

of information that one requires. As an example, for my interests now, I find models useful for teaching and research viz. qualitative beach classifications (Table 1.4), three-dimensional sequence of wave-dominated beach changes for accretionary and erosional wave conditions (Figure 7.4), characterization of wave-dominated, microtidal beach types (Table 7.1), a generalized model of one, two, and three bar beach systems (Figure 7.14), frequency of outer and inner bar combinations on double bar beaches (Figure 7.15), classification of beaches on the basis of breaking wave height, *etc.* (Figure 8.14), impact of environmental parameters on beach type, stability, circulation, and bar number (Table 10.1), proposed sequence of seven southern Australian barrier types in relation to level of wave energy and rate, models of microtidal, wave-dominated beach types (Figure 13.3) and tide-modified beach types (Figure 13.4), examples of dunefield-dominated barrier types (Figure 14.12), and quantity, and time of sediment supply (Figure 14.20). Many other examples could be selected to illustrate various points; this is just a selection that seemed germane to some of my current interests. The point to be made, however, is that the book contains a wealth of information on a wide variety of topics related to the theme of each chapter. If one were to master everything in the book, he would be well equipped to research coastal morphodynamics from the tropics to polar regions.

This book, which I like very much, contains only a few annoyances that are worth mentioning. The high price, which is one of them, is a sticky point (see following comments). Another is the wording of the title, which in turn should reflect the contents and organization of the subject matter. I was, initially, a little puzzled by the word *handbook* in the title. I immediately thought this book would be like the *Practical Handbook of Marine Science* (Kennish, 1989) or the *Handbook of Coastal Processes and Erosion* (Komar, 1983). A handbook is commonly referred to as a ready reference or manual that covers a particular subject. It might include directions on how to do something or contain voluminous information in tabular form. The book edited by Mike Kennish, containing a systematic collection of selective physical, chemical, and biological reference data on the ocean, was close to what I perceive as a handbook. The book edited by Paul Komar was less so as it contained short chapters on specialized subfields within the selection of coastal processes and erosion topics. The book edited and authored by Andy Short, contains longer chapters that fit together as a coherent treatment of the subject in the format of a textbook. To me, the *Handbook of Beach and Shoreface Morphodynamics* is a textbook and not a handbook, as I understand the meaning of the latter term. Whether it is a handbook or textbook may be immaterial and the term handbook might just be an advertising gimmick. If that is the case, I am not sure what advantage is achieved by the designation of handbook. My last quibble concerns the subject index. The author and location indexes seem quite good, but the subject index is somewhat slim. I did a quick check on the term *berm* and found that the index lists two pages, 133 and 134. Opening the book at random and by quickly scanning the page I found the term on the additional pages 153 and 284. Yes, I know, picky, picky. It is

just a simple example and clearly minor. I had to struggle to find something to niggle about.

References for all chapters are collected into a single list to avoid repetitive listings in each chapter. Quality of production of the book is good throughout. In spite of the high quality of production, the publisher is not to be commended for offering the book at such a high price. Even in these days when many professors in the academy receive adequate salaries, the prices of books seem to increase at an ever-accelerating rate so that many potential users are simply priced out of the market. I received this gratis copy on the condition of a review. Although the subject matter is of definite interest to me and even though the book exhibits obvious scholarly merit, I would think more than twice about paying the steep price set by John Wiley & Sons. Trying to rationalize the high price from the publishers point of view, I agree that the subject matter of the book is specialized, but not so highly specialized that there will be few buyers. Yes, the potential readership is somewhat limited compared to a 'general audience' market but the publisher's asking price is, in my opinion, simply excessive. This is not good for the authors, as their intention is to get the information into the hands of as many people as possible. Although the price of the book is expensive for most researchers' personal collections, most large libraries can probably afford the purchase.

Because the information contained in this book is so relevant and important to our field, I would urge coastal researchers to purchase the book even if it means they have to acquire a small short-term loan to feed the bureaucracy at Wiley. This book will, in my opinion, become one of the classics in the field of coastal science because it contains information that is essential to increased understanding of evolution, maintenance, and degradation of the dune-beach-shoreface system. It also provides useful qualitative and quantitative models as well as information required for classificatory purposes. If you buy this book, in spite of the high price and Australian bias, you will not be disappointed in the product as it is of uniformly high caliber.

LITERATURE CITED

- KENNISH, M.J., 1989. *Practical handbook of Marine Science*. Boca Raton, Florida: CRC Press. 710p.
 KOMAR, P.D., 1983. *Handbook of Coastal Processes and Erosion*. Boca Raton, Florida: CRC Press. 305p.

