

Application Of Seismic Refraction Tomography To Karst Cavities

This book provides a general introduction to the most important methods of applied geophysics with a variety of case studies. These methods represent a primary tool for investigation of the subsurface and are applicable to a very wide range of problems. Applied geophysics is based on physics principles that collect and interpret data on subsurface conditions for practical purposes, including oil and gas exploration, mineral prospecting, geothermal exploration, groundwater exploration, engineering applications, archeological interests, and environmental concerns. The depth of investigation into applied geophysics is shallow, typically from the ground surface to several kilometers deep, where economic, cultural, engineering, or environmental concerns often arise. Applied geophysics uses almost all of the current geophysical methods, including electrical, magnetic, electromagnetic, gravimetric, geothermal, seismic, seismoelectric, magnetotelluric, nuclear, and radioactive methods. In applied geophysics, geophysicists are usually required to have a good understanding of math and physics principles, knowledge of geology and computer skills, and hands-on experience of electronic instruments. A geophysicist's routine job includes survey designs, data acquisition, data processing, and data interpretation with detailed explanation of the study. Applied geophysics consists of three main subject and interest areas, which are exploration geophysics, engineering geophysics, and environmental geophysics.

The seismic ray method plays an important role in seismology, seismic exploration, and in the interpretation of seismic measurements. Seismic Ray Theory presents the most comprehensive treatment of the method available. Many new concepts that extend the possibilities and increase the method's efficiency are included. The book has a tutorial character: derivations start with a relatively simple problem, in which the main ideas are easier to explain, and then advance to more complex problems. Most of the derived equations are expressed in algorithmic form and may be used directly for computer programming. This book will prove to be an invaluable advanced text and reference in all academic institutions in which seismology is taught or researched.

This new edition of the well-established Kearey and Brooks text is fully updated to reflect the important developments in geophysical methods since the production of the previous edition. The broad scope of previous editions is maintained, with even greater clarity of explanations from the revised text and extensively revised figures. Each of the major geophysical methods is treated systematically developing the theory behind the method and detailing the instrumentation, field data acquisition techniques, data processing and interpretation methods. The practical application of each method to such diverse exploration applications as petroleum, groundwater, engineering, environmental and forensic is shown by case histories. The mathematics required in order to understand the text is purposely kept to a minimum, so the book is suitable for courses taken in geophysics by all undergraduate students. It will also be of use to postgraduate students who might wish to include geophysics in their studies and professional geologists who wish to discover the breadth of the subject in connection with their own work.

Applied Geophysics with Case Studies on Environmental, Exploration and Engineering Geophysics

Fundamentals of Seismic Tomography

Information Circular

Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions

Exploration Seismology

The past few decades have witnessed the growth of the Earth Sciences in the pursuit of knowledge and understanding of the planet that we live on. This development addresses the challenging endeavor to enrich human lives with the bounties of Nature as well as to preserve the planet for the generations to come. Solid Earth Geophysics aspires to define and quantify the internal structure and processes of the Earth in terms of the principles of physics and forms the intrinsic framework, which other allied disciplines utilize for more specific investigations. The first edition of the Encyclopedia of Solid Earth Geophysics was published in 1989 by Van Nostrand Reinhold publishing company. More than two decades later, this new volume, edited by Prof. Harsh K. Gupta, represents a thoroughly revised and expanded reference work. It brings together more than 200 articles covering established and new concepts of Geophysics across the various sub-disciplines such as Gravity, Geodesy, Geomagnetism, Seismology, Seismics, Deep Earth Processes, Plate Tectonics, Thermal Domains, Computational Methods, etc. in a systematic and consistent format and standard. It is an authoritative and current reference source with extraordinary width of scope. It draws its unique strength from the expert contributions of editors and authors across the globe. It is designed to serve as a valuable and cherished source of information for current and future generations of professionals.

