

The Geology Of Fluvial Deposits Sedimentary Facies Basin Analysis And Petroleum Geology

Rivers differ among themselves and through time. An individual river can vary significantly downstream, changing its dimensions and pattern dramatically over a short distance. If hydrology and hydraulics were the primary controls on the morphology and behaviour of large rivers, we would expect long reaches of rivers to maintain characteristic and relatively uniform morphologies. In fact, this is not the case - the variability of large rivers indicates that other important factors are involved. *River Variability and Complexity* presents an interesting approach to the understanding of river variability. It provides examples of river variability and explains the reasons for them, including fluvial response to human activities. Understanding the mechanisms of variability is important for geomorphologists, geologists, river engineers and sedimentologists as they attempt to interpret ancient fluvial deposits or anticipate river behaviour at different locations and through time. This book provides an excellent background for graduates, researchers and professionals.

The Geology of Fluvial Deposits Sedimentary Facies, Basin Analysis, and Petroleum Geology Springer

This book aims primarily at providing those involved in fundamental or applied research in the fields of geology, geomorphology and hydrology with a systematic overview of glacial sediments. A generally applicable terminology is proposed which should facilitate communication between scientists from several fields. Also it should form a bridge between western and eastern "schools" dealing with Quaternary geology. Because the book is mainly devoted to depositional processes and the resulting deposits, the approach and the terminology followed in this book are obviously founded strongly on sedimentology, the geological discipline that deals specifically with these phenomena. The book will be helpful in describing the sediments involved, interpreting their genesis, establishing their extent and their mutual relationships, and thus in the reconstruction of the palaeogeographic development. The large list of references reflects the author's extensive search of the literature.

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).

Alluvial and fluvial fans are the most widespread depositional landform bordering the margins of highland regions and actively subsiding continental basins, across a broad spectrum of tectonic and climatic settings. They are significant to the local morphodynamics of mountain regions and also to the evolution of sediment-routing systems, affecting the propagation and preservation of stratigraphic signals of environmental change over vast areas. The volume presents case studies discussing the geology and geomorphology of alluvial and fluvial fans from both active systems and ancient ones preserved in the stratigraphic record. It brings together case studies from a range of continents, climatic and tectonic settings, some introducing innovative monitoring and analysis techniques, and it provides an overview of current debates in the field. This volume will be of particular interest to geologists, geomorphologists, sedimentologists and the general reader with an interest in Earth science.

This fully revised and updated edition introduces the reader to sedimentology and stratigraphic principles, and provides tools for the interpretation of sediments and sedimentary rocks. The processes of formation, transport and deposition of sediment are considered and then applied to develop conceptual models for the full range of sedimentary environments, from deserts to deep seas and reefs to rivers. Different approaches to using stratigraphic principles to date and correlate strata are also considered, in order to provide a comprehensive introduction to all aspects of sedimentology and stratigraphy. The text and figures are designed to be accessible to anyone completely new to the subject, and all of the illustrative material is provided in an accompanying CD-ROM. High-resolution versions of these images can also be downloaded from the companion website for this book at: www.wiley.com/go/nicholssedimentology.

Most of the thirty-four papers contained in this Special Publication arise from the Fourth International Conference on Fluvial Sedimentology held in Spain in 1989. Sections deal with various aspects of sediment transport and hydraulics in flume experiments and modern rivers, the analysis of alluvial facies, geomorphic and structural controls on alluvial sedimentation, alluvial stratigraphy and basin analysis, and finally the exploration and exploitation of ores. A professional reference to the most recent research in fluvial sedimentology. An international expert authorship.

Fluvial-Tidal Sedimentology provides information on the 'Tidal-Fluvial Transition', the transition zone between river and tidal environments, and includes contributions that address some of the most fundamental research questions, including how the morphology of the tidal-fluvial transition zone evolves over short (days) and long (decadal) time periods and for different tidal and fluvial regimes, the structure of the river flow as it varies in its magnitude over tidal currents and how this changes at the mixing interface between fresh and saline water and at the turbidity maximum, the role of suspended

sediment in controlling bathymetric change and bar growth and the role of fine-grained sediment (muds and floes), whether it is possible to differentiate between 'fluvial' and 'tidally' influenced bedforms as preserved in bars and within the adjacent floodplain and what are the diagnostic sedimentary facies of tidal-fluvial deposits and how are these different from 'pure' fluvial and tidal deposits, amongst other topics. The book presents the latest research on the processes and deposits of the tidal-fluvial transition, documenting recent major field programs that have quantified the flow, sediment transport, and bed morphology in tidal-fluvial zones. It uses description of contemporary environments and ancient outcrop analogues to characterize the facies change through the tidal-fluvial transition. Presents the latest outcomes from recent, large, integrated field programs in estuaries around the world Gives detailed field descriptions (outcrop, borehole, core, contemporary sediments) of tidal-fluvial deposits Accesses new models and validation datasets for estuarine processes and deposits Presents descriptions of contemporary environments and ancient outcrop analogues to characterize the facies change through the tidal-fluvial transition