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Macrodiagnóstico da Zona Costeira do Brasil. Ministerio do Meio Ambiente, 1996. Brasília: Ministério do Meio Ambiente, dos Recursos Hídricos e da Amazônia Legal, Programa Nacional de Gerenciamento Costeiro, 280p. [Ministerio do Meio Ambiente, dos Recursos Hídricos e da Amazônia Legal, Secretaria Geral de Assuntos do Meio Ambiente, Programa Nacional de Gerenciamento Costeiro. Esplanada dos Minister-

ios, bloco B, 8° andar, sala 828. Brasília, DF, Brasil, CEP: 70 068-900]

This comprehensive atlas of the Brazilian coast treats a wide variety of themes in administrative units that are similar to counties in many other countries. The atlas is remarkable in its exhaustive treatment of coastal features and characteristics of adjacent hinterlands. The coastal zone, as shown in the atlas, extends many kilometers inland but the landward boundary of study is variable and depends on the nature of the region being considered. Definition of the coastal zone was based on various macro-diagnostic criteria that are elaborated according to the geographic locality. A series of maps at a scale of 1:100,000 cover the Brazilian coast, which spans more than thirty-five degrees of latitude from 4°30' N to 33°44' S Latitude. The length of the coast, including only significant embayments and irregular indentations, is about 8500 km.

Introductory discussion and explanation of the coastal mapping considers (1) definitions of coastal environments in relation to national policies and principles of integrated coastal zone management and (2) technical aspects of cartographic presentation for various themes related to human habitation, biophysical environments, natural resources, conservation areas and sensitive environments, and administrative units. The atlas is divided into five major folios based on themes related to (1) occupation of the coastal zone, (2) characterization of the natural physical environment, (3) potential natural environmental resources, (4) conservation, and (5) degradation of coastal environments.

The thematic legend for population trends in the coastal zone shows a variety of units including scales for population density in addition to symbols for industrial centers, energy production facilities, tourist infrastructure, reserves for indigenous peoples, coastal fisheries, offshore petroleum production facilities, petroleum terminals, ports, and conventional cartographic symbols for highways, railroads, drainage, airports, civil boundaries, etc.

The folio dealing with the characterization of the biophysical environment defines major properties of the continental platform adjacent to the coast. Summary tables categorize relief, geology, soils, vegetation, and factors that effectively function as limitations of the environment. Satellite imagery accompanies lengthy discussion of subdivision of the littoral and helps illustrate the rationale for major compartmentalization of the environment. With more than one hundred biophysical units in the master legend, subdivision of the coastal zone is complex and detailed. Categories identify, for example, dozens of different kinds of coastal and fluvial plains, numerous types of tablelands, depressions, vegetation, and soils. Added to the biophysical environmental units are resource potentials for civil activities such as agro-industrial development, chemical industry, base metal mining, production of paper products from forestry, construction, textile industries, hydroelectric and thermoelectric and nuclear power generation.

The penultimate folio deals with various issues associated with conservation in the coastal zone. Although it is difficult to present an integrated treatment of such a diverse subject,

the atlas does a good job characterizing biological diversity in the coastal zone, designation of conservation areas, financial systems that support the protection and conservation of natural resources, and the administration (direction) of human resources in urbanization and legal protection of conservation areas. Shown are national parks, biological reserves, ecological research stations, federal marine reserves, protected areas, and areas recommended for protection.

The last folio recognizes fragile coastal-marine ecosystems. Tables, keyed to maps, list the sensitivity of these ecosystems and indicates potential impacts from selected kinds of human activity. These maps are important because they recognize the importance of ecological areas, threatened ecosystems, and sensitive coastal-marine areas. Coastal areas are classified according to degrees of required protection.

This national atlas is a remarkable achievement in that it summarizes a great deal of information for the coastal zone of Brazil. For local researchers, its scientific value is immediately apparent. Although some coastal researchers in other countries will think that the atlas has little value for them, unless they have research interests in Brazil. It seems to me that the atlas has much to offer as an example of a national approach to integrated coastal zone management. I think, for example, how useful such an atlas would be in the United States where we have no coherent national coastal zone management program. There is, of course, the *National Atlas of the United States* that contains some coastal sections, but it pales in comparison to the Brazilian effort. One can thus hope that the US will produce this kind of coordinated national coastal zone atlas. When the US was first colonized, settlements were initially in the coastal zone and later many of today's important cities were founded along the Fall Line. Subsequently there was a surge of interest for expansion into the hinterland and then to the West Coast. In Brazil, settlement largely remained coastal except for some development in the Amazon Basin associated with rubber plantations (e.g. Manaus) and governmental administrative centers (Brasília). The Brazilian coastal zone atlas is thus an expected maritime focus because this is where the people are. Conservation and preservation of the natural coastal environment is important in this developing country that is hungry for resources and ways to increase national income. A work like this helps to establish an environmental base line against which development in the future can be compared. I was impressed by the extensive research that must have been required to produce the atlas. This atlas can, in many ways, serve as a template for similar mapping efforts in other countries.

