

L. Peter, Joella Hogan, and the Na-Cho Nyäk Dun First Nation Lands and Resources Department on the history of the local Na-Cho Nyäk Dun people of the Mayo area. The chapter discusses many of the local traditional ways, values, and activities, and it includes many interesting and informative quotes by Na-Cho Nyäk Dun Elders, who describe the numerous cultural changes they have witnessed firsthand over their lifetimes. Unfortunately, this chapter on cultural changes is presented before the chapters that describe the history of early prospectors and exploration, and many readers unfamiliar with the region may be left confused by the lack of preceding historical context. The next five chapters, by Lynette Bleiler, present a detailed account of the colorful post-contact history of prospectors, traders, Mayo village, and mining, leading up to modern-day industry and government. These chapters will be a delight to anyone interested in the vibrant characters, including Jack McQuesten and Al Mayo, whose efforts eventually led to the establishment of Mayo and the gold, silver, lead, and zinc mines that were central to the Yukon economy for most of the 20th century. The next chapter, by Denise L. Peter, Anne Leckie, and the Na-Cho Nyäk Dun First Nation Lands and Resources Department, provides an informative historical account of the path of First Nations people to self-government and eventual land claims under the Umbrella Final Agreement of 1993. This chapter highlights the importance in the land-claim agreements of traditional cultural values as exemplified in contemporary Na-Cho Nyäk Dun society. The discussion on the operation and activities of Na-Cho Nyäk Dun First Nation government provides an interesting contrast with the traditional activities and old ways described by Elders earlier in the book. The book concludes with a chapter by Shanon Cooper and Anne Leckie that describes the activities, organizations, and foundations that make up the present-day community of Mayo.

In summary, this is a well-written, esthetically pleasing volume on the natural and cultural history of Mayo and surrounding area in central Yukon Territory that belongs on the coffee tables of all Yukon residents and in the library of anyone with an active interest in northern Canada. Northern researchers and resource managers will find this a useful reference book for summary overviews on a wide variety of topics pertinent to central Yukon. This volume provides a great model, which I hope other northern communities will follow, for producing a high-quality, easily accessible, and informative account of the land, life, and people within the place they call home.

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- THE ARCTIC CLIMATE SYSTEM. By ROGER BARRY and MARK SERREZE. New York: Cambridge University Press, 2005. Cambridge Atmospheric and Space Science Series. ISBN 0-521-81418-9. xvii + 385 p., maps, b&w illus., colour plates, bib., index. Hardbound. US\$130.00.

The Arctic Climate System, by Mark Serreze and Roger Barry, could not be more timely. With the International Polar Year (IPY) and the 2007 IPCC Assessments following close on the heels of the Arctic Climate Impact Assessment, eyes are turned to the Arctic regions with wonder and concern. Will climate change in the North play out as dramatically as is forecast? To assess what a warmer Earth will mean for sea ice, ice sheets, the hydrological cycle, and storm frequency, we need a solid understanding of the mean climate state and historical climate variability in the Arctic. What are the fundamental dynamics and characteristics of the Arctic climate system?

This text squarely addresses these questions, and I cannot imagine a better pair of authors for this task. Roger Barry, Distinguished Professor at the University of Colorado, has had a tireless research career in Arctic, atmospheric, and cryospheric science. Recent accolades include the 2006 Goldthwait Polar Medal, honouring lifetime achievement in polar research, and the 2007 Francois Emile Matthes Award of the American Association of Geographers, recognizing Barry's 50 years of contributions to cryospheric science. *The Arctic Climate System* will join two other Barry volumes, *Mountain Weather and Climate* (1992) and *Synoptic and Dynamic Climatology* (2001; co-authored with A.M. Carleton), which spend more time on my desk than on my shelf. Mark Serreze, research scientist at the University of Colorado, has worked on a broad spectrum of problems in Arctic science over the last 20 years. I know of no one who has contributed more to the primary research on Arctic climatology over this time. Serreze is clearly the heir-apparent to Roger Barry in continuing the outstanding legacy of Arctic climate research at the University of Colorado and the U.S. National Snow and Ice Data Center.

With the subject matter in such good hands, many researchers in the community will pick up *The Arctic Climate*

System without hesitation. They will not be disappointed. The book does an impressive job of filling a void as a resource for both research and teaching. It is thoroughly referenced, making for a valuable extended “review article” on a wide range of research questions concerned with Arctic climate. The book will serve as a helpful starting point for many, many investigations, and I also expect it to be the go-to reference on several topics. At the same time, the book explains most of the subjects it touches in loving detail, and I highly recommend it as the primary textbook for senior undergraduate or graduate courses in Arctic climatology. In all honesty, I had difficulty reviewing this volume because it was hard to skim—the book works very well as a cover-to-cover read, and I found it very rewarding to work methodically through every section.

