

## Seismic Stratigraphy Basin Analysis And Reservoir Characterisation Handbook Of Geophysical Exploration Seismic Exploration By Paul P Veeken 2007 01 03

Over the past five years there have been many advances in the field of basin analysis. Developments such as the publication of new stratigraphic codes; new research in fission-track dating; evolution of thought regarding the importance of tectonic versus eustatic controls of regional and global cycles; and refinements of geophysically-based, basin-subsidence models have necessitated the publication of a second edition of Principles of Sedimentary Basin Analysis. Like the first edition, this book emphasizes the stratigraphic evidence which geologists can actually see in outcrops, well records, and core samples and can gather using geophysical techniques. Principles of Sedimentary Basin Analysis is both an excellent text for students and a practical handbook for professional geologists.

The 30th International Geological Congress was held in Beijing, China in August 1997. Leading scientists convened to present their findings and views to the international geological research community. Volume 8 of 26 focuses on basin analysis, global sedimentary geology and sedimentology. All articles in the proceedings have been refereed and keynote papers have been included in Volume 1. These proceedings aim to present a view of contemporary geology and should be of interest to researchers in the geological sciences.

Origins of fallout radionuclides Sediment records of fallout radionuclides Simple dating models Vertical mixing Numerical techniques Radiometric techniques Discussion Summary Acknowledgements References 10. chronostratigraphic techniques in paleolimnology. Svante Björck & Barbara Wohlfarth 205 Introduction Methods and problems Radiocarbon-dating different fractions of the sediment as a chronostratigraphic tool Dating of long (old) stratigraphies High resolution dating and wiggle matching dating versus absolute dating techniques of lacustrine sediments Concluding remarks Summary Useful www addresses Acknowledgements References 11. Varve chronology techniques. Scott Lamoureux 247 Introduction Methods Summary and future directions Acknowledgements References 12. Luminescence dating. Olav B. Lian & D. J. Huntley 261 Introduction The mechanism responsible for luminescence Dating and estimation of the paleodose Thermoluminescence dating Optical dating Evaluating the environmental dose rate xi Sample collection and preparation What types of depositional environments are suitable for luminescence dating? What can lead to an inaccurate optical age? Summary Acknowledgements References 13. Electron spin resonance (ESR) dating in lacustrine environments. Bonnie A. B. Blackwell 283 Introduction Principles of ESR analysis Sample collection ESR analysis ESR microscopy and other new techniques Applications and datable materials in limnological settings Summary Acknowledgements References 14. Use of paleomagnetism in studies of lake sediments. John King & John Peck 371 Introduction Recording fidelity of geomagnetic behavior by sediments Field and laboratory methods Holocene SV records Magnetostratigraphic studies of Neogene lake sediments Excursions, short events and relative paleointensity Conclusions Summary References 15. Amino acid racemization (AAR) dating and analysis in lacustrine environments.

This volume summarizes in 16 chapters the petroleum geology of the Békés basin with respect to its geological setting in the Pannonian Basin. The work was accomplished by a joint effort of the Hungarian Oil and Gas Co. and U.S. Geological Survey. In contrast with other books that discuss the geology of Hungary, this volume identifies, in detail, potential source rocks and reservoir rocks, and evaluates the maturation, generation, migration, and entrapment of hydrocarbons. The outstanding points are: (1) its summary of the petroleum geology of the Békés basin with respect to its structural and sedimentological setting in the Pannonian Basin; (2) the identification of geographic areas, structural trends and stratigraphic zones that remain relatively unexplored; and (3) a summary of 'petroleum plays' with an assessment of their recoverable, undiscovered resources of oil and gas. This book is primarily for petroleum geologists interested in oil and gas exploration in Hungary, and earth scientists interested in the geology of the Pannonian Basin.

Basin Analysis is an up-to-date overview of the essential processes of the formation and evolution of sedimentary basins, and their implications for the development of hydrocarbon resources. The new edition features: A consideration of the fundamental physical state of the lithosphere. A discussion on the major types of lithospheric deformation relevant to basin development – stretching and flexure. A new chapter on the effects of mantle dynamics. Radically revised chapters on the basin-fill. A new chapter on the erosional engine for sediment delivery to basins, reflecting the massive and exciting advances in this area in the last decade. Expansion of the techniques used in approaching problems in basin analysis. Updated chapters on subsidence analysis and measurements of thermal maturity of organic and non-organic components of the basin-fill. New material on thermochronological and exposure dating tools. Inclusion of the important petroleum system concept in the updated section on the application to the petroleum play. Visit: [www.blackwellpublishing.com/allen](http://www.blackwellpublishing.com/allen) for practical exercises related to problems in Basin Analysis 2e. To run the programs you will need a copy of Matlab 6 or 7. An Instructor manual CD-ROM for this title is available. Please contact our Higher Education team at [HigherEducation@wiley.com](mailto:HigherEducation@wiley.com) for more information.

