

the human environment. The welter of topics means that most are covered in little more than a page, but nonetheless arguments are coherently presented and adequately referenced. Only once or twice does the book waver, mainly when it tries to become too technical. Perhaps the clearest examples are the four pages devoted to 'simulation modelling,' which simply do not 'work.' I suspect the authors are trying to indicate where research was heading, a laudable enough aim in itself, but in a book of this length, an almost impossible task.

Overall this is an excellent introduction. The text is stylish, well-illustrated with diagrams, but sadly no map and only two photographs. However these are minor quibbles for the book is definitely value-for-money, and should sell well.

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Coastal Environments, by R.W.G. Carter, 1988. Academic Press, London, 617pp. £42 (Hardcover), ISBN 0-12-161855-2.

This book is an introduction to physical, ecological, and cultural systems of coastlines. It is organized into 14 chapters that span the gamut from coastal processes (morphodynamics), effects of sea-level changes on the shoreline, to various aspects of coastal management including hazard mitigation. The overall plan or sequential organization follows a logical sequence that leads the reader from basic definitions and concepts through processes that are typical of certain types of coastal environments. The last couple hundred pages are devoted to coastal management. The framework here, again, proceeds nicely from reviews of human activities along the coast to discussions of human impacts on shorelines as well as providing ample consideration of the effects of natural coastal processes on coastal developments. For those interested in the general layout, topical matters are specifically grouped into the following chapters: Introduction, Waves and Wave-Dominated Coasts, Shoreline Morphodynamics, Tidal and Lake Coasts, Long-Term Develop-

ment of Coasts, Sea-Level Changes, Sub-Tidal and Beach Ecosystems, Coastal Dunes, Coastal Wetlands, Structures and Organization, The Management of Coastal Waters, Management of Coastal Lands and Sediments, Management of Coastal Ecosystems, and Coastal Hazards.

It is indeed a welcome relief to find a textbook that deals with such a broad spectrum of topics related to coastal environments and yet which retains sufficient detail to provide the student with much needed insight into the workings of natural environments as well as the possibilities for rational management of some coastal systems. Carter carefully documents various aspects of shoreline management, particularly the management of coastal (biophysical) resources. Beach nourishment (*i.e.* artificial renourishment) and coastal engineering works (*i.e.* breakwaters, groins, jetties, *etc.*) are, for example, discussed in terms of beneficial and unwanted effects. As with so many things in life, coastal management is a trade off. Although it is hoped that the benefits of a particular management procedure outweigh the down side, serious unwanted effects often occur. This book does not skirt the issues but faces them head-on, discussing the various options in a useful and productive manner. Students will come to appreciate the balanced views presented here where both sides of an issue receive equal time.

As an introductory text, this book is highly recommended. Because of its scope and orientation, the text will be admirably suited to a variety of courses ranging from coastal geology to various management-related themes. Although originally designed to fill a need for an upper division course at the University of Ulster, the text will no doubt find application at the post-graduate level, particularly in North America where increasing numbers of students are specializing in "coastal" science-management courses. In addition to qualities already highlighted, the author is commended for providing such an extensive bibliography. The list would have been much more useful, however, if the titles of articles in journals could have been provided. The savings in space is minimal and the publisher ended up with a couple of blank pages at the end of the book anyway. Also, the index is rather slim for a text of this sort; a more detailed and comprehensive index would

increase the reference value of this text. Begging these minor quibbles, this reviewer finds Carter's *Coastal Environments* to be a major contribution to the advancement of the coastal sciences. A text of this sort has been needed for some time and now we finally have a versatile book that can fulfill many different requirements to advantage. I, for one, will be pleased to use this text at university as, no doubt, will others. Although the price of the book is disappointingly high, I am afraid that it is in line with books of similar size and quality of production. Students will have to dig deeper into their pockets to buy this book but the payback will be far greater for knowledge gained.

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The Hydrodynamic and Sedimentological Consequences of Sea-level Change, edited by R.W.G. Carter and R.J.N. Devoy, 1987. Pergamon Journals (*Progress in Oceanography* Vol. 18 Nos. 1-4), 358 \$149.00, ISSN 0079-6611. 358pp.

This volume of *Progress in Oceanography* is devoted to the International Geological Correlation Programme Project 200—*Sea-Level Correlations and Applications* and contains sixteen research papers based on presentations made at the conference "The Hydrodynamic and Sedimentary Consequences of Sea-Level Change" held in the University College, Cork, Ireland in March 1986.

A wide range of topics are covered, ranging from studies of global-scale factors to local-scale studies, and timescales dealt with range from over 100,000 years to one year or less. Given such a range of scales caution must be applied when reading about "long term trends in sea level," for in one paper this may mean 10 to 20 years, whereas in the following paper the same statement relates to 2 or 3 orders of magnitude greater. As the editors of this special volume state "The challenge for coastal scientists is to explore the causes and effects of sea-level change across a variety of scales, and to apply this knowledge to the future management of the world's low-lying coasts." Coastal scientists should be happy dealing with factors

which operate over a variety of scales and should have no problem with this volume. Readers not so familiar with the subject, perhaps looking at the volume for a statement regarding the status of fundamental and applied sea-level research, will need a more cautious approach. Perhaps some subdivision of the volume would have helped, along the four themes of the conference into: (i) recent sea-level changes, coastal processes-sediments, (ii) Quaternary-Holocene sea-level changes and sediments, (iii) the modelling and prediction of sea-level change and (iv) future sea-level changes and the problems of coastal management. This list, from the editorial, poses the interesting question, from comparing the first two Quaternary-Holocene scale of study.

Recent sea-level changes, monitoring and the detection of future sea-level rise are dealt with by Diamente *et al.* who discuss a space-based geodetic network for global measurement of sea-level change. Other papers dealing with recent sea-level changes concentrate on local-scale studies and coastal processes and sediments. Locations covered include Ireland; the south coast of England; Maryland, USA; the German Bight; and the Lagoon of Venice.

Quaternary-Holocene studies are reported from Corsica; the south coast of England; west Africa; Jersey and Wales. These papers discuss the various morphological, sedimentary and archaeological evidence for relative sea-level changes in each area and contrast with the paper by Newman and Baeteman who attempt to synthesize the available radiocarbon data related to Holocene sea-level changes in North-west Europe. Many points for debate arise from this paper, but need not be discussed here, except it is worth stressing their plea that it is necessary to collate all the relevant data in a central databank and thus be able "to produce a product rather more meaningful than a provincial sea-level curve" (p. 308).

Modelling and prediction of sea-level change are dealt with in two contrasting papers by Thomas and Denness, although similar forecasts of sea-level rise by 2050 AD are made.

The problems of coastal management arising from future sea-level rise are dealt with in papers by Devoy, who also considers the broader theme of applied sea-level research, and by Newman and Fairbridge who focus the