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KEY=OF - SILAS HUDSON

Seismic Attributes as the Framework for Data Integration Throughout the Oilfield Life Cycle

SEG Books Useful attributes capture and quantify key components of the seismic amplitude and texture for subsequent integration with well log, microseismic, and production data through either interactive visualization or machine learning. Although both approaches can accelerate and facilitate the interpretation process, they can by no means replace the interpreter. Interpreter "grayware" includes the incorporation and validation of depositional, diagenetic, and tectonic deformation models, the integration of rock physics systematics, and the recognition of unanticipated opportunities and hazards. This book is written to accompany and complement the 2018 SEG Distinguished Instructor Short Course that provides a rapid overview of how 3D seismic attributes provide a framework for data integration over the life of the oil and gas field. Key concepts are illustrated by example, showing modern workflows based on interactive interpretation and display as well as those aided by machine learning.

Rock Physics and Geofluid Detection

Frontiers Media SA

Geophysics Today

A Survey of the Field as the Journal Celebrates Its 75th Anniversary

SEG Books

Seismic Petrophysics in Quantitative Interpretation

SEG Books Exploration and characterization of conventional and unconventional reservoirs using seismic technologies are among the main activities of upstream technology groups and business units of oil and gas operators. However, these activities frequently encounter difficulties in quantitative seismic interpretation due to remaining confusion and new challenges in the fast developing field of seismic petrophysics. Seismic Petrophysics in Quantitative Interpretation shows how seismic interpretation can be made simple and robust by integration of the rock physics principles with seismic and petrophysical attributes bearing on the properties of both conventional (thickness, net/gross, lithology, porosity, permeability, and saturation) and unconventional (thickness, lithology, organic richness, thermal maturity) reservoirs. Practical solutions to existing interpretation problems in rock physics-based amplitude versus offset (AVO) analysis and inversion are addressed in the book to streamline the workflows in subsurface characterization. Although the book is aimed at oil and gas industry professionals and academics concerned with utilization of seismic data in petroleum exploration and

production, it could also prove helpful for geotechnical and completion engineers and drillers seeking to better understand how seismic and sonic data can be more thoroughly utilized.

The Rock Physics Handbook

Tools for Seismic Analysis of Porous Media

Cambridge University Press A significantly expanded new edition of this practical guide to rock physics and geophysical interpretation for reservoir geophysicists and engineers.

Quantitative Seismic Interpretation

Applying Rock Physics Tools to Reduce Interpretation Risk

Cambridge University Press Quantitative Seismic Interpretation demonstrates how rock physics can be applied to predict reservoir parameters, such as lithologies and pore fluids, from seismically derived attributes. The authors provide an integrated methodology and practical tools for quantitative interpretation, uncertainty assessment, and characterization of subsurface reservoirs using well-log and seismic data. They illustrate the advantages of these new methodologies, while providing advice about limitations of the methods and traditional pitfalls. This book is aimed at graduate students, academics and industry professionals working in the areas of petroleum geoscience and exploration seismology. It will also interest environmental geophysicists seeking a quantitative subsurface characterization from shallow seismic data. The book includes problem sets and a case-study, for which seismic and well-log data, and Matlab codes are provided on a website (<http://www.cambridge.org/9780521816014>). These resources will allow readers to gain a hands-on understanding of the methodologies.

New Advances in Geology and Engineering Technology of Unconventional Oil and Gas

Frontiers Media SA

Modern Fracturing

Enhancing Natural Gas Production

"Natural gas is rapidly emerging as a premier fuel for the world economy with markedly increasing trans-national trade. With proven reserves far exceeding those for crude oil, natural gas is likely to be around for centuries. This is a book about enhancing natural gas production using one of the most important and widespread well completion technologies -- hydraulic fracturing. The book addresses the way that natural gas is produced from reservoirs and then describes diagnostic techniques that can pinpoint whether the well is producing as it should or whether intervention should be undertaken, which is the central theme of this book."--Back cover.

Seismic Amplitude

An Interpreter's Handbook

Cambridge University Press Introduces practical seismic analysis techniques and evaluation of interpretation confidence, for graduate students and industry professionals - independent of commercial software products.

