

Unmanned Aerial Vehicle Geomorphology Study

This book is a printed edition of the Special Issue "Earth Observations for Geohazards" that was published in Remote Sensing)

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.

Geographical Information Systems is a computer system used to capture, store, analyze and display information related to positions on the Earth's surface. It has the ability to show multiple types of information on multiple geographical locations in a single map, enabling users to assess patterns and relationships between different information points, a crucial component for multiple aspects of modern life and industry. This 3-volumes reference provides an up-to date account of this growing discipline through in-depth reviews authored by leading experts in the field. VOLUME EDITORS
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discipline, providing readers with a detailed overview of all aspects of geographic information systems, principles and applications Emphasizes the practical, socioeconomic applications of GIS Provides readers with a reliable, one-stop comprehensive guide, saving them time in searching for the information they need from different sources

Small Format Aerial Photography and UAS Imagery: Principles, Techniques and Geoscience Applications, Second Edition, provides basic and advanced principles and techniques for Small Format Aerial Photography (SFAP), focusing on manned and unmanned aerial systems, including drones, kites, blimps, powered paragliders, and fixed wing and copter SFAP. The authors focus on everything from digital image processing and interpretation of data, to travel and setup for the best result, making this a comprehensive guide for any user. Nine case studies in a variety of environments, including gullies, high altitudes, wetlands and recreational architecture are included to enhance learning. This new edition includes small unmanned aerial systems (UAS) and discusses changes in legal practices across the globe. In addition, the book presents the history of SFAP, providing background and context for new developments. Provides background and context for new developments in SFAP Covers the legal implications for small format aerial systems in different countries Discusses unmanned aerial systems (drones) and their applications Features new case studies for different applications, including vineyard monitoring and impacts of wind energy

Geospatial Technologies for Resources Planning and Management

Unmanned Aerial Vehicle: Applications in Agriculture and Environment

Minoan Earthquakes

Concepts, Techniques, and Applications

Breakthroughs in Research and Practice

Landslide Processes

This book focuses on small flying drones and their applications in conducting geographic surveys. Scholars and professionals will discover the potential of this tool, and hopefully develop a conceptual and methodological framework for doing the following things: a) Translate their data acquisition needs into specifications. (b) Use the developed specifications to choose the best accessible configuration for their drones, and (c) Design and organize effective and low-cost field deployment and flight operations by integrating technical aspects with regulatory and research requirements. Readers can apply this knowledge to work in cartography, environmental monitoring and analysis, land-use studies and landscape archaeology. Particular attention is also given to the reasons why a drone can dramatically boost a geographer's capability to understand geographic phenomena both from hard-science and humanities-oriented approach.

Urban Geomorphology: Landforms and Processes in Cities addresses the human impacts on landscapes through occupation (urbanization) and development as a contribution to anthropogenic geomorphology or "anthropogeomorphology." This includes a focus on land clearance, conservation issues, pollution, decay and

erosion, urban climate, and anthropogenic climate change. These topics, as well as others, are considered to shed more light on the human transformation of natural landscapes and the environmental impacts and geomorphological hazards that environmental change can encompass. Its multidisciplinary approach is appropriate for audiences from a range of disciplines and professions, from geologists, conservationists, and land-use planners to architects and developers. Urban Geomorphology not only transcends disciplines, but also covers varied spatial-temporal frameworks and presents a diverse set of approaches and solutions to human impacts and geomorphological hazards within urban landscapes. Features a cross-disciplinary perspective, highlighting the importance of the geosciences to environmental science, engineering, and public policy Focuses on the built environment as the location of concentrated human impacts and change Provides an international scope, including case studies from urban areas around the world

The edited book deals with climate change and its response to river system which is one of the most burning issues of the Global environment. Due to urbanization and industrialization land degradation and resource depletion are happening and promoting livelihood challenges in the world which is reflected in the book too. The book addresses the construction of dams over large rivers and its possible consequences in the environment. Changes of the hydrology and sedimentology are to be addressed in the book. The climate change phenomena and associated geomorphic hazards and contemporary environmental issues such as sea level rise, coastal flood, drought, wind erosion, flood, soil erosion, landslide, depletion of ground water, coastal erosion etc. are elaborated in the book with suitable methods and techniques. So this edited book will contribute a lot to general to particular filed of studies and will help to geographers, geomorphologists, environmentalists, planners, policy makers and developers for studies and promoting regional plans and development.

