hudson Bay Lowlands of Northeastern Manitoba	111
	Peter Lafleur Climate-Treeline Studies in the Churchill Region	113
	Jarod L. Larter Discrimination of Floating Peat Islands in a Sub-Arctic Reservoir Using Synthetic Aperture Radar and Optical Satellite Imagery	116

	Julie Loisel Effects of Hydrology, Climate and Vegetation on Long-term Carbon Sequestration Rates in Two Boreal Peat Bogs, James Bay, Quebec	_117
	Christopher J. Lortie Moss Cushions Having a Positive Effect on Biodiversity	_119
	Kimberly Monson Fire History and Secondary Vegetation Succession in the Forest-Tundra Near Churchill, Manitoba	_122
	David Punter Plant Ecology of the York Factory Peninsula	_125
	Britta Sannel Thermokarst Dynamics in Subarctic Peat Plateau/ Thermokarst Lake Complexes	_127
	Sharon Smith & Larry Dyke Permafrost Characterization, Western Hudson Bay	_129
	Josef Svoboda, Richard Staniforth, Orin Durey, Esther Levesque, W. Raymond Cummins & Mark Romer Active Layer and Phenology Monitoring at Baker Lake and Keewati Gardens Horticultural Experiment at Rankin Inlet, Nunavut	
	Kyle Swystun  Monitoring and Modeling of the Net Ecosystem Carbon  Exchange of Fen Environments in the Hudson Bay Lowlands	_134
	Jacques C. Tardif Tree Rings, 13C and Climate in Picea Glauca Growing Near Churchill, Subarctic Manitoba, Canada	_136
	Joerg Tews Hummock Vegetation at the Arctic Tree-line Near Churchill, Manitoba	_139
I۱	V Contaminants	
	Jadie Clifford-Pena Human Perceptions, Comprehension and Awareness of Contaminants in Sanikiluaq	_143
	Ashley Gaden Contaminants in Ringed Seal (Phoca hispida) of Western Canada _	_145
	Alexandre Hare Mercury in Hudson Bay: Movement and Behaviour in a Changing Environment	_147

	Jane Kirk Sources of Mono-Methyl Mercury to Arctic Marine Ecosystems	149
	I. McKeown, P. Orr, S. Macdonald, A. Kabani, R. Brown, G. Coghlan, M. Dawood, J. Embil, M. Sargent, G. Smart & C. Bernstein Helicobacter Pylori in the Canadian Arctic: Seroprevalence and Detection in Community Water Samples	152
	C.J. Mundy, David Barber, Greg McCullough, Mats Granskog, Robie Mcdonald, Tim Papakyriakou, Zou Zou Zuzyk, Alexandre Hare, Feiyue Wang & Gary Stern Biogeochemical Signature and Contaminant Loads of River Discharge to Hudson Bay	154
	Jonahan Price, Brian Branireun & Vicki Remenda Impact of Mine Dewatering on the Hydrology and Mercury Biogeochemistry of Peatlands in the Hudson/James Bay Lowland: The De Beers Victor Diamond Mine	_157
٧	Environmental Education & Traditional Knowledge	
	Lucette Barber Bridging Environmental Education and Scientific Research: A Case Study of the Schools on Board Program	163
	Linda Chow Youth Environmental Awareness: Intergenerational Knowledge Transfer in Churchill, Manitoba	_166
	Hadi Dowlatabadi Adaptive Decision and Planning Tools	168
	Joel Edye-Rowntree Residents' Perspectives on the Churchill River	171
	Justin Gilligan Traveling on the Land: Impacts and Opportunities of Environmental Change	_174
	Michael Heine 'Traditional Aboriginal Coaching Resources' Development of Instructional Resources for Inuit and Dene Traditional Games	_177
	Devin Imrie Traditional Knowledge on Sea Ice Change in Sanikiluaq: Impacts on Inuit Hunters	179