The Leading Edge

Physical Properties of Rocks

A Workbook

Elsevier A symbiosis of a brief description of physical fundamentals of the rock properties (based on typical experimental results and relevant theories and models) with a guide for practical use of different theoretical concepts.

Petroleum Geoscience

From Sedimentary Environments to Rock Physics

Springer This comprehensive textbook presents an overview of petroleum geoscience for geologists active in the petroleum industry, while also offering a useful guide for students interested in environmental geology, engineering geology and other aspects of sedimentary geology. In this second edition, new chapters have been added and others expanded, covering geophysical methods in general and electromagnetic exploration methods in particular, as well as reservoir modeling and production, unconventional resources and practical petroleum exploration.

Petroleum Related Rock Mechanics

Elsevier Engineers and geologists in the petroleum industry will find Petroleum Related Rock Mechanics, 2e, a powerful resource in providing a basis of rock mechanical knowledge - a knowledge which can greatly assist in the understanding of field behavior, design of test programs and the design of field operations. Not only does this text give an introduction to applications of rock mechanics within the petroleum industry, it has a strong focus on basics, drilling, production and reservoir engineering. Assessment of rock mechanical parameters is covered in depth, as is acoustic wave propagation in rocks, with possible link to 4D seismics as well as log interpretation. Learn the basic principles behind rock mechanics from leading academic and industry experts Quick reference and guide for engineers and geologists working in the field Keep informed and up to date on all the latest methods and fundamental concepts

Offset-dependent Reflectivity

Theory and Practice of AVO Analysis

SEG Books Recognizing the need for education and further research in AVO, the editors have compiled an all-encompassing treatment of this versatile technology. In addition to providing a general introduction to the subject and a review of the current state of the art, this unique volume provides useful reference materials and data plus original contributions at the leading edge of AVO technologies.

Rock Fractures and Fluid Flow

Contemporary Understanding and Applications

National Academies Press Scientific understanding of fluid flow in rock fractures--a process underlying contemporary earth science problems from the search for petroleum to the controversy over nuclear waste storage--has grown significantly in the past 20 years. This volume presents a comprehensive report on the state of the field, with an interdisciplinary viewpoint, case studies of fracture sites, illustrations, conclusions, and research recommendations. The book addresses these questions: How can fractures that are significant hydraulic conductors be identified, located, and characterized? How do flow and transport occur in fracture systems? How can changes in fracture systems be predicted and controlled? Among other topics, the committee provides a geomechanical understanding of fracture formation, reviews methods for detecting subsurface fractures, and looks at the use of hydraulic and tracer tests to investigate fluid flow. The volume examines the state of conceptual and mathematical modeling, and it provides a useful framework for understanding the complexity of fracture changes that occur during fluid pumping and other engineering practices. With a practical and multidisciplinary outlook, this volume will be welcomed by geologists, petroleum geologists, geoengineers, geophysicists, hydrologists, researchers, educators and students in these fields, and public officials involved in geological projects.

Rock Fractures in Geological Processes

Cambridge University Press Rock fractures control many of Earth's dynamic processes, including plate-boundary development, tectonic earthquakes, volcanic eruptions, and fluid transport in the crust. An understanding of rock fractures is also essential for effective exploitation of natural resources such as ground water, geothermal water, and petroleum. This book combines results from fracture mechanics, materials science, rock mechanics, structural geology, hydrogeology, and fluid mechanics to explore and explain fracture processes and fluid transport in the crust. Basic concepts are developed from first principles and illustrated with worked examples linking models of geological processes to real field observations and measurements. Many additional examples and exercises are provided online, allowing readers to practise formulating and quantitative testing of models. Rock Fractures in Geological Processes is designed for courses at the advanced undergraduate and graduate level but also forms a vital resource for researchers and industry professionals concerned with fractures and fluid transport in the Earth's crust.

Cooking for Geeks

Real Science, Great Hacks, and Good Food

"O'Reilly Media, Inc." Presents recipes ranging in difficulty with the science and technology-minded cook in mind, providing the science behind cooking, the physiology of taste, and the techniques of molecular gastronomy.

