Book Reviews

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Sea-Level Change in the Gulf of Mexico. By R. A. Davis, Jr. College Station, Texas: Texas A&M University, 172 p. $25.00 flexbound. ISBN 1-60344-224-3.

Skip Davis has prepared a nice book that deals with most all aspects of sea-level change in the Gulf of Mexico region. Although the topic considers water volumes in the basin and submarine features such as drowned river valleys and submerged deltas on the continental shelf, the book features coasts and shorelines that are related to the ups and downs of water levels. The preface states that the book is for the layman, but I doubt most people without some kind of background in the geological sciences would fathom (no pun intended) the main concept much less the geodynamic and geophysical nuances that are alluded to. The author tells us that there is not much new research in the book as most of the material is derived from the published literature, but that does not matter and in fact lends credibility to the work as it derives from established prior observations and conclusions.

The book is divided into chapters as follows: (1) Causes and Rate of Sea-Level Change, (2) Sea-Level Changes in the Early History of the Gulf of Mexico, (3) Sea-Level Changes During Glacial Times, (4) Melting Ice Sheets and Sea-Level Rise, (5) What Is Happening Now? and (6) What Is Next? From the chapter titles it is evident that the author has broken down the subject into manageable parts that make for easy reading and understanding. Such an approach is important to the reader as the subject matter of sea-level change is complex. To the uninitiated, the topic seems simple enough (ocean levels go up and down through time) but the devil is in the details and this is where the story or explanation of why and how this happens gets very complicated. The author does a good job summarizing in a cogent manner why ocean levels go up and down and how fast these changes can take place at different phases of Earth history. It is perhaps a surprise to readers not familiar with eustatic change to find out that the range of sea-level flux is astonishingly large, from about 100 m above present sea level in the Cretaceous Period to about 100 m below present levels during glacial cycles in the Quaternary. The series of paleoenvironmental maps in chapter 2 gives a clear picture of the pronounced environmental changes that have occurred around the Gulf border lands. The topic of glacioeustasy is considered in chapters 3 and 4 to give a clear indication of complex relationships between waxing and waning phases of continental ice sheets and global sea-level fluctuations. The situation around the Gulf of Mexico is further complicated by land subsidence, which is an additional factor that must be considered in the discussion of causes of sea-level change.

The book in actuality is a vignette of sea-level change in the Gulf of Mexico that takes the reader from what is believed to have happened in the past to what is thought to be happening now to prognostications of potential future events. No one can accurately foretell the future and although certain trends seem apparent, there is no guarantee they will continue. Events in Earth history are cyclical and trends do not continue forever, but wax and wane through time. Nevertheless, Skip offers some ideas for possible mitigation measures to ameliorate the impacts of portending sea-level rise. Whether these efforts come about remains to be seen, but he has at least suggested some reasonable courses of action for populations that have built too close to the shore.

The book contains 65 color figures, most of them being illustrations or photographs (most are aerial photos but some are hand-held views) that are most helpful adjuncts to the text. In addition, there are 48 maps that help the reader garner geographic information regarding land–water distributions during different geological time frames and that provide other useful spatial information in graphic form. The index is adequate and each chapter contains a short list of additional readings. There are no in-text citations as normally associated with a scientific work, but this book was not intended for an audience of scientific researchers. Having said that the book is probably too technical for the general public and now indicating that it is not stringent enough for researchers, one might well ask for whom is it intended? To me, it fulfills both roles in that informed members of the public will be able to read the book while at the same time students and professionals alike will find the book to be good background or review of salient issues and concepts. It thus serves as a great introduction to sea-level change not only for the Gulf of Mexico but the whole world ocean, recognizing of course that there will be local variations on the general theme. Although the book uses the Gulf of Mexico as an exemplar, the concepts and story are thus very germane to many aspects of the dynamic world ocean.

This is a good book. It is handsomely produced and contains a wealth of information that will be useful to the informed layperson as well as the professional researcher desiring an introduction or refresher into the general topic of sea-level change through time. It is a pleasure to recommend this book without reservation.

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