

Basics Of Geological Remote Sensing An Introduction To Applications Of Remote Sensing In Geological Mapping And Mineral Exploration

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Advanced Remote Sensing - Shunlin Liang
2012-12-06

Advanced Remote Sensing is an application-based reference that provides a single source of mathematical concepts necessary for remote sensing data gathering and assimilation. It presents state-of-the-art techniques for estimating land surface variables from a variety of data types, including optical sensors such as RADAR and LIDAR. Scientists in a number of different fields including geography, geology, atmospheric science, environmental science, planetary science and ecology will have access to critically-important data extraction techniques and their virtually unlimited applications. While rigorous enough for the most experienced of scientists, the techniques are well designed and integrated, making the book's content intuitive, clearly presented, and practical in its implementation. Comprehensive overview of various practical methods and algorithms
Detailed description of the principles and procedures of the state-of-the-art algorithms
Real-world case studies open several chapters
More than 500 full-color figures and tables
Edited by top remote sensing experts with contributions from authors across the

geosciences

Satellite Remote Sensing - Ray Harris
1987-01-01

Hyperspectral Remote Sensing - Ruiliang Pu
2017-08-16

Advanced imaging spectral technology and hyperspectral analysis techniques for multiple applications are the key features of the book. This book will present in one volume complete solutions from concepts, fundamentals, and methods of acquisition of hyperspectral data to analyses and applications of the data in a very coherent manner. It will help readers to fully understand basic theories of HRS, how to utilize various field spectrometers and bioinstruments, the importance of radiometric correction and atmospheric correction, the use of analysis, tools and software, and determine what to do with HRS technology and data.

Remote Sensing for Hydrocarbon Exploration - Andreas Laake

This book provides insights into the benefits of using remote sensing data from a geoscientist's perspective, by integrating the data with the understanding of Earth's surface and subsurface. In 3 sections, the book takes a

detailed look at what data explorationists use when they explore for hydrocarbon resources, assess different terrain types for planning and hazards and extract present-day geologic analogs for subsurface geologic settings. The book presents the usage of remote sensing data in exploration in a structured way by detecting individual geologic features as building blocks for complex geologic systems. This concept enables readers to build their own workflows for the assessment of complex geologic systems using various combinations of remote sensing data. Section 1 introduces readers to the foundations of remote sensing for exploration, covers various methods of image processing and studies different digital elevation and bathymetry models. Section 2 presents the concept of geomorphology as a means to integrate surface and subsurface data. Different aspects of rendering in 2D and 3D are explained and used for the interpretation and extraction of geologic features that are used in exploration. Section 3 addresses remote sensing for hydrocarbon exploration in detail, from geophysical data acquisition to development and infrastructure planning. The organization of this chapter follows an exploration workflow from regional to local modeling studying basin and petroleum system modeling as well as logistics planning of seismic surveys and near-surface modeling. Aspects of field development and infrastructure planning comprise multi-temporal and dynamic modeling. The section closes with a structured approach to extracting geologic analogs from interpreted remote sensing data. The book will be of interest to professionals and students working in exploration for hydrocarbons and water resources, as well as geoscientists and engineers using remote sensing for infrastructure planning, hazard assessment and dynamic environmental studies.

Urban Informatics - Wenzhong Shi 2021-04-06

This open access book is the first to systematically introduce the principles of urban informatics and its application to every aspect of the city that involves its functioning, control, management, and future planning. It introduces new models and tools being developed to understand and implement these technologies that enable cities to function more efficiently - to become 'smart' and 'sustainable'. The smart city

has quickly emerged as computers have become ever smaller to the point where they can be embedded into the very fabric of the city, as well as being central to new ways in which the population can communicate and act. When cities are wired in this way, they have the potential to become sentient and responsive, generating massive streams of 'big' data in real time as well as providing immense opportunities for extracting new forms of urban data through crowdsourcing. This book offers a comprehensive review of the methods that form the core of urban informatics from various kinds of urban remote sensing to new approaches to machine learning and statistical modelling. It provides a detailed technical introduction to the wide array of tools information scientists need to develop the key urban analytics that are fundamental to learning about the smart city, and it outlines ways in which these tools can be used to inform design and policy so that cities can become more efficient with a greater concern for environment and equity.

