
Written by a distinguished geomorphologist, this is an excellent introduction to plate tectonics and sea floor spreading. His earth expansion hypothesis is controversial but only a secondary question. Of particular value is his dynamic-historic explanation of coast types, coastal plains and continental shelves.

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Almost, but not quite, this is an excellent compilation. It is designed as a manual both for aspiring students of world sea-levels, and for old hands to refer to in times of crisis. The volume comprises 22 chapters, all but two of which focus on the value of sea-level phenomena as precise indicators of marine water level history. Such precision can be resolved into two components: how good and unambiguous are sea-level indicators in providing vertical control; and two, how sensitive are such indicators to time. Obviously, any indicator that develops quickly at a definable level relative to seafloor is of immense value. One that evolves slowly, perhaps over several periods, across a wide vertical range is not. Faced with these dilemmas, the sea-level researcher must make a number of crucial decisions, based both on the material available, the resolution of signals (especially against all-too-noisy backgrounds), and the objectives of the study. Almost inevitably one is going to take a suboptimal course, so that any resulting record of sea level will, axiomatically, by “fuzzy.” The search for better and better resolution may lead us into a confusion between accuracy and precision. Many sea-level researchers are going to great lengths to measure precisely, seemingly ignoring the inherent accuracies in the natural environment. Most sea-level curves are only as good as their least-reliable control, such as sediment compaction, C14 contamination, neotectonic movement and so forth. These ideas must be borne in mind when reading a book like Sea-Level Research.

The two opening chapters, by Orson van de Plassche and Clarence Kidson, provide a “double-act” introduction. Plassche is concerned with the role of sea-level research, especially in coastal management, and the framework within which we should strive to work. Kidson’s essay, reprinted from Quaternary Science Reviews (volume 1, 1982), paints on a broad, if somewhat personal, canvas, a picture of the constraints of sea-level studies. Kidson’s contribution reinforces the view that obtaining a “true” record of sea level even for a small area is tantamount to seeking the Holy Grail. But read on...

The remainder of the book is thematic, divided into 16 chapters on specific sea-level indicators—marine molluscs, corals, sediments, notches, submerged forests, etc., plus two chapters on “age,” and two on “altitude.” The indicator chapters are a real mixed bag. Some authors, for example Andrews on “raised beaches” and Martin, Sugiu and Flexor on “shell middens” adopt a very regional approach and leave the reader to interpret and draw the parallels with his or her own research topic. The geomorphology topics, while not so parochial, are rather restricted, from example Roep concentrates on the Dutch barriers, themselves somewhat anomalous for showing offlap tendencies during rising sea level. The beachrock chapter (by Hopley) and the marine notches chapter (by Pirazzoli) are interesting, but beg many of the questions about timing that must arise with development of such features. Quite why these two landforms were covered, and not rock platforms, strandflats, coastal dunes and beaches is not clear; all these environments include preservable morphology and sediments, useful for unravelling sea-level changes. The biological indicators are perhaps more convincing, although here ooids and coralline algae score poorly, but molluscs, vermetids, plant remains, forams, ostracods and diatoms all have their adherents, and have by-and-large put sea-level research where it stands today.

The concluding chapters are in some ways the best, perhaps because they deal with more technical, and therefore precise, facets of the subject. Chapter 19 on Radiocarbon Dating by Mook and van de Plassche is excellent, and includes the most digestable summary of “apparent ages” I have read. It is a pity that other isotopes, especially Pb10, are not covered.

At the start I said the book was “almost” excellent. I feel I must justify my comment by highlight-
ing three detractions.

1. Although the editor has my deepest sympathy in trying to deal with authors from all parts of the world, I feel he should have "reined-in" some of the more wayward contributions; too many tend to dwell on the specific example rather than the general principle.

2. The volume is not a "manual," but more of a "handbook." It tells you "what" you need to do, but not "how." In this sense it is slightly misleading.

3. There are a number of omissions—inevitable perhaps—but those seeking a balance are perhaps going to be disappointed. The biggest minus is the lack of a rigorous discussion of sedimentological indices.

Notwithstanding, Sea-Level Research is an impressive accomplishment, certainly one the editor should be proud of. It contains remarkably few errors, and is generally well-illustrated and readable.

Finally, I must comment on the price. I know the editor was aghast at the eventual pricing of the book, almost 100% more than had been expected. This fact alone may put the volume beyond the reach of those to whom it is aimed.

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A multi-authored volume with 14 papers (12 in English, 2 in French) covers the area fairly comprehensively. The first paper, by Flemming and Webb, analyzes the data for 335 coastal archaeology sites (Holocene), ranging in height from -11 m to 8.5 m above present sea level. From these data they try to derive regional neotectonic trends and an overall eustatic component, but unfortunately no reference is made to the paleoclimatic trends which presumably should be reflected by sea level (steric, eustatic, storminess). Four papers treat with chronometric procedures and results, notably the relatively new isoleucine epimerization and uranium/thorium.

Radke (p 167) discusses values and risks of radiometric dating of shorelines. Specifically, he compares uranium-series methods with ESR — electron-spin resonance. Recognizing that a universally-valid eustatic curve is now an outdated dream and that in many areas the neotectonic factor is overwhelming, a much more vigorous approach to chronometry is needed. With aminostratigraphy, an integration of the different methods, can now present fairly consistent ("consensus") datings for the last two interglacials. The consistency can then be checked independently against the deep-sea isotopic curve. In the highly unstable areas of central and southern Italy, these methods (using selected Molluscan shells) have proven very encouraging. Considering the aminostratigraphy in the Tunisian area, where the late Pleistocene sequence is exceptionally well-preserved, Miller, Paskoff and Stearns agree that there has to be an integration of different independent methods. Isolated sampling is not only useless; it can be grossly misleading. The famous Strombus bubonius (Tyrrhenian) fauna has now been taxonomically revised as Strombus latus according to the paper by Richards, who points out that the majority of Tyrrhenian fossils are still living, and that most stratigraphic associations are facies assemblages and not of significant chronological value. Richards is convinced he has evidence for a 30,000 BP transgression (14 C dates), but he does not mention the oceanic isotopic objections, or Mörner's glacial geological arguments.

In short, this is an original and stimulating collection of papers, rather uncoordinated, but nevertheless useful.

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Douglas Myles is a freelance writer living in Oregon and has taught history, politics and drama. The dust jacket indicates that he is a student of seismology, vulcanology and oceanography. However, the book itself indicates that he has only the sketchiest knowledge of these areas and his book, which examines tsunami as natural hazards, could never be regarded as an authoritative work. The organization of the book follows a meandering path with "Earth Structure" and "The New Global Tectonics" five chapters apart.

In the main, it consists of a series of case studies or regional histories which singly may be of interest, but when put together are repetitive, even to the