

## Reference

Carter, R.W.G. 1988. *Coastal Environments*. London: Academic, 617p.

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Trenhaile, A.S., 1997. *Coastal Dynamics and Landforms*. New York: Oxford University Press, 366p., ISBN 0-19-823353-1. \$130.00US (HC).

When looking to upgrade course reading materials or interested in obtaining recent reference texts for research, one is always faced with the challenge of assessing needs in the view of the availability of current books on the subject matter. When the topic of interest is coastal processes and landforms, the variety and choice of books can be overwhelming. With these thoughts in mind, I had the opportunity to consider the addition of the recent book *Coastal Dynamics and Landforms* by Alan Trenhaile to my collection. In addition to assessing the book on its own merits, I found it useful to consider it in comparison to two other standard volumes on the subject matter (Carter, 1991; Pethick, 1984). Rather than delve into a detailed comparison of presentation and content, I intend to instead reflect on *Coastal Dynamics and Landforms* and its potential for adding to, and improving, the available literature on coastal processes and landforms and its utility as a key resource and reference document.

The author describes the book as a reference text for senior undergraduates, graduate students, faculty and working professionals in the field. Having passed through all these stages I feel only proper in attempting to examine the book with these potential audiences in mind. The author also states an assumption that the reader has some basic knowledge of coastal geomorphology to build upon and to provide the basis for understanding the material to be presented. The author states in the preface his initial aim of conducting a detailed survey of a broad spectrum of coastal types, but this resulted in a large and ultimately unmanageable task and manuscript. He also acknowledges the vast amount of information and literature already available on the subject matter of interest and the need to focus his presentation. However, with the exception of the reduction of references, it is unclear how his aim was modified or reduced in light of these concerns and ultimately how this impacted the content and presentation of material in the final book.

The book begins with a basic and very general introduction with descriptions of coastal classification schemes, global warming, and models. It was not clear to this reader what the connection was between these concepts and how they alone serve as an appropriate and adequate introduction to the themes of the book. They appear to have been dropped into the introduction as key or fundamental issues with very little description of their relevance or connection. The only concern that I would have is that to the reader this initial focus is not clear and related to the discussion of coastal dynamics and landforms central to the book.

The next two chapters present a very detailed and excellent presentation of the key natural processes functioning in coastal environments including waves, tides, sea level, and sedimentation. Here the author builds on his expertise in these areas and presents a well organized discussion with ample use of illustrations and formulas to lead the reader through what can be very difficult subject matter. However, I found the material presented lacking in some level of detail, if it is compared to that in Carter (1991) and Pethick (1984)—two other textbooks that I have used to serve the purpose that Trenhaile has identified for his book. I am not sure what he has added or improved upon in terms of presentation and organization beyond what is already available and published. His discussion of sediment movement is very detailed and as a section on its own provides an excellent summary of many of the mathematical models and equations used to describe this fundamental process. For this alone I applaud the author for his focus and dedication to this challenging subject matter.

The next nine chapters are devoted to individual coastal types and the processes that create them and continue to modify their form. The description of the beach and nearshore zones is accompanied by a series of clear and simple illustrations that greatly assist the reader in understanding the relationship between the basic physical processes characteristic of the nearshore and their impacts on formation of sediment features including bars and beaches. Unfortunately, like many other textbooks, coarse clastic beaches are given only very limited treatment even though they are present as major features in many coastal regions. They are also the focus of current research in arctic environments, including the coastlines of eastern Canada and northern Europe.

Barriers and beaches are the focus of the next two chapters in which description of their form is well presented and accompanied by examples and use of illustrations. The detailed discussion of aeolian processes and formation of dune types is well done and to a certain degree at a level of presentation more than in either Carter (1991) or Pethick (1984). The discussion of estuaries and coastal lagoons that follows is also very good and provides excellent descriptions of the related processes of sedimentation and deposition. It is also one of the very few chapters that contains discussion of the human impacts, although very brief and somewhat simplistic.

The next two chapters focus on tide-dominated environments and deltas. The discussion of mangal and salt marshes is especially significant in light of the fact that they are an important coastal environment throughout the world yet poorly understood and often given limited attention in the literature. The role of sedimentation in these environments is highlighted as is vegetation types and their distribution. The impacts from human activities, particularly resource extraction is given a cursory review.

Chapters 9 (Deltas) and 10 (Coral Reefs) are perhaps the best individual chapters in the book and are comparable or exceed the presentation of these topics in any other coastal geomorphology text that I have had the opportunity to use. The detailed descriptions are very well done and accompanied by an excellent set of illustrations. Given the expertise of the author, the following chapter on rock and cohesive clay

coasts is also a highlight of the text. Trenhaile has built upon his research and extensive background in this subject matter to present an organized and concise presentation.