This text is written from the perspective of strong, meteorologically literate physical geographers. Atmospheric scientists will find it to be a valuable climatology text, but it is not the place to go for detailed descriptions of atmospheric or ocean dynamics, the governing equations for sea ice thermodynamics and rheology, or other mathematical considerations. It is also somewhat uneven in its explanations of several topics; for example, at times it juxtaposes detailed, probably unnecessary, elaboration of units and areas of assumed knowledge (e.g., discussion of potential vorticity without an introduction or definition). This is a minor quibble, however, and I expect that most readers will join me in hanging on every word.

The authors infuse a great deal of energy and passion for their topic into this book. The personal anecdotes (e.g., “As a young graduate student fascinated by clouds...”) sprinkled through the text make for a pleasant, accessible read. The underlying enthusiasm for the subject matter is unusual in a text, and I expect it to inspire many a student that works through this book. Organizationally, I appreciated the road map provided by the overview section at the beginning of each chapter. The book provides a good smattering of primary results from individual research studies and large, multiyear research networks that have plied the Arctic. There is also a superb blend of observational (station) data, satellite data, climate modelling, and reanalyzed climatology. I suspect that very little of the climate data from the brief historical observational period (the last 50 to 60 years) did not find its way into the book.

For a review volume, there is a large amount of original material and analysis, mostly compiled from the U.S. National Center for Environmental Prediction/National Center for Atmospheric Research (NCEP/NCAR) climate reanalysis fields. The book leans heavily on NCEP/NCAR reanalyses, which is helpful for a review because it enables a tidy, complete view of the mean state of various meteorological fields. As an example, it is very constructive as a means of revisiting the classical work of Nakamura and Oort (1988) on the Arctic energy budget.

However, reanalyzed climatology comes with an asterisk that the authors probably understate, particularly for

the world’s polar regions. Reanalysis fields are derived from climate model simulations that assimilate all available meteorological data and do the best possible job of constructing detailed 3D meteorological fields for times in the past: numerical weather hindcasts. NCEP/NCAR reanalyzed climatology is available for six-hour or daily snapshots for the period 1948 to present. Similar reanalysis products are available for different historical periods and with different climate models, such as that of the European Centre for Medium-Range Weather Forecasts (ECMWF). Reanalyzed climatology is a complex mixture of observational data and model simulations, with the climate model effectively acting as a physically based interpolator of the data. There are issues with this in the Arctic because of the paucity of observational data in large regions. Hence, the many figures in the text that plot complete spatial patterns of atmospheric conditions may impart a false sense of how well we really know and understand Arctic weather and climate. Depending on your confidence in the NCEP/NCAR reanalyses in different parts of the Arctic, some of the results should not be taken too literally.

This is not a serious concern in my mind, as most of those working in Arctic climatology are well aware of the strengths and limitations of climate model reanalyses. However, climate models are constantly evolving and improving, and this raises the spectre of the “non-stationarity” of some of the results and figures in the book. How much would these differ with ECMWF rather than NCEP/NCAR fields? How much will they change in the next edition of the text, using reanalyses from NCEP III or regional climate models?

The overall content is solid, and I appreciate the authors’ effort to keep the length under 400 pages. That said, I can imagine a few recommendations or implorations if the authors choose to write a second edition. The discussion of the North Atlantic and Arctic Oscillations comes surprisingly late, given the importance of these modes of variability—they are nicely discussed, but one waits until the final pages to get there. A case can be made that the systematic weather variability associated with these modes is a central feature of the mean state, and that topics such as cyclonic frequencies, sea ice conditions in the Nordic seas, the hydrological cycle, and glacier mass balance are more thoroughly treated with this variability in mind.

Attention to certain topics, such as Arctic oceanography, permafrost processes, and glaciology is sparse in comparison to the general coverage. Discussions of these topics are sprinkled throughout, but I suspect that many readers would appreciate dedicated chapters on these subjects, with a depth similar to that of the chapters devoted to some atmospheric topics. There is finite space, of course, but some of the later chapters are a bit diffuse, lacking the focus of the earlier chapters. For instance, the chapters on climate modeling and Arctic paleoclimate are both ambitious and reasonably well done, but these are huge topics that could extend to full texts in their own right. The authors provide interesting surveys of these

subjects, well worth a read, but these chapters do not achieve the ground-staking authority of the early chapters.