Grounded in current research, this second edition has been thoroughly updated, featuring new topics, global examples and online material. Written for students studying coastal geomorphology, this is the complete guide to the processes at work on our coastlines and the features we see in coastal systems across the world.

Breaking the Myth through Interdisciplinarity

UAV Photogrammetry and Remote Sensing

Theoretical Foundation and Applications

Unmanned Aerial Vehicles: Breakthroughs in Research and Practice

Gully Erosion Studies from India and Surrounding Regions

Sustainable Development and Innovations in Marine Technology

The use of small unoccupied aerial systems (sUAS) for acquiring close-range remotely sensed data has substantially increased in the past 5 years. A primary focus of early research was on physical systems and photogrammetric techniques. However, as

sUAS technology continues to improve and more sophisticated payloads are utilized, such as lidar and multispectral cameras, applications have expanded to nearly all subdisciplines within Geography. This edited volume is intended to showcase the various ways in which sUAS are used in geographic research, including geomorphology, environmental and hazard monitoring, biogeography, and urban and sociocultural geography.

First used in military applications, unmanned aerial vehicles are becoming an integral aspect of modern society and are expanding into the commercial, scientific, recreational, agricultural, and surveillance sectors. With the increasing use of these drones by government officials, business professionals, and civilians, more research is needed to understand their complexity both in design and function. *Unmanned Aerial Vehicles: Breakthroughs in Research and Practice* is a critical source of academic knowledge on the design, construction, and maintenance of drones, as well as their applications across all aspects of society. Highlighting a range of pertinent topics such as intelligent systems, artificial intelligence, and situation awareness, this publication is an ideal reference source for military consultants, military personnel, business professionals, operation managers, surveillance companies, agriculturalists, policymakers, government officials, law enforcement, IT professionals, academicians, researchers, and graduate-level students.

Unmanned Aircraft Systems (UAS) are a rapidly evolving technology with an expanding array of diverse applications. In response to the continuing evolution of this technology, this book discusses unmanned aerial vehicles (UAVs) and similar systems, platforms and sensors, as well as exploring some of their environmental applications. It explains how they can be used for mapping, monitoring, and modeling a wide variety of different environmental aspects, and at the same time addresses some of the current constraints placed on realizing the potential use of the technology such as s flight duration and distance, safety, and the invasion of privacy etc. Features of the book: Provides necessary theoretical foundations for pertinent subject matter areas Introduces the role and value of UAVs for geographical data acquisition, and the ways to acquire and process the data Provides a synthesis of ongoing research and a focus on the use of technology for small-scale image and spatial data acquisition in an environmental context Written by experts of the technology who bring together UAS tools and resources for the environmental specialist *Unmanned Aerial Remote Sensing: UAS for Environmental Applications* is an excellent resource for any practitioner utilizing remote sensing

and other geospatial technologies for environmental applications, such as conservation, research, and planning. Students and academics in information science, environment and natural resources, geosciences, and geography, will likewise find this comprehensive book a useful and informative resource. This book offers a collection of papers presented at the First International Conference "Information Technologies in the Research of Biodiversity" that was held from 11-14 September 2018 in Irkutsk (Russia). Papers in this book cover areas of interaction of knowledge on biodiversity and information technologies. The main topics include: methods, models, software systems for the analysis of biodiversity data; global data portals; information and analytical systems on biodiversity; application of remote methods in vegetation mapping; theoretical fundamentals and organization technologies of the information and telecommunications infrastructures.

Unmanned Aerial System in Geomatics

Proceedings of the International Conference "Information Technologies in the Research of Biodiversity", 11-14 September, 2018, Irkutsk, Russia

Applications for Geographic Observation

Small-Format Aerial Photography and UAS Imagery

Proceedings of UASG 2019

Interdisciplinary study on the role of earthquakes in the eastern Mediterranean Does the "Minoan myth" still stand up to scientific scrutiny? Since the work of Sir Arthur Evans at Knossos (Crete, Greece), the romanticized vision of the Cretan Bronze Age as an era of peaceful prosperity only interrupted by the catastrophic effects of natural disasters has captured the popular and scientific imagination. Its impact on the development of archaeology, archaeoseismology, and earthquake geology in the eastern Mediterranean is considerable. Yet, in spite of more than a century of archaeological explorations on the island of Crete, researchers still do not have a clear understanding of the effects of earthquakes on Minoan society. This volume, gathering the contributions of Minoan archaeologists, geologists, seismologists, palaeoseismologists, geophysicists, architects, and engineers, provides an up-to-date interdisciplinary appraisal of the role of earthquakes in Minoan society and in Minoan archaeology - what we know, what are the remaining issues, and where we need to go. Contributors: Tim Cunningham (Université catholique de Louvain), Jan Driessen (Université catholique de Louvain), Charalampos Fassoulas (Natural History Museum of Crete, University of Crete), Christoph Grützner (RWTH Aachen University, University of