	Jill Oakes Eider Skin Clothing Production Sanikiluaq	_181
	Jill Oakes & Rick Riewe People and Environmental Change: Linking Traditional and Scientific Knowledge	_ 183
	Richard J. "Dick" Preston Psychology of Cree Culture and Ecology: Tools for Understanding and Assisting Cree's	_185
	Amanda Rogala Impacts of Climate Change on Tourism in Churchill, Manitoba	_188
	Shirley Tagalik Traditional Lifeviews: Inuguinniq Practices	_189
\	/I Geology	
	Guillaume Allard Paleoecological Content and Chronology of a Subtill Organic-bearing Deposit in James Bay, Quebec	_ 193
	James D. Bamburak Industrial and Metallic Mineral Potential of the Churchill Area	_ 195
	Daniel Brosseau Surficial Deposits Mapping and Palaeogeographic Reconstruction of the Eastmain-1 Reservoir Sector, James Bay, Quebec	_ 197
	Lynda Dredge & Isabelle McMartin Glacial History of Wager Bay, Nunavut	_199
	Lynda Dredge & Isabelle McMartin Surface Materials and Landforms, Northernmost Manitoba	_201
	Lynda Dredge & S. Pehrsson Till Geochemistry and Mineral Exploration in Northern Manitoba _	_203
	Charles Maurice Geological Mapping and Research in Northern Quebec	_205
	Isabelle McMartin & Lynda Dredge Glacial Geology and Geochemistry, Schultz Lake/Baker Lake Areas, Nunavut	_207
	Robert Mott & Lynda Dredge Holocene Pollen Records of Environmental Change in the Hudson Bay Lowlands Manitoha	209

	Godfrey S. Nowlan Lower Paleozoic Micropaleontology, Paleontology and Stratigraphy of the Hudson Bay Region	211
	Sharon Smith & Larry Dyke Permafrost Characterization, Western Hudson Bay	213
	Graham Young, Robert Elais, David Rudkin, Godfrey Nowlan, Edward Dorbrzanski & Sean Robson Upper Ordovician to Lower Silurian Paleontology, Paleoecology, and Stratigraphy of the Churchill Area, Manitoba	215
	Shunxin Zhang Late Ordovivian – Early Silurian Conodont Biostratigraphy, Thermal Maturation and Implications for Hydrocarbon Generation	219
V	/II Health	
	M. Achtemichuck, E. Etcheverry, B. Martin, A. Macaulay & A. Durcar Community-Based Medical Rehabilitation Program in the Kivalliq Region of Nunavut, Canada	223
	M. Achtemichuck, M. Frike, B. Martin, A. Macaulay and A. Durcan Development of a Community Therapy Assistant Program in the Kivalliq Region of Nunavut, Canada	224
	M. Fricke, M. Achtemichuck, J. Cooper, B. Martin, A. Macaulay & A. Durcan Development of a Community-Based Medical Rehabilitation Program in the Kivalliq Region of Nunavut, Canada	226
	Doris Gagne & Carole Vezina Prevention Program of Iron Deficiency in Children of Child Care Centers of Nunavik	228
	A. Macaulay, A. Durcan, J. Geraci, N. Hatlevik & N. Williams A Retrospective Audit of the Rankin Inlet Birthing Centre, 1991-2004	231
	A. Macaulay, P. Orr, S. Macdonald, L. Elliott, R. Brown, A. Durcan & B. Martin Mortality in the Kivalliq Region of Nunavut, 1987-1996	233
	B. Martin, W. Smith, P. Orr & F. Guijon Follow-up of a Decentralized Colposcopy Program for the Investigation and Management of Cervical Intraepithelial	05-
	Neoplasia in the Central Canadian Arctic	235

