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Glacier Science and Environmental Change, edited by Peter G. Knight, 2006. Blackwell Publishing Ltd, 9600 Garsington Road, Oxford, OX4 2DQ United Kingdom. Hardback, 527 pages, 349 illustrations. Price GBP 125.00; USD 249.95. ISBN 978-1-4051-0018-2.



The occurrence of significant climate-change events in the past couple of decades emphasizes the need for a comprehensive understanding of the most sensitive physical systems to global warming, namely glaciers. The growing concern – in a global-change perspective – over the fate of both small valley glaciers and the continental-scale ice masses in Greenland and Antarctica has raised numerous questions about the various aspects of the complicated natural systems that build glaciers. While the apparent shrinking of the glaciers is commonly considered as the most prominent aspect of the response of glaciers to a global temperature rise, other (less explored) aspects of glacial systems need still further discussion. I was pleasantly surprised to find out that Peter Knight has collected such extensive data on the latest developments regarding the most important aspects of glacial behavior across time and space.

The book is structured in the form of a collection of extended and less extended contributions “to provide a picture of current scientific understanding of key issues that relate the study of glaciers to the boarder field of environmental change.” The introduction provides a brief but worthwhile multidisciplinary discussion of the necessity of a comprehensive publication to serve as a set of snapshots of important issues within each discipline. A clear hierarchy is well developed in the contributions in a way that makes it easy for the reader to start with a review of the established working hypotheses. These contributions are then followed by less discussed interpretations and suggested models. The aim of this arrangement is to provide a statement of leading figures in the most pressing issues in glacial studies.

The book is divided into 5 parts, covering various aspects of the glacial sciences, and consists of more than 90 contributions. The book is edited in a very accessible style and each aspect of the dynamics of glaciers is presented in a logical sequence that guides the reader from conventional to less well known hypotheses in an easy to follow order. Particularly useful for both to the research students and the seasoned academic are the analyses of unorthodox hypotheses such as those about the subglacial megafloods. I really enjoyed the plain science, criticism and the discussion on the hypothesis followed by the reply provided by John Shaw and colleagues who categorise the various styles of thinking and reasoning of physical features using form analogy.

I have, however, also some points of criticism. I would have liked more emphasis on the sedimentology of glacier systems. Out of the more than 90 contributions, only 3 deal with glacial sedimentation. In addition, it would have been practical to have a special part dealing with important glacial contributions to the periglacial environment. A review in a climate-change perspective paying attention to the importance and implication of esker systems in glacial marginal areas would also have suited nicely. While the subglacial hydrology of glaciers is extensively discussed, the clastic evidence of such phenomena accumulated among others in esker systems are not dealt with in reasonable detail.

The book in its present form also seems to suggest that – while the hydrology of the subglacial environment is of importance – it is the glacial morphology of these huge ice masses that on the long term might be the sole agent responsible for earth-surface evolution. The deformation of subglacial strata is only marginally dealt with in the book, while deformational events may be of critical importance for the morphology of glaciated areas; special reference to subglacial earthquakes would have been welcome.

In spite of these critical remarks, I consider the book is an excellent aid to research in a wide range of disciplines dealing with glaciers. It provides sensible facts and mechanisms, and addresses its subject matter in a methodical manner. The book will be a useful companion to any research student as well as to researchers dealing with the complicated aspects of changing glaciers across the globe. This outstanding book is comprehensive and well edited. The book thus fully maintains the high standards expected from Peter Knight in dealing with such an interdisciplinary approach to glacial sciences.

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