Over the last couple of decades, fluvial geomorphology and fluvial sedimentary geology have been developing in parallel, rather than in conjunction as might be desired. This volume is the result of the editors' attempt to bridge this gap in order to understand better how sediments in modern rivers become preserved in the rock record, and to improve interpretation from that record of the history of past environmental conditions. The catalyst for the volume was a conference with the same title hosted at the University of Aberdeen School of Geosciences, in Aberdeen, Scotland, on 12-14 January 2009.

Fluvial deposits represent the preserved record of one of the major nonmarine environments. They accumulate in large and small intermontane valleys, in the broad valleys of trunk rivers, in the wedges of alluvial fans flanking areas of uplift, in the outwash plains fronting melting glaciers, and in coastal plains. The nature of alluvial assemblages - their lithofacies composition, vertical stratigraphic record, and architecture - reflect an interplay of many processes, from the wandering of individual channels across a floodplain, to the long-term effects of uplift and subsidence. Fluvial deposits are a sensitive indicator of tectonic processes, and also carry subtle signatures of the climate at the time of deposition. They are the hosts for many petroleum and mineral deposits. This book is about all these subjects. The first part of the book, following a historical introduction, constructs the stratigraphic framework of fluvial deposits, step by step, starting with lithofacies, combining these into architectural elements and other facies associations, and then showing how these, in turn, combine to represent distinctive fluvial styles. Next, the discussion turns to problems of correlation and the building of large-scale stratigraphic frameworks. These basin-scale constructions form the basis for a discussion of causes and processes, including autogenic processes of channel shifting and cyclicity, and the larger questions of allogenic (tectonic, eustatic, and climatic) sedimentary controls and the development of our ideas about nonmarine sequence stratigraphy.

This completely revised and enlarged second edition provides an up-to-date overview of all major topics in sedimentary geology. It is unique in its quantitative approach to denudation-accumulation systems and basin fillings, including dynamic aspects. The relationship between tectonism and basin evolution as well as the concepts of sequence cycle and event stratigraphy in various depositional environments are extensively discussed. Numerous, often composite figures, a well-structured text, brief summaries in boxes, and several examples from all continents make the book an invaluable source of information for students, researchers and professors in academia as well as for professionals in the oil industry.

Pinxian Wang and Qianyu Li The South China Sea (SCS) (Fig. 1. 1) offers a special attraction for Earth scientists world-wide because of its location and its well-preserved hemipelagic sediments. As the largest one of the marginal seas separating Asia from the Pacific, the largest continent from the largest ocean, the SCS functions as a focal point in land-sea interactions of the Earth system. Climatically, the SCS is located between the Western Pacific Warm Pool, the centre of global heating at the sea level, and the Tibetan Plateau, the centre of heating at an altitude of 5,000m. Geomorphologically, the SCS lies to the east of the highest peak on earth, Zhumulangma or Everest in the Himalayas (8,848m elevation) and to the west of the deepest trench in the ocean, Philippine Trench (10,497m water depth) (Wang P. 2004). Biogeographically, the SCS belongs to the so-called "East Indies Triangle" where modern marine and terrestrial biodiversity reaches a global maximum (Briggs 1999). Among the major marginal sea basins from the west Pacific, the SCS presents some of the best conditions for accumulating complete paleoclimatic records in its hemipelagic deposits. These records are favorable for high-resolution paleoceanographic studies because of high sedimentation rates and good carbonate preservation. It may not be merely a coincidence that two cores from the southern 14 SCS were among the first several cores in the world ocean used by AMS C dating for high-resolution stratigraphy (Andree et al. 1986; Broecker et al. 1988).