Neural Networks for Applied Sciences and Engineering

From Fundamentals to Complex Pattern Recognition

CRC Press In response to the exponentially increasing need to analyze vast amounts of data, Neural Networks for Applied Sciences and Engineering: From Fundamentals to Complex Pattern Recognition provides scientists with a simple but systematic introduction to neural networks. Beginning with an introductory discussion on the role of neural networks in

Compressibility of Sandstones

Elsevier This book is a comprehensive treatment of the elastic volumetric response of sandstones to variations in stress. The theory and data presented apply to the deformations that occur, for example, due to withdrawal of fluid from a reservoir, or due to the redistribution of stresses caused by the drilling of a borehole. Although the emphasis is on reservoir-type sandstones, results and methods discussed are also applicable to other porous rocks. Part One concerns the effect of stress on deformation and discusses porous rock compressibility coefficients. Elasticity theory is used to derive

relationships between the porous rock compressibility coefficients, the porosity, and the mineral grain compressibility. Theoretical bounds on the compressibility coefficients are derived. The concept of effective stress coefficients is examined, as is the integrated form of the stress-strain relationships. Undrained compression and induced pore pressures are treated within the same general framework. Part One is concluded with a brief, elementary introduction to Biot's theory of poroelasticity. All the results in Part One are illustrated and verified with extensive references to published compressibility data. Part Two deals with the relationship between pore structure and compressibility, and presents methods that permit quantitative prediction of the compressibility coefficients. Two- and three-dimensional models of tubular pores, spheroidal pores, and crack-like "grain boundary" voids are analyzed. A critical review is made of various methods that have been proposed to relate the effective elastic moduli (bulk and shear) of a porous material to its pore structure. Methods for extracting pore aspect ratio distributions from stress-strain data or from acoustic measurements are presented, along with applications to actual sandstone data. Part Three is a brief summary of experimental techniques that are used to measure porous rock compressibilities in the laboratory. The information contained in this volume is of interest to petroleum engineers, specifically those involved with reservoir modeling, petroleum geologists, geotechnical engineers, hydrologists and geophysicists.

Field Book for Describing and Sampling Soils

Seismic Exploration of Hydrocarbons in Heterogeneous Reservoirs

New Theories, Methods and Applications

Elsevier Seismic Exploration of Hydrocarbons in Heterogeneous Reservoirs: New Theories, Methods and Applications is based on the field research conducted over the past decade by an authoring team of five of the world's leading geoscientists. In recent years, the exploration targets of world's oil companies have become more complex. The direct detection of hydrocarbons based on seismic wave data in heterogeneous oil/gas reservoirs has become a hot spot in the research of applied and exploration geophysics. The relevant theories, approaches and applications, which the authors have worked on for years and have established mature technical processes for industrial application, are of significant meaning to the further study and practice of engineers, researchers and students in related area. Authored by a team of geophysicists in industry and academia with a range of field, instruction, and research experience in hydrocarbon exploration. Nearly 200 figures, photographs, and illustrations aid in the understanding of the fundamental concepts and techniques. Presents the latest research in wave propagation theory, unconventional resources, experimental study, multi-component seismic processing and imaging, rock physics modeling and quantitative seismic interpretation. Sophisticated approach to research systematically forms an industrial work flow for geoscience and engineering practice.

97 Things Every Cloud Engineer Should Know

"O'Reilly Media, Inc." If you create, manage, operate, or configure systems running in the cloud, you're a cloud engineer--even if you work as a system administrator, software developer, data scientist, or site reliability engineer. With this book, professionals from around the world provide valuable insight into today's cloud engineering role. These concise articles explore the entire cloud computing experience, including fundamentals, architecture, and migration. You'll delve into security and compliance, operations and reliability, and software development. And examine networking, organizational culture, and more. You're sure to find 1, 2, or 97 things that inspire you to dig deeper and expand your own career. "Three Keys to Making the Right Multicloud Decisions," Brendan O'Leary "Serverless Bad Practices," Manases Jesus Galindo Bello "Failing a Cloud Migration," Lee Atchison "Treat Your Cloud Environment as If It Were On Premises," Iyana Garry "What Is Toil, and Why Are SREs Obsessed with It?", Zachary Nickens "Lean QA: The QA Evolving in the DevOps World," Theresa Neate "How Economies of Scale Work in the Cloud," Jon Moore "The Cloud Is Not About the Cloud," Ken Corless "Data Gravity: The Importance of Data Management in the Cloud," Geoff Hughes "Even in the Cloud, the Network Is the Foundation," David Murray "Cloud Engineering Is About Culture, Not Containers," Holly Cummins