This book presents one of the first 3D sequence-stratigraphy interpretations of the Cretaceous sequence in the Porcupine basin, offshore Ireland. This interpretation is based on a seismic dataset acquired from the NW margin of the Porcupine basin. This work includes a literature review, attribute extraction, and a basinward analysis of a set of high amplitude anomalies, along with a complete description of the methodology used for this research. In addition to improving understanding of the evolution of the basin during the Cretaceous, this work also correlates high amplitude anomalies with the interpreted stratigraphic framework, both in the structural domain and the time domain (Wheeler diagram). The book offers an enhanced insight into the deposition of sediment in the basin, and it presents new perspectives about the geological and stratigraphic interpretation of the basin's history.

This book is a compilation of selected papers from the 10th International Field Exploration and Development Conference (IFEDC 2020). The proceedings focuses on Reservoir Surveillance and Management, Reservoir Evaluation and Dynamic Description, Reservoir Production Stimulation and EOR, Ultra-Tight Reservoir, Unconventional Oil and Gas Resources Technology, Oil and Gas Well Production Testing, Geomechanics. The conference not only provides a platform to exchange experience, but also promotes the development of scientific research in oil & gas exploration and production. The main audience for the work includes reservoir engineer, geological engineer, enterprise managers senior engineers as well as professional students.

The interest in seismic stratigraphic techniques to interpret reflection datasets is well established. The advent of sophisticated subsurface reservoir studies and 4D monitoring, for optimising the hydrocarbon production in existing fields, does demonstrate the importance of the 3D seismic methodology. The added value of reflection seismics to the petroleum industry has clearly been proven over the last decades. Seismic profiles and 3D cubes form a vast and robust data source to unravel the structure of the subsurface. It gets nowadays exploited in ever greater detail. Larger offsets and velocity anisotropy effects give for instance access to more details on reservoir flow properties like fracture density, porosity and permeability distribution, Elastic inversion and modelling may tell something about the change in petrophysical parameters. Seismic investigations provide a vital tool for the delineation of subtle hydrocarbon traps. They are the basis for understanding the regional basin framework and the stratigraphic subdivision. Seismic stratigraphy combines two very different scales of observation: the seismic and well-control. The systematic approach applied in seismic stratigraphy explains why many workers are using the principles to evaluate their seismic observations. The here presented modern geophysical techniques allow more accurate prediction of the changes in subsurface geology. Dynamics of sedimentary

environments are discussed with its relation to global controlling factors and a link is made to high-resolution sequence stratigraphy. 'Seismic Stratigraphy Basin Analysis and Reservoir Characterisation' summarizes basic seismic interpretation techniques and demonstrates the benefits of integrated reservoir studies for hydrocarbon exploration. Topics are presented from a practical point of view and are supported by well-illustrated case histories. The reader (student as well as professional geophysicists, geologists and reservoir engineers) is taken from a basic level to more advanced study techniques. \* Overview reflection seismic methods and its limitations. \* Link between basic seismic stratigraphic principles and high resolution sequence stratigraphy. \* Description of various techniques for seismic reservoir characterization and synthetic modelling. \* Overview inversion techniques, AVO and seismic attributes analysis.

Seismic Stratigraphy, Basin Analysis and Reservoir Characterisation Elsevier

The Norwegian Continental Shelf (NCS), focus of this special publication, is a prolific hydrocarbon region and both exploration and production activity remains high to this day with a positive production outlook. A key element today and in the future is to couple technological developments to improving our understanding of specific geological situations. The theme of the publication reflects the immense efforts made by all industry operators and their academic partners on the NCS to understand in detail the structural setting, sedimentology and stratigraphy of the hydrocarbon bearing units and their source and seal. The papers cover a wide spectrum of depositional environments ranging from alluvial fans to deepwater fans, in almost every climate type from arid through humid to glacial, and in a variety of tectonic settings. Special attention is given to the integration of both analogue studies and process-based models with the insights gained from extensive subsurface datasets.