An integrated reference on the economic geology of titanium that covers all the basic processes of formation of titanium-mineral deposits, organized along the lines of a geochemical cycle of titanium in order to facilitate the description of linkages among deposit types. Annotation copyright Book Net

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This book provides a detailed overview of the operational principles of modern mining geology, which are presented as a good mix of theory and practice, allowing use by a broad range of specialists, from students to lecturers and experienced geologists. The book includes comprehensive descriptions of mining geology techniques, including conventional methods and new approaches. The attributes presented in the book can be used as a reference and as a guide by mining industry specialists developing mining projects and for optimizing mining geology procedures. Applications of the methods are explained using case studies and are facilitated by the computer scripts added to the book as Electronic Supplementary Material.

This short introduction aims to provide archaeologists of all backgrounds with a grounding in the principles, materials, and methods of geology. Each chapter ends with a short reading list, and many have selected case-histories in illustration of the points made. Included is a glossary of technical terms.

Understanding of rivers and their sediments, both as modern systems and as ancient counterparts in the geological record, has progressed steadily but markedly over the past several decades, with contributions by practitioners in diverse fields of geosciences and engineering. This book contains 31 papers, with authors from 13 countries, who participated in the Sixth International Conference on Fluvial Sedimentology held in Cape Town, South Africa, in 1977. True to the nature of these quadrennial conferences, the papers in this book discuss a broad range of fluvial subjects that include the character of bedforms and sediment transport in river channels, morphological and sedimentological features of modern fluvial environments, modern and ancient avulsions, internal and external controls on the behaviour of river systems, and the facies and architectural organization of alluvial deposits. A specialist volume detailing the latest advances in fluvial sedimentology. Authorship includes the leaders in the field. If you are a member of the International Association of Sedimentologists, for purchasing details, please see: <http://www.iasnet.org/publications/details.asp?code=SP28>

This book, first published in 1979, collects together a key set of papers from the 10th Binghamton Geomorphology Symposium. They analyse fluvial theory, channel processes, stream adjustments, paleo-adjustments and channel adjustments.

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

In the extensive field of earth sciences, with its many subdisciplines, the transfer of knowledge is primarily established via personal communication, during meetings, by reading journal articles, or by consulting books. Because more information is available than can be assimilated, it is necessary for the individual to search selectively. Books take more time from the inception of an idea until publication than any of the other means of communication mentioned. As a consequence, their function is somewhat different. Many good books are a compilation of up to date knowledge and serve as reference or instruction manuals. Some books are a collection of previously published papers dealing with a certain topic, while others may basically provide large sets of data or examples. The Frontiers in Sedimentary Geology series was established both for students and practicing earth scientists who wish to either stay abreast of the most recent ideas or developments or to become familiar with an important topic in the field of sedimentary geology. The series attempts to deal with subjects that are in the forefront of both scientific and economic interest. The treatment of a subject in an individual volume should be a combination of topical, regional, and interdisciplinary approaches. Although these three terms can be defined separately, in reality they should flow into each other. A topical treatment should relate to a major category of sedimentary geology.

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.

Rivers and Floodplains is concerned with the origin, geometry, water flow, sediment transport, erosion and deposition associated with modern alluvial rivers and floodplains, how they vary in time and space, and how this information is used to interpret deposits of ancient rivers and floodplains. There is specific reference to the types and lifestyles of organisms associated with fluvial environments, human interactions with rivers and floodplains, associated environmental and engineering concerns, as well as the economic aspects of fluvial deposits, particularly the modeling of fluvial hydrocarbon reservoirs and aquifers. Methods of studying rivers and floodplains and their deposits are also discussed. Although basic principles are emphasized, many examples are detailed. Particular emphasis is placed on how an understanding of the nature of modern rivers and floodplains is required before any problems concerning rivers and floodplains, past or present, can be addressed rationally. Rivers and Floodplains is designed as a core text for senior undergraduate and graduate students studying modern or ancient fluvial environments, particularly in earth sciences, environmental sciences and physical geography, but also in civil and agricultural engineering. College teachers, researchers, and practising professionals will also find the book an invaluable reference. Presents a process-based approach, which is relevant to modern curricula. Discusses methods of studying rivers and floodplains and their deposits. Provides many detailed examples throughout the text. Emphasises the basic principles of this subject. As the first synthesis of this entire field, it will be a must-have for all students studying modern or ancient fluvial environments. Teachers, researchers and practising professionals will find this an invaluable reference tool. Rivers and Floodplains will also be of interest to geologists, geographers and engineers.