[Introduction to the Physics and Techniques of Remote Sensing](#) - Charles Elachi 2006-05-11

The science and engineering of remote sensing--theory and applications The Second Edition of this authoritative book offers readers the essential science and engineering foundation needed to understand remote sensing and apply it in real-world situations. Thoroughly updated to reflect the tremendous technological leaps made since the publication of the first edition, this book covers the gamut of knowledge and skills needed to work in this dynamic field, including: * Physics involved in wave-matter interaction, the building blocks for interpreting data * Techniques used to collect data * Remote sensing applications The authors have carefully structured and organized the book to introduce readers to the basics, and then move on to more advanced applications. Following an introduction, Chapter 2 sets forth the basic properties of electromagnetic waves and their interactions with matter. Chapters 3 through 7 cover the use of remote sensing in solid surface studies, including oceans. Each chapter covers one major part of the electromagnetic spectrum (e.g., visible/near infrared, thermal infrared, passive microwave, and active microwave). Chapters 8 through 12 then cover remote

sensing in the study of atmospheres and ionospheres. Each chapter first presents the basic interaction mechanism, followed by techniques to acquire, measure, and study the information, or waves, emanating from the medium under investigation. In most cases, a specific advanced sensor is used for illustration. The book is generously illustrated with fifty percent new figures. Numerous illustrations are reproduced in a separate section of color plates. Examples of data acquired from spaceborne sensors are included throughout. Finally, a set of exercises, along with a solutions manual, is provided. This book is based on an upper-level undergraduate and first-year graduate course taught by the authors at the California Institute of Technology. Because of the multidisciplinary nature of the field and its applications, it is appropriate for students in electrical engineering, applied physics, geology, planetary science, astronomy, and aeronautics. It is also recommended for any engineer or scientist interested in working in this exciting field.

Remote Sensing Geology - Ravi P. Gupta
2017-11-24

Over the past decade, advances in sensor technology, processing algorithms, and computational capacity have taken remote sensing to a level where observations can be transformed into quantitative measurements, and the technology can be used in near real-time for mapping, monitoring and decision-making. For the third edition, this widely acclaimed book has been fully revised, enlarged and updated. It covers remote sensing in a wide range of optical, thermal, and microwave wavelengths and their host of geologic applications featuring sample applications from around the globe. In addition, it presents state-of-the-art content on emerging themes such as atmospheric interactions, spectroscopy, spectral indices, prospectivity modelling, and multi-sensor geodata integration. The subject matter is presented at a basic level, offering students an excellent introductory text on remote sensing. Further, the main part of the book will also be of great value to active researchers. Excerpt from the review of *Remote Sensing Geology* (2nd ed., 2003): *International Journal of Applied Earth Observation and Geoinformation*, 5 (2004) 239-240 "...Graduate students, research workers and professional

earth scientists will use this book to their advantage and with pleasure; it is well-written, to the point and with an emphasis on understanding the principles underlying this wide spectre of technology in its application to the earth sciences. Remote sensing is a fascinating subject; so is geology. The author has fully succeeded in providing a fascinating book that combines them in a handy volume."

Jan J. Nossin

Introduction to Remote Sensing - James B. Campbell 2002

This comprehensive introductory text presents a timely overview of the most widely used forms of remote sensing imagery and their applications in plant sciences, hydrology, earth sciences, and land-use analysis.

Introductory Digital Image Processing - John R. Jensen 2015-04-17

For junior/graduate-level courses in Remote Sensing in Geography, Geology, Forestry, and Biology. *Introductory Digital Image Processing: A Remote Sensing Perspective* focuses on digital image processing of aircraft- and satellite-derived, remotely sensed data for Earth resource management applications. Extensively illustrated, it explains how to extract biophysical information from remote sensor data for almost all multidisciplinary land-based environmental projects. Part of the Pearson Series Geographic Information Science. Now in full color, the Fourth Edition provides up-to-date information on analytical methods used to analyze digital remote sensing data. Each chapter contains a substantive reference list that can be used by students and scientists as a starting place for their digital image processing project or research. A new appendix provides sources of imagery and other geospatial information.

