Remote Sensing Of Impervious Surfaces In Tropical And Subtropical Areas Remote Sensing Applications Series

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Multi-sensor System Applications in the Everglades Ecosystem - Caiyun Zhang 2020-01-06
This book explores the applicability of multiple remote sensors to acquire information relevant to restoration and conservation efforts in wetlands using data collected from airborne and space multispectral/hyperspectral sensors, light detection and ranging (LiDAR), Unmanned Aircraft Systems (UAS), and a hand-held spectroradiometer. This book also examines digital data processing techniques such as object-based image analysis, machine learning, texture analysis, and data fusion. After an introduction to the Everglades and to remote sensing, the book is divided into four parts based on the sensor systems used. There are chapters on vegetation mapping, biomass and water quality modeling, applications of hyperspectral data for plant stress analysis and coral reef mapping, studies of airborne LiDAR data for coastal vulnerability analysis and DEM improvement, as well as chapters that explore a fusion of multiple sensors for different datasets. Features Introduces concepts, theories, and advanced processing techniques A complete introduction of machine learning, object-based image analysis, data fusion, and ensemble analysis techniques in processing data from multiple remote sensors Explains how multiple remote sensing systems are applied in the wetland ecosystems of Florida The author had been teaching and using both systems and her research is widely recognized Multi-sensor System Applications in the Everglades Ecosystems provides a comprehensive application of remote sensing techniques in the Florida Everglades and its coastal ecosystems. It will prove an invaluable resource for the restoration and conservation of the Florida Everglades and beyond, for global wetlands in general. Any professional, scientist, engineer, or student working with remote sensing and wetland ecosystems will reap enormous benefits from this book.

Issues in Global Environment: Biology and Geoscience: 2011 Edition 2012-01-09
Issues in Global Environment: Biology and Geoscience: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Global Environment—Biology and Geoscience. The editors have built Issues in Global Environment: Biology and Geoscience: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Global Environment—Biology and Geoscience in this eBook to be deeper than

what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Global Environment: Biology and Geoscience: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Remote Sensing and Global Environmental Change - Sam J. Purkis 2011-03-07
Remote Sensing plays a key role in monitoring the various manifestations of global climate change. It is used routinely in the assessment and mapping of biodiversity over large areas, in the monitoring of changes to the physical environment, in assessing threats to various components of natural systems, and in the identification of priority areas for conservation. This book presents the fundamentals of remote sensing technology, but rather than containing lengthy explanations of sensor specifications and operation, it concentrates instead on the application of the technology to key environmental systems. Each system forms the basis of a separate chapter, and each is illustrated by real world case studies and examples. Readership The book is intended for advanced undergraduate and graduate students in earth science, environmental science, or physical geography taking a course in environmental remote sensing. It will also be an invaluable reference for environmental scientists and managers who require an overview of the use of remote sensing in monitoring and mapping environmental change at regional and global scales. Additional resources for this book can be found at: http://www.wiley.com/go/purkis/remote.

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 Sustainability - Qihao Weng 2016-11-17
Driven by the societal needs and improvement in sensor technology and image processing techniques, remote sensing has become an essential geospatial tool for understanding the Earth and managing Human-Earth interactions. Remote Sensing for Sustainability introduces the current state of the art remote sensing knowledge integral for monitoring the world's natural resources and environments, managing exposure to natural disasters and man-made risks, and helping understand the sustainability and productivity of natural ecosystems. Bridging the gap between remote sensing and sustainability science this book examines theories and methods as well as practical applications of sustainable development for cities using remote sensing; focuses on remote sensing methods and techniques for sustainable natural resources with emphasize on forests; answers questions on how and what the remote sensing methods and techniques can do for the sustainability of environmental systems; and examines the issues of energy use and sustainable energy sources using remote sensing technology in countries such as Germany, China, the U.S, drawing on case studies to demonstrate the applicability of remote sensing techniques. This comprehensive guide, which can serve to professors, researchers, and students alike, takes in consideration the United Nations set of sustainable development goals and intends to contribute to the GEO's Strategic Plan by addressing and exemplifying a number of societal benefit areas of remote sensing data sets, methods, and techniques for sustainable development.