The final chapter on coasts in cold environments is notable given that it is an area often given limited attention in other coastal geomorphology or geology texts. The author notes that cold environments present unique characteristics worthy of specific focus and discussion. The presence of ice and temperature variations can play fundamental roles in altering coastal environments in many regions within the world. Acknowledging the lack of research on cold environments, the author has still managed to summarize the current level of understanding on the roles of ice thrust, frost action, and freeze-thaw processes.

The text concludes with a very detailed reference list consisting of 50 pages. A quick scan reveals the standard materials covering a wide range of major journals, academic conference proceedings, and texts, but interestingly a limited number of references that postdate 1990. I wonder whether this reflects the wealth of research undertaken primarily in the period from 1950 to 1990, or the lack of innovative and new fundamental knowledge gained within the field of coastal research in recent years. I suspect that the authors efforts to reduce the length of the manuscript may have come at the expense of a number of additional references. A situation that Trenhaile acknowledges in his introduction to the text.

Overall I found *Coastal Dynamic and Landforms* to be a complete and well organized presentation that could function as a reference source and perhaps as a standard university course text. The main concern is whether it represents a sufficient improvement to Carter (1991) and Pethick (1984), which have become the most common textbooks in the field of coastal geomorphology. As I have attempted to outline, the text does make important new contributions, but I question as to whether they are enough to overcome the level of presentation and organized as found in Carter (1991) and Pethick (1984). Ultimately, the most important consideration, unfortunately to some degree, may in fact be the cost of the textbook. At a price of \$130US it will be very difficult for many academics, including myself, to justify this expense given that other similar texts on the subject matter are readily available at a lower cost. However, I would like to express my appreciation to the author for his work and recommend that others take the opportunity to examine the book and make their judgments as to its value and potential utility.

### References

- Carter, R.W.G. 1991. *Coastal Environments: An Introduction to the Physical, Ecological, and Cultural Systems of Coastlines*. London: Academic, 617p.
- Pethick, J. 1984. *An Introduction to Coastal Geomorphology*. New York: Edward Arnold, 260p.

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Herschey, R.W. and Fairbridge, R.W., (eds.), 1998. *Encyclopedia of Hydrology and Water Resources*. Dordrecht: Kluwer Academic Publishers, 803p. Hardback, USD 459, GBP 289. ISBN 0412-74060-5.

This large-format volume provides the reader with a comprehensive overview and understanding of the diverse field of hydrology. The editors secured contributions from more than one hundred contributing authors, all of whom are leading experts in their respective fields of study. The volume contains about two hundred and sixty discrete, stand-alone entries that cover a range of key topics. The articles, which are arranged in an easy to use encyclopedic A-Z format, range in length from 400 words for definitions to over 8000 words for extensive topical coverage. Most entries contain illustrations (mostly line drawings, but there is also a fair number of halftones) and/or tabular data that summarize important information for easy look-up. Each entry is clearly labeled by an upper case headline and if the body of table copy carries over to another page, there is a spanner head at the top of the page. Most of the articles contain bibliographies and are additionally cross-referenced for further study. Although the cross-references are not extensive, they do point to some related topics. In addition to subject and author indexes, the volume contains a useful list of international journals, tables of units, symbols, and conversion factors. These are the nuts and bolts of the volume.

The book is well produced with a sturdy binding and an interesting false-color infrared image of the Mississippi River Delta, downstream from New Orleans, on the front and back covers. The book weighs in at about 2.5 kg and consequently, it has some heft to it. That is probably part of the reason why the publisher decided to use such small print, to get more type per page. For those readers over the age of 40, a good pair of glasses will be necessary to read the fine print. The 8/8½ pt Times type is, however, very clear. Tables are organized and arranged in a manner that is easy to follow. Column and spanner heads are repeated, for example, in tables that are continued on additional pages. This makes for easy use by the reader and is much appreciated as a time saver so that one does not have to flip back to the beginning of the table to look up headings. Overall, the book is well produced and the publisher is to be commended for the high quality production. On the down side, the price is a little steep for individual research and the primary market logically must be seen as libraries and large research institutions. I feel fortunate to have been a reviewer because I could not afford to purchase the book on my own. In sum, aside from the high price, the book will be a very worth while addition to any research or reference library.

Well, the preceding statement was the obligatory, but favorable, overview of a massive work on hydrology and you are now probably wondering what's in it for coastal specialists. Coastal environments have clear and present connections with the main topical categories in the book viz. water resources, hydrological processes, climate, and natural biophysical water-based hazards. After perusing the contents list, I was able to come up with at least twenty-five articles that have, or should have, interest for coastal researchers.