Basics of Computational Geophysics - Pijush Samui 2020-11-27

Basics of Computational Geophysics provides a one-stop, collective resource for practitioners on the different techniques and models in geoscience, their practical applications, and case studies. The reference provides the modeling theory in an easy-to-read format that is verified with onsite models for specific regions and scenarios, including the use of big data and artificial intelligence. This book offers a platform whereby readers will learn theory, practical

applications, and the comparison of real-world problems surrounding geomechanics, modeling and optimizations. Covers various advanced computational techniques for solving different problems in geophysics, including the use of Big Data and artificial intelligence Includes case studies that provide examples surrounding practical applications Provides an assessment of the capabilities of commercial software
Remote Sensing Geology - Ravi P. Gupta
2013-06-29

For nearly three decades there has been a phenomenal growth in the field of Remote Sensing. The second edition of this widely acclaimed book has been fully revised and updated. The reader will find a wide range of information on various aspects of geological remote sensing, ranging from laboratory spectra of minerals and rocks, ground truth, to aerial and space-borne remote sensing. This volume describes the integration of photogeology into remote sensing as well as how remote sensing is used as a tool of geo-exploration. It also covers a wide spectrum of geoscientific applications of remote sensing ranging from meso- to global scale. The subject matter is presented at a basic level, serving students as an introductory text on remote sensing. The main part of the book will also be of great value to active researchers.

Atlas of Structural Geological and Geomorphological Interpretation of Remote Sensing Images - Achyuta Ayan Misra
2023-01-17

ATLAS OF STRUCTURAL GEOLOGICAL AND GEOMORPHOLOGICAL INTERPRETATION OF REMOTE SENSING IMAGES An extensive compilation of case studies in structural geology and geomorphology for interpreting remotely sensed images In the Atlas of Structural Geological and Geomorphological Interpretation of Remote Sensing Images, a team of experts delivers an extensive collection of over 20 different examples of structural geological and geomorphological studies by remote sensing. The book demonstrates how to properly interpret geological features and gather robust and reliable information from remote sensing images. This atlas contains high-quality colour images that depict a diversity of structures and geomorphic features from different tectonic regimes and geographic localities in the

Americas, Europe, and Australasia. While its primary emphasis is on structural geology, geomorphology is considered in some depth as well. The examples also cover geological hazards, including volcanic eruptions and earthquakes. Readers will also find: A thorough introduction to the background of remote sensing, including foundational concepts and the classification of remote sensing based on data type, source, platform and imaging media Comprehensive discussions of geomorphology, including explorations of lava fissures, badlands and beaches In-depth explorations of structural geology, including discussions of deformation bands, fault lines and earthquake effects Several examples of how to trace hydrological processes such as glacier retreat, changes in drainage patterns and bar formation Perfect for advanced students and researchers in the geoscience community, Atlas of Structural Geological and Geomorphological Interpretation of Remote Sensing Images will also earn a place in the libraries of practicing professionals with an interest in the interpretation of remote sensing images.

Remote Sensing for Geoscientists - Gary L. Prost 2013-12-13

This third edition of the bestselling *Remote Sensing for Geologists: A Guide to Image Interpretation* is now titled *Remote Sensing for Geoscientists: Image Analysis and Integration*. The title change reflects that this edition applies to a broad spectrum of geosciences, not just geology; stresses that remote sensing has become more than photointerpretation; and emphasizes integration of multiple remote sensing technologies to solve Earth science problems. The text reviews systems and applications, explains what to look for when analyzing imagery, and provides abundant case histories to illustrate the integration and application of these tools. See What's New in the Second Edition: Broader coverage to include integration of multiple remote sensing technologies Expanded with significant new illustrations in color and reviews of new satellites and sensors Analysis of imagery for geobotanical remote sensing, remote geochemistry, modern analogs to ancient environments, and astrogeology The book covers how to initiate a project, including determining

