Ship Detection Using Polarimetric Radarsat 2 Data And

This new Encyclopedia of Coastal Science stands as the latest authoritative source in the field of coastal studies, making it the standard reference work for specialists and the interested lay person. Unique in its interdisciplinary approach. This Encyclopedia features contributions by 245 well-known international specialists in their respective fields and is abundantly illustrated with line-drawings and photographs. Not only does this volume offer an extensive number of entries, it also includes various appendices, an illustrated glossary of coastal morphology and extensive bibliographic listings.

This book is a printed edition of the Special Issue "Advances in SAR: Sensors, Methodologies, and Applications" that was published in Remote Sensing

This book is a printed edition of the Special Issue "Polarimetric SAR Techniques and Applications" that was published in Applied Sciences

Modern Earth System Monitoring represents a fundamental change in the way scientists study the Earth System. In Oceanography, for the past two centuries, ships have provided the platforms for observing. Expeditions on the continents and Earth's poles are land-based analogues. Fundamental understanding of current systems, climate, natural hazards, and ecosystems has been greatly advanced. While these approaches have been remarkably successful, the need to establish measurements over time can only be made using Earth observations and observatories with exacting standards and continuous data. The 19 peer-reviewed contributions in this volume provide early insights into this emerging view of Earth in both space and time in which change is a critical component of our growing understanding.

The theme of IGARSS'99, Remote Sensing of the System Earth - A Challenge for the 21st Century, reflects the expectation that earth observation based on satellite remote sensing can significantly contribute to the future study of our environment and the changes it is undergoing, whether from natural causes or human activities. The wide range of topics suggested for presentation is not only an indication of the interdisciplinary nature of this complex task, it also implies an essential need for integrated approaches in remote sensing in order to meet the challenge of modeling and understanding a system as complex as our environment.

This volume provides international case studies of practical and advanced methods using satellite images integrated with other airborne, drone images and field data to monitor infrastructure. The book is timely, as infrastructure spending by national governments is increasing and robust monitoring techniques are needed to keep pace with climate change impacts affecting infrastructures globally. The expert international contributions that comprise the book provide examples of advanced methods using InSAR, high-resolution optical and radar images, LIDAR, UAV, geophysical techniques and their applications to civil infrastructure. The case studies focus on high-resolution, rapid time-series radar interferometry to monitor highways, railways, pipelines, bridges, urban, and water conveyance infrastructures. Other case studies use optical and radar images to characterize urban infrastructure and monitor damages from floods, oil spills and conflicts. The case studies are global focusing on infrastructure projects in Canada, Dominica Guyana, India Italy, Syria Taiwan, United States and the United Kingdom. This compilation of selected case studies will provide useful guidelines for the civil infrastructure characterization and monitoring communities. The book will be of interest to infrastructure consultants and professionals, scientific communities in earth observation and advanced imaging methods, and researchers and professors in earth sciences, climate change, and civil and geoengineering.

This book constitutes the proceedings of the 31st Australasian Joint Conference on Artificial Intelligence, AI 2018, held in Wellington, New Zealand, in December 2018. The 50 full and 26 short papers presented in this volume were carefully reviewed and selected from 125 submissions. The paper were organized in topical sections named: agents, games and robotics; AI applications and innovations; computer vision; constraints and search; evolutionary computation; knowledge representation and reasoning; machine learning and data mining; planning and scheduling; and text mining and NLP.

The National Academy of Sciences estimate that 1.7 to 8.8 million tons of oil are released into world's water every year, of which more than 70% is directly related to human activities. The effects of these spills are all too apparent: dead wildlife, oil covered marshlands and contaminated water chief among them. This reference will provide scientists, engineers and practitioners with the latest methods use for identify and eliminating spills before they occur and develop the best available techniques, equipment and materials for dealing with oil spills in every environment. Topics covered include: spill dynamics and behaviour, spill treating agents, and cleanup techniques such as: in situ burning, mechanical containment or recovery, chemical and biological methods and physical methods are used to clean up shorelines. Also included are the fate and effects of oil spills and means to assess damage. Covers spill dynamics and behaviour Definitive guide to spill treating agents Complete coverage of cleanup techniques Includes fate and effects of oil spills and means to assess damage

The Special Issue entitled "Remote Sensing in Vessel Detection and Navigation" comprises 15 articles on many topics related to remote sensing with navigational sensors. The sequence of articles included in this Special Issue is in line with the latest scientific trends. The latest developments in science, including artificial intelligence, were used. It can be said that navigation and vessel detection remain important and hot topics, and a lot of work will continue to be done worldwide. New techniques and methods for analyzing and extracting information from navigational sensors and data have been proposed and verified. Some of these will spark further research, and some are already mature and can be considered for industrial implementation and development.

This book will guide you in the use of remote sensing for military and intelligence gathering applications. It is a must read for students working on systems acquisition or for anyone interested in the products derived from remote sensing systems.

