

### 3 Subsurface Facies Analysis Kaft Gekko

This book celebrates the professional career of Harold Reading, who has played a leading role in the development of the IAS, and has been at the roots of the development of 'facies sedimentology' as an art in itself and as a major tool in the broader field of geology. This special collection of original research papers from Harold Reading's students covers the wide range of his research interests and reflects the power of facies sedimentology today. State-of-the-art research papers in the important field of facies sedimentology \* a festschrift to one of the great names in sedimentology.

This unparalleled reference synthesizes the methods used in microfacies analysis and details the potential of microfacies in evaluating depositional environments and diagenetic history, and, in particular, the application of microfacies data in the study of carbonate hydrocarbon reservoirs and the provenance of archaeological materials. Nearly 230 instructive plates (30 in color) showing thin-section photographs with detailed explanations form a central part of the content. Helpful teaching-learning aids include detailed captions for hundreds of microphotographs, boxed summaries of technical terms, many case studies, guidelines for the determination and evaluation of microfacies criteria, for enclosed CD with 14000 references, self-testing exercises for recognition and characterization skills, and more

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.

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.

The early chapters of the volume present data and interpretations of the geophysics of the craton and summarise, with sequential maps, the tectonic evolution of the craton. The main body of the text and accompanying plates and figures present the stratigraphy, structural history, and economic geology of specific sedimentary basins and regions. The volume concludes with a summary chapter in which the currently popular theories of cratonal tectonics are discussed and the unresolved questions are identified.

The nEU-Med project is part of the Horizon 2020 programme, in the ERC Advanced project category. It began in October 2015 and the University of Siena is the host institution of the project. The project is focussed upon two Tuscan riverine corridors leading from the Gulf of Follonica in the Tyrrhenian Sea to the Colline Metallifere. It aims to document and analyze the form and timeframe of economic growth in this part of the Mediterranean, which took place between the 7th and the 12thc. Central to this is an understanding of the processes of change in human settlements, in the natural and farming landscapes in relation to the exploitation of resources, and in the implementation of differing political strategies. This volume presents the multi-disciplinary research focussed upon the key site of the project, Vetricella, and its territory. Vetricella is thought to be the site of Valli, a royal property in the Tuscan march. It is the only Early Medieval property to be extensively studied in Italy. Located on Italy's Tyrrhenian coast, the archaeology and history of this site provide new insights on estate management, metal production and wider Mediterranean relations in the later first millennium. Apart from reports on the archaeology, the finds from excavations and environmental studies, three essays consider the wider European historical and archaeological context of Vetricella. Future monographs will feature studies by members of the project team on aspects of Vetricella, its finds and territory.

Earth science is becoming increasingly quantitative in the digital age. Quantification of geoscience and engineering problems underpins many of the applications of big data and artificial intelligence. This book presents quantitative geosciences in three parts. Part 1 presents data analytics using probability, statistical and machine-learning methods. Part 2 covers reservoir characterization using several geoscience disciplines: including geology, geophysics, petrophysics and geostatistics. Part 3 treats reservoir modeling, resource evaluation and uncertainty analysis using integrated geoscience, engineering and geostatistical methods. As the petroleum industry is heading towards operating oil fields digitally, a multidisciplinary skillset is a must for geoscientists who need to use data analytics to resolve inconsistencies in various sources of data, model reservoir properties, evaluate uncertainties, and quantify risk for decision making. This book intends to serve as a bridge for advancing the multidisciplinary integration for digital fields. The goal is to move beyond using quantitative methods individually to an integrated descriptive-quantitative analysis. In big data, everything tells us something, but nothing tells us everything. This book emphasizes the integrated, multidisciplinary solutions for practical problems in resource evaluation and field development.

This book considers the deposition of sediments in different types of lakes and shows how changes in the lake environment can be

interpreted from the sediment facies at the lake floor. Lakes are particularly sensitive to climate change and thus their sediments are accurate indicators of environmental change and palaeoclimate. This volume examines both ancient and modern lake deposits which is particularly appropriate considering the current widespread interest in global climate change, with particular emphasis on global warming. The book is global in approach and contains fifteen papers from an internationally acclaimed authorship. The volume will be of particular interest to sedimentologists, petroleum geologists, economic geologists and geographers with a particular interest in global climate change. Short papers describing results of recent geologic investigations.