Cambridge), Susan E. Hough (U.S. Geological Survey), Simon Jusseret (The University of Texas at Austin, Université catholique de Louvain), Colin F. Macdonald (The British School at Athens), Jack Mason (RWTH Aachen University), James P. McCalpin (GEO-HAZ Consulting Inc.), Floyd W. McCoy (University of Hawaii - Windward), Clairy Palyvou (Aristotle University of Thessaloniki), Gerassimos A. Papadopoulos (National Observatory of Athens), Klaus Reicherter (RWTH Aachen University), Manuel Sintubin (KU Leuven), Jeffrey S. Soles (University of North Carolina - Greensboro), Rhonda Suka (Research Corporation of the University of Hawaii), Eleftheria Tsakanika (National Technical University of Athens), Thomas Wiatr (RWTH Aachen University, German Federal Agency for Cartography and Geodesy).

This book showcases how new and emerging technologies like Unmanned Aerial Vehicles (UAVs) are trying to provide solutions to unresolved socio-economic and environmental problems. Unmanned vehicles can be classified into five different types according to their operation. These five types are unmanned ground vehicles, unmanned aerial vehicles, unmanned surface vehicles (operating on the surface of the water), unmanned underwater vehicles, and unmanned spacecraft. Unmanned vehicles can be guided remotely or function as autonomous vehicles. The technology has a wide range of uses including agriculture, industry, transport, communication, surveillance and environment applications. UAVs are widely used in precision agriculture; from monitoring the crops to crop damage assessment. This book explains the different methods in which they are used, providing step-by-step image processing and sample data. It also discusses how smart UAVs will provide unique opportunities for manufacturers to utilise new technological trends to overcome the current challenges of UAV applications. The book will be of great interest to researchers engaged in forest carbon measurement, road patrolling, plantation monitoring, crop yield estimation, crop damage assessment, terrain modelling, fertilizer control, and pest control.

This book addresses the role and importance of space in the respective fields of the social sciences and the humanities. It discusses how map representations and mapping processes can inform ongoing intellectual debates or open new avenues for scholarly inquiry within and across disciplines, including a wide array of significant developments in spatial processes, including the Internet, global positioning system (GPS), affordable digital photography and mobile technologies. Last but not least it reviews and assesses recent research challenges across disciplines that enhance our understanding of spatial processes and mapping at scales ranging from the molecular to

the galactic.

This volume gathers the latest advances, innovations, and applications in the field of geographic information systems and unmanned aerial vehicle (UAV) technologies, as presented by leading researchers and engineers at the 1st International Conference on Unmanned Aerial System in Geomatics (UASG), held in Roorkee, India on April 6–7, 2019. It covers highly diverse topics, including photogrammetry and remote sensing, surveying, UAV manufacturing, geospatial data sensing, UAV processing, visualization, and management, UAV applications and regulations, geo-informatics and geomatics. The contributions, which were selected by means of a rigorous international peer-review process, highlight numerous exciting ideas that will spur novel research directions and foster multidisciplinary collaboration among different specialists.

Small Flying Drones

Landforms and Processes in Cities

Unmanned Aerial Remote Sensing

Exploring Potential Uses of Unmanned Aerial Systems to Support Reclamation's Mission

