

## **Climate Change and Arctic Sustainable Development: Scientific, Social, Cultural and Educational Challenges**

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## Book Reviews

CLIMATE CHANGE AND ARCTIC SUSTAINABLE DEVELOPMENT: SCIENTIFIC, SOCIAL, CULTURAL AND EDUCATIONAL CHALLENGES. By UNESCO. Paris: UNESCO, 2009. 376 pp. Price 22,00 € (softcover). ISBN 978-92-3-104139-6. Includes Forwards, Opening Messages, Illustrations, Maps, and Bibliographies. Summary of International Expert Meeting, 3–6 March 2009, Monaco.

This book represents a compendium of expert opinions on the future of climate change and development in the Arctic. It was developed in concert with a special meeting hosted by the Principality of Monaco in 2009. The book contains 35 primarily single-author papers written by a diverse group of people with an interest in the Arctic, including natural and social scientists, Native leaders and politicians, and specialists in education, health, and ethics.

The book is divided into eight thematic sections containing three to five papers each. Section titles (and a paraphrased description) include: (1) “Ice Oceans and Atmosphere”—merging climate science with local experience; (2) “Biodiversity and Ecosystem Services”—merging biological science with local experience; (3) “Community Level Impacts and Adaptation”—effects of climate change on citizens of the North; (4) “Health and Well Being”—condition assessments and potential exacerbations; (5) “Economic and Social Transformations”—global connectivity in the North; (6) “Education”—culturally appropriate ways to achieve it; (7) “Ethics, Responsibility and Sustainability”—weighing the responsibilities that come with development; and (8) “Monitoring Systems”—keeping tabs on the pulse of the Arctic (after IPY). The book ends with an appendix summarizing the results and recommendations of the conference exploring the same topics. The sections are not mutually exclusive and there are many common threads, including issues of cultural sustainability, education, and outreach. The individual papers are short (ca. 10 pages) and well-referenced, and the book is well-illustrated with numerous graphs and photos.

The book balances natural science data describing climate change in the Arctic with the human dimensions of climate change through the inclusion of indigenous perspectives regarding the nature of the issues and the decision-making processes developing to address the issues. As elsewhere, the indigenous people of the North have a unique culture which includes both tangible and intangible heritage based on long tenure. Papers touching on this (e.g., Holm, Huntington) portray the multiple levels of indigenous knowledge at play in the context of life in the Arctic. As an archaeologist, I was thrilled to note the several occasions in which archaeological data were used to discern ancient adaptations as a way of speculating about future adaptations (e.g., Retter), and of course I am sensitive to the impending loss of heritage materials through erosion and decay.

Climate change per se is certainly not new; it has happened before and it will happen again. But humans are an adaptable lot, and the archaeological record provides some comfort by showing previous responses to climatic and social perturbations. The collected papers note that while the citizens of the Arctic need not take responsibility for the causes of the climate change they are

currently faced with, they are taking ownership of their response. Several authors note that indigenous people object to being viewed as objects in the decision-making process, i.e., they take offense to being weighed and balanced along with polar bears and melting permafrost (e.g., Motzfeldt).

Throughout the book, I was often confused by the 100+ acronymed initiatives that have been created to record, document, and disseminate information about climate change in the Arctic. My immediate reaction was that there must be a certain amount of overlap between them and quite probably some redundancy. Undoubtedly, part of the reason for so many initiatives has to do with national-level funding structures, but there must be some way to logically order/organize them in a clearinghouse. Toward that end several of the papers make the common sense call for continued integration of initiatives and data sets, including natural and social sciences within a circumpolar perspective (e.g., Malaurie, Larsen).

Many of the papers stress the need for a steady message for national and international communities about climate change and its effects on the Arctic. One of the critical issues is to make the change and challenges real to individuals and policy makers who seemingly have no vested interest in the Arctic. The people who will read and benefit from this book are largely aware of the problems; the trick is to continue to raise awareness among non-Arctic groups and to stress the connections and consequence that arise from our continued action and inaction. Media support is critical in this endeavor. Some authors suggest that Arctic climate change-related messages should be linked to reflect the pervasiveness of the issue(s) and caution against desensitizing sensationalism.

I found this book to be an excellent overview of its stated topics. It is readable and will make a good reference for a broad audience, including those familiar with either the natural or social sciences (or both). The individual bibliographies at the end of each paper provide ready starting points for further research. It was a pleasure to review and it would be a good addition to your library.

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