the objective, choosing the right tools, and selecting imagery. It describes techniques used in geologic mapping and mineral and hydrocarbon exploration, image analysis used in mine development and petroleum exploitation, site evaluation, groundwater development, surface water monitoring, geothermal resource exploitation, and logistics. It also demonstrates how imagery is used to establish environmental baselines; monitor land, air, and water quality; map hazards; and determine the effects of global warming. The many examples of geologic mapping on other planets and the moon highlight how to analyze planetary surface processes, map stratigraphy, and locate resources. The book then examines remote sensing and the public, geographic information systems and Google Earth, and how imagery is used by the media, in the legal system, in public relations, and by individuals. Readers should come away with a good understanding of what is involved in image analysis and interpretation and should be able to recognize and identify geologic features of interest. Having read this book, they should be able to effectively use imagery in petroleum, mining, groundwater, surface water, engineering, and environmental projects.

Scientific and Technical Aerospace Reports - 1987-05

Principles of Remote Sensing - Lucas L. F. Janssen 2000

Introduction to Remote Sensing - James B. Campbell 2022-08-23

Now in full color, the sixth edition of this leading text features new chapters on remote sensing platforms (including the latest satellite and unmanned aerial systems), agriculture (including agricultural analysis via satellite imagery), and forestry (including fuel type mapping and fire monitoring). The book has introduced tens of thousands of students to the fundamentals of collecting, analyzing, and interpreting remotely sensed images. It presents cutting-edge tools and practical applications to land and water use analysis, natural resource management, climate change adaptation, and more. Each concise chapter is designed as an independent unit that instructors can use in any

sequence. Pedagogical features include over 400 figures, chapter-opening lists of topics, case studies, end-of-chapter review questions, and links to recommended online videos and tutorials. New to This Edition *Discussions of Landsat 8 and Sentinel-2; the growth of unmanned aerial systems; mobile data collection; current directions in climate change detection, fire monitoring, and disaster response; and other timely topics. *Additional cases, such as river erosion; the impact of Hurricane Sandy on Mantoloking, New Jersey; and Miami Beach as an exemplar of challenges in coastal communities. *Revised throughout with 60% new material, including hundreds of new full-color figures. *New chapters on remote sensing platforms, agriculture, and forestry.

Remote sensing: an operational technology for the mining and petroleum industries - Institution of Mining & Metallurgy 2014-11-14

Remote Sensing and Mineral Exploration - W. D. Carter 2013-10-22

Remote Sensing and Mineral Exploration contains the proceedings of the international workshop on remote sensing and mineral exploration, held in Bangalore, India in June 1979. The compendium is comprised of papers presented at the workshop and reflects the state of remote sensing in the field of geology and exploration for mineral and energy resources. The two-day conference serves as a platform for geologists and other experts in related fields to share experiences and research studies on the use of satellites and other remote sensing techniques in geologic mapping and mineral and energy exploration. Topics presented include, contributions of LANDSAT data to the geological survey of India; characteristics of the LANDSAT system and data for geologic applications; application of remote sensing techniques to petroleum exploration; and an automatic method of discriminating rock outcrops using LANDSAT data. Geologists, petroleum and mineral exploration experts, and researchers will find this book an interesting reading material.

The SAGE Handbook of Remote Sensing - Timothy A Warner 2009-06-18

'A magnificent achievement. A who's who of contemporary remote sensing have produced an engaging, wide-ranging and scholarly review of