The Elgar Companion to Geography, Transdisciplinarity and Sustainability - Fausto O. Sarmiento 2020-05-29
With contributions from top geographers, this

Companion frames sustainability as exemplar of transdisciplinary science (critical geography) while improving future scenarios, debating perspectives between rich North/poor South, modern urban/backwards rural, and everything in between. The Companion has five sections that carry the reader from foundational considerations to integrative trends, to resources use and accommodation, to examples highlighting non-traditional pathways, to a postscript about cooperation of the industrialized Earth and a prognosis of the road ahead for the new geographies of sustainability.

Remote Sensing of Impervious Surfaces in Tropical and Subtropical Areas - Hongsheng Zhang 2015-08-27
Urban impervious surfaces include any man-made surfaces such as roads, parking lots, and rooftops which prevent rainwater from infiltrating into the soil. This book investigates the state of the art of remote sensing of impervious surfaces by summarizing the environmental and socioeconomic impacts of impervious surfaces, the methods of impervious surface estimation using remote sensing technology, and challenges of remote sensing in humid subtropical regions. It pays special attention to the seasonal effects of impervious surface estimation in humid subtropical areas. A methodological framework for using optical and SAR images is proposed for impervious surface estimation in humid subtropical regions. Major conclusions as well as recommendations for future study are also provided.

Living in a Dynamic Tropical Forest Landscape - Nigel Stork 2009-01-26
This book brings together a wealth of scientific findings andecological knowledge to survey what we have learned about the"Wet Tropics" rainforests of North Queensland,Australia. This interdisciplinary text is the first book to providesuch a holistic view of any tropical forest environment, includingthe social and economic dimensions. The most thorough assessment of a tropical forest landscape todate Explores significant scientific breakthroughs in areasincluding conservation genetics, vegetation modeling, agroforestryand revegetation techniques, biodiversity assessment and modeling,impacts of climate change, and the integration of science innatural resource management Research achieved, in part, due to the Cooperative ResearchCentre for Tropical Rainforest Ecology and Management (theRainforest CRC) Written by a number of distinguished internationalexperts contains chapter summaries and section commentaries

Environmental Remote Sensing and Systems Analysis - Ni-Bin Chang 2012-03-23
Using a systems analysis approach and extensive case studies, Environmental Remote Sensing and Systems Analysis shows how remote sensing can be used to support environmental decision making. It presents a multidisciplinary framework and the latest remote sensing tools to understand environmental impacts, management complexity, and policy implicatio

Integrating Scale in Remote Sensing and GIS - Dale A. Quattrochi 2017-01-06
Integrating Scale in Remote Sensing and GIS serves as the most comprehensive documentation of the scientific and methodological advances that have taken place in integrating scale and remote sensing data. This work addresses the invariants of scale, the ability to change scale, measures of the impact of scale, scale as a parameter in process models, and the implementation of multiscale approaches as methods and techniques for integrating multiple kinds of remote sensing data collected at varying spatial, temporal, and radiometric scales. Researchers, instructors, and students alike will benefit from a guide that has been pragmatically divided into four thematic groups: scale issues and multiple scaling; physical scale as applied to natural resources; urban scale; and human health/social scale. Teeming with insights that elucidate the significance of scale as a foundation for geographic analysis, this book is a vital resource to those seriously involved in the field of GIScience.

Applications and Challenges of Geospatial Technology - Pavan Kumar 2018-11-24
This book advances the scientific understanding and application of space-based technologies to address a variety of areas related to sustainable development; including environmental systems analysis, environmental management, clean processes, green chemistry, and green engineering. Geo-spatial techniques have gained considerable interest in recent decades among

the earth and environmental science communities for solving and understanding various complex problems and approaches towards sustainable technologies. The book encompasses several scopes of interests on sustainable technologies in areas such as water resources, forestry, remote sensing, meteorology, atmospheric and oceanic modeling, environmental engineering and management, civil engineering, air and environmental pollution, water quality problems, etc. The book will appeal to people with an interest in geo-spatial techniques, sustainable development and other diverse backgrounds within earth and environmental sciences field.