Carbonate Seismology

SEG Books Although carbonates make up only 20% of the sedimentary rock record, they account for more than 50% of the world's proven oil reserves. Carbonates differ from siliclastics in generation, geomorphology, and diagenesis, all of which modify the mineralogy, porosity, and permeability so important to reservoir quality and 3-D seismic response. The first eight chapters establish the geologic framework and consist of state-of-the-art review papers written by recognized experts in carbonate generation, rock properties, sequence stratigraphy, seismic stratigraphy, and structural deformation. The last 10 chapters illustrate the seismic expression of carbonate terranes through carefully chosen case studies drawn from the United States, Venezuela, Norway, China, Saudi Arabia, Italy, and the

Bahamas, augmented by two careful studies of seismic signal-to-noise problems specific to carbonates. A recurring theme in each of these case studies is the importance of integrating seismic and petrophysical control with geologic models to better predict carbonate facies quality and distribution. This book is destined to become a well-worn reference volume that sits easily within reach of every geologist, geophysicist, and engineer involved in the exploration or exploitation of carbonate reservoirs.

Introduction to Sports Biomechanics

Analysing Human Movement Patterns

Routledge Introduction to Sports Biomechanics has been developed to introduce you to the core topics covered in the first two years of your degree. It will give you a sound grounding in both the theoretical and practical aspects of the subject. Part One covers the anatomical and mechanical foundations of biomechanics and Part Two concentrates on the measuring techniques which sports biomechanists use to study the movements of the sports performer. In addition, the book is highly illustrated with line drawings and photographs which help to reinforce explanations and examples.

Classical and Quantum Dynamics in Condensed Phase Simulations

World Scientific The school held at Villa Marigola, Lerici, Italy, in July 1997 was very much an educational experiment aimed not just at teaching a new generation of students the latest developments in computer simulation methods and theory, but also at bringing together researchers from the condensed matter computer simulation community, the biophysical chemistry community and the quantum dynamics community to confront the shared problem: the development of methods to treat the dynamics of quantum condensed phase systems. This volume collects the lectures delivered there. Due to the focus of the school, the contributions divide along natural lines into two broad groups: (1) the most sophisticated forms of the art of computer simulation, including biased phase space sampling schemes, methods which address the multiplicity of time scales in condensed phase problems, and static equilibrium methods for treating quantum systems; (2) the contributions on quantum dynamics, including methods for mixing quantum and classical dynamics in condensed phase simulations and methods capable of treating all degrees of freedom quantum-mechanically. Contents: Barrier Crossing: Classical Theory of Rare but Important Events (D Chandler) Monte Carlo Simulations (D Frenkel) Molecular Dynamics Methods for the Enhanced Sampling of Phase Space (B J Berne) Constrained and Nonequilibrium Molecular Dynamics (G Ciccotti & M Ferrario) From Eyring to Kramers: Computation of Diffusive Barrier Crossing Rates (M J Ruiz-Montero) Monte Carlo Methods for Sampling of Rare Event States (W Janke) Proton Transfer in Ice (D Marx) Nudged Elastic Band Method for Finding Minimum Energy Paths of Transitions (H Jónsson et al.) RAW Quantum Transition State Theory (G Mills et al.) Dynamics of Peptide Folding (R Elber et al.) Theoretical Studies of Activated Processes in Biological Ion Channels (B Roux & S Crouzy) The Semiclassical Initial Value Representation for Including Quantum Effects in Molecular Dynamics Simulations (W H Miller) Tunneling in the Condensed Phase: Barrier Crossing and Dynamical Control (N Makri) Feynman Path Centroid Methods for Condensed Phase Quantum Dynamics (G A Voth) Quantum Molecular Dynamics Using Wigner Representation (V S Filinov et al.) Nonadiabatic Molecular Dynamics Methods for Diffusion (D Laria et al.) and other papers Readership: Computational and statistical physicists. Keywords: Quantum; Molecular Dynamics; Dynamics Reviews: "... this volume is a useful introduction to currently popular, and widely-used techniques in chemical and statistical physics. The authors are well-respected researchers in the field and the level is appropriate to graduate students and researchers." Journal of Statistical Physics

Evaluating Fault and Cap Rock Seals

The key driver for both the Hedberg conference and this publication was the recognition that knowledge of risk in the estimation of sealing capacity and fault-seal potential is important in making judgments at the exploration, appraisal, and development stages of the petroleum business. In addition, incorporating seal risk in the overall assessment of hydrocarbons in place can affect decisions to drill prospects and the location of appraisal and development wells, as well as reserve estimation.