Applied Geomorphology and Contemporary Issues

Volume 2

Karst Hydrogeology, Geomorphology and Caves A Comprehensive Resource Covering All Aspects of Karst Hydrogeology, Geomorphology, and Caves This essential book covers all physical, chemical, and geological aspects of karst science. It reviews current knowledge on hydrogeology, geomorphology and caves in karst, based on the vast existing literature and investigations carried out by the authors worldwide. The different topics are profusely illustrated with color figures and images from all continents and climates, showing the scientific and aesthetic appeal of karst environments. The book covers in a systematic way the significant features of karst rocks, the chemistry and kinetics of their dissolution, the rate and distribution of karst denudation, the unique hydrogeology of karst terrains, the landforms endemic to karst, the morphology of caves and their diverse sedimentary records, and the multiple processes that lead to the formation of underground voids. Overall, the work reflects the increasing recognition of karst as a fundamental part of the Earth's dynamic systems, and helps readers understand this multidisciplinary field from a holistic and nuts-and-bolts perspective. Some of the ideas discussed within the book include: How karst is gaining importance for human development, because of its valuable resources (groundwater) and associated environmental problems (impacts and hazards) The enormous technological developments achieved in recent years Recent major breakthroughs in the field and their influence on other scientific disciplines The central role played by karst science for understanding and mitigating global environmental issues (global warming, depletion of resources, human-induced hazards) For all scientists working in karst, and for students and lecturers of karst-related programs, this book serves as a valuable all-in-one source. It is also a valuable resource for professional hydrogeologists, the petroleum industry, environmental geologists, and of course speleologists, the last true geographic explorers in the world.

Remote Sensing of Geomorphology, Volume 23, discusses the new range of remote-sensing

techniques (lidar, structure from motion photogrammetry, advanced satellite platforms) that has led to a dramatic increase in terrain information, and as such provided new opportunities for a better understanding of surface morphology and related Earth surface processes. As several papers have been published (including paper reviews and special issues) on this topic, this book summarizes the major advances in remote sensing techniques for the analysis of Earth surface morphology and processes, also highlighting future challenges. Useful for MSc and PhD students, this book is also ideal for any scientists that want to have a single volume guideline to help them develop new ideas. In addition, technicians and private and public sectors working on remote sensing will find the information useful to their initiatives. Provides a useful guideline for MSc and PhD students, scientists, technicians, and land planners on the use of remote sensing in geomorphology Includes applications on specific case studies that highlight issues and benefits of one technique compared to others Presents future trends in remote sensing and geomorphology

Unmanned Aerial Systems: Theoretical Foundation and Applications presents some of the latest innovative approaches to drones from the point-of-view of dynamic modeling, system analysis, optimization, control, communications, 3D-mapping, search and rescue, surveillance, farmland and construction monitoring, and more. With the emergence of low-cost UAS, a vast array of research works in academia and products in the industrial sectors have evolved. The book covers the safe operation of UAS, including, but not limited to, fundamental design, mission and path planning, control theory, computer vision, artificial intelligence, applications requirements, and more. This book provides a unique reference of the state-of-the-art research and development of unmanned aerial systems, making it an essential resource for researchers, instructors and practitioners. Covers some of the most innovative approaches to drones Provides the latest state-of-the-art research and development surrounding unmanned aerial systems Presents a comprehensive reference on unmanned aerial systems, with a focus on cutting-edge technologies and recent research trends in the area

How we understand our shared and individual heritage, interpret and disseminate that knowledge is increasingly central to contemporary society. The emerging context for such development is the field of heritage science. Inherently interdisciplinary, and involving both the Arts and Humanities, engineering, conservation and the digital sciences, the development of heritage science is a driver for change; socially, economically and technically. This book has gathered contributions from leading researchers from across the world and provides a series of themed contributions demonstrating the theoretical, ethical, methodological and technical methods which lie at the heart of heritage science. Archaeology, conservation, museology, the arts, forensic sciences, and heritage management are represented through collaborative research with specialists in applied technologies including object and terrestrial laser scanning, multi-spectral imaging, visualisation, GIS and 3D-printing. Together, the chapters present important case studies to demonstrate the recent advances and best practise within the discipline, highlighting the value of digital transformation across the heritage community that includes objects, monuments, sites and landscapes spanning two million years of natural and cultural history from all over the world. Visual Heritage: Digital Approaches in Heritage Science is aimed at a broad academic and practice-led readership, which extends across many disciplines and will be of considerable value to scholars, practitioners, and students working within heritage and computer science at all levels. The content, which applies heritage science across two million years of cultural history will be appreciated by a general audience, as well as those wishing simply to explore the vast range of potential technical applications across all the

disciplines represented in the book.