Earth Observation of Ecosystem Services - Domingo Alcaraz-Segura 2013-11-12 A balanced review of differing approaches based on remote sensing tools and methods to assess and monitor biodiversity, carbon and water cycles, and the energy balance of terrestrial ecosystem. Earth Observation of Ecosystem Services highlights the advantages Earth observation technologies offer for quantifying and monitoring multiple ecosystem functions and services. It provides a multidisciplinary reference that expressly covers the use of remote sensing for quantifying and monitoring multiple ecosystem services. Rather than exhaustively cover all possible ecosystem services, this book takes a global look at the most relevant remote sensing approaches to estimate key ecosystem services from satellite data. Structured in four main sections, it covers carbon cycle, biodiversity, water cycle, and energy balance. Each section contains a review of conceptual and empirical methods, techniques, and case studies linking remotely sensed data to the biophysical variables and ecosystem functions associated with key ecosystem services. The book identifies relevant issues and challenges of assessment, presents cutting-edge sensing techniques, uses globally implemented tools to quantify ecosystem functions, and presents examples of successful monitoring programs. Covering recent developments undertaken on the global and national stage from Earth observation satellite data, it includes valuable lessons and recommendations and novel ways to improve current global monitoring systems. The book

delineates the use of Earth observation data so that it can be used to quantify, map, value, and manage the valuable goods and services that ecosystems provide to societies around the world.

Computational Vision and Medical Image Processing: VipIMAGE 2011 - João Manuel R.S. Tavares 2011-09-28 This book contains invited lecturers and full papers presented at VIPIMAGE 2011 - III ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (Olh Algarve, Portugal, 12-14 October 2011). International contributions from 16 countries provide a comprehensive coverage of the current state-of-the-art in: Image Processing

Change Detection and Image Time Series Analysis 2 - Abdourrahmane M. Atto 2021-12-29 Change Detection and Image Time Series Analysis 2 presents supervised machine-learning-based methods for temporal evolution analysis by using image time series associated with Earth observation data. Chapter 1 addresses the fusion of multisensor, multiresolution and multitemporal data. It proposes two supervised solutions that are based on a Markov random field: the first relies on a quad-tree and the second is specifically designed to deal with multimission, multifrequency and multiresolution time series. Chapter 2 provides an overview of pixel based methods for time series classification, from the earliest shallow learning methods to the most recent deep-learning-based approaches. Chapter 3 focuses on very high spatial resolution data time series and on the use of semantic information for modeling spatio-temporal evolution patterns. Chapter 4 centers on the challenges of dense time series analysis, including pre processing aspects and a taxonomy of existing methodologies. Finally, since the evaluation of a learning system can be subject to multiple considerations, Chapters 5 and 6 offer extensive evaluations of the methodologies and learning frameworks used to produce change maps, in the context of multiclass and/or multilabel change classification issues.

Remote Sensing of Coastal Environments - Yeqiao Wang 2009-12-09

As coastal environments around the world face unprecedented natural and anthropogenic threats, advancements in the technologies that support geospatial data acquisition, imaging, and computing have profoundly enhanced monitoring capabilities in coastal studies. Providing systematic treatment of the key developments, Remote Sensing of Coastal Environments brings together renowned scholars to supply a clear presentation of the state-of-the-art in this technically complex arena. Edited by a recipient of the prestigious PECASE award, this book provides unrivaled coverage of the issues unique to coastal environments. It presents the best available data for measuring and monitoring coastal zones and explains how decision makers and resource managers can use this data to address contemporary issues in coastal zone management. The text illustrates the latest developments in active remote sensing, hyperspectral remote sensing, high spatial resolution remote sensing, the integration of remote sensing and in situ data, and covers the effects of land-cover and land-use change on coastal environments. Complete with representative case studies, this authoritative resource provides a timely snapshot of the wide range of remote sensing applications in coastal issues to enhance the understanding of how increasing disturbances to our coastal regions are affecting the ecological dynamics, biological diversity, and ecosystem health of our coastal environments.