These criticisms do not detract from the immense value of this book. If anything, the clear and thorough coverage of some topics simply sets a very high bar for the rest of the text. Researchers and students will delight in *The Arctic Climate System*, and I can honestly report that if I could have only one text or resource on Arctic climatology, this would be it. Perhaps the best recommendation I can give is to report that I have already adopted this text for the graduate course that I teach in Arctic Climate Dynamics. I expect it will maintain this place for many years and future editions.

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TWENTIETH-CENTURY SHORE-STATION WHALING IN NEWFOUNDLAND AND LABRADOR. By ANTHONY B. DICKINSON and CHESLEY W. SANGER. Montreal: McGill-Queen's University Press, 2005. ISBN 0-7735-2881-4. xvii + 254 p., maps., b&w illus., appendices, notes, bib., index. Hardbound. Cdn\$49.95.

Whales and whaling have aroused literary and scholarly interest for many reasons. Among them are the grandeur of these large species; their spiritual, nutritional, social, and commercial importance to coastal peoples who depend upon living marine resources; the historical and present challenges met in their capture, use, and management as resources; and questions inspired by their behavior.

The present volume is a lucid, objective, thoroughly researched, and historically grounded regional account of modern whaling in waters around Newfoundland and Labrador. Its authors and publisher merit top marks for presenting a valuable contribution to Newfoundland literature and evidence of our wider failure to use the sea's renewable living resources—in this case, whales of various species—without driving them to the precipice of biological collapse, if not extinction. The book results from a

collaboration between two Memorial University of Newfoundland geographers: Chesley Sanger, whose interest in North Atlantic whaling reaches back to about 1980, when he studied Scottish whaling and its influence on sealing; and Anthony Dickinson, who has collaborated with Sanger on studies of shore-whaling in Newfoundland and Labrador since about 1990.

Ten well-annotated chapters take readers from Newfoundland and Labrador's earliest inhabitants, beginning in 7000 BC, to the decline and cessation of whaling in its waters in 1972, when Canada's government imposed a moratorium on commercial whaling. Concise descriptions of how inhabitants adapted to this maritime region are provided, with special attention to the 20th century. Chapter One outlines the archaeological and historical evidence for human occupation of the region, beginning in Labrador with Maritime Archaic Indians in 7000 BC, through Paleoeskimos (2000 BC), Dorset Paleoeskimos (by AD 500), and Inuit (by AD 1500, when persistent whale hunting first appeared). Beothuk Indians occupied Newfoundland until 1829. (The Mi'kmaq Indians, who remain on the island to the present, are not mentioned.)

The first Europeans, the Norse, appeared briefly on the Great Northern Peninsula by AD 1000, but about five centuries passed before Europeans discovered the rich cod resources in Newfoundland waters, after which various nations appeared for seasonal fishing and vied for hegemony. The Basques, however, arrived in the 16th century and conducted the earliest traditional whaling from stations on the coast of Labrador in the Strait of Belle Isle until their target stock, North Atlantic right whales, declined and they shifted their hunt elsewhere. By the 1700s, New Englanders, and, later, Dundee whalers, at times hunted right and sperm whales in Newfoundland waters, and in the mid 1880s several large Newfoundland merchant firms conducted some hunting. After two decades of operation there, the only two Scottish firms with branches in Newfoundland involved in Arctic whaling and sealing closed their doors. Their departure benefited the first joint Newfoundland-Norwegian whaling company, which used a transport vessel and some machinery acquired from these firms to establish its first whale factory. Overall, whaling in Newfoundland waters remained sporadic and limited to a few species until the last years of the nineteenth century.

Chapter One closes with the arrival of the "Modern Era of Global Whaling." It involved coastal whaling in Newfoundland waters built upon a mechanized catching technology and system (steam-driven catchers, each with a bow-mounted gun that fired explosive harpoons attached to a winch and pulley mechanism for retrieval) developed by Svend Foyn in Norway in the 1860s. For the authors, this system insured the inevitable "depletion of all commercially important whale stocks" in the 20th century age of "generally ineffectual, ignored, and poorly enforced" regulations (p. 13).

Chapter Two recounts the convergence of Newfoundland and Norwegian interests in developing "Newfoundland's" coastal whaling industry. It involved both chance