The 2e of Seismic Stratigraphy and Depositional Facies Models summarizes basic seismic interpretation techniques and demonstrates the benefits of integrated reservoir studies for hydrocarbon exploration. Topics are presented from a practical point of view and are supported by well-illustrated case histories. The reader is taken from a basic level to more advanced study techniques. The presented modern geophysical techniques allow more accurate prediction of the changes in subsurface geology. Dynamics of sedimentary environments are discussed their relation to global controlling factors, and a link is made to high-resolution sequence stratigraphy. The interest in seismic stratigraphic techniques to interpret reflection datasets is well established. The advent of sophisticated subsurface reservoir studies and 4D monitoring for optimizing the hydrocarbon production in existing fields demonstrate the importance of the 3D seismic methodology. The added value of reflection seismics to the petroleum industry has clearly been proven over the last few decades. Seismic profiles and 3D cubes form a vast and robust data source to unravel the structure of the subsurface. Larger offsets and velocity anisotropy effects give access to more details on reservoir flow properties like fracture density, porosity and permeability distribution. Elastic inversion and modeling may tell something about the change in petrophysical parameters. Seismic investigations provide a vital tool for the delineation of subtle hydrocarbon traps, and they are the basis for understanding the regional basin framework and the stratigraphic subdivision. Seismic stratigraphy combines two very different scales of observation: the seismic and well control. The systematic approach applied in seismic stratigraphy explains why many workers are using the principles to evaluate their seismic observations. Discusses the link between seismic stratigraphic principles and sequence stratigraphy Provides techniques for seismic reservoir characterization as well as well control Analyzes inversion, AVO and seismic attributes

'This book is an analysis procedures of seismic stratigraphy'. --Pref.

Regional Geology and Tectonics: Principles of Geologic Analysis, 2nd edition is the first in a three-volume series covering Phanerozoic regional geology and tectonics. The new edition provides updates to the first edition's detailed overview of geologic processes, and includes new sections on plate tectonics, petroleum systems, and new methods of geological analysis. This book provides both professionals and students with the basic principles necessary to grasp the conceptual approaches to hydrocarbon exploration in a wide variety of geological settings globally. Discusses in detail the principles of regional geological analysis and the main geological and geophysical tools Captures and identifies the tectonics of the world in detail, through a series of unique geographic maps, allowing quick access to exact tectonic locations Serves as the ideal introductory overview and complementary reference to the core concepts of regional geology and tectonics offered in volumes 2 and 3 in the series

Principles of Sequence Stratigraphy provides an in-depth coverage and impartial assessment of all current ideas and models in the field of sequence stratigraphy. This textbook thoroughly develops fundamental concepts of sequence stratigraphy that links base-level changes to sedimentary deposits. It examines differing approaches to how the sequence stratigraphic method can be applied to the rock record, and reviews practical applications such as how petroleum geologists can target where to drill for oil. The book's balanced approach helps students acquire a common terminology and conceptual understanding that will be helpful later in their academic and professional careers, whether they pursue jobs as geologists, geophysicists, or reservoir engineers. This textbook offers theoretical guidelines of how the facies and time relationships are expected to be under specific circumstances such as subsidence patterns, sediment supply, topographic gradients, etc. It goes beyond the standard treatment of sequence stratigraphy by focusing on a more user-friendly and flexible method of analysis of the sedimentary rock record than other current methods. The text is richly illustrated with dozens of full color photographs and original illustrations of outcrop, core, well log, and 3D seismic data. There is a dedicated chapter on discussions and conclusions, along with an instructor site containing images from the book. Principles of Sequence Stratigraphy will appeal to researchers and professionals, as well as upper graduate and graduate students in stratigraphy, sedimentology, petroleum geology and engineering, economic geology, coal geology, seismic exploration, precambrian geology, and mining geology and engineering. \* Offers theoretical guidelines of how the facies and time relationships are expected to be under specific circumstances such as subsidence patterns, sediment supply, topographic gradients, etc. \* Contains numerous high-quality and full-color diagrams, photographs and illustrations, virtually on every aid in comprehension of the subject \* Features a dedicated chapter on discussions and conclusions incorporating all previous chapters with references, basic principles and strategies \* Provides an extensive list of references for further reading, as well as an author and subject index for quick information access

