hesion of clay particles is primarily an electro-chemical phenomenon is challenged by a growing body of research over the past 20 years showing that the dominant factors are organic. The flora, fauna, plankton and bacteria associated with muddy coasts are described by M. D. Fortes, together with the way in which they interact with each other, and with their muddy environment. Two further chapters are devoted to the importance of mangroves as a dominant species of tropical muddy coasts. Their use as sensitive indicators of sea level change, and their considerable influence over the dynamics of fine sediments, are described.

Chapter 12 deals with that most fundamental of interactions, that of the human influence on muddy coasts. The author cites examples of both direct influences, due to coastal defence works, pollution, erosion or loss of habitat, and indirect influences such as subsidence due to water/oil/gas extractions, or sediment starvation.

Chapters 13 to 21 each deal with muddy coasts in geographically distinct regions: China, New Zealand, India, Korea, England, Canada, North and South America, and Australia. The authors illustrate the distinctive factors, features and issues influencing their different regions: tidal flats, tectonic activity, saltmarshes, tidal dynamics, ice-cover, and coral reefs.

Part of a reviewer's task is to look for deficiencies, but I found very few and those only minor. One possible improvement would have been if the title or authors of chapters had been printed at the tops of pages, to aid navigation within the book. The chapter on "Geographic distribution of muddy coasts" might have sat more comfortably as Chapter 12, leading into the chapters devoted to specific parts of the world. An index would have been a desirable addition, but they are difficult to compile in multi-authored books so its absence is understandable. The authors must have put considerable effort into proof-reading, since the typographic errors are very few.

The authors and editors have produced a masterly, authoritative and usable work. They amply cover the subject matter of the title, both with a balanced coverage of the world, and with a comprehensive overview of processes, deposits and functions—plus much more besides. The book is attractively printed by Elsevier, and lies easily on the eye with large black print on opaque white paper, with a binding that looks as though it will withstand repeated reading. I heartily recommend this book to all those who deal with muddy coasts, whether as researchers, managers, or members of conservation bodies and interest groups.

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Mediterranean Archaeology and Archaeometry: International Journal. Liritzis, Ioannis (ed.), 2002. Rhodes, Greece: University of the Aegean, vol. 1, no. 1, 77p. Initially free (later 20 euros).

A journal in the same general field as JCR might seem redundant, but here is one that focuses on a particular region and its appropriate sciences that should be warmly welcomed. This reviewer recently compiled a chronology of the last 10,750yr (the Holocene Epoch) which contained some 50 tentative names for the climatic and sea-level oscillations, of which I found that 33 came from source areas in the eastern Mediterranean and Middle East. My point is that this is a very special region of great significance in sciences relating to the environment and cultural evolution of the Human Race.

This first number is beautifully produced and laid out (by the Rhodian Graphic Arts company in Rhodes itself) and its sponsors should be immensely proud of this initial effort. The scientific papers begin with the flint tools and blade technology of the Palaeolithic, which reminded me of my first encounter with these cultures in North Africa while working with the UNESCO "Save the Monuments" program in the middle Nile and eastern Sahara. How did those people travel to the Aegean islands? Certainly not by eustatic or tectonic adjustments (land bridges).

Next comes an article on the Bronze Age on Rhodes which provides valuable chronological data relating to the cultural levels before and after the celebrated eruption of Santorini (Thera) in the Second Millennium B.C. The precise date of this event is still under investigation. The "high" date is given at 1628 B.C. and the "low" at 1550 B.C., the latter relating to traditional time-tables of Egyptian and Mesopotamian history. An interesting sequence of events shows that the widespread damage caused by a pre-eruption earthquake was already partially repaired before the main tephra fall. Quite soon after the latter the sites were reoccupied, so it was not "the end of the world". Abundant charcoal makes it possible to obtain high precision radiocarbon dates in great numbers, which are calibrated according to latest tables. Wood samples always present problems, however, because the tree can be any age, and twigs are preferable because of their natural limitations.

Next comes a discussion of Jordan in the 7th to 6th millennia B.C., i.e. around 8500 BP (uncalibrated). Most sites in southern Jordan were abandoned around 8000 BP, apparently a result of climatic changes. It would be interesting to review the geological evidence for the large-scale evacuation.

A fourth paper treats with Cyprus and islands in the eastern Aegean during the early Holocene. Apparently, these were formerly not regarded as being regularly occupied, or merely as "way stations" for migrant peoples. This earlier view is now rejected and many colonial settlements (mostly coastal) have been clearly established. Cyprus is 400km from Rhodes and 600km from Crete. Around 7000 BC (calibrated) sea level was around −35m, so that coastal plains were wider and camp sites are more difficult to identify. Early visitors were evidently fishermen, but hunting was also involved, resulting in the extermination of the pygmy hippopotamus and pygmy elephant. Archaeological indications suggest that the early Holocene visitors came from the Levant.