The use of geophysical techniques has become an important tool in many geomorphological studies. However, the correct handling of geophysical instruments and the subsequent processing of the data they yield, on the one hand, and the description and interpretation of geomorphological settings to which they are applied, on the other hand, are difficult tasks. Without close cooperation of geophysicists and geomorphologists, the accurate and effective use of geophysical techniques and their geophysical and geomorphological interpretation is often limited. There are many text books in both disciplines, but no single book addresses the interdisciplinary aspects of combining geophysics and geomorphology. In addition to these papers, we include a CD-ROM by Karl-Josef Sandmeier which contains (i) a test version of the software package REFLEXW (programme for 2D and 3D processing and interpretation of GPR and seismic refraction/reflection data, incl. Demo-data and handbook); (ii) an introduction to the interpretation of seismic refraction data; (iii) an introduction to modelling and tomography tools, and (iv) a technical note on the use of wavefront inversion, forward modelling and tomographic interpretation tools for seismic refraction data

Many scientific studies have been conducted on the Cretaceous-Paleogene boundary (KTB) in the Gulf coast region and, in particular, the Brazos River section in Falls County, Texas. Despite this, there remains much to be learned about the KTB and its depositional environment. Study of the KTB has been multidisciplinary, primarily in the fields of sedimentology and paleontology. Some researchers in these disciplines have questioned the consensus view of the placement of the KTB and subsequent interpretation of the timing of depositional events and mass extinction events. Geophysical methods have potential to provide additional understanding of the physical properties of the KTB. To date, study of the KTB has relied on point data and borehole information to create cross sections of the complex. Seismic refraction surveys can provide spatially continuous information on susburface horizons located adjacent to the KTB. In this study, seismic first-arrival traveltimes are processed with a tomographic modeling program to map the top of the hummocky cross-bedded sandstone (HCS), which is a key indicator of the deposition environment at the time of KTB boundary complex placement. The survey area is located at Cottonmouth Creek, a tributary of the Brazos River. Three seismic lines were surveyed, one across Cottonmouth Creek, and two parallel to the creek on either side. The data from the two parallel lines were processed using the 2-D seismic refraction tomography algorithm of Zelt and Smith. The reconstructed depth to the HCS in the survey area is approximately 6 m, with layer seismic velocities of 364, 1800, and 2200 m/s, respectively. Seismic tomography successfully mapped the HCS layer and reveals approximately 1 m amplitude undulations vertically and undulations on the order of several m horizontally. These variations are consistent with exposed surfaces of the HCS in the creek bed. Seismic refraction has been utilized successfully herein to map a key buried indicator, namely the top of the HCS layer, associated with the KTB complex. A detailed 3-D seismic refraction survey at this site is recommended to generate a high-resolution 2-D terrain map of the top of the HCS layer.

Landslide Characterization Using P- and S-wave Seismic Refraction Tomography : the Importance of Elastic Moduli

Advances in Near-surface Seismology and Ground-penetrating Radar

Principles of Applied Geophysics

Seismic Ray Theory

This is the completely updated revision of the highly regarded book Exploration Seismology. Available now in one volume, this textbook provides a complete and systematic discussion of exploration seismology. The first part of the book looks at the history of exploration seismology and the theory - developed from the first principles of physics. All aspects of seismic acquisition are then described on to discuss data-processing and interpretation. Applications of seismic exploration to groundwater, environmental and reservoir geophysics are also included. The book is designed to give a comprehensive up-to-date picture of the applications of seismology. Exploration Seismology's comprehensiveness makes it suitable as a text for undergraduate courses for geologists, geophysicists and engineering reference work for practising professionals.

Consisting of more than 150 articles written by leading experts, this authoritative reference encompasses the entire field of solid-earth geophysics. It describes in detail the state of current knowledge, including advanced instrumentation and techniques, and focuses on important areas of exploration geophysics. It also offers clear and complete coverage of seismology, geodesy, gravimetry, magnetic and adjacent disciplines of physics, geology, oceanography and space science.