the field in just one volume' - Professor Paul Curran, Vice-Chancellor, Bournemouth University Remote Sensing acquires and interprets small or large-scale data about the Earth from a distance. Using a wide range of spatial, spectral, temporal, and radiometric scales Remote Sensing is a large and diverse field for which this Handbook will be the key research reference. Organized in four key sections: • Interactions of Electromagnetic Radiation with the Terrestrial Environment: chapters on Visible, Near-IR and Shortwave IR; Middle IR (3-5 micrometers); Thermal IR ; Microwave • Digital sensors and Image Characteristics: chapters on Sensor Technology; Coarse Spatial Resolution Optical Sensors ; Medium Spatial Resolution Optical Sensors; Fine Spatial Resolution Optical Sensors; Video Imaging and Multispectral Digital Photography; Hyperspectral Sensors; Radar and Passive Microwave Sensors; Lidar • Remote Sensing Analysis - Design and Implementation: chapters on Image Pre-Processing; Ground Data Collection; Integration with GIS; Quantitative Models in Remote Sensing; Validation and accuracy assessment; • Remote Sensing Analysis - Applications: LITHOSPHERIC SCIENCES: chapters on Topography; Geology; Soils; PLANT SCIENCES: Vegetation; Agriculture; HYDROSPHERIC and CRYOSPHERIC SCIENCES: Hydrosphere: Fresh and Ocean Water; Cryosphere; GLOBAL CHANGE AND HUMAN ENVIRONMENTS: Earth Systems; Human Environments & Links to the Social Sciences; Real Time Monitoring Systems and Disaster Management; Land Cover Change Illustrated throughout, an essential resource for the analysis of remotely sensed data, the SAGE Handbook of Remote Sensing provides researchers with a definitive statement of the core concepts and methodologies in the discipline.

Image Processing and GIS for Remote Sensing - Jian Guo Liu 2016-01-04

Following the successful publication of the 1st edition in 2009, the 2nd edition maintains its aim to provide an application-driven package of essential techniques in image processing and GIS, together with case studies for demonstration and guidance in remote sensing applications. The book therefore has a "3 in 1"

structure which pinpoints the intersection between these three individual disciplines and successfully draws them together in a balanced and comprehensive manner. The book conveys in-depth knowledge of image processing and GIS techniques in an accessible and comprehensive manner, with clear explanations and conceptual illustrations used throughout to enhance student learning. The understanding of key concepts is always emphasised with minimal assumption of prior mathematical experience. The book is heavily based on the authors' own research. Many of the author-designed image processing techniques are popular around the world. For instance, the SFIM technique has long been adopted by ASTRIUM for mass-production of their standard "Pan-sharpen" imagery data. The new edition also includes a completely new chapter on subpixel technology and new case studies, based on their recent research.

Bibliografia sobre Sensores Remotos -

[Exploring Space, Exploring Earth](#) - Paul D. Lowman Jr 2002-08-15

An account of the impact of space exploration on our understanding of the geology and geophysics of Earth.

Essentials of Medical Geology - Olle Selinus 2013-03-30

Essentials of Medical Geology reviews the essential concepts and practical tools required to tackle environmental and public health problems. It is organized into four main sections. The first section deals with the fundamentals of environmental biology, the natural and anthropogenic sources of health elements that impact health and illustrate key biogeochemical transformations. The second section looks at the geological processes influencing human exposure to specific elements, such as radon, arsenic, fluorine, selenium and iodine. The third section presents the concepts and techniques of pathology, toxicology and epidemiology that underpin investigations into the human health effects of exposure to naturally occurring elements. The last section provides a toolbox of analytical approaches to environmental research and medical geology investigations. Essentials of Medical Geology was first published in 2005 and has since won three prestigious rewards. The book has been recognized as a key book in both

medical and geology fields and is widely used as textbook and reference book in these fields. For this revised edition, editors and authors have updated the content that evolved a lot during 2005 and added two new chapters, on public health, and agriculture and health. This updated volume can now continue to be used as a textbook and reference book for all who are interested in this important topic and its impacts the health and wellbeing of many millions of people all over the world. · Addresses key topics at the intersection of environmental science and human health · Developed by 60 international experts from 20 countries and edited by professionals from the International Medical Geology Association (IMGA) · Written in non-technical language for a broad spectrum of readers, ranging from students and professional researchers to policymakers and the general public · Includes color illustrations throughout, references for further investigation and other aids to the reader