Remote Sensing of Ocean and Coastal Environments - Meenu Rani 2020-09-27
Remote Sensing of Ocean and Coastal Environments advances the scientific understanding and application of technologies to address a variety of areas relating to sustainable development, including environmental systems analysis, environmental management, clean processes, green chemistry and green engineering. Through each contributed chapter, the book covers ocean remote sensing, ocean color monitoring, modeling biomass and the carbon of oceanic ecosystems, sea surface temperature (SST) and sea surface salinity, ocean monitoring for oil spills and pollutions, coastal erosion and accretion measurement. This book is aimed at those with a common interest in oceanography techniques, sustainable

development and other diverse backgrounds within earth and ocean science fields. This book is ideal for academicians, scientists, environmentalists, meteorologists, environmental consultants and computing experts working in the areas of earth and ocean sciences. Provides a comprehensive assessment of various ocean processes and their relative phenomena Includes graphical abstract and photosets in each chapter Presents literature reviews, case studies and applications

Remote Sensing Applications for the Urban Environment - George Z. Xian 2015-10-09
Land use and land cover changes associated with increased urbanization have led to landscape and environmental changes throughout the world. Remote Sensing Applications for the Urban Environment places emphasis on the rapid development of worldwide urbanization and its impact on the environment, and reviews the assessment of urban land cover condit

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 Reso

Scale Issues in Remote Sensing - Qihao Weng 2014-03-17
Provides up-to-date developments in the field of remote sensing by assessing scale issues in land surface, properties, patterns, and processes Scale is a fundamental and crucial issue in remote sensing studies and image analysis. GIS and remote sensing scientists use various scaling techniques depending on the types of remotely sensed images and geospatial data used. Scaling techniques affect image analysis such as object identification and change detection. This book offers up-to-date developments, methods, and techniques in the field of GIS and remote sensing and features articles from internationally renowned authorities on three interrelated perspectives of scaling issues: scale in land surface properties, land surface patterns, and land surface

processes. It also visits and reexamines the fundamental theories of scale and scaling by well-known experts who have done substantial research on the topics. Edited by a prominent authority in the geographic information science community, Scale Issues in Remote Sensing: Offers an extensive examination of the fundamental theories of scale issues along with current scaling techniques Studies scale issues from three interrelated perspectives: land surface properties, patterns, and processes Addresses the impact of new frontiers in Earth observation technology (high-resolution, hyperspectral, Lidar sensing, and their synergy with existing technologies) and advances in remote sensing imaging science (object-oriented image analysis and data fusion) Prospects emerging and future trends in remote sensing and their relationship with scale Scale Issues in Remote Sensing is ideal as a professional reference for practicing geographic information scientists and remote sensing engineers as well as supplemental reading for graduate level students.

Techniques and Methods in Urban Remote Sensing - Qihao Weng 2019-11-26
An authoritative guide to the essential techniques and most recent advances in urban remote sensing Techniques and Methods in Urban Remote Sensing offers a comprehensive guide to the recent theories, methods, techniques, and applications in urban remote sensing. Written by a noted expert on the subject, this book explores the requirements for mapping impervious surfaces and examines the issue of scale. The book covers a range of topics and includes illustrative examples of commonly used methods for estimating and mapping urban impervious surfaces, explains how to determine urban thermal landscape and surface energy balance, and offers information on impacts of urbanization on land surface temperature, water quality, and environmental health. Techniques and Methods in Urban Remote Sensing brings together in one volume the latest opportunities for combining ever-increasing computational power, more plentiful and capable data, and more advanced algorithms. This allows the technologies of remote sensing and GIS to become mature and to gain wider and better applications in environments, ecosystems,

resources, geosciences, geography and urban studies. This important book: Contains a comprehensive resource to the latest developments in urban remote sensing Explains urban heat islands modeling and analysis Includes information on estimating urban surface energy fluxes Offers a guide to generating data on land surface temperature Written for professionals and students of environmental, ecological, civic and urban studies, Techniques and Methods in Urban Remote Sensing meets the demand for an updated resource that addresses the recent advances urban remote sensing.

International Journal of Advanced Remote Sensing and GIS - Cloud Publications 2012-01-01
International Journal of Advanced Remote Sensing and GIS (IJARSG, ISSN 2320 – 0243) is an open-access peer-reviewed scholarly journal publishes original research papers, reviews, case study, case reports, and methodology articles in all aspects of Remote Sensing and GIS including associated fields. This Journal commits to working for quality and transparency in its publishing by following standard Publication Ethics and Policies.

Remote Sensing for Natural Resources Management & Monitoring - Mahesh Gaur 2016-10-01
The book attempts to match user need to the level of technology required for management, planning and monitoring of natural resources. It provides clear guidance on the reliability, accuracy and cost of applications. Editors believe that this endeavour shall provide a valuable scientific basis to students and researchers to address the future challenges in natural resources monitoring and management. Accurate inventory, assessment and periodic monitoring of resources will enable the policy makers to keep an eye on optimal utilization of resources and development process to take timely interventions. We further hope this book will be a valuable reference and provide practical guidance for all who work towards the goal of the sustainable and judicious use of resources.