Urban Geomorphology

Engineering Geology for Society and Territory - Volume 2

Proceedings of the International Conference on Geo-Spatial Technologies and Earth Resources 2017

Introduction to Coastal Processes and Geomorphology

Applications of Photogrammetry for Environmental Research

Beach Management Tools - Concepts, Methodologies and Case Studies

This book provides an overview of beach management tools, including carrying capacity, beach nourishment, environmental and tourism awards (like Blue Flag or others), bathing water quality, zoning, beach typologies, quality index, user's perception, interdisciplinary beach monitoring, coastal legislation, shore protection, social and economic indicators, ecosystem services, and coastal governance (applied in beach case studies). Beaches are one of the most intensely used coastal ecosystems and are responsible for more than half of all global tourism revenues, and as such the book introduces a wide range of state-of-the-art tools that can be used to deal with a variety of beach challenges. Each chapter features specific types of tools that can be applied to advantage in beach management practices. With examples of local and regional case studies from around the globe, this is a valuable resource for anyone involved in beach management.

The concept of remote sensing as a way of capturing information from an object without making contact with it has, until recently, been exclusively focused on the use of Earth observation satellites. The emergence of unmanned aerial vehicles (UAV) with Global Navigation Satellite System (GNSS) controlled navigation and sensor-carrying capabilities has increased the number of publications related to new remote sensing from much closer distances. Previous knowledge about the behavior of the Earth's surface under the incidence different wavelengths of energy has been successfully applied to a large amount of data recorded from UAVs, thereby increasing the spatial and temporal resolution of the products obtained. More specifically, the ability of UAVs to be positioned in the air at pre-programmed coordinate points; to track flight paths; and in any case, to record the coordinates of the sensor position at the time of the shot and at the pitch, yaw, and roll angles have opened an interesting field of applications for low-altitude aerial photogrammetry, known as UAV photogrammetry. In addition, photogrammetric data processing has been improved thanks to the combination of new algorithms, e.g., structure from motion (SfM), which solves the collinearity equations without the need for any control point, producing a cloud of points referenced to an arbitrary coordinate system and a full camera calibration, and the multi-view stereopsis (MVS) algorithm, which applies an expanding procedure of sparse set of matched keypoints in order to obtain a dense point cloud. The set of technical advances described above allows for geometric modeling of terrain surfaces with high accuracy, minimizing the need for topographic campaigns for georeferencing of such products. This Special Issue aims to compile some applications realized thanks to the synergies established between new remote sensing from close distances and UAV photogrammetry.

Section 1. Geomorphological mapping -- section 2. Techniques in applied geomorphological mapping -- section 3. Case studies.

This book offers the scientific basis for the ample evaluation of badland management in India and some surrounding regions. It examines the processes operating in the headwaters and main channels of ephemeral rivers in lateritic environments of India. In

particular, the book covers a range of vital topics in the areas of gully erosion and water to soil erosion at lateritic uplands regions of India and other regions in Asia. It explores the probable gully erosion modeling through Remote Sensing & GIS Techniques. It is divided into three units. Unit I deals with the introduction of badland, types of badland and the process of badland formation. Unit II is devoted to a description of quantitative measurements. Unit III deals with the control and management processes related to various issues from different regions. As such this book serves as a reference book for research activities in this area. It is an efficient guide for aspiring researchers in applied geography, explaining advanced techniques to help students recognize both simple and complex concepts.

Visual Heritage: Digital Approaches in Heritage Science

Mapping Across Academia

Karst Hydrogeology, Geomorphology and Caves

sUAS Applications in Geography

Spatial Modeling in GIS and R for Earth and Environmental Sciences

Unmanned Aerial Vehicles for Internet of Things (IoT)

This book presents practical hydraulic and river engineering research along with fluvial geomorphological concepts, and links the theoretical and practical knowledge of people working every day with rivers, streams, and hydraulic structures to fluvial geomorphology. Besides providing a guide for professionals, this book also provides material for students to acquire the knowledge and skills to rehabilitate rivers, streams, and waterways.

This book is a printed edition of the Special Issue "Observing Geohazards from Space" that was published in Geosciences

The 15 chapters in this book explore the theoretical as well as a number of technical research outcomes on all aspects of UAVs. UAVs has widely differing applications such as disaster management, structural inspection, goods delivery, transportation, localization, mapping, pollution and radiation monitoring, search and rescue, farming, etc. The advantages of using UAVs are countless and have led the way for the full integration of UAVs, as intelligent objects into the IoT system. The book covers cover such subjects as: Efficient energy management systems in UAV based IoT networks IoE enabled UAVs Mind-controlled UAV using Brain-Computer Interface (BCI) The importance of AI in realizing autonomous and intelligent flying IoT Blockchain-based solutions for various security issues in UAV-enabled IoT The challenges and threats of UAVs such as hijacking, privacy, cyber-security, and physical safety.