Introductory Remote Sensing - Paul Jude Gibson 2000

Introduction to Remote Sensing Principles and Concepts provides a comprehensive student introduction to both the theory and application of remote sensing. This textbook * introduces the field of remote sensing and traces its historical development and evolution * presents detailed explanations of core remote sensing principles and concepts providing the theory required for a clear understanding of remotely sensed images. * describes important remote sensing platforms - including Landsat, SPOT and NOAA * examines and illustrates many of the applications of remotely sensed images in various fields. A unique World Wide Web site accompanies this textbook. Developed for the users of Netscape 3 / Internet Explorer or above, this site offers: * over 45 full colour images with descriptions * examples illustrating remote sensing applications for meteorology, geology, vegetation studies, urban studies and oceanography * material from the Americas, the UK, Ireland, Africa, Australasia, Africa and Western Europe * Image exercises, with answers * Shorter questions and answers on remote sensing * An online glossary of terms, links to sources of useful remote sensing information available online.

Earth Science Satellite Remote Sensing -

John J. Qu 2007-04-29

This book provides information on the Earth science remote sensing data information and data format such as HDF-EOS. It evaluates the current data processing approaches and introduces data searching and ordering from different public domains. It further explores the remote sensing and GIS migration products and WebGIS applications. Both volumes are designed to give an introduction to current and future NASA, NOAA and other Earth science remote sensing.

GIS - Patrick McHaffie 2018-10-09

Over the past few decades the world has been organized through the growth and integration of geographic information systems (GIS) across public and private sector industries, agencies, and organizations. This has happened in a technological context that includes the widespread deployment of multiple digital mobile technologies, digital wireless communication networks, positioning, navigation and mapping services, and cloud-based computing, spawning new ways of imagining, creating, and consuming geospatial information and analytics. GIS: An Introduction to Mapping Technologies is written with the detached voices of practitioner scholars who draw on a diverse set of experiences and education, with a shared view of GIS that is grounded in the analysis of scale-diverse contexts emphasizing cities and their social and environmental geographies. GIS is presented as a critical toolset that allows analysts to focus on urban social and environmental sustainability. The book opens with chapters that explore foundational techniques of mapping, data acquisition and field data collection using GNSS, georeferencing, spatial analysis, thematic mapping, and data models. It explores web GIS and open source GIS making geospatial technology available to many who would not be able to access it otherwise. Also, the book covers in depth the integration of remote sensing into GIS, Health GIS, Digital Humanities GIS, and the increased use of GIS in diverse types of organizations. Active learning is emphasized with ArcGIS Desktop lab activities integrated into most of the chapters. Written by experienced authors from the Department of

Geography at DePaul University in Chicago, this textbook is a great introduction to GIS for a diverse range of undergraduates and graduate students, and professionals who are concerned with urbanization, economic justice, and environmental sustainability.

Introduction to Environmental Remote Sensing - Eric Charles Barrett 1999

First Published in 1999. Routledge is an imprint of Taylor & Francis, an informa company.

Fundamentals of Geological and Environmental Remote Sensing - Robert K. Vincent 1997

Aims to present remote sensing as it applies to environmental monitoring. It features mineral and petroleum remote-sensing. There is a focus on multispectral applications and digital photogrammetry. Ratio codes and brightness codes are included in an appendix. This has reduced the spectra of minerals to simple, one-digit-per-band codes, helping the user select the best bands or ratios to highlight a mineral. Imaging gases, especially methane, have been included. With the book, students can perform elevation extraction from digitized stereo pairs. Case studies appear throughout the text, allowing students to see how remote-sensing is used in petroleum and mining companies.

Civil Engineer's Reference Book - L S Blake 2013-10-22

Civil Engineer's Reference Book, Fourth Edition provides civil engineers with reports on design and construction practices in the UK and overseas. It gives a concise presentation of theory and practice in the many branches of a civil engineer's profession and it enables them to study a subject in greater depth. The book discusses some improvements in earlier practices, for example in surveying, geotechnics, water management, project management, underwater working, and the control and use of materials. Other changes covered are from the evolving needs of clients for almost all forms of construction, maintenance and repair. Another major change is the introduction of new national and Euro-codes based on limit state design, covering most aspects of structural engineering. The fourth edition incorporates these advances and, at the same time, gives greater prominence to the special problems relating to work overseas, with differing client requirements and

climatic conditions. Chapters 1 to 10 provide engineers, at all levels of development, with 'lecture notes' on the basic theories of civil engineering. Chapters 11 to 44 cover the practice of design and construction in many of the fields of civil engineering. Civil engineers, architects, lawyers, mechanical engineers, insurers, clients, and students of civil engineering will find benefit in the use of this text.