Calcium Orthophosphates

Applications in Nature, Biology, and Medicine

CRC Press Due to a great chemical similarity with the biological calcified tissues, many calcium orthophosphates possess remarkable biocompatibility and bioactivity. Materials scientists use this property extensively to construct artificial bone grafts that are either entirely made of or only surface-coated with the biologically relevant calcium orthophosphates. Porous scaffolds made of calcium orthophosphates are very promising tools for tissue engineering applications. A comprehensive overview of calcium orthophosphates, this book highlights their importance and biomedical uses.

Wave Fields in Real Media

Wave Propagation in Anisotropic, Anelastic, Porous and Electromagnetic Media

Elsevier Authored by the internationally renowned José M. Carcione, *Wave Fields in Real Media: Wave Propagation in Anisotropic, Anelastic, Porous and Electromagnetic Media* examines the differences between an ideal and a real description of wave propagation, starting with the introduction of relevant stress-strain relations. The combination of this relation and the equations of momentum conservation lead to the equation of motion. The differential formulation is written in terms of memory variables, and Biot's theory is used to describe wave propagation in porous media. For each rheology, a plane-wave analysis is performed in order to understand the physics of wave propagation. This book contains a review of the main direct numerical methods for solving the equation of motion in the time and space domains. The emphasis is on geophysical applications for seismic exploration, but researchers in the fields of earthquake seismology, rock acoustics, and material science - including many branches of acoustics of fluids and solids - may also find this text useful. New to this edition: This new edition presents the fundamentals of wave propagation in Anisotropic, Anelastic, Porous Media while also incorporating the latest research from the past 7 years, including that of the author. The author presents all the equations and concepts necessary to understand the physics of wave propagation. These equations form the basis for modeling and inversion of seismic and electromagnetic data. Additionally, demonstrations are given, so the book can be used to teach post-graduate courses. Addition of new and revised content is approximately 30%. Examines the fundamentals of wave propagation in anisotropic, anelastic and porous media Presents all equations and concepts necessary to understand the physics of wave propagation, with examples Emphasizes geophysics, particularly, seismic exploration for hydrocarbon reservoirs, which is essential for exploration and production of oil

Shale Reservoirs

Giant Resources for the 21st Century, AAPG Memoir 97

AAPG Hardcover plus CD

Quartz Cementation in Sandstones

John Wiley & Sons Quartz is the major porosity-reducing cement in many sandstone sequences. Therefore, Quartz cements represent a key source of petrographic and geochemical information about diagenetic history. They are also the major determinant of sandstone reservoir quality. While the ultimate goal of research in this area is to make robust predictions about the amount and distribution of quartz cements in a wide variety of depositional and burial settings, there are nevertheless large areas of the subject that are poorly understood and remain the subject of controversy. The aim of this Volume, which is based partly on papers submitted to a 1996 workshop in Belfast, and partly on invited contributions, is to bring together some of the main strands of research into quartz cements and provide a focus for debate and direction for future research. This book will be welcomed by sedimentologists, petrographers and geochemists involved in sandstone diagenesis, as well as by petroleum geologists seeking a deeper understanding of the factors influencing reservoir porosity and permeability. Contributors from 11 countries and 4 continents. Represents the benchmark in quartz cement research. If you are a member of the International Association of Sedimentologists, for purchasing details, please see: <http://www.iasnet.org/publications/details.asp?code=SP29>

Computational Methods for Fracture

MDPI This book offers a collection of 17 scientific papers about the computational modeling of fracture. Some of the manuscripts propose new computational methods and/or how to improve existing cutting edge methods for fracture. These contributions can be classified into two categories: 1. Methods which treat the crack as strong discontinuity such as peridynamics, scaled boundary elements or specific versions of the smoothed finite element methods applied to fracture and 2. Continuous approaches to fracture based on, for instance, phase field models or continuum damage mechanics. On the other hand, the book also offers a wide range of applications where state-of-the-art techniques are employed to solve challenging engineering problems such as fractures in rock, glass, concrete. Also, larger systems such as fracture in subway stations due to fire, arch dams, or concrete decks are studied.