This book reviews and assesses the various methodologies for site characterization and site effect estimation to carry out seismic zonation at micro and macro levels. Readers will learn about the suitability of these methodologies for each level of zoning that needs to be assessed in order to optimize the resources for carrying out seismic zonation. The Indian sub-continent is highly vulnerable to earthquakes and studies have focused primarily on the Himalayan region (inter-plate zone) and the northeast region (subduction zone). The book improves understanding of the Peninsular India that also has significantly high seismicity and is prone to earthquakes of sizeable magnitude. Particular attention is given to the various methodologies for assessing seismic hazards, the scales at which site characterization methods for zonation practices using site data and hazard indexes. Aimed at students, this book will be of use to post-graduates and doctoral students researching seismic zonation, hazard assessment and mitigation, and spatial data in earth sciences.

Two-dimensional Velocity Anomaly Reconstruction by Seismic Tomography

Geophysical Assessment of Soil and Rock in the New Madrid Seismic Zone

Gpr / Seismic Tomography for Delineating Subsurface Structure

2-dimensional Seismic Refraction Mapping Study of the Cretaceous-Paleogene Boundary Complex from the Brazos, Texas Section

On Significant Applications of Geophysical Methods

"The research presented here consists of two case studies: the first from a study site in Illinois and the second from a site in Arkansas. In both instances, geophysical investigations were conducted to characterize the subsurface. At the Illinois site, borehole control, downhole seismic (DHS), seismic refraction tomography (SRT) and multichannel analysis of surface waves (MASW) data were acquired for the purpose of seismic site characterization. Shear wave and compressional wave velocities were used to estimate depth to bedrock and to generate 1-D plots depicting variations in Poisson's Ratio, elastic moduli and density. The average shear wave velocity in the upper 100 ft was calculated and the national earthquake hazards reduction program (NEHRP) class D was assigned to the site based on MASW and DHS data results. At the Arkansas site, borehole control, electrical resistivity tomography (ERT), seismic refraction tomography (SRT), and multichannel analysis of surface waves (MASW) data were acquired with the objective of verifying and mapping a postulated fault. A comparative evaluation of the overall usefulness of the ERT, SRT and MASW techniques was also performed. The comparison showed that ERT and SRT tools generated remarkably similar images of the fault. The MASW tool generated a slightly different image of the fault. The research demonstrates that integrated use of seismic (seismic refraction tomography, multichannel analysis of surface waves and downhole seismic) and electrical (electrical resistivity tomography) methods is an effective approach in terms of assessing soil and rock in the New Madrid Seismic Zone"--Abstract, page iii.

Transportation Tunnels, 2nd Edition provides a comprehensive text on tunneling and tunnel engineering applicable in general to all types of tunnels, with more detailed information on highway and railway tunnels. While the First Edition of the book was confined to deal with railway and highway tunnels, the Second Edition is also extensively considering the latest trends in use of tunnels in different other fields. The book has been revised to provide coverage of water conveyance, navigation and material conveyance tunnels also and deals with these subjects in more detail. It covers all aspects of investigation, design, construction, monitoring and maintenance of tunnels. Special emphasis has been laid on the geotechnical investigations, interpretation of findings and relating the same to the design as well as the construction of tunnels. The book reflects the advancements in the knowledge of ground behaviour and rock mechanics and also in construction technology, including use of TBM in the last two decades. It covers in sufficient detail the basic requirements of tunnel profile, the geometric parameters, clearance requirements, aerodynamics, and cost economics in fixing alignments with different design parameters like curvature, gradient and operational requirements. It discusses in detail alternative forms of the cross section / profile and illustrates design methodology with examples. The different methodologies that have been used in the past using timber or steel supports by stage wise expansion of cross sections and modern methodologies used for boring full profile using new tunneling methods and Tunnel Boring Machines are also comprehensively discussed. Requirements of tunnels in respect of ventilation, lighting and drainage are adequately covered. Separate chapters have been included on 'Instrumentation' and 'Tunnel Inspection and Maintenance'. The expanded text on the use and advantages of methodologies and equipment for dealing with various aspects of construction of tunnels is based on observations through site visits, discussions with, and experiences of people as recorded on large number of tunneling works which have been taken up recently for railways, highways and urban transport subway projects. The book can serve as a textbook for undergraduate and graduate students and as a reference book for practicing engineers.