Advances in Sequence Stratigraphy, Volume Two covers current research across a wide range of stratigraphic disciplines, providing information on the most recent developments for the geoscientific research community. Chapters in this volume include Sequence Stratigraphy – Oman, Sequence Stratigraphy and diagenesis, Sequence Stratigraphy of Siliciclastic Systems, Upper Devonian Biostratigraphy, Event Stratigraphy and Late Frasnian Kellwasser Extinction Bio-events in the Iowa Basin: Western Euramerica, Sea-level change and Sequence Stratigraphy, Sequence Stratigraphy: A Material-based Approach Versus A Time-Based Approach, and Anisian-Ladinian marker horizon: Implications for sequence stratigraphy and intra-tethyan correlation. This fully commissioned review publication aims to foster and convey progress in stratigraphy, including geochronology, magnetostratigraphy, lithostratigraphy, event-stratigraphy, isotope stratigraphy, astrochronology, climatostratigraphy, seismic stratigraphy, biostratigraphy, ice core chronology, cyclostratigraphy, palaeoceanography, sequence stratigraphy, and more. Contains contributions from leading authorities in the field Informs and updates on all the latest developments in the field Aims to foster and convey progress in stratigraphy, including geochronology, magnetostratigraphy, lithostratigraphy, event-stratigraphy, and more

A Comprehensive review of modern stratigraphic methods. The stratigraphic record is the major repository of information about the geological history of Earth, a record stretching back for nearly 4 billion years. Stratigraphic studies fill out our planet's plate-tectonic history with the details of paleogeography, past climates, and the record of evolution, and stratigraphy is at the heart of the effort to find and exploit fossil fuel resources. Modern stratigraphic methods are now able to provide insights into past geological events and processes on time scales with unprecedented accuracy and precision, and have

added much to our understanding of global tectonic and climatic processes. It has taken 200 years and a modern revolution to bring all the necessary developments together to create the modern, dynamic science that this book sets out to describe. Stratigraphy now consists of a suite of integrated concepts and methods, several of which have considerable predictive and interpretive power. The new, integrated, dynamic science that Stratigraphy has become is now inseparable from what were its component parts, including sedimentology, chronostratigraphy, and the broader aspects of basin analysis.

Sequence Stratigraphy, presently one of the most rapidly growing areas in geology, is concerned with the documentation and prediction of how sandstones (potential hydrocarbon reservoirs) and shales (potential source rocks) are distributed in time and space within sedimentary basins. The book takes a critical look at some of the sequence stratigraphy concepts, and provides an account of how these have been applied recently in NW Europe (North Sea, mid Norway and E. Greenland, Barents Sea and Svalbard), mainly in connection with the exploration for oil and gas. There is currently no similar book available.

Review of the second edition "For geologists and geophysicists studying sedimentary fill of basins, this volume is a valuable addition to their shelves. The book is packed with information includes numerous lists of references, and is up-to-date. As a source volume, this book is second to none. It is clear and well organized." GEOPHYSICS

Knowledge of the principles and methods of petroleum sedimentology is essential for oil and gas exploration and exploitation. This book is designed as an introductory text for students in petroleum geology and applied sedimentology as well as a useful companion for advanced technicians, explorationists, geophysicists and petroleum engineers. Source rock, lithology and type of trap define the quality of a hydrocarbon accumulation. This interrelationship is exemplified by seven case histories worldwide (NW Europe, Saudi Arabia, U.S.A., Mexico, CIS, China). Moreover, successful exploitation and enhanced oil recovery often depend on an adequate knowledge of the sedimentology of a reservoir. Photographs illustrate macroscopic and microscopic aspects of source rocks as well as reservoir sandstones and limestones that are most important for hydrocarbon exploration. A comprehensive list of references encourages further study.

This book contains six chapters dealing with the investigation of seismic and sequence stratigraphy and integrated stratigraphy, including the stratigraphic unconformities, in different geological settings and using several techniques and methods, including the seismostratigraphic and the sequence stratigraphic analysis, the field geological survey, the well log stratigraphic interpretation, and the lithologic and paleobotanical data. Book chapters are separated into two main sections: (i) seismic and sequence stratigraphy and (ii) integrated stratigraphy. There are three chapters in the first section, including the application of sequence and seismic stratigraphy to the fine-grained shales, to the fluvial facies and depositional environments, and to the Late Miocene geological structures offshore of Taiwan. In the second section, there are three chapters dealing with the integrated stratigraphic investigation of Jurassic deposits of the southern Siberian platform, with the stratigraphic unconformities, reviewing the related geological concepts and studying examples from Middle-Upper Paleozoic successions; and, finally, with the integrated stratigraphy of the Cenozoic deposits of the Andean foreland basin (northwestern Argentina).