Remote Sensing of Natural Resources - Guangxing Wang 2013-07-12
Highlighting new technologies, Remote Sensing

of Natural Resources explores advanced remote sensing systems and algorithms for image processing, enhancement, feature extraction, data fusion, image classification, image-based modeling, image-based sampling design, map accuracy assessment and quality control. It also discusses their applications for

Urban Remote Sensing - Qihao Weng 2018-10-08 Driven by advances in technology and societal needs, the next frontier in remote sensing is urban areas. With the advent of high-resolution imagery and more capable techniques, the question has become "Now that we have the technology, how do we use it?" The need for a definitive resource that explores the technology of remote sensing and the issues it can resolve in an urban setting has never been more acute. Containing contributions from world renowned experts, Urban Remote Sensing provides a review of basic concepts, methodologies, and case studies. Each chapter demonstrates how to apply up-to-date techniques to the problems identified and how to analyze research results. Organized into five sections, this book: Focuses on data, sensors, and systems considerations as well as algorithms for urban feature extraction Analyzes urban landscapes in terms of composition and structure, especially using sub-pixel analysis techniques Presents methods for monitoring, analyzing, and modeling urban growth Illustrates various approaches to urban planning and socio-economic applications of urban remote sensing Assesses the progress made to date, identifies the existing problems and challenges, and demonstrates new developments and trends in urban remote sensing This book is ideal for upper division undergraduate and graduate students, however it can also serve as a reference for researchers or those individuals interested in the remote sensing of cities in academia, and governmental and commercial sectors. Urban Remote Sensing examines how to apply remote sensing technology to urban and suburban areas.

LiDAR Remote Sensing and Applications - Pinliang Dong 2017-12-12 Ideal for both undergraduate and graduate students in the fields of geography, forestry, ecology, geographic information science, remote sensing, and photogrammetric engineering, LiDAR Remote Sensing and Applications

expertly joins LiDAR principles, data processing basics, applications, and hands-on practices in one comprehensive source. The LiDAR data within this book is collected from 27 areas in the United States, Brazil, Canada, Ghana, and Haiti and includes 183 figures created to introduce the concepts, methods, and applications in a clear context. It provides 11 step-by-step projects predominately based on Esri's ArcGIS software to support seamless integration of LiDAR products and other GIS data. The first six projects are for basic LiDAR data visualization and processing and the other five cover more advanced topics: from mapping gaps in mangrove forests in Everglades National Park, Florida to generating trend surfaces for rock layers in Raplee Ridge, Utah. Features Offers a comprehensive overview of LiDAR technology with numerous applications in geography, forestry and earth science Gives necessary theoretical foundations from all pertinent subject matter areas Uses case studies and best practices to point readers to tools and resources Provides a synthesis of ongoing research in the area of LiDAR remote sensing technology Includes carefully selected illustrations and data from the authors' research projects Before every project in the book, a link is provided for users to download data

Remote Sensing of Impervious Surfaces in Tropical and Subtropical Areas - Hongsheng Zhang 2015-09-01
Remote Sensing of Impervious Surfaces in Tropical and Subtropical Areas offers a complete and thorough system for using optical and synthetic aperture radar (SAR) remote sensing data for improving impervious surface estimation (ISE). Highlighting tropical and subtropical areas where there is significant cloud occurrence and varying phenology, the book addresses the challenges impacting impervious surfaces in tropical and subtropical zones. It examines the potential for estimating urban impervious surfaces in a rainy and cloudy environment, considers the difficulties encountered when using optical remote sensing in this type of climate, and assesses existing methods employing remote sensing data for accurate ISE in tropical and subtropical regions. Using the results of comparative studies conducted during the four seasons and in six