Basic Seismic Refraction Survey and Data Interpretation Techniques This book is written to impart knowledge on seismic refraction method, which covers data acquisition, processing and interpretation techniques. The discussion in this book is about seismic waves and their characteristics, theory of seismic refraction and field procedures. Examples of seismic refraction data and simple calculation are also provided to enable readers to better visualize and aid their understanding on the seismic refraction method. Rosli Saad is currently a lecturer at School of Physics, Universiti Sains Malaysia, Pulau Pinang with 30 years of experience in geophysics. His expertises is in the areas of Ground Penetrating Radar (GPR), gravity, magnetic, seismic and electrical methods. His main research is in engineering and environmental studies. He has published three research book chapters, four research books and more than 250 journal papers. Recently, he was appointed as head of geophysics section at the Centre of Tropical Geoengineering (GEOTROPIK), Universiti Teknologi Malaysia.

Rock Quality, Seismic Velocity, Attenuation and Anisotropy

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Geophysical Applications in Geomorphology

Basic Seismic Refraction Survey and Data Interpretation Techniques (Penerbit USM)

Transportation Tunnels

This book provides a systematic review of tomographic applications in seismology and the future directions. Theories and case histories are discussed by the international authors, drawing on their own practical experiences with global and local case histories.

Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions contains invited, keynote and theme lectures and regular papers presented at the 7th International Conference on Earthquake Geotechnical Engineering (Rome, Italy, 17–20 June 2019. The contributions deal with recent developments and advancements as well as case histories, field monitoring, experimental characterization, physical and analytical modelling, and applications related to the variety of environmental phenomena induced by earthquakes in soils and their effects on engineered systems interacting with them. The book is divided in the sections below: Invited papers Keynote papers Theme lectures Special Session on Large Scale Testing Special Session on Liquefact Projects Special Session on Lessons learned from recent earthquakes Special Session on the Central Italy earthquake Regular papers Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions provides a significant up-to-date collection of recent experiences and developments, and aims at engineers, geologists and seismologists, consultants, public and private contractors, local national and international authorities, and to all those involved in research and practice related to Earthquake Geotechnical Engineering.

This book aims to inform policy-makers, engineers and earth scientists about the current and emerging role of geophysics in addressing environmental processes, assessments, and policy directions related to new and existing dams and levees. Until now geophysics has concentrated on characterization and remediation of dams and levees, but now the field is changing our understanding on the influence of natural processes (e.g., floods, dissolution) and human activities in the design, and management of these structures. This monograph includes advances in the following fields of Dams and Levees studies: · New insights from small and mid-sized laboratory experiments · Integrated methods electromagnetic, seismic, potential methods · Inverse modeling approaches · Statistical considerations · Monitoring of processes attending aging structures · Hazard monitoring · Risk Analysis

Comprehensive Seismic Zonation Schemes for Regions at Different Scales

Seismic Tomography

Seismic refraction tomography for volume analysis of saturated alluvium in the Straight Creek drainage and its confluence with Red River, Taos County, New Mexico

Seismic Imaging: a Practical Approach

Investigation of Bridge Foundation Sites in Karst Terrane Via Seismic Refraction Tomography

As a result the FDOT is interested in methods of early detection. The capabilities of three commercially available seismic refraction tomography (SRT) programs, specifically Rayfract, SeisImager, and SeisOpt Pro, to image the subsurface were evaluated. The resulting tomograms were then compared to traditional, intrusive geotechnical test methods such as: CPT soundings, SPT soundings, and rock coring data. The results of these comparisons suggest that SRT is capable of accurately imaging the laterally-variable top of bedrock typical of karst terrain.