Sequence stratigraphy represents a new paradigm in geology. The principal hypothesis is that stratigraphic successions may be subdivided into discrete sequences bounded by widespread unconformities. There are two parts to this hypothesis. First, it suggests that the driving forces which generate sequences and their bounding unconformities also generate predictable three-dimensional stratigraphies. In recent years stratigraphic research guided by sequence models has brought about fundamental improvements in our understanding of stratigraphic processes and the controls of basin architecture. Sequence models have provided a powerful framework for mapping and numerical modeling, enabling the science of stratigraphy to advance with rapid strides. This research has demonstrated the importance of a wide range of processes for the generation of cyclic sequences, including eustasy, tectonics, and orbital forcing of climate change. The main objective of this book is to document the sequence record and to discuss our current state of knowledge about sequence-generating processes.

Seven original case-studies are presented in this volume, each describing the application of micropaleontology and palynology in applied geology: (1) a study of the modern distribution of coccolith sedimentation in the North Sea and its potential for future application in basin analysis; (2) ostracods are shown to be good paleoenvironmental indicators in the early Cretaceous and Tertiary; (3) a biogenic gas seep in the North Sea is shown to be marked by diagnostic benthonic foraminifera; (4) in the North Sea hydrocarbon exploration, integrated studies of micropaleontology have provided invaluable data; (5) palynofacies analysis are shown to be vital in determining depositional events and hydrocarbon source rock potential; (6) the application of paleontology and sedimentology to sequence stratigraphy is demonstrated in the early Cretaceous; and (7) the application of micropaleontology is shown to be an essential tool in both engineering and economic geology. Most chapters have been prepared by earth scientists from industry. The study of microfossils presented in this book provides invaluable data for stratigraphers, petroleum geologists and for engineers and economic geologists working in hydrocarbon exploration and basin analysis.

This book will help readers learn the basic skills needed to study microfossils especially those without a formal background in paleontology. It details key principles, explains how to identify different groups of microfossils, and provides insight into their potential applications in solving geologic problems. Basic principles are addressed with examples that explore the strengths and limitations of microfossils and their geological records. This overview provides an understanding of taphonomy and quality of the fossil records, biomineralization and biogeochemistry, taxonomy, concepts of species, and basic concepts of ecology. Readers learn about the major groups of microfossils, including their morphology, ecology, and geologic history. Coverage includes: foraminifera, ostracoda, coccolithophores, pteropods, radiolaria, diatoms, silicoflagellates, conodonts, dinoflagellates, acritarch, and spores and pollens. In this coverage, marine microfossils, and particularly foraminifera, are discussed in more detail compared with the other groups as they continue to play a major role in most scientific investigations. Among the various tracers of earth history, microfossils provide the most diverse kinds of information to earth scientists. This richly illustrated volume will help students and professionals understand microfossils, and provide insight on how to work with them to better understand evolution of life, and age and the paleoenvironment of sedimentary strata.

Aimed at advanced undergraduates but suitable also for graduate students and professionals, it covers processes of sedimentation, describes the characteristics of sedimentary rocks formed in major sedimentary environments, and discusses the fundamental principles of stratigraphy and basin analysis, including recent developments in the important fields of magnetostratigraphy, seismic stratigraphy, sequence stratigraphy, isotope stratigraphy, and sea-level analysis. The book presents divergent views on controversial topics and is extensively referenced and up-to-date thus encouraging students to refer to recently published literature.

This contribution presents a thorough study of the SE-German molasse basin, its subsidence history and the sequence stratigraphy in the sediments of that basin. The study is based on seismic and borehole data generously provided by German petroleum companies. A detailed outcrop study of marine Molasse deposits was carried out to they are thought to be analogues of sandy tidal sediments. Using probabilistic modelling and simulations it was found that the reservoir characteristics, due to the simple layercake structure of the Molasse sediment can be predicted from the data of one single well. The results of the sequence stratigraphic study and those of the subsidence analysis are described and used as input parameters for a stratigraphic model of the Molasse basin.