different cities (Guangzhou, Shenzhen, Hong Kong, Mumbai, Sao Paulo, and Cape Town), the authors develop a framework for ISE using optical and SAR image data. They address the advantages and disadvantages of optical and SAR data, consider fusion strategies for combining optical and SAR data, and examine different feature extractions for optical and SAR data. They also detail the limitations of the research, suggest possible topics for future analysis, and cover previous findings on the synergistic use of optical and SAR data. Concentrates on the effect a tropical and subtropical urban climate can have on impervious surface estimation (ISE) Reviews literature on the significance of ISE and the phonological and climatic characteristics of tropical and subtropical regions Describes datasets including satellite data, digital orthophoto data, in situ data, and more Remote Sensing of Impervious Surfaces in Tropical and Subtropical Areas investigates the state of the art in creating new algorithms for digital images processing and remotely sensed images classification, as well as in developing the meteorological modeling of urban heat islands, and the hydrological modeling of surface run-off and urban floods.

Urban Remote Sensing - Xiaojun X. Yang 2021-10-06
The second edition of Urban Remote Sensing is a state-of-the-art review of the latest progress in the subject. The text examines how evolving innovations in remote sensing allow to deliver the critical information on cities in a timely and cost-effective way to support various urban management activities and the scientific research on urban morphology, socio-environmental dynamics, and sustainability. Chapters are written by leading scholars from a variety of disciplines including remote sensing, GIS, geography, urban planning, environmental science, and sustainability science, with case studies predominately drawn from North America and Europe. A review of the essential and emerging research areas in urban remote sensing including sensors, techniques, and applications, especially some critical issues that are shifting the directions in urban remote sensing research. Illustrated in full color throughout, including numerous relevant case

studies and extensive discussions of important concepts and cutting-edge technologies to enable clearer understanding for non-technical audiences. Urban Remote Sensing, Second Edition will be of particular interest to upper-division undergraduate and graduate students, researchers and professionals working in the fields of remote sensing, geospatial information, and urban & environmental planning.

Remote Sensing the Mekong - Claudia Kuenzer 2018-10-11
The Mekong Basin in Southeast Asia is one of the largest international river basins in the world. Its abundant natural resources are shared by six riparian countries and provide the basis for the livelihoods of more than 75 million people. However, ongoing socio-economic growth and related anthropogenic interventions impact the region's ecosystems, and there is an urgent need for the monitoring of the basin's land surface dynamics. Remote sensing has evolved as a key tool for this task, allowing for up-to-date analyses and regular monitoring of environmental dynamics beyond physical or political boundaries and at various temporal and spatial scales. This book serves as a forum for remote-sensing scientists with an interest in the Mekong River Basin to present their recent basin-related works as well as applied case studies of the region. A broad range of sensors from high to medium resolution, and from multispectral to SAR systems, are applied, covering topics such as land cover/land use classification and comparison, time series analyses of climate variables, vegetation structure and vegetation productivity, as well as studies on flood mapping or water turbidity monitoring. This book was originally published as a special issue of the International Journal of Remote Sensing.

Remote Sensing of Impervious Surfaces - Qihao Weng 2007-10-03
Remote sensing of impervious surfaces has matured using advances in geospatial technology so recent that its applications have received only sporadic coverage in remote sensing literature. Remote Sensing of Impervious Surfaces is the first to focus entirely on this developing field. It provides detailed coverage of mapping, data extraction, and modeling techniques specific to analyzing

impervious surfaces, such as roads and buildings. Written by renowned experts in the field, this book reviews the major approaches that apply to this emerging field as well as current challenges, developments, and trends. The authors introduce remote sensing digital image processing techniques for estimating and mapping impervious surfaces in urban and rural areas. Presenting the latest modeling tools and algorithms for data extraction and analysis, the book explains how to differentiate roads, roofs, and other manmade structures from remotely sensed images for individual analysis. The final chapters examine how to use impervious surface data for predicting the flow of storm- or floodwater and studying trends in population, land use, resource distribution, and other real-world applications in environmental, urban, and regional planning. Each chapter offers a consistent format including a concise review of basic concepts and methodologies, timely case studies, and guidance for solving problems and analyzing data using the techniques presented.