The atlas is produced in large format (32 × 42 cm) on glossy paper with a hard cover. Maps are in full color and fold out to a width of 60 cm. Legends are reproduced on left-hand pages facing the right-hand foldout map giving each map a two-page spread that is 92 cm wide. This large format allows for detailed cartographic representation of a myriad of coastal features. I found the atlas easy to use, of convenient size when laid out on a large table, and easy to understand even though it is in Portuguese. Fortunately, many scientific terms are recognizable in Portuguese and experience with professional or scientific atlases of this caliber prepares one to anticipate what will be depicted within any particular the-

matic section. A rudimentary knowledge of Spanish, or even Italian, allows a non-Portuguese speaking reader to make much out of what at first appears to be impossible reading. If I can find my way around the atlas, virtually anyone can do it! Some of the longer explanatory texts will present some problems for full comprehension, but these days most people have a Spanish-speaking friend who can help them out. An extensive reference list is included at the back of the atlas. Most references are in Portuguese, as should be anticipated, but some are in English as well.

I was impressed by the quality of work that went into the preparation of the atlas. This is a fine piece of work that will find its place among the best modern atlases in the world. For the coastal zone, this atlas may serve as an example of the high quality that is achievable with dedication of purpose and determination to produce a world class work. I strongly recommend this atlas for coastal and marine research libraries. Even for the private researcher, consultant, or professor at university, this atlas is not out of reach, price-wise, because it is available free from the government publisher.

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Tsunami. The Underrated Hazard. Edward Bryant. Cambridge University Press, 320p.

This 320 page volume by Ted Bryant of Wollongong, Australia, reflects the author's passion for a subject that has been at the centre of his attention for just over a decade. The book is written as a semi-academic, semi-popular science volume, although in reality it is much more weighted toward the former than the latter. In style it disregards conventional referencing in favour of a list of relevant references at the beginning of each section, an approach which does make the book more readable for the non-specialist and yet provides source material for the enthusiast. Similarly, while not disregarding the dynamics of tsunamis, it aims to provide a written account that is understandable to the non-specialist (an approach that is largely successful). Perhaps an indication of the publishers attempt to appeal to the popular audience is the cover illustration 'The Hollow of the Deep-Sea Wave off Kanagawa' which the author acknowledges on page 3 to be a wind-generated wave rather than a tsunami.

The book is organised into several sections that deal with most aspects of tsunami (the same word is applied to the singular and plural in this volume) and their coastal impacts. The book's major sections are devoted to the following: tsu-

nami as hazards; tsunami-formed landscapes, causes of tsunami and the modern risk of tsunami. The book provides a sound grounding in the field and is systematically organised. The reader will find a comprehensive collation of sedimentary and erosional signatures of tsunami, some of them readily acceptable, and some that require a leap of faith. In this, Bryant is clear in stating that he is on the fringes of conventional science. Indeed, the reader will find a number of incredible coastal landform features ascribed to tsunami, particularly forms in the erosional signatures of tsunami section (e.g. flutes, grooves, ramps, arches and whirlpools all cut into bedrock). Mega-tsunami are presented as the formative agent, although because of the infrequency of occurrence of such events, none has been recorded in historical times. Nonetheless nothing is presented in this section that has not appeared before in peer-reviewed articles and collectively the bedrock-sculpted forms present a more compelling case for tsunami-genesis than individually.

One of the central themes of the book is the risk posed by tsunami, given the various modes of genesis (which are dealt with in some detail). Bryant points out the large number of recorded tsunami (and those known from folklore) and presents a case for considering them a genuine, though unpredictable risk around the entire world's coastline. Accounts of impacts are presented from a variety of sources and the scale of the risk is brought home to the reader by accounts of enormous measured runup heights. Just as the book starts with several accounts of tsunami impacts (some of which are folklore), it concludes with several hypothetical accounts to illustrate the potential risk. Designed to shock the reader into taking the hazard seriously, one section certainly shocked me as it painted a picture of the impacts of a tsunami in a non-seismic area (the northwestern Irish coast), generated by a submarine slide and wiping out coastal residents including students of my University! Granted, a precedent existed in the Storrega slide off Norway c. 8000 BP, but tsunami are not currently high on the disaster planning priority list in Ireland.

I found the book easy to read and well illustrated. It does, however, suffer from a lack of adequate proof reading; numerous typing errors and breaks in syntax are present throughout the text. Nonetheless, I enjoyed reading this book—I couldn't put it down—and would recommend it to specialist and interested coastal researcher alike. It provides much food for thought and the scale of tsunami impacts presented is so radical to those unfamiliar with Bryant's earlier work, that it is likely to stimulate researchers to question conventional interpretations of their coastal landscapes.

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