B. Martin & J. Kaufert Palliative Care in Inuit Communities: Determinants of Sustainable Program Development and Implementation	_236
Daniel Martin Climate Change and Public Health in Nunavik and Labrador	237
G. Minuk, D. Sun, J. Uhanova, M. Zhang, S. Caouette, L. Nicolle, A. Gutkin, K. Doucette, B. Martin & A. Guilivi Occult Hepatitis B Virus Infection in a North American Community-Based Population	_240
G. Minuk, P. Orr, R. Brown, S. Macdonald, R. Chaudhary & P. Temple Pre-Core Mutant Infections in Canadian Inuit	242
G. Minuk, N. Ling, B. Postl, J. Waggoner, L. Nicolle & J. Hoofnagle Changing Epidemiology of Hepatitis B Virus Infection in the Canadian North	_243
P. Orr, S. Mcdonald, D. Milley & R. Brown Bronchiolitis in Inuit Children from a Canadian Central Arctic Community, 1995-1996	_244
P. Orr & R. Brown Incidence of Ectopic Pregnancy and Sexually Transmitted Disease in the Candian Central Arctic	245
P. Orr, B. Martin, K. Patterson & M. Moffatt Prevalence of Diabetes Mellitus and Obesity in the Keewatin District of the Canadian Arctic	_246
H. Schilling, B. Buelow, L. Duval & J. Killulark Prevalence of Hearing Loss in an Inuit School Age Population	_247
J. Singer, D. Carriere, B. Martin & J. Embil Prevalence of Type 2 Diabetes in a Canadian Inuit Population	_248
Ekaterina Smali Health Perspectives of the People of Arviat, Nunavut: An Analysis of the Current Health Care System	_249
P. Van Caeseele, A. Macaulay, P. Orr, F. Aoki & B. Martin Rapid Pharmacotherapeutic Intervention for an Influenza A Outbrea in the Canadian Arctic: Lessons from the Sanikiluaq Experience	
Nicole Watters & Lana Pestaluky Examining the Nutrition School Environment of Repulse Bay, Nunavut	_253

## X Parks

Rachel Cooley Churchill 2007 Parks Canada Visitor Survey	287
Jessica Elliott  Evaluation of Performance Measures for Monitoring Tundra Ecosys	tem

Integrity in Wapusk National Park, Manitoba \_\_\_\_\_\_288

Overview of Hudson Bay Marine Ecosystem \_\_\_\_\_\_282

B. Ford, M. Piercey-Normore, D. Punter & E. Punter Botanical Survey of Wapusk National Park with Special Reference to Coastal Regions	289
XI Tourism & Arts	
Jackie Dawson & Emma Stewart Climate Change Vulnerability of the Polar Bear Viewing Industry in Churchill, Manitoba	293
Diane Driedger Creative Writing, Publishing and Empowerment of Inuit Adult Learners in Baker Lake, Nunavut	295
Raynald H. Lemelin Observers in the Churchill Wildlife Management Area, Churchill, Manitoba	297
Chris Malcolm, Courtney O'Brien Moran & Heather Penner Ecological Biogeography and Wildlife Ecotourism Management	300
Emma Stewart & Diane Draper Stakeholder Perceptions of Tourism in Churchill: A Collaborative Approach	302
Jane Waterman & James Roth Significance of Social Play and the Impact of Ecotourism on Polar Bears Near Churchill, Manitoba	305
XII Wildlife	
David E. Andersen, Clint W. Boal, Gad Perry, R. Nicholas Mannan & Matthew E. Reiter Factors Affecting Distribution and Detection of Boreal Chorus Frogs and Wood Frogs at Cape Churchill, Manitoba	309
Ryan Brook Structure and Dynamics of the Hudson Bay Lowlands of Manitoba: Integrating Wildlife, Habitats and Local People	312
Ben Cash & LeeAnn Fishback Demographics and Wetland Dynamics in the Arctic/Sub-Artic Transition Zone	315
Magaly Chambellant Hudson Bay Ringed Seals ( <i>Phoca hispida)</i> : Ecology in Warming Climate	317
Elly Chmelnitsky Classification and Comparison of Beluga Whale, (Delphinapterus leucas) Vocalizations in Hudson Bay	319