CORSE-81 - 1981

Essentials of Mineral Exploration and Evaluation - S. M. Gandhi 2016-05-10

Essentials of Mineral Exploration and Evaluation offers a thorough overview of methods used in mineral exploration campaigns, evaluation, reporting and economic assessment processes. Fully illustrated to cover the state-of-the-art exploration techniques and evaluation of mineral assets being practiced globally, this up-to-date reference offers balanced coverage of the latest knowledge and current global trends in successful mineral exploration and evaluation. From mineral deposits, to remote sensing, to sampling and analysis, Essentials of Mineral Exploration and Evaluation offers an extensive look at this rapidly changing field. Covers the complete spectrum of all aspects of ore deposits and mining them, providing a "one-stop shop" for experts and students Presents the most up-to-date information on developments and methods in all areas of mineral exploration Includes chapters on application of GIS, statistics, and geostatistics in mineral exploration and evaluation Includes case studies to enhance practical application of concepts

Earth Resources - 1983

Computer Processing of Remotely-Sensed Images - Paul M. Mather 2022-04-11

Computer Processing of Remotely-Sensed Images A thorough introduction to computer processing of remotely-sensed images, processing methods, and applications Remote sensing is a crucial form of measurement that allows for the gauging of an object or space without direct physical contact, allowing for the assessment and recording of a target under conditions which would normally render access difficult or impossible. This is done through the

analysis and interpretation of electromagnetic radiation (EMR) that is reflected or emitted by an object, surveyed and recorded by an observer or instrument that is not in contact with the target. This methodology is particularly of importance in Earth observation by remote sensing, wherein airborne or satellite-borne instruments of EMR provide data on the planet's land, seas, ice, and atmosphere. This permits scientists to establish relationships between the measurements and the nature and distribution of phenomena on the Earth's surface or within the atmosphere. Still relying on a visual and conceptual approach to the material, the fifth edition of this successful textbook provides students with methods of computer processing of remotely sensed data and introduces them to environmental applications which make use of remotely-sensed images. The new edition's content has been rearranged to be more clearly focused on image processing methods and applications in remote sensing with new examples, including material on the Copernicus missions, microsattellites and recently launched SAR satellites, as well as time series analysis methods. The fifth edition of *Computer Processing of Remotely-Sensed Images* also contains: A cohesive presentation of the fundamental components of Earth observation remote sensing that is easy to understand and highly digestible. Largely non-technical language providing insights into more advanced topics that may be too difficult for a non-mathematician to understand. Illustrations and example boxes throughout the book to illustrate concepts, as well as revised examples that reflect the latest information. References and links to the most up-to-date online and open access sources used by students. *Computer Processing of Remotely-Sensed Images* is a highly insightful textbook for advanced undergraduates and postgraduate students taking courses in remote sensing and GIS in Geography, Geology, and Earth & Environmental Science departments.

Remote Sensing Handbook - Three Volume Set - Prasad Thenkabail 2018-10-03

A volume in the three-volume *Remote Sensing Handbook* series, *Remote Sensing of Water Resources, Disasters, and Urban Studies* documents the scientific and methodological advances that have taken place during the last

50 years. The other two volumes in the series are *Remotely Sensed Data Characterization, Classification, and Accuracies*, and *Land Resources*.
Aerospatial Remote Sensing in Geology - Jean-Yves Scanvic 1997-01-01

Using numerous operational and research-oriented examples, this text seeks to explain how the human eye and brain can extract and use remotely sensed data in the fields of applied geology and mineral exploration.

