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Author: McDougall, Derek A.

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Landforms of High Mountains

By Alexander Stahr and Ewald Langenscheidt. Heidelberg, Germany: Springer, 2015. viii + 158 pp. US$ 129.99. Also available as an e-book. ISBN 978-3-642-53714-1.

I teach mountain geomorphology to university students, so I was delighted to be asked to review this book. It is described by the publisher as an image atlas and reference book that comprehensively explains the geomorphological forms of high mountains. The latter is quite an ambitious claim, especially given that the book is only 158 pages long. However, the authors' tone is more measured, and they make clear in their preface that the book does not seek to be comprehensive or to replace any conventional textbook. In terms of readership, they state that it is written in a way that makes it accessible to anyone interested in the landforms and landscapes of high mountains, from the layperson through to students and teachers of earth sciences. Aiming to satisfy such a range of readers is not a trivial undertaking, so I looked forward to seeing how well they succeeded in this objective and, more to the point, whether I would be able to use this book with my students.

It is worth starting off by considering the authors' use of the term "high mountain"; it appears in the title, some chapter headings, and throughout the book, so it is clearly important to them. But what does it mean? Anyone looking for a clear definition will be disappointed. The authors rightly note the difficulties in defining such terms, which of necessity are arbitrary and rarely work in all situations, but they nevertheless go on to propose that "high mountains … are characterized by high relief energy and in particular by spatially confined changes in environment with altitude, ie a clear climate-related stair-step progression of environment" (p 8). However, it soon becomes clear in practice what the authors mean by "high mountains": most examples in the book are drawn from the European Alps.

The book, which is slightly under A4 size, has 11 chapters. Topics covered include mountain building, mountain weather and climate, tectonic landforms, volcanoes, weathering, slope failures, snow, mountain glaciers, mountain rivers, and the impact of humans on the landscape. Inevitably, some of these topics receive more attention than others: for example, 3 chapters and around 45 pages are devoted to glaciers. Although this emphasis works well for me, others may take a different view. It is important to remember, though, that this is not a textbook; the treatment of topics reflects the authors' field experiences and specifically the opportunities—and limitations—presented by their photo collections.

One of the defining features of the book is the extensive use of photos, most of which are the authors' own. It is clear why the publisher describes this book as an "image atlas"; the book is richly illustrated, with plenty of good photos. However, some of these could have been reproduced at larger sizes; the default size (approximately 12.5×8.5 cm) is slightly small for my liking. Most photos come with helpful captions that add to the information given in the main text.

In some places, though, photos have been used instead of diagrams, and this has not always been successful. In the section on plate tectonics and mountain building (in the introductory chapter), for example, a photo of Mount Everest has been used to illustrate the collision between the Indian and the Eurasian plates. There is no accompanying diagram to assist readers in visualizing and understanding the plate boundary processes and their associated morphological expressions. There are no such diagrams for the plate boundary types. This is a pity, because the text on plate tectonics and mountain building is otherwise clearly written and pitched at an appropriate level for students new to the topic. The paucity of diagrams is a recurring theme throughout the book (there are just 9 in total), making it more difficult for those new to the subject to properly understand the terms and concepts; not everything can be illustrated by photos.

It is not possible here to review the text chapter by chapter, but some general observations are possible. On the whole, I enjoyed reading the book. The level at which it is written makes it broadly suitable for university students who are new to the subject (notwithstanding the diagram issues), but those intending to use the book in this way should be aware that no citations are provided within the text, which makes it difficult to pursue topics in more depth. This is not a particular problem; some introductory academic texts eschew in-text citations, ostensibly for clarity, but I am less keen on this approach because it makes it more difficult for students to learn about good academic practice.

I have two main issues with the text. First, there are inconsistencies in the clarity of the writing. While I more or less understood all of the text, some chapters are more clearly written and easier to follow than others. I found myself rereading sentences to determine their meaning a little more often that I would have expected. This is compounded by the second issue: some of the terminology used is nonstandard. I noticed this particularly in the chapters on glaciers, an area of interest for me, where examples include detersion (for polishing and abrasion), detraction (quarrying or plucking), exaration (the quarrying of larger fragments, I think), nutrient zone

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(an easy one—accumulation zone), and shore moraines (lateral moraines; the authors also refer to "lateral moraines" but restrict the use of this term to supraglacial features). This is far from a definitive list. The use of these nonstandard terms, which I suspect may result from the literal translations of German words, is unlikely to be a major issue for those familiar with the topic, because it is relatively straightforward to determine the commonly used English term from the context in which it is used. However, this may present challenges for nonexperts.

So who should buy this book? At the time of writing this review, its price is likely to put it out of the reach of most individuals. This is disappointing and somewhat undermines the publisher's and authors' pitch that the book is suitable for a wide readership. Instead, it looks destined to be purchased mostly by university libraries. Those looking to use this book with students, however, should be wary of the nonstandard terms used in some chapters; these are likely to cause confusion, and additional guidance may be required.

Despite some of these issues, I am pleased to have this on my bookshelf. Although there is plenty of well-written text, it is more about the photos—and in this respect, the book works best.

AUTHOR

Derek A. McDougall
d.mcdougall@worc.ac.uk
Institute of Science and the Environment, University of Worcester, Worcester WR2 6AJ, United Kingdom