This tutorial or practical guide on seismic tomography is aimed at an audience familiar with basic seismology concepts and calculus. The intent is to provide the reader with a fundamental understanding of both seismic ray tomography and seismic diffraction tomography. Case studies illustrate processing method-ology, basic interpretation technique, and pitfalls. After reading through this presentation, one will have a greater understanding of and appreciation for seismic tomography articles found in the literature.

"The critical zone is defined as the upper most portion of the crust extending from the top of unweathered bedrock to the top of the vegetation canopy. It is the zone in which inorganic rock is transformed into biologically useful soils and saprolites in a process termed weathering. Because the critical zone is the connection between the subsurface and surface it plays a role in a wide variety of biological, hydrologic, and climatic processes.

Understanding the critical zone though is inherently difficult because its scale and heterogeneity often means direct sampling methods, e.g. soil pits and cores, under represent the heterogeneous critical zone process. Geophysical methods are increasingly applied to study the near-surface processes at a variety of spatial and temporal scales. This paper presents two geophysical experiments that capture two different hydrologic processes and two different scales: the first is the study of the influence of aspect, elevation, and snow accumulation on weathering depths at the catchment scales using seismic refraction tomography and second is the application of electrical resistivity tomography to observe the heterogeneous seasonal change of soil moisture and its connectivity at the plot scale."--Boise State University ScholarWorks.

Theory and practice

2-D Electrical Resistivity, Seismic Refraction Tomography and Geotechnical Data Application in Searching for Ancient Impact Crater of Bukit Bunuh, Perak

Application of Seismic-refraction Techniques to Hydrologic Studies

Encyclopedia of Solid Earth Geophysics

An Introduction to Geophysical Exploration

This edited volume is based on the best papers accepted for presentation during the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1), Tunisia 2018. This special volume is of interest to all researchers practicing geophysicists/seismologists, students of PG and UG in the fields of multifaceted Geoscience. Major applications with

relevant illustrations presented in the volume are from Middle East. And therefore, this book no doubt would serve as a reference guide to all geoscientists and students in the broad field of Earth Science. This volume covers significant applications of gravity and magnetic methods, electrical and electromagnetic methods, refraction and reflection seismic methods besides a large number of study on earthquakes, tectonics and geological settings etc. The salient features of this volume are the interpretation and modeling of geophysical data of different nature. Main topics include: 1. Applications of gravity and magnetic methods.2. Electrical and Electromagnetic methods in mineral and groundwater exploration.3. Case studies on refraction and reflection seismic methods.4. Integrated geoscience applications in the exploration of subsurface resources.5. Hydrocarbon and petrophysical studies6. Earthquakes and seismic hazard assessment.7. Tectonics

Develop a Greater Understanding of How and Why Surface Wave Testing Works Using examples and case studies directly drawn from the authors' experience, Surface Wave Methods for Near-Surface Site Characterization addresses both the experimental and theoretical aspects of surface wave propagation in both forward and inverse modeling. This book accents the key facets associated with surface wave testing for near-surface site characterization. It clearly outlines the basic principles, the theoretical framework and the practical implementation of surface wave analysis. In addition, it also describes in detail the equipment and measuring devices, acquisition techniques, signal processing, forward and inverse modeling theories, and testing protocols that form the basis of modern surface wave techniques. Review Examples of Typical Applications for This Geophysical Technique Divided into eight chapters, the book explains surface wave testing principles from data measurement to interpretation. It effectively integrates several examples and case studies illustrating how different ground conditions and geological settings may influence the interpretation of data measurements. The authors accurately describe each phase of testing in addition to the guidelines for correctly performing and interpreting results. They present variants of the test within a consistent framework to facilitate comparisons, and include an in-depth discussion of the uncertainties arising at each stage of surface wave testing. Provides a comprehensive and in-depth treatment of all the steps involved in surface wave testing Discusses surface wave methods and their applications in various geotechnical conditions and geological settings Explains how surface wave measurements can be used to estimate both stiffness and dissipative properties of the ground Addresses the issue of uncertainty, which is often an overlooked problem in surface wave testing Includes examples with comparative analysis using different processing techniques and inversion algorithms Outlines advanced applications of surface wave testing such as joint inversion, underwater investigation, and Love wave analysis Written for geotechnical engineers, engineering seismologists, geophysicists, and researchers, Surface Wave Methods for Near-Surface Site Characterization offers practical guidance, and presents a thorough understanding of the basic concepts.