One of this book's main themes is how God's 'Book of Nature' is concordant with His 'Book of Scripture'. In their writings, many of the pioneers of the Scientific Revolution often referred to God's two 'Books'. These brilliant naturalists were also devout Christians. But that was back then. Is modern science actually compatible with Scripture? More to the point, are the findings of 21st-century science concordant with the Genesis creation story? What else does the text of Genesis 1-2 have to say? While making an honest effort to answer those questions, some vitally-important theological concepts (which were introduced by Moses in the first two chapters of Genesis) are also examined and discussed in this volume. This comprehensive study (on how modern science is concordant with the intended meaning of the text of Genesis 1-2) has many useful features, including the following: Much of the first two parts of the book consists of background material on: (1) logic, (2) history and philosophy of science, and (3) 'scientific method', as well as (4) basic geological principles, (5) descriptions of Plate Tectonic theory, and (6) the principles and methods of radiometric dating. This background material is designed to help the reader to understand the implications of the empirical evidence presented in Part Two: God's Book of Nature. Similarly, there is also extensive material on: (1) Biblical interpretation and hermeneutics, (2) textual criticism, (3) the history of ancient Israel, (4) development of the Hebrew language, and (5) some of the basic elements of Biblical Hebrew. This material is given prior to looking at the literary structure and genre of the Genesis 1-2 text, and then conducting thorough and complete exegetical analyses of the various textual units of Genesis 1-2 in Part Four: God's Book of Scripture. Prior to the exegetical analyses for each of the textual units of Genesis 1-2, (1) the Biblical Hebrew text, (2) a standard English translation, and (3) an Interlinear version of the text of that unit are provided. The Interlinear version consists of (a) the Hebrew text, with (b) SBL transliterations and (c) English glosses below each one of the Hebrew words. Color coding and other types of annotations/highlighting are used throughout Part Four: God's Book of Scripture, in order to help the reader identify important Biblical Hebrew elements, including recurring phrases, important BH words, and key BHVS verb forms. There are more than 2000 detailed footnotes. Many of these footnotes also cross-reference other topics in the book to make it easier for the reader to refer back to a discussion of some important theme or concept. Excerpts from the entries of reputable Hebrew and Greek lexicons (for words written in the original languages of the Biblical text) are also footnoted. An Appendix is included with a Key to Transliteration and Pronunciation for Biblical Hebrew graphemes; it also has a short section on Biblical Hebrew Accent Markings. Numerous detailed, colored figures are sprinkled throughout the text. In many of these figures, the artwork itself is worth the inexpensive price of the digital edition of this book. Part Six: The Good News is worth reading as a stand-alone exposition of God's Grace, but it also helps put the rest of the book in context. Although the most common (and logical) way to read A Fresh Look at Genesis 1-2 is from start to finish, this 1100-page book was also intended to be used as a reference work. Footnotes direct the reader back to pertinent material in preceding chapters that might not have been read already (or that readers might want to revisit, in order to refresh their memory on some topic). More information is available at <https://a-fresh-look-at-genesis.org>

Expert petroleum geologists David Roberts and Albert Bally bring you Regional Geology and Tectonics: Principles of Geologic Analysis, volume one in a three-volume series covering Phanerozoic regional geology and tectonics. It has been written to provide you with a detailed overview of geologic rift systems, passive margins, and cratonic basins, it features the basic principles necessary to grasping the conceptual approaches to hydrocarbon exploration in a broad range of geological settings globally. Named a 2013 Outstanding Academic Title by the American Library Association's Choice publication A "how-to" regional geology primer that provides a detailed overview of tectonics, rift systems, passive margins, and cratonic basins The principles of regional geological analysis and the main geological and geophysical tools are discussed in detail. The tectonics of the world are captured and identified in detail through a series of unique geographic maps, allowing quick access to exact tectonic locations. Serves as the ideal introductory overview and complementary reference to the core concepts of regional geology and tectonics offered in volumes two and three in the series.

This book is intended as a practical handbook for those engaged in the task of analyzing the paleogeographic evolution of ancient sedimentary basins. The science of stratigraphy and sedimentology is central to such endeavors, but although several excellent textbooks on sedimentology have appeared in recent years little has been written about modern stratigraphic methods. Sedimentology textbooks tend to take a theoretical approach, building from physical and chemical theory and studies of modern environments. It is commonly difficult to apply this information to practical problems in ancient rocks, and very little guidance is given on methods of observation, mapping and interpretation. In this book theory is downplayed and the emphasis is on what a geologist can actually see in outcrops, well records, and cores, and what can be obtained using geophysical techniques. A new approach is taken to stratigraphy, which attempts to explain the genesis of lithostratigraphic units and to de-emphasize the importance of formal description and naming. There are also sections explaining principles of facies analysis, basin mapping methods, depositional systems, and the study of basin thermal history, so important to the genesis of fuels and minerals. Lastly, an attempt is made to tie everything together by considering basins in the context of plate tectonics and eustatic sea level changes.

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