



Environmental Sedimentology, Chris Perry and Kevin Taylor, eds., 2007, Blackwell Publishing Ltd., 441 p., ISBN-13: 978-1-4051-1515-5, USD 89.95.

Before starting to read this book, I'd not given the concept of environmental sedimentology a great deal of thought. An internet search for definitions of environmental sedimentology uncovered frequent use of the phrase (over 1000 hits), but the first few pages of these did not provide a definition. A literature search produced only 6 results (spanning 1980–2003), and those I could access online did not provide a definition. A book on the subject, therefore, seems to be much needed. In the Preface and Chapter 1 of this book, Chris Perry and Kevin Taylor describe the rapidly expanding field of environmental sedimentology as having evolved largely due to an increased recognition of the influence of humans on sedimentary systems and highlight the multidisciplinary nature of the field, in which traditional sedimentology interfaces with such fields as hydrology, geomorphology, biogeochemistry, ecology, and engineering. Perry and Taylor define environmental sedimentology as “the study of the effects of both man and environmental change upon active surface sedimentary systems,” and consequently “the study of how both natural and anthropogenic inputs and events modify the production and accumulation of the physical and biogenic constituents of recent sedimentary deposits” (p. 1).

In the introductory chapter of this book (Chapter 1), Perry and Taylor introduce the field of environmental sedimentology and summarize the underlying principles of sediment production, supply, transport, accumulation, and postdepositional processes, referring those readers who require more detailed background information to several textbooks. Sedimentary response to disturbance events, anthropogenic modification, and environmental change are also described, along with key aspects of sediment management and future issues. The following nine chapters each focus on a different sedimentary environment, each written by a different author. These chapters describe the physical characteristics of the sedimentary environment in question before exploring the likely response of the system to natural and anthropogenically induced change (disturbance events) on short-to-medium timescales (generally less than 100 years), describing the state of present knowledge and principal management concerns in those environments. These chapters cover: Mountain (author: Jeff Warburton), Fluvial (author:

Karen Hudson-Edwards), Lake (author: Lars Hakanson), Arid (author: Anne Mather), Urban (author: Kevin Taylor), Deltaic and Estuarine (author: Peter French), Temperate Coastal (author: Andrew Cooper), Tropical Coastal—Coral Reefs and Mangroves (author: Chris Perry), and Continental Shelf (author: Piers Larcombe) Environments. Each of these chapters is divided into a common structure, covering sediment sources and accumulation, processes and impacts of natural and anthropogenic disturbance events, management and remediation, and future issues.

Several common themes are highlighted throughout this book, the most notable of which are: the importance of distinguishing between anthropogenic and natural effects on sedimentary systems and awareness of the interplay between them; the need for detailed information at a range of temporal and spatial scales; understanding and management of many sedimentary systems, which is hampered by a lack of data, particularly in remote environments and on the longer timescales relevant to changing climate and sea levels; and the importance of sediments in understanding and managing the effects of climate change and in managing environmental and anthropogenic hazards. Population growth is frequently highlighted as a future issue. The need for management is driven by the human occupation of, development in, and modification of the environment. As the global human population increases, urbanization continues, and development occurs increasingly within dynamic sedimentary systems (e.g., arid and coastal environments), there is an increasing need for a better understanding of sedimentary deposits and processes, particularly for the management of natural systems, the built environment, and sedimentary hazards. This book also highlights the growing importance of effective communication between scientists, managers, and policy makers, emphasizing the need for much more research on sedimentary systems in order to better facilitate management of these dynamic and complex environments.

The editors are upfront about the fact that, as is frequently the case in multi-authored volumes, the focus of each chapter reflects the interest and background of the authors. While understandable in a text describing such a multidisciplinary topic, this results in a sometimes heavy bias in the focus of some

chapters (e.g., toward physical processes or contaminants and pollution) that may influence the reader's overall perception of the fundamental issues in the sedimentary environment being discussed. On a lesser note, in Chapter 6 (Urban Environments) some statements are regionally specific without being made clear; for example, comments are made about high levels of sodium in road-deposited sediments during winter months due to road salt application and that many sewer systems date from the mid-1800s—observations that are not globally applicable. The description of channel pattern in Chapter 2 (Fluvial Environments) would benefit from some expansion; for example, it does not mention that anastomosing or anabranching rivers can have straight, meandering, or braided channels.

Overall, this book is concise and well written, with good use of figures to illustrate the text and numerous references to relevant textbooks and published papers. In each chapter, excellent use is made of distinct case studies that are illustrated with figures and contain references to relevant publications. These case studies and the frequent use of examples within the text will greatly assist readers from a range of backgrounds to understand and visualize the information presented. A more detailed contents outline summarizing the content of each chapter would be useful.

After reading this book, I would summarize environmental sedimentology as being whole-system sedimentology, requiring information from a range of disciplines that influence or are influenced by sediment dynamics on a range of spatial and temporal scales. This book provides interested readers from a range of backgrounds with an excellent starting point from which to further investigate the sedimentology and associated physical, biogeochemical, and ecological characteristics and management issues of the environments described. I would recommend this book to anyone generally interested in the environmental and earth sciences, although with a word of warning: some readers will find it useful to have a dictionary on hand when reading sections using terminology from a field with which they are unfamiliar. For those who teach sedimentology or environmental science, the case studies could be easily adapted for use in lectures and practical classes.

Kathryn Amos
Australian School of Petroleum
The University Of Adelaide
SA 5005, Australia
kamos@asp.adelaide.edu.au