Treatise on Geophysics, Second Edition, is a comprehensive and in-depth study of the physics of the Earth beyond what any geophysics text has provided previously. Thoroughly revised and updated, it provides fundamental and state-of-the-art discussion of all aspects of geophysics. A highlight of the second edition is a new volume on Near Surface Geophysics that discusses the role of geophysics in the exploitation and conservation of natural resources and the assessment of degradation of natural systems by pollution. Additional features include new material in the Planets and Moon, Mantle Dynamics, Core Dynamics, Crustal and Lithosphere Dynamics, Evolution of the Earth, and Geodesy volumes. New material is also presented on the uses of Earth gravity measurements. This title is essential for professionals, researchers, professors, and advanced undergraduate and graduate students in the fields of Geophysics and Earth system science. Comprehensive and detailed coverage of all aspects of geophysics Fundamental and state-of-the-art discussions of all research topics Integration of topics into a coherent whole

Proceedings of the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1), Tunisia 2018

Surface Wave Methods for Near-Surface Site Characterization

Application of Hydrogeophysical Imaging in the Reynolds Creek Critical Zone Observatory

In: Journal of Applied Geophysics Vol. 134 (2016).

Advances in Geophysical Monitoring and Characterization

Seismic measurements take many forms, and appear to have a universal role in the Earth Sciences. They are the means for most easily and economically interpreting what lies beneath the visible surface. There are huge economic rewards and losses to be made when interpreting the shallow crust or subsurface more, or less accurately, as the case may be.

The welcome accorded to the first two editions of this book has been most encouraging. The object of the third edition continues to be to give a brief but "fairly comprehensive survey of the methods of applied geophysics including some of the modern interpretation techniques. The general approach and plan of the previous editions are preserved, but in bringing the book up to date some changes have been made to which I would like to draw the reader's special attention. SI units are strictly adhered to except in six illustrative figures reproduced from older literature and left intact to save some extensive redrafting. Following the recommendation of the International Union of Geodesy and Geophysics, the magnetic field measured in geophysical work is labelled here as flux density (tesla). Consequently, the symbols H, Z and T commonly used in geomagnetic work should stand for flux density. In the Maxwellian theory of electromagnetism the symbol H stands, by convention, for a magnetizing force (A m⁻¹) and a discerning reader will at once sense a source of confusion. This source of confusion is avoided in the present edition by B_z, B_z and B_z instead of H, Z and T. The employing the symbols b_z, z_t latter –et is employed for the corresponding magnetizing forces of the earth's field. I hope this notation will gain general acceptance because it so easily dispenses with an ambiguity that otherwise tends to lead to unnecessary confusion of units and dimensions in geomagnetism.