Sustainable Development and Innovations in Marine Technologies includes the papers presented at the 18th International Congress of the Maritime Association of the Mediterranean (IMAM 2019, Varna, Bulgaria, 9-11 September 2019). Sustainable Development and Innovations in Marine Technologies includes a wide range of topics: Aquaculture & Fishing; Construction; Defence & Security; Design; Dynamic response of structures; Degradation/ Defects in structures; Electrical equipment of ships; Human factors; Hydrodynamics; Legal/Social aspects; Logistics; Machinery & Control; Marine environmental protection; Materials; Navigation; Noise; Non-linear motions - manoeuvrability; Off-shore and coastal development; Off-shore renewable energy; Port operations; Prime movers; Propulsion; Safety at sea; Safety of Marine Systems; Sea waves; Seakeeping; Shaft & propellers; Ship resistance; Shipyards; Small & pleasure crafts; Stability; Static response of structures; Structures, and Wind loads. The IMAM

series of Conferences started in 1978 when the first Congress was organised in Istanbul, Turkey. IMAM 2019 is the eighteenth edition, and in its nearly forty years of history, this biannual event has been organised throughout Europe. Sustainable Development and Innovations in Marine Technologies is essential reading for academics, engineers and all professionals involved in the area of sustainable and innovative marine technologies.

Information Technologies in the Research of Biodiversity

Remote Sensing of Geomorphology

A Compendium

Observing Geohazards from Space

UAS for Environmental Applications

Atlas of Structural Geological and Geomorphological Interpretation of Remote Sensing Images

The growing popularity of unmanned aerial vehicles (UAVs), informally known as drones, opened new opportunities for geoscientists to monitor the Earth at unprecedented spatial and temporal resolutions.

Geophysicists use UAVs to observe underground features, geologists and geomorphologists utilize drones to carry out detailed survey of Earth's surface, hydrologists apply UAVs to observe water bodies and conduct hydrometric measurements, and meteorologists use drones to measure weather characteristics and air quality. The articles presented in this topical issue of Pure and Applied Geophysics focus on the range of applications of UAVs in geosciences, forming a selection of case studies from different geographic regions. Two papers address the issue of investigating subsurface processes, including magnetic survey and post-explosion imprint on physical terrain. Three articles present examples of high-resolution mapping of landforms, ranging from a highly dynamic aeolian environment to stable granite tors. Water-related problems, covering fluvial geomorphologic and hydrographic studies with the use of UAVs, are solved in other three papers of this topical issue. A number of meteorological variables is investigated in four articles, including UAV-based snow characterization, atmospheric aerosol monitoring and cloudiness.

Finally, this book includes two technical reports on both technological and historical aspects of the UAV-assisted research in geosciences. Since this volume of Pure and Applied Geophysics puts an emphasis on case studies on a diverse usage of drones in Earth sciences it may be interesting not only for researchers, but particularly for postgraduate students in geophysics, geology, geography or civil engineering. Practitioners may also find this topical issue useful for implementing the UAV survey as a tool for mitigating the risk of selected geohazards.

This book focuses on the application of geospatial technologies for resource planning and management for the key natural resources, e.g. water, agriculture and forest as well as the decision support system (DSS) for infrastructure development. We have seen in the past four decades that the growing complexities of sustainable management of natural resources management have been very challenging. The book has been written to leverage the current geospatial technologies that