This book is intended to complement the author's 1996 book "The geology of fluvial deposits", not to replace it. The book summarizes methods of mapping and interpretation of fluvial depositional systems, with a detailed treatment of the tectonic, climatic and eustatic controls on fluvial depositional processes. It focuses on the preserved, ancient depositional record and emphasizes large-scale (basin-scale) depositional processes. Tectonic and climatic controls of fluvial sedimentation and the effects of base-level change on sequence architecture are discussed. Profusely illustrated and with an extensive reference to the recent literature, this book will be welcomed by the student and professional geologist alike.

For several decades Peter Friend has been one of the leading figures in sedimentary geology and throughout that time he has helped scores of other people by supervising doctoral students, collaborating with colleagues, especially in developing countries, and selflessly sharing ideas with fellow geologists. This collection of papers is a survey of the research frontier in basin dynamics, a field Peter Friend helped initiate, and a token of thanks from people who have benefited from an association with Peter during their careers. The papers in this book fall into four themes - Tectonics and sedimentation, Landscape evolution and provenance, Depositional systems and Fluvial sedimentation - which reflect Peter's research interests and are all important areas of current research in sedimentary geology. There are both case studies and review articles on these themes which reflect recent work, but the collection can also be considered to be a 'sampler' of sedimentary geology for anyone with broad interests in the Earth sciences.

This volume addresses the multi-disciplinary topic of engineering geology and the environment, one of the fastest growing, most relevant and applied fields of research and study within the geosciences. It covers the fundamentals of geology and engineering where the two fields overlap and, in addition, highlights specialized topics that address principles, concepts and paradigms of the discipline, including operational terms, materials, tools, techniques and methods as well as processes, procedures and implications. A number of well known and respected international experts contributed to this authoritative volume, thereby ensuring proper geographic representation, professional credibility and reliability. This superb volume provides a dependable and ready source of information on approximately 300 topical entries relevant to all aspects of engineering geology. Extensive illustrations, figures, images, tables and detailed bibliographic citations ensure that the comprehensively defined contributions are broadly and clearly explained. The Encyclopedia of Engineering Geology provides a ready source of reference for several fields of study and practice including civil engineers, geologists, physical geographers, architects, hazards specialists, hydrologists, geotechnicians, geophysicists, geomorphologists, planners, resource explorers, and many others. As a key library reference, this book is an essential technical source for undergraduate and graduate students in their research. Teachers/professors can rely on it as the final authority and the first source of reference on engineering geology related studies as it provides an exceptional resource to train and educate the next generation of practitioners.

The sinuous form and peculiar evolution of meandering rivers has long captured the imagination of people. Today, meandering rivers exist in some of the most densely populated areas in the World, where they provide environmental and economic wealth and opportunities, as well as posing hazards. Through geological time, the ancestors of these modern meanders built deposits that are now host to mineral resources, groundwater, and hydrocarbons. This Special Publication illustrates the breadth of current research on meandering rivers and their deposits. The collection of research papers demonstrates the state of science on fluvial process-product relationships. The articles cover fundamental and applied studies of both modern and ancient rivers, are based on state-of-the-art technology, include complementary philosophical approaches, and span a wide range of spatial and temporal scales. This book includes some of the most recent advances in the study of the morphodynamics and sedimentology of meandering rivers, and is an important resource for those who want to investigate fluvial systems and their deposits.

Written for a first course in sedimentary geology or sedimentary rocks and stratigraphy (with only an introductory geology/physical geology course as a prerequisite), Prothero and Schwab shows students how sedimentary strata serves geologists as a continuous record of Earth's history. The authors' conversational style, and focus on the important concepts make the book highly accessible to an undergraduate audience.

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

The recent increase in the search for coal has initiated a dramatic growth in sedimentological research on the origin, formation and environment of coal deposition. This publication is concerned with perhaps the most important field of coal research, that of coal environments. This subject involves many interrelated disciplines, including the sedimentology, petrology, geochemistry, palaeobotany and palaeogeography of coal deposits. In the past, workers in these fields have operated independently, and only recently have their research efforts been integrated to provide a more comprehensive understanding of coal depositional environments.

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. Often thought of as a volcanically dominated planet, the last several decades of Mars exploration have revealed with increasing clarity the role of sedimentary processes on the Red Planet. Data from recent orbiters have highlighted the role of sedimentary processes throughout the geologic evolution of Mars by providing evidence that such processes are preserved in a rock record that spans a period of over four billion years.

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