Our appreciation of glaciological processes in Antarctica suffers from a lack of observations in regions where numerical models indicate the ice sheet to be susceptible to ocean and/or atmospheric warming. The solution lies in the use and development of glacier geophysics. In this volume we present a series of papers that demonstrate how geophysics can be deployed in Antarctica to comprehend: (1) boundary conditions that influence ice flow such as subglacial topography, the distribution of basal water and ice-sheet rheology; (2) phenomena that might affect ice-flow processes, such as complex internal ice-sheet structures and the proposition of large stores of hitherto unappreciated groundwater; and (3) how glacial sediments and formerly glaciated terrain on, and surrounding, the continent can inform us about past ice-sheet dynamics. The volume also takes a historical view on developments leading to current knowledge, examines active ice-sheet processes, and points the way forward on how geophysics can advance quantitative understanding of Antarctic ice-sheet behaviour.

The Neuquen Basin of northern Patagonia provides an excellent case study in basin analysis and sequence stratigraphy. The basin is one of the largest petroleum provinces in South America and includes a dramatic record of relative sea level changes as well as a unique and globally important palaeontological record. Understanding this region is also central to unravelling the history of the Andes. The latest developments in the study of the area have been combined in this volume to give an integrated series of case studies that document the structural, igneous, sedimentological and palaeontological history of the region from the Triassic to the Recent. This publication provides an introduction into this fascinating region as well as a resource that includes the most complete and up-to-date studies of the area.

Summary of International Energy Research and Development Activities 1974–1976 is a directory of energy research and development projects conducted in various countries such as Canada, Italy, Germany, France, Sweden, and the United Kingdom between 1974 and 1976. A limited number of projects sponsored by international organizations such as the International Atomic Energy Agency are also included. This directory consists of nine chapters and opens with a section on organic sources of energy such as coal, oil and gas, peat, hydrocarbons, and non-fossil organic sources. The next sections focus on thermonuclear energy and plasma physics; fission sources and energy production; geophysical energy sources; conversion technology; and environmental aspects of energy conversion and use. Energy transport, transmission, utilization, and conservation are also covered. The final chapter deals with energy systems and other energy-related research on subjects ranging from car sharing and urban passenger transport to nuclear power plants, energy supply and demand models, and high-power molecular lasers. This

monograph will be a valuable resource of information for those involved in energy research and development.

Biostratigraphic analysis of Santonian microfaunas and macrofaunas in a subsurface marine facies of the Middendorf Formation.

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](http://www.wiley.com/go/nicholssedimentology).

This book comprises the selected papers from the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1), Tunisia 2018. The volume is of interest to all researchers and practitioners in the fields of Hydrology, Hydrogeology, Hydrochemistry, Water Resources and Hydrologic Engineering. Water is a dynamic, finite, and vulnerable but resilient natural resource to be protected in an environmentally sustainable manner. Water systems in different frameworks requires a comprehensive understanding of climatology, geology, hydrogeology, hydrochemistry, hydrodynamics, and surface hydrology. In addition, it is highlighted the role of the variability and climate change in water systems. Furthermore, water has a vital significance to the entire socio-economic sector. This volume offers an overview of the state-of-the-art related to water science and technology in model regions in Europe, Africa, Middle East, Asia and America, but mainly focuses on the Mediterranean environment and surrounding regions. It gives new insights on characterisation, evaluation, quality, management, protection, modelling on environmental hydrology, groundwater, hydrochemistry, sustainable water resources studies and hydrologic engineering approaches by international researchers. Main topics include: 1. Hydrology, Climatology and Water-Related Ecosystems 2. Hydrochemistry and Isotopic Hydrology 3. Groundwater Assessment and Management: mapping, exploration, abstraction and modelling 4. Water Resources Sustainability and Climate Change 5. Hydrologic Engineering and Urban Groundwater

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