integrate the remotely sensed data available from various platforms, the precise locational data providing geospatial intelligence, and the advanced integration tools of Geographical Information Systems (GIS). Geospatial technologies have been used for water resources management employing geomorphological characteristics, analysis of river migration pattern, understanding the large-scale hydrological process, wet land classification and monitoring, analysis of glacial lake outburst flood (GLOF), assessment of environmental flow and soil erosion studies, water quality modelling and assessment and rejuvenation of paleochannels through groundwater recharge. Geospatial technologies have been applied for crop classification and mapping, soil moisture determination using RISAT-1 C-band and PALSAR-2 L-band sensors, inventory of horticulture plantations, management of citrus orchards, crop yield forecasting, rice yield estimation, estimation of evapotranspiration and its evaluation against lysimeter and satellite-based evapotranspiration product for India to address the various issues of the agricultural system management. Geospatial technologies have been used for generation of digital elevation model, urban dynamics assessment, mobile GIS application at grass root level planning, cadastral level developmental planning and e-governance applications, system dynamics for sustainable development, micro-level water resources planning, site suitability for sewage treatment plant, traffic density assessment, geographical indications of India, archaeological applications and disasters interventions to elaborate various issues of DSS for infrastructure development and management. Geospatial technologies have been employed for the generation and reconciliation of the notified forest land boundaries, and also the land cover changes analysis within notified forest areas, forest resource assessment, management and monitoring and wildlife conservation and management. This book aims to present high-quality technical case studies representing the recent developments in the "application of geospatial technologies for resource planning and management." The editors hope that this book will serve as a valuable resource for scientists and researchers to plan and manage land and water resources sustainably.

Over the last twenty years there has been a major expansion of knowledge in the field of landforms and landforming processes of deserts. This advanced-level book provides a benchmark for the current state of science, and is written by an international team of authors who are acknowledged experts in their fields.

This book is a printed edition of the Special Issue "UAV or Drones for Remote Sensing Applications" that was published in *Sensors Unmanned Aerial Vehicle Systems in Crop Production Geomorphology of Desert Environments Current Studies in Social Sciences II Encyclopedia of Geology*

UAV or Drones for Remote Sensing Applications

Principles, Techniques and Geoscience Applications

This book discusses the latest advances and applications in geospatial technologies and earth resources for mine surveying

and civil engineering. It also discusses mineral resources management and assesses many techniques such as unmanned aerial vehicles/drones, ground-penetrating radar, geographic information system (GIS) and GIS-based machine learning. The book gathers the proceedings of the International Conference on Geo-Spatial Technologies and Earth Resources (GTER 2017), which was co-organized by the Hanoi University of Mining and Geology (HUMG) and the International Society for Mine Surveying (ISM) and held in Hanoi, Vietnam, on October 5-6, 2017. GTER 2017 is technically co-sponsored by the Vietnam Mining Science and Technology Association (VMST), Vietnam Association of Geodesy, Cartography and Remote Sensing (VGCR), Vietnam National Coal-Mineral Industries Holding Corporation Limited (VINACOMIN), and the Dong Bac Corporation (NECO). The event is intended to bring together experts, researchers, engineers, and policymakers to discuss and exchange their knowledges and experiences with modern geospatial technologies, recent advances in mining and tunneling, and the geological and earth sciences. Given its breadth of coverage, the book will appeal to scientists in the field as well as professionals interested in related technological applications.

Applications of Unmanned Aerial Vehicles in Geosciences
Birkhäuser

Spatial Modeling in GIS and R for Earth and Environmental Sciences offers an integrated approach to spatial modelling using both GIS and R. Given the importance of Geographical Information Systems and geostatistics across a variety of applications in Earth and Environmental Science, a clear link between GIS and open source software is essential for the study of spatial objects or phenomena that occur in the real world and facilitate problem-solving. Organized into clear sections on applications and using case studies, the book helps researchers to more quickly understand GIS data and formulate more complex conclusions. The book is the first reference to provide methods and applications for combining the use of R and GIS in modeling spatial processes. It is an essential tool for students and researchers in earth and environmental science, especially those looking to better utilize GIS and spatial modeling. Offers a clear, interdisciplinary guide to serve researchers in a variety of fields, including hazards, land surveying, remote sensing, cartography, geophysics, geology, natural resources, environment and geography Provides an

overview, methods and case studies for each application
Expresses concepts and methods at an appropriate level for both students and new users to learn by example
Encyclopedia of Geology, Second Edition presents in six volumes state-of-the-art reviews on the various aspects of geologic research, all of which have moved on considerably since the writing of the first edition. New areas of discussion include extinctions, origins of life, plate tectonics and its influence on faunal provinces, new types of mineral and hydrocarbon deposits, new methods of dating rocks, and geological processes. Users will find this to be a fundamental resource for teachers and students of geology, as well as researchers and non-geology professionals seeking up-to-date reviews of geologic research. Provides a comprehensive and accessible one-stop shop for information on the subject of geology, explaining methodologies and technical jargon used in the field Highlights connections between geology and other physical and biological sciences, tackling research problems that span multiple fields Fills a critical gap of information in a field that has seen significant progress in past years Presents an ideal reference for a wide range of scientists in earth and environmental areas of study

