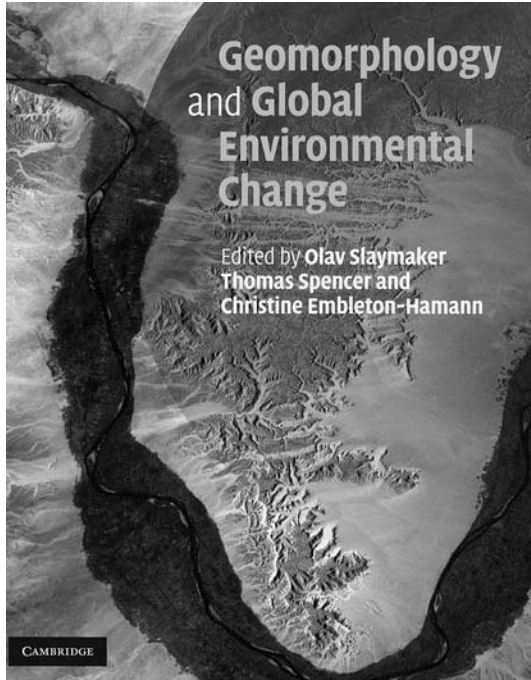


Geomorphology and global environmental change, edited by O. Slaymaker, T. Spencer & Ch. Embleton-Hamann, 2009. Cambridge University Press, Cambridge. Hardback, 434 pages. Price GBP 45.00; USD 80.00 (eBook USD 64.00). ISBN 978-0-521-87812-8.



Global environmental change is among the most discussed issues today, involving not only scientists but, increasingly, also policy makers, environmental activists, and environmental managers. An interest in global change is rising among the general public, too, fuelled by media reports delivered in either alarming or highly sceptical (much less often) tone. Part of global environmental change is climate change and, rather sadly, an overemphasis on this has downplayed the other changes and drivers of these changes. As a side effect, a false message is conveyed that averting climate change would save the planet and humankind (as if climate stability is the norm) and make safe any environment or location where people live. Geologists have issued a number of sober warnings that global changes are an inherent attribute of the Earth's environment and that global instabilities have frequently occurred throughout the Earth history. The book under review is another attempt to redress the imbalance in our dealing with global change, focusing on current and anticipated changes of the Earth surface – a domain of geomorphology.

'Geomorphology and global environmental change' is a product of four-year work of a working group set by the International Association of Geomorphologists in 2005. The objectives of the group, chaired by Olav Slaymaker from the University of British Columbia in Vancouver, Canada, were threefold: (1) to provide a critical state-of-the-art review of the geomorphology of global change; (2) to discuss possible geomorphic consequences of future global environmental changes, whatever their actual causes; and, in doing so, (3) to demonstrate how geomorphologists can contribute to the global-change debate. The fulfilling of these objectives has come into effect in the discussed volume. It consists of 15 individual chapters, written by 27 authors recruited from 12 countries, all widely experienced in the subject. Leaving the introduction (Chapter 1) and conclusions (Chapter 15) aside, the remaining ones are informally grouped into two sections. Chapters 2–7 show the problem of geomorphic change within the water and sediment cascade framework. Mountain environments are discussed first, followed by lake systems (temporary storage, common in high-mountain environments), rivers, estuaries, beaches, cliffs and deltas, and finally coral reefs. Coastal and near-shore environments are highlighted, which is not surprising given the worldwide concern about sea-level rise and increased vulnerability of coastal communities. Chapters 8–14 are arranged to cover the major geographical zones, and the authors focus primarily on landscape stability and instability issues, and on the susceptibility of characteristic landforms within each zone to change. These zones are tropical rainforests, tropical savannas, deserts, Mediterranean landscapes, temperate forests and grasslands, permafrost/tundra environments and, finally, ice sheets. One can easily note that this arrangement is effectively by biomes, hence akin to climatic geomorphology approach, rather than by relief types or specific tectonic settings. But this is well justified. First, it acknowledges the role of vegetation in mod-

erating topographic change at the timescale of decades to centuries (the main subject of interest in this book), and the fact that acceleration of geomorphic processes is often the result of land-cover change. Second, it may help to achieve mutual understanding and increase collaboration between geodiversity and biodiversity communities, too much split at the moment.

The wealth of information contained in each chapter is extraordinary, although – as usual in large edited volumes – some chapters are (slightly) better than others. It is, unfortunately, beyond my possibilities to review each individual chapter in more detail, although each one is actually worth a critical essay. Instead, I want to focus on some key concepts and ideas presented by the editors in the introduction and final synthesis. These key ideas are exposed as the potential of geomorphology to contribute to the global-change debate and to tell us about both the drivers behind the globally experienced changes of the Earth surface and the nature of these changes. I believe it is instructive to review briefly this particular part of the book.

One message is that climate change is one out of many drivers of environmental change, including surface change, although it might be argued that it is climate change that drives the other changes. Four such drivers are considered throughout the book, namely runoff, sea-level change, relief, and humans. There are complex interactions between them, with the role of humans becoming increasingly important in affecting runoff and relief, directly via water pumping and engineering transformation of the surface, or indirectly via land use and vegetation change. Here comes the second key message. Linkages between climate, land use and landforms are complex, and the changes experienced by the latter may have

little do to with climate change because of its relatively low magnitude or lag time. Examples are provided mainly from coastal environments which are most sensitive to changes in sediment supply from land, often occurring at a sheer scale, rather than to relatively minor changes in global temperature. Likewise, the behaviour of rivers is critically dependent on sediment supply, and this is seen accelerating because of forest exploitation, particularly in tropical catchment areas. Implications of these findings are clear and neatly summarized in the following statement in Chapter 15: *“There is a danger in some localities that we place too much emphasis on policy-making and management for climate change whilst paying too little attention to the acceleration of landscape modification by growing human populations”* (p. 416). Consequently, by considering the geomorphological component, we can increase the number of options available to local populations to cope with global, but also regional and local environmental change. These local solutions averting negative consequences of change may work far better than heavily contested and costly global strategies.

To sum up, if you are not a geomorphologist, don't be pushed back by the title. There is far more than geomorphology in this book. I highly recommend this volume to any geoscientist interested in the present and future of our planet and I wish that it is read by other parties involved in the global-change debate. They will see that climate change is not necessarily the reason behind everything and that sensible land-surface management at a local scale is the key to successful making our environment safer.

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