Remote Sensing of Tropical Regions - Eugene A. Sharkov 1998-10-27
The tropical regions of the Earth play a crucial role in the evolution of the global thermodynamic surface-atmosphere system, and in the socio-ecological processes on our planet. The well known clichés describing the tropics as "the firebox of the atmosphere" and "the lungs of the planet" are not exaggerations. The principle purposes of this book are to demonstrate the unique capabilities of modern remote sensing techniques for the observation and monitoring of tropical ecosystems, and to substantiate the scientific rationale for studies of the Earth?s tropical regions. In the first part of this book, the author places particular emphasis on specific features of low-latitude conditions, such as tropical cyclones, mesoscale tropical systems, dynamical features in tropical oceans, and the temperature and humidity structure of the tropical atmosphere. Remote sensing of the tropics in the visual and infrared bands is severely limited by cloud cover, and for this reason microwave remote sensing is of great importance for observations of tropical systems. In the second part of this book, the author considers the basic principles of microwave sounding, and the role of both passive and active

remote sensing methods for tropical ecosystem monitoring. He presents examples of applications in areas such as rainforest monitoring, crop mapping, population distribution, hydrology studies and the monitoring of biomass burning and active geodetic zones. The book concludes with a synopsis of the current status of operational satellite systems and future plans for tropical studies using remote sensing. Readership: Undergraduate and postgraduate students of geography, meteorology, climatology, atmospheric physics, geophysics, oceanography, tropical agriculture and environmental science. Professional scientists, environmentalists and engineers concerned with tropical ecosystems, and government agencies and industries involved with management, planning and hazard assessment in tropical regions.

Topics in Medical Image Processing and Computational Vision Joao Manuel R.S. Tavares 2013-03-27
The sixteen chapters included in this book were written by invited experts of international recognition and address important issues in Medical Image Processing and Computational Vision, including: Object Recognition, Object Detection, Object Tracking, Pose Estimation, Facial Expression Recognition, Image Retrieval, Data Mining, Automatic Video Understanding and Management, Edges Detection, Image Segmentation, Modelling and Simulation, Medical thermography, Database Systems, Synthetic Aperture Radar and Satellite Imagery. Different applications are addressed and described throughout the book, comprising: Object Recognition and Tracking, Facial Expression Recognition, Image Database, Plant Disease Classification, Video Understanding and Management, Image Processing, Image Segmentation, Bio-structure Modelling and Simulation, Medical Imaging, Image Classification, Medical Diagnosis, Urban Areas Classification, Land Map Generation. The book brings together the current state-of-the-art in the various multi-disciplinary solutions for Medical Image Processing and Computational Vision, including research, techniques, applications and new trends contributing to the development of the related areas.

Global Urban Monitoring and Assessment

through Earth Observation - Qihao Weng
2014-05-23
Cities and towns are the original producers of many of the global environmental problems related to waste disposal, and air and water pollution. There is a rapidly growing need for technologies that will enable monitoring of the world's natural resources and urban assets, and managing exposure to natural and man-made risks. The Group on Earth Observation (GEO) calls for strengthening the cooperation and coordination among global observing systems and research programs. Global Urban Monitoring and Assessment through Earth Observation introduces this important international collaborative effort, reviews the current state of global urban remote sensing, and expands on future directions in the field. The book reviews the current state of global urban monitoring, assessment, modeling, and prediction through Earth observation and related technologies. It then introduces GEO's important international collaborative effort—Global Urban Observation and Information Task—and the current state of global urban remote sensing and future directions. It explores groundbreaking work in urban remote sensing and examines how it could contribute to the development of innovative concepts and techniques for sustainable urban development. Despite significant progress in recent years, there remain substantial gaps in ongoing national, regional, and global efforts to address environmental challenges. Edited by a well-known expert in the field of remote sensing, GIS, and other geospatial technologies, this book addresses the gaps in an effective and long-term manner, highlighting the importance of increased coordination and networking among major stakeholders and of working together with other key international mechanisms. Drawing on the expertise of pioneers in the field from across the globe, the book details emerging research in the theory, methods, and techniques of urban remote sensing that provide insight into how to solve the major issues of sustainable development—one of the most important issues facing society in the future.

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

GIS and Geocomputation for Water Resource Science and Engineering - Barnali Dixon 2016-02-08
GIS and Geocomputation for Water Resource Science and Engineering not only provides a comprehensive introduction to the fundamentals of geographic information systems but also demonstrates how GIS and mathematical models can be integrated to develop spatial decision support systems to support water resources planning, management and engineering. The book uses a hands-on active learning approach to introduce fundamental concepts and numerous case-studies are provided to reinforce learning and demonstrate practical aspects. The benefits and challenges of using GIS in environmental and water resources fields are clearly tackled in this book, demonstrating how these technologies can be used to harness increasingly available digital data to develop spatially-oriented sustainable solutions. In addition to providing a strong grounding on fundamentals, the book also demonstrates how GIS can be combined with traditional physics-based and statistical models as well as information-theoretic tools like neural networks

and fuzzy set theory.