The final item treats with a topic of particular interest to geologists and is provided with a historical chronology. This

concerns the weathering rates in the porous building stone used for the city of Rhodes due to salt decay "fretting").

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Oceanographic Processes of Coral Reefs: Physical and Biological Links in the Great Barrier Reef. Edited by Eric Wolanski. CRC Press, Boca Raton, London, New York, Washington, D.C. 356 pp, companion CD-ROM.

The Great Barrier Reef (GBR) of Australia is arguably the most important coral reef system in the world. Chapter 1 provides a brief political history, noting that the GBR was inscripted on the World Heritage List in 1981. More importantly, Australia, with an area nearly as great as the continental United States, but a smaller population than the state of Texas, has wisely committed substantial resources to study and protect this national treasure. The driving force behind the establishment of James Cook University in the 1960's and the Australian Institute of Marine Science in the 1970's was recognition of the need for reef research. As a result, at a time when many of the world's reefs are critically threatened, the GBR is the most comprehensively studied and best protected, and the most likely to continue as a functioning coral reef system well into the 21st century.

The papers in this important book tend to be very local in focus. Yet they provide not only important information for local resource management, but also important case-studies and lessons for reef scientists and managers around the world. For example, while Chapter 3 "Landcover and Water Quality in River Catchments of the Great Barrier Reef Marine Park" by A.K.L Johnson and others primarily examines the Herbert River, it informs land-use managers that riparian vegetation and coastal freshwater wetlands are critical to the protection of coastal marine ecosystems.

Joe Baker states in Chapter 1. "The Place of Science and Technology in the Wise Management of the Great Barrier Reef" (p. 1): "This book brings together many authoritative scientific and technological papers which demonstrate the way in which systematic studies can help decision-makers understand the linkages between land- and water-use practices and their impacts on coral reef processes and structure." That goal is optimistic. Although the chapters are generally well edited and readable by reef researchers and other scientists, much of the information will still require significant translation to effectively communicate scientific understanding of the interconnectivity of upland, coastal and reef ecosystems to local land-use planning councils, as well as state and national political leaders. Baker notes (p. 5) that "The Precautionary Principle has not been as strong as the Economic Rationalism, which is so contrary to the principles of Ecological Sustainable Development", and places responsibility for communication squarely on scientists and technologists.

The book consists of 20 chapters that examine physical, chemical and biological links ranging from river systems to ocean currents to climate variability and global climate change. Eric Wolanski provides an overview in Chapter 2. "Physics-Biology Links in the Great Barrier Reef". Terrestrial sediments and nutrients, including the critical importance of intact coastal mangrove and seagrass ecosystems to coral reefs, are subjects covered in chapters 3 through 10. Chapter 11. Connectivity in the Great Barrier Reef World Heritage Area—An Overview of Pathways and Processes", by M. Cappo and R. Kelley, links Chapters 3–10, which deal with terrestrial-reef connectivity, with Chapters 12–16 which deal with oceanographic processes, currents, and fisheries issues in the GBR region. Chapters 17 and 18 deal relatively briefly with climate and bleaching. Chapter 17, by J.M. Lough, relates climate variability change to processes ranging from rainfall and river flow to coral bleaching. The relatively brief text leaves the reader wanting much more; fortunately it is supported by a multitude of informative figures and animations. Chapter 19. "The Challenges of Coral Reef Management in Indonesia", by I.M. Dutton and others, provides a stark contrast with the commitment to GBR research and preservation apparent in Chapters 1–18. Dutton and coauthors discuss the limited resources and understanding of the long-term value of reef resources in Indonesia, where degradation has occurred on 70% of the reefs that were formerly some of the most stunningly beautiful and valuable reef resources in the world.

The book utilizes technology in a way that many will find informative and innovative. Figures are not presented within the text of the chapters, but rather in small, black and white versions at the end of each chapter. A "Companion CD" is located in a clear, plastic pocket in the inside back cover of the book. The CD provides color graphics and animations, both video clips and computer simulations, to further illustrate issues presented in the text. Each figure and animation is provided in a variety of formats including HTML documents, GIF files, and JPEG's or video clips.

The influences of oceanographic processes and links on the geological function of reef ecosystems are all but ignored. E.A. Drew, in Chapter 16, does mention the critical role of carbonate sediment production and accretion in *Halimeda* bioherms but the implications of human impacts on the construction and structure of the GBR ecosystems are not given adequate consideration. This would not be such a serious omission if the purpose of the book was a purely scientific communication but with a stated goal of educating decision makers about the impacts of their policies on coral reef processes and structure, one might assume the book would provide some discussion of the implications of the decline of carbonate producing organisms and consequent reef-accretion potential.

The final chapter asks "Will the Great Barrier Reef Survive Human Impact?" The author, F.K. Talbot, in a one paragraph section entitled "Time Scales", suggests that predictions beyond a human generation or two have little value. Yet the doubling of atmospheric CO_2 over pre-industrial concentrations in this century is not a prediction, but rather inevitable. How much and how quickly that doubling will influence glob-