Comprehensive Geographic Information Systems

Unmanned Aerial Systems

Earth Observations for Geohazards

Volume 1

Applications of Unmanned Aerial Vehicles in Geosciences

Open Channel Hydraulics, River Hydraulic Structures and Fluvial Geomorphology

This book is one out of 8 IAEG XII Congress volumes, and deals with Landslide processes, including: field data and monitoring techniques, prediction and forecasting of landslide occurrence, regional landslide inventories and dating studies, modeling of slope instabilities and secondary hazards (e.g. impulse waves and landslide-induced tsunamis, landslide dam failures and breaching), hazard and risk assessment, earthquake and rainfall induced landslides, instabilities of volcanic edifices, remedial works and mitigation measures, development of innovative stabilization techniques and applicability to specific engineering geological conditions, use of geophysical techniques for landslide characterization and investigation of triggering mechanisms. Focuses is given to innovative techniques, well documented case studies in different environments, critical components of engineering geological and geotechnical investigations, hydrological and hydrogeological investigations, remote sensing and geophysical techniques, modeling of triggering, collapse, run

out and landslide reactivation, geotechnical design and construction procedures in landslide zones, interaction of landslides with structures and infrastructures and possibility of domino effects. The Engineering Geology for Society and Territory volumes of the IAEG XII Congress held in Torino from September 15-19, 2014, analyze the dynamic role of engineering geology in our changing world and build on the four main themes of the congress: environment, processes, issues, and approaches. The congress topics and subject areas of the 8 IAEG XII Congress volumes are: Climate Change and Engineering Geology. Landslide Processes. River Basins, Reservoir Sedimentation and Water Resources. Marine and Coastal Processes. Urban Geology, Sustainable Planning and Landscape Exploitation. Applied Geology for Major Engineering Projects. Education, Professional Ethics and Public Recognition of Engineering Geology. Preservation of Cultural Heritage.

The book presents a collection of papers focused on recent progress in key areas of photogrammetry for environmental research. Applications oriented to the understanding of natural phenomena and quantitative processes using dataset from photogrammetry (from satellite to unmanned aerial vehicle images) and terrestrial laser scanning, also by a diachronic approach, are reported. The book covers topics of interest of many disciplines from geography, geomorphology, engineering geology, geotechnology, including landscape description and coastal studies. Mains issues faced by the book are related to applications on coastal monitoring, using multitemporal aerial images, and investigations on geomorphological hazard by the joint use of proximal photogrammetry, terrestrial and aerial laser scanning aimed to the reconstruction of detailed surface topography and successive 2D/3D numerical simulations for rock slope stability analyses. Results reported in the book bring into evidence the fundamental role of multitemporal surveys and reliable reconstruction of morphologies from photogrammetry and laser scanning as support to environmental researches.

This volume responds to the growing interest in adopting aerial robots (UAVs, or drones) for agricultural crop production, which are revolutionizing farming methods worldwide. The book provides a detailed review of 250 UAVs that examines their usefulness in enhancing profitability, yield, and quality of crop production. Recent trends indicate an increase in agricultural drone production and use. Millions of dollars have been invested in start-ups that produce agro-drones in the past several years. North America, Europe, China, and the Far East have excelled in offering a large number of UAV models. Some of them are versatile, a few are specific, and many of them are low cost. With so many drone models (over 1200) available, how do farmers and agricultural specialists choose the models best for them? This compendium examines the most useful drones and provides the pertinent details about each drone, its producer, cost incurred, and its pros and cons. It covers their technical specifications, suitability for various purposes, previous

performances in farms, and possible benefits to farmers. It covers fixed-wing drones, fixed-winged (hybrid) VTOL helicopters, multi-copters, tilted-wing drones, etc. The book includes a few drones meant more for military or other purposes (e.g. recreation/fun) but that could be easily modified and adapted for the farming sector. The reviews compare activities among the UAVs, such aerial imagery of crops, ability to provide spectral analyses to collect useful data about a crop's growth patterns, and how they can be used to gauge crop canopy temperature (i.e. water stress index), determine grain maturity, and much more.

Geomorphological Mapping

For Engineers, Geomorphologists and Physical Geographers

Methods and Applications

Advances and Applications in Geospatial Technology and Earth Resources