Introduction to Environmental Remote Sensing
Eric Charles Barrett 1999
First Published in 1999. Routledge is an imprint of Taylor & Francis, an informa company.

Advances in Environmental Remote Sensing
Qihao Weng 2011-02-16
Generating a satisfactory classification image from remote sensing data is not a straightforward task. Many factors contribute to this difficulty including the characteristics of a study area, availability of suitable remote sensing data, ancillary and ground reference data, proper use of variables and classification algorithms, and the analyst's e

Urban Remote Sensing - Qihao Weng
2018-02-20
Urban Remote Sensing, Second Edition assembles a team of professional experts to provide a much-needed update on the applications of remote sensing technology to urban and suburban areas. This book reflects new developments in spaceborne and airborne sensors, image processing methods and techniques, and wider applications of urban remote sensing to meet societal and economic challenges. In various sections of the book the authors address methods for upscaling urban feature extraction to the global scale, new methods in mapping and detecting urban landscape features and structures, and mapping and monitoring urbanization in developing countries. Additionally, readers are provided with valuable case studies such as the HEAT (Heat Energy Assessment Technologies) project in Calgary, Canada and the use of VHR (very high resolution) satellite monitoring in Salzburg, Austria to tackle challenges of urban green planning. Features Explores the most up-to-date developments in the field of urban remote sensing Integrates both technical and practical aspects covering all different topics of global urban growth issues Provides new and updated contributions addressing data mining of remotely sensed big data, recent urban studies on a global scale, accuracy assessment and validation, and new technical challenges Examines various applications of urban remote sensing in support of urban planning, environmental management, and sustainable urban development Authors are renowned

figures in the field of remote sensing
Subaltern Urbanisation in India - Eric Denis
2017-03-01
This volume decentres the view of urbanisation in India from large agglomerations towards smaller urban settlements. It presents the outcomes of original research conducted over three years on subaltern processes of urbanization. The volume is organised in four sections. A first one deals with urbanisation dynamics and systems of cities with chapters on the new census towns, demographic and economic trajectories of cities and employment transformation. The interrelations of land transformation, social and cultural changes form the topic of the "land, society, belonging" section based on ethnographic work in various parts of India (Karnataka, Himachal Pradesh, Arunachal Pradesh and Tamil Nadu). A third section focuses on public policies, governance and urban services with a set of macro-analysis based papers and specific case studies. Understanding the nature of production and innovation in non-metropolitan contexts closes this volume. Finally, though focused on India, this research raises larger questions with regard to the study of urbanisation and development worldwide.

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 CRYSOPHERIC 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.

Integrated Water Resource Management in Brazil - Carsten Lorz 2014-10-15
The complex interactions between water resources, land-use change and water technologies are a major issue in many emerging countries of Southern America. Usable water resources are affected by natural conditions, such as, strong seasonal contrasts and high climatic variability, and rapid changes of land use and land cover that is caused by the dramatic expansion of agricultural land and urbanization processes. So far, the effects of the changing climate have had minor effects on water resources. Although regional data is rather scarce, global climate models predict substantial changes of climatic conditions in the future. A further pressure is that demand for water supply and waste water, both in terms of amount and spatial expansion, is increasing rapidly due to higher population densities caused by natural population growth and migration as well as higher per capita consumption. Integrated Water Resource Management in Brazil aims to present the results of the joint project IWAS-AGUA DF which deals with problems, causes and solutions in water supply in scope of integrated water resource management in western Central Brazil. The basic idea of the IWRM approach to be presented is to show how natural conditions and human interference are interacting and how technologies as well as concepts might help to manage such water resource systems in a sustainable way. Authors: Carsten Lorz, Hochschule Weihenstephan-Triesdorf, University of Applied Sciences, Germany, Franz Makeschin, Dresden University of Technology, Germany and Holger Weiss, Center for Environmental Research, Germany