

on seasonal snow and freshwater ice, the author also puts to work much of the thermodynamics discussed in earlier chapters in modeling examples of ice growth and decay, which are elaborated in the sea ice chapter. However, there is little mention of observational methods in these chapters. This may leave the reader unconnected to the “how” of cryospheric science, which is often the inspiration for cryospheric exploration.

The concluding chapters are devoted to the role of the cryosphere in global climate. Treating the subject in relation to historical and recent climate change, these chapters give overarching climatic context to the cryospheric elements discussed previously, explaining the two-way linkages between the apparent and inherent properties of the cryosphere and atmospheric, terrestrial, and oceanic properties and climate processes. It was especially interesting to see the history of the cryosphere set in the context of millennia, as most of the marine cryospheric literature I am familiar with concerns itself with the past in terms of decades or centuries. This section also elucidated, at least for this reader, the potential lack of integration between the many forms and paths a student of cryospheric science might take. The book ends with a succinct and thoughtful summary of cryospheric changes in recent history, giving some thought to the social and ecological consequences of these changes.

The reviewed paperback version of the text is fairly standard quality. The graphs and the few illustrations and photos are all black and white, which is typical of a paperback but sometimes makes the legends or annotations difficult to discern.

The most difficult task of this review is to recommend an appropriate audience for the book. The nature and amount of prerequisite knowledge that the author assumes in his readers suggest that an undergraduate student of physics or chemistry would be most at ease reading *The Cryosphere*. However, clever navigation through some of the book’s detail might make it well suited to use as a text in an introductory class on the subject in Geography or Environmental Science. As part of the Princeton Primers in Climate series, it probably wasn’t necessarily intended to be state-of-the-art, but it is up to date and topical. It likely wasn’t designed as reference material either, although the annotated bibliography could allow one to investigate further works of reference.

Finally, I enjoyed reading the book, and thank the author for his contribution to the literature.

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POLAR TOURISM: HUMAN, ENVIRONMENTAL AND GOVERNANCE DIMENSIONS. Edited by PATRICK T. MAHER, EMMA J. STEWART, and MICHAEL LÜCK. Putnam Valley, New York: Cognizant Communication Corporation, 2011. ISBN 978-1-882345-55-7. 306 p., 25 contributors, maps, b&w illus., index. Softbound. US\$110.00.

In recent decades, the field of Tourism Studies has been enriched with diverse theoretical, methodological, and substantive insights stemming from multiple disciplinary perspectives. While tourism content is often peripheral in the pages of *Arctic* and in broader discourses of polar research, a critical mass of scholarship has converged around understanding polar tourism as part of complex Arctic and Antarctic systems (Dawson et al., 2007; Maher, 2007). Recent volumes have examined polar tourism in relation to regional development (Grenier and Müller, 2011), social-ecological change (Hall and Saarinen, 2010), the cruise sector (Lück et al., 2010), and environmental management (Stonehouse and Snyder, 2010). However, as the editors of *Polar Tourism: Human, Environmental and Governance Dimensions* point out, much of the foundational literature on polar tourism lacks a coordinated and focused empirical research agenda. As polar tourism products diversify, tourist numbers and community involvement in tourism development increase, impacts accumulate, and climate patterns change, there is a pressing need for high-quality research that informs polar tourism governance, management, and sustainable development.

Accordingly, the primary objective of *Polar Tourism* is to present “cutting-edge empirical research completed since the new millennium, assembled in a structured manner under the topics of human, environmental, and governance dimensions” (p. 10). Taken as a whole, the book achieves this broad objective. The 16 chapters report on research in diverse disciplines carried out by an impressive group of international contributors: academics, graduate students, industry representatives, and government officials. Individual chapters, each dedicated to either the human, the environmental, or the governance dimensions of polar tourism, are organized into four substantive sections that are regionally focused—Arctic, Antarctic, Sub-Arctic, and Sub-Antarctic. Each section begins with a chapter by leading scholars who set the stage with helpful contextual information and overviews of tourism-related issues affecting the particular region. The book concludes with a wise summary by Debra Enzenbacher, a distinguished author with both Arctic and Antarctic expertise. Enzenbacher also synthesizes various polar tourism trends, emerging issues and challenges, and key concepts into calls for future research, informed policy, and industry action. For readers pressed for time or interested in timely research questions, I recommend engaging with this final chapter first.

The clear strength of the book is comprehensiveness; it integrates research that spans not only the polar regions and interrelated tourism dimensions, but also disciplinary

differences. In chapter three, for example, Emma Stewart and colleagues employ social adaptation, vulnerability, and resilience as conceptual tools for understanding northern community perspectives on tourism development in contexts of global climate change. Their community-based approach draws on qualitative data derived mainly from semi-structured interviews with residents of Cambridge Bay and Pond Inlet in Nunavut. Chapter eight by Tamara van Polanen Petel is a sharp contrast. At Long Fjord and Vestfold Hills in East Antarctica, van Polanen Petel investigated the behavioral responses of mother and pup Weddell seals (*Leptonychotes weddellii*) to different human approach experiments. Moreover, Christopher Malcolm and Heather Penner's study of the social and ecological aspects of beluga whale (*Delphinapterus leucas*) watching in Churchill, Manitoba, presented in chapter four, illustrates the value of using a range of methods within a single project to advance management, industry, and research considerations.

The geographic or disciplinary space between such chapters is effectively reconciled by recurrent and crosscutting themes within the text. The management implications and industry recommendations that follow from the various empirical findings are most notable. Keys to sustainable polar tourism also surface regularly and include stakeholder cooperation, precautionary decision making, and enhancing our understanding of the transformative effects of visitor experiences and various representations (e.g., in the media) of polar regions. Conceptually, the text builds on the aforementioned work that views polar tourism through the lens of complex social-ecological systems.

These positive contributions notwithstanding, I was curious about the absence of a chapter on governance in the sub-Arctic tourism section and of one on the environment in the sub-Antarctic tourism section. Readers are left guessing whether these omissions reflect a dearth in research activity or, less seriously, page constraints imposed by the publisher. An impression was also left that the editors chose to define loosely what counts as "cutting-edge empirical research" (p. 10). Chapters nine and eleven, in particular, read more like review pieces than dissemination of primary research. But more substantially, I was disappointed that the book contained little in the way of research informed by social or critical theory, a reflection perhaps of broader trends in polar research. What such investigations might do is position polar tourism within deeper meanings of human experience and alongside other forms of cultural practice. They may, for example, open the field to identifying with Arctic residents in all their diversity—as local stakeholders in polar tourism development, absolutely, but also as historical and contemporary polar travelers and tourists themselves (see e.g., Aporta, 2004; van den Scott, 2009).

Overall, I concur with the editors that the book will be instructive for students and academics of tourism and related disciplines, and I share their hope that the book will inform representatives of government and non-governmental organizations involved in policy development and

tourism planning, as well as industry operators. The extensive references in each chapter, the tidy text with several effective figures and tables listed in the front, black-and-white images that have reproduced well and supplement the text as intended, and a useful subject index should make this book accessible and attractive to these audiences. But what really ought to draw readers in is that the text articulates how knowledge derived from integrated, interdisciplinary, and internationally rich research can be translated into meaningful and regionally appropriate action items for responding to complex global changes. With the momentum spurred by the contributors of this book, I expect that polar tourism research will be a more integral component in any future International Polar Year program.

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