Coastal Geomorphology

An Introduction

Second Edition

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GEOSTUDIES
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Preface to the Second Edition

This is the second edition of an introduction to the study of coastal geomorphology that provides a background for people interested in learning how coastal features (such as cliffs, beaches, spits or deltas) have developed, and how they are changing. It is intended for people coming newly to the subject, for students and for ecologists, engineers, planners and developers concerned with the coast.

Coastal geomorphology is a broad subject that has developed rapidly, and now generates about 400 publications each year. It has become difficult to produce an introductory textbook, for topics covered in chapters in previous textbooks have subsequently been dealt with at book length, as in the Wiley Coastal Morphology and Research series. A comprehensive treatise on coastal geomorphology would now require a massive volume that would certainly be too expensive for students. This book provides a concise introduction that draws attention to unsolved problems and matters on which there are differences of opinion, and gives references to more detailed research work. The coverage is necessarily selective, and somewhat personal, drawing upon my studies of coasts in various parts of the world over the past five decades.

The book discusses the shaping of coastal landforms and examines the changes that are taking place in response to coastal processes. It demonstrates the dynamic nature of coastal landforms and provides a background for analytical planning and management decisions in coastal areas subject to continuing change. One of the problems in producing an introductory textbook on coastal geomorphology is the need to be selective in quoting examples of coastal features and process relationships, bearing in mind that most readers come from Britain, Europe, North America or Australasia, and are likely to be more interested in local and accessible examples. Reference can be made to The World’s Coasts Online, produced by Springer in 2003, for examples from various other coasts. Place names in England are identified by county, in the USA and Australia by state, and elsewhere by country.

The book begins with an introduction to concepts and terminology, and the factors that have affected coastal evolution and coastline changes (Chapter 1). This is followed by a discussion of waves, tides, currents and other nearshore processes (Chapter 2), and a study of the effects of land and sea level changes, notably the Holocene marine transgression, which has played a major part in shaping modern coastlines and can be regarded as a unifying theme in coastal geomorphology (Chapter 3). Cliffs are discussed in Chapter 4 and the shore platforms that border them in Chapter 5. Chapter 6 deals with the origin of beaches and the changes taking place on them, and Chapter 7 with the beach erosion problem. Spits, barriers and bars are discussed in Chapter 8 and the formation of coastal dunes in
Chapter 9. Intertidal wetlands, including mudflats, salt marshes and mangroves, are dealt with in Chapter 10, followed by estuaries and lagoons, including other inlets (rias, fiords, fiards, calanques, harbors and sebkhas) in Chapter 11. Chapter 12 considers deltas produced by deposition at river mouths, and Chapter 13 deals with the various kinds of reef built by corals, algae and other organisms on the shore and in coastal waters. The final chapter reviews the response of coastlines to the predicted world-wide rise in sea level, resulting from global warming by the enhanced greenhouse effect, and documented by the Intergovernmental Panel on Climate Change (2007). A list of references provides a guide to more detailed information, including many pre-2000 publications that remain relevant.

Supplementary material, including a classification of coastal landforms (which appeared as an appendix in the first edition), will appear on this book’s companion website www.wileyeurope.com/college/bird, along with a glossary, a bibliography, case studies and many more illustrations. It will also be useful to refer to two recent reference works, the Encyclopedia of Geomorphology (Goudie, 2004) and the Encyclopedia of Coastal Science (Schwartz, 2005).

Eric Bird
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Eric Bird
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