Fundamentals of Remote Sensing - George Joseph 2005

This book presents the fundamental concepts covering various stages of remote sensing from data collection to end utilization, so that it can be appreciated irrespective of the discipline in which the reader has graduated. The physical principles on which remote sensing are based has been explained without getting into complicated mathematical equations.

Remote Sensing - Floyd F. Sabins, Jr. 2020-04-01

Remote sensing has undergone profound changes over the past two decades as GPS, GIS, and sensor advances have significantly expanded the user community and availability of images. New tools, such as automation, cloud-based services, drones, and artificial intelligence, continue to expand and enhance the discipline. Along with comprehensive coverage and clarity, Sabins and Ellis establish a solid foundation for the insightful use of remote sensing with an emphasis on principles and a focus on sensor technology and image acquisition. The Fourth Edition presents a valuable discussion of the growing and permeating use of technologies such as drones and manned aircraft imaging, DEMs, and lidar. The authors explain the scientific and societal impacts of remote sensing, review digital image processing and GIS, provide case histories from areas around the globe, and describe practical applications of remote sensing to the environment, renewable and nonrenewable resources, land use/land cover, natural hazards, and climate change. • *Remote Sensing Digital Database* includes 27 examples of satellite and airborne imagery that can be used to jumpstart labs and class projects. The database includes descriptions, georeferenced images, DEMs, maps, and metadata. Users can display, process, and interpret images with

open-source and commercial image processing and GIS software. • Flexible, revealing, and instructive, the Digital Image Processing Lab Manual provides 12 step-by-step exercises on the following topics: an introduction to ENVI, Landsat multispectral processing, image processing, band ratios and principal components, georeferencing, DEMs and lidar, IHS and image sharpening, unsupervised classification, supervised classification, hyperspectral, and change detection and radar. • Introductory and instructional videos describe and guide users on ways to access and utilize the Remote Sensing Digital Database and the Digital Image Processing Lab Manual. • Answer Keys are available for instructors for questions in the text as well as the Digital Image Processing Lab Manual.

Geological Field Techniques - Dr Angela L. Coe
2010-11-01

The understanding of Earth processes and environments over geological time is highly dependent upon both the experience that can only be gained through doing fieldwork, and the collection of reliable data and appropriate samples in the field. This textbook explains the main data gathering techniques used by geologists in the field and the reasons for these, with emphasis throughout on how to make effective field observations and record these in suitable formats. Equal weight is given to assembling field observations from igneous, metamorphic and sedimentary rock types. There are also substantial chapters on producing a field notebook, collecting structural information, recording fossil data and constructing geological maps. The volume is in a robust and handy size, with colour coded chapters for ease of use and quick reference in the field. Geological Field Techniques is designed for students, amateur enthusiasts and professionals who have a background in geology and wish to collect field

data on rocks and geological features. Teaching aspects of this textbook include: step-by-step guides to essential practical skills such as using a compass-clinometer, making a geological map and drawing a field sketch; tricks of the trade, checklists, flow charts and short worked examples; over 200 illustrations of a wide range of field notes, maps and geological features; appendices with the commonly used rock description and classification diagrams; a supporting website hosted by Wiley Blackwell. ~ Introduction to Remote Sensing - James B. Campbell 2002

Now in its revised and updated third edition, this comprehensive introductory text presents a timely overview of the most widely used forms of remote sensing imagery and their applications in plant sciences, hydrology, earth sciences, and land-use analysis. The third edition features new coverage of lidar technology, radar interferometry, and the present generation of satellite sensors, as well as other topics of current significance. Integrating knowledge from the many fields that contribute to remote sensing, the text is richly illustrated with 28 color plates and more than 380 black-and-white images and figures.

An Introduction to Ocean Remote Sensing - Seelye Martin 2011-06-16

Examining the use of satellite data in the retrieval of oceanic physical and biological properties, this study presents examples of the kinds of data that can be acquired and recounts their oceanographic application. It also describes the national and international programs in satellite oceanography of the past two decades, and reviews current and future programs up to 2019. The textbook, designed for graduate and senior undergraduate courses in satellite oceanography, will prepare students and interested scientists to use satellite data in oceanographic research.