The Brittle-Ductile Transition in Rocks

The Heard Volume

American Geophysical Union Published by the American Geophysical Union as part of the Geophysical Monograph Series, Volume 56. "The roses seem to have a mildew," Lucy said as I drank my morning coffee. "I'll ask Hugh about it," flashed through my mind, but not past my lips since he's been dead for over two years. I wonder if this isn't typical for his friends and colleagues. Hugh's ability and willingness to help, his unselfish cooperation not just in research but in life, are what made him special to those who worked closely with him. Many who read this volume are familiar with the varied contributions he made to rock mechanics and to high-pressure research. Consistent with his reputation, the things that impressed me when I first worked with Hugh in 1969 were his enthusiasm for work and his ability to keep pressure systems working well. Although these qualities still come to mind when I think of Hugh, the thing that usually remains is a warm feeling of pleasure at having been his friend and shared part of his life.

Rare Earth

Why Complex Life is Uncommon in the Universe

Springer What determines whether complex life will arise on a planet, or even any life at all? Questions such as these are investigated in this groundbreaking book. In doing so, the authors synthesize information from astronomy, biology, and paleontology, and apply it to what we know about the rise of life on Earth and to what could possibly happen elsewhere in the universe. Everyone who has been thrilled by the recent discoveries of extrasolar planets and the indications of life on Mars and the Jovian moon Europa will be fascinated by Rare Earth, and its implications for those who look to the heavens for companionship.

Fundamental Controls on Fluid Flow in Carbonates

Current Workflows to Emerging Technologies

Geological Society of London This volume highlights key challenges for fluid-flow prediction in carbonate reservoirs, the approaches currently employed to address these challenges and developments in fundamental science and technology. The papers span methods and case studies that highlight workflows and emerging technologies in the fields of geology, geophysics, petrophysics, reservoir modelling and computer science. Topics include: detailed pore-scale studies that explore fundamental processes and applications of imaging and flow modelling at the pore scale; case studies of diagenetic processes with complementary perspectives from reactive transport modelling; novel methods for rock typing; petrophysical studies that investigate the impact of diagenesis and fault-rock properties on acoustic signatures; mechanical modelling and seismic imaging of faults in carbonate rocks; modelling geological influences on seismic anisotropy; novel approaches to geological modelling; methods to represent key geological details in reservoir simulations and advances in computer visualization, analytics and interactions for geoscience and engineering.

Report of the Presidential Commission on the Space Shuttle Challenger Accident

DIANE Publishing Reviews the circumstances surrounding the Challenger accident to establish the probable cause or causes of the accident. Develops recommendations for corrective or other action based upon the Commission's findings and determinations. Color photos, charts and tables.

Fundamentals of Rock Mechanics

Springer

The Rock Physics Handbook

Cambridge University Press Brings together widely scattered theoretical and laboratory rock physics relations critical for modelling and interpretation of geophysical data.

Applied Statistics

Small-Scale Aquaponic Food Production

Fao Aquaponics is the integration of aquaculture and soilless culture in a closed production system. This manual details aquaponics for small-scale production--predominantly for home use. It is divided into nine chapters and seven annexes, with each chapter dedicated to an individual module of aquaponics. The target audience for this manual is agriculture extension agents, regional fisheries officers, non-governmental organizations, community organizers, government ministers, companies and singles worldwide. The intention is to bring a general understanding of aquaponics to people who previously may have only known about one aspect.

Petroleum Geoscience

From Sedimentary Environments to Rock Physics

Springer Science & Business Media Petroleum geoscience comprises those geoscientific disciplines which are of greatest significance for the exploration and recovery of oil and gas. These include petroleum geology, of which sedimentary geology is the main foundation along with the contextual and modifying principles of regional, tectonic and structural geology. Additionally, biostratigraphy and micropalaeontology, organic geochemistry, and geophysical exploration and production techniques are all important tools for petroleum geoscientists in the 21st century. This comprehensive textbook present an overview of petroleum geoscience for geologists destined for the petroleum industry. It should also be useful for students interested in environmental geology, engineering geology and other aspects of sedimentary geology