Basic Seismic Refraction Survey and Data Interpretation Techniques (Penerbit USM)Penerbit USM

In Situ Leach Mining

Proceedings : Bureau of Mines Technology Transfer Seminars, Phoenix, AZ, April 4 and Salt Lake City, UT, April 6, 1989

Levees and Dams

Proceedings of the 1st GeoMEast International Congress and Exhibition, Egypt 2017 on Sustainable Civil Infrastructures

Proceedings of the 7th International Conference on Earthquake Geotechnical Engineering, (ICEGE 2019), June 17-20, 2019, Rome, Italy

The aim of the present work is to develop an approach for detecting and mapping different types of subsurface anomalous zones using tomographic processing techniques. Tomography is applied to process seismic refraction and Ground Penetrating Radar (GPR) data. We developed a new tomography technique depending on acquiring the GPR or seismic data from surface survey, where both sources and receivers are located on the earth's surface. Three synthetic seismic models and two sets of field data are discussed to test the proposed seismic refraction tomography technique. Due to the similarities between GPR and seismic data, the adopted tomography technique is applied to GPR data. Three GPR tomography laboratory experiments are acquired in the laboratory of Kiel University, Germany. The inversion of GPR data using the adopted technique give satisfactory results on the lateral extension of the anomalies as well as GPR velocity. One GPR tomography field test is acquired in the botanic garden of Kiel University, Kiel, Germany. In this data the root system of a tree and zone of high water content, due to previous excavation processes could be marked on the inverted tomogram map.

The ongoing population growth is resulting in rapid urbanization, new infrastructure development and increasing demand for the Earth's natural resources (e.g., water, oil/gas, minerals). This, together with the current climate change and increasing impact of natural hazards, imply that the engineering geology profession is called upon to respond to new challenges. It is recognized that these challenges are particularly relevant in the developing and newly industrialized regions. The idea beyond this volume is to highlight the role of engineering geology and geological engineering in fostering sustainable use of the Earth's resources, smart urbanization and infrastructure protection from geohazards. We selected 19 contributions from across the globe (16 countries, five continents), which cover a wide spectrum of applied interdisciplinary and multidisciplinary research, from geology to engineering. By illustrating a series of practical case studies, the volume offers a rather unique opportunity to share the experiences of engineering geologists and geological engineers who tackle complex problems working in different environmental and social settings. The specific topics addressed by the authors of chapters included in the volume are the following: pre-design site investigations; physical and mechanical properties of engineering soils; novel, affordable sensing technologies for long-term geotechnical monitoring of engineering structures; slope stability assessments and monitoring in active open-cast mines; control of environmental impacts and hazards posed by abandoned coal mines; assessment of and protection from geohazards (landslides, ground fracturing, coastal erosion); applications of geophysical surveying to investigate active faults and ground instability; numerical modeling of seabed deformations related to active faulting; deep geological repositories and waste disposal; aquifer assessment based on the integrated hydrogeological and geophysical investigation; use of remote sensing and GIS tools for the detection of environmental hazards and mapping of surface geology. This volume is part of the proceedings of the 1st GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2017.

Advances in Near-surface Seismology and Ground-penetrating Radar (SEG Geophysical Developments Series No. 15) is a collection of original papers by renowned and respected authors from around the world. Technologies used in the application of near-surface seismology and ground-penetrating radar have seen significant advances in the last several years. Both methods have benefited from new processing tools, increased computer speeds, and an expanded variety of applications. This book, divided into four sections--"Reviews," "Methodology," "Integrative Approaches," and "Case Studies"--captures the most significant cutting-edge issues in active areas of research, unveiling truly pertinent studies that address fundamental applied problems. This collection of manuscripts grew from a core group of papers presented at a post-convention workshop, "Advances in Near-surface Seismology and Ground-penetrating Radar," held during the 2009 SEG Annual Meeting in Houston, Texas. This is the first cooperative publication effort between the near-surface communities of SEG, AGU, and EEGS. It will appeal to a large and diverse audience that includes researchers and practitioners inside and outside the near-surface geophysics community. --Publisher description.

Engineering Geology and Geological Engineering for Sustainable Use of the Earth's Resources, Urbanization and Infrastructure Protection from Geohazards

Questa Baseline and Pre-mining Ground-water Quality Investigation

Seismic Methods

Treatise on Geophysics

The Generalized Reciprocal Method of Seismic Refraction Interpretation