Issues in Analysis, Measurement, Monitoring, Imaging, and Remote Sensing Technology: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Analysis and Measurement. The editors have built Issues in Analysis, Measurement, Monitoring, Imaging, and Remote Sensing Technology: 2013 Edition on the vast

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This open access book focuses on the practical application of electromagnetic polarimetry principles in Earth remote sensing with an educational purpose. In the last decade, the operations from fully polarimetric synthetic aperture radar such as the Japanese ALOS/PalSAR, the Canadian Radarsat-2 and the German TerraSAR-X and their easy data access for scientific use have developed further the research and data applications at L,C and X band. As a consequence, the wider distribution of polarimetric data sets across the remote sensing community boosted activity and development in polarimetric SAR applications, also in view of future missions. Numerous experiments with real data from spaceborne platforms are shown, with the aim of giving an up-to-date and complete treatment of the unique benefits of fully polarimetric synthetic aperture radar data in five different domains: forest, agriculture, cryosphere, urban and oceans.

An Advanced Research Workshop (ARW) "Data Fusion Technologies for Harbour Protection" was held in Tallinn, Estonia 27 June–1 July, 2005. This workshop was organized by request of the NATO Security Through Science Programme and the Defence Investment Division. An ARW is one of many types of funded group support mechanisms established by the NATO Science Committee to contribute to the critical assessment of existing knowledge on new important topics, to identify directions for future research, and to promote close working relationships between scientists from different countries and with different professional experiences. The NATO Science Committee was approved at a meeting of the Heads of Government of the Alliance in December 1957, subsequent to the 1956 recommendation of "Three Wise Men" – Foreign Ministers Lange (Norway), Martino (Italy) and Pearson (Canada) on Non-Military Cooperation in NATO. The NATO Science Committee established the NATO Science Programme in 1958 to encourage and support scientific collaboration between individual scientists and to foster scientific development in its member states. In 1999, following the end of the Cold War, the Science Programme was transformed so that support is now devoted to collaboration between Partner-country and NATO-country scientists or to contributing towards research support in Partner countries. Since 2004, the Science Programme was further modified to focus exclusively on NATO Priority Research Topics (i. e. Defence Against Terrorism or Countering Other Threats to Security) and also preferably on a Partner country priority area.

Here is a review of the current potential of Earth Observations that devotes particular attention to the challenges posed by the European Seas. The assessment of surface parameters by means of passive techniques – which measure reflected visible and near-infrared sunlight, or surface emissions in the thermal infrared or microwave spectral regions – is addressed. Active techniques – which use transmitted impulses of visible or microwave radiation – are covered as well.

This new resource presents the principles and applications in the emerging discipline of Activity-Based Intelligence (ABI). This book will define, clarify, and demystify the tradecraft of ABI by providing concise definitions, clear examples, and thoughtful discussion. Concepts, methods, technologies, and applications of ABI have been developed by and for the intelligence community and in this book you will gain an understanding of ABI principles and be able to apply them to activity based intelligence analysis. The book is intended for intelligence professionals, researchers, intelligence studies, policy makers, government staffers, and industry representatives. This book will help practicing professionals understand ABI and how it can be applied to real-world problems.

Evaluation of Simulated RADARSAT-2 Polarimetry ProductsRemote Sensing in Vessel Detection and NavigationMDPI

This thesis presents a groundbraking methodology for the radar international community. The detection approach introduced, namely perturbation analysis, is completey novel showing a remarkable capability of thinking outside the box. Perturbation analysis is able to push forward the performance limits of current algorithms, allowing the detection of targets smaller than the resolution cell and highly embedded in clutter. The methodology itself is extraordinary flexibe and has already been used in two other large projects, funded by the ESA (European Space Agency): M-POL for maritime surveillance, and DRAGON-2 for land classification with particular attention to forests. This book is a perfectly organised piece of work where every detail and perspective is taken into account in order to provide a comprehensive vision of the problems and solutions.

This book discusses in detail the science and morphology of powerful hurricane detection systems. It broadly addresses new approaches to monitoring hazards using freely available images from the European Space Agency's (ESA's) Sentinel-1 SAR satellite and benchmarks a new interdisciplinary field at the interface between oceanography, meteorology and remote sensing. Following the launch of the first European Space Agency (ESA) operational synthetic aperture radar satellite, Sentinel-1, in 2014, synthetic aperture radar (SAR) data has been freely available on the Internet hub in real-time. This advance allows weather forecasters to view hurricanes in fine detail for the first time. As a result, the number of synthetic aperture radar research scientists working in this field is set to grow exponentially in the next decade; the book is a valuable resource for this large and budding audience.

This book presents a timely investigation of radar remote sensing observations for agricultural crop monitoring and advancements of research techniques and their applicability for crop biophysical parameter estimation. It introduces theoretical background of radar scattering from vegetation volume and semi-empirical modelling approaches that are the foundation for biophysical parameter inversion. The contents will help readers explore the state-of-the-art crop monitoring and biophysical parameter estimation using approaches radar remote sensing. It is useful guide for academicians, practitioners and policymakers. Changes in sea surface roughness are usually associated with a change in the sea surface wind field. This interaction has been exploited to measure sea surface wind speed by scatterometry. A number of features on the sea surface associated with changes in roughness can be observed by synthetic aperture radar (SAR) because of the change in Bragg backscatter of the radar signal by damping of the resonant ocean capillary waves. With various radar frequencies, resolutions, and modes of polarization, sea surface features have been analyzed in numerous campaigns, bringing various datasets together, thus allowing for new insights into small-scale processes at a larger areal coverage. This Special Issue aims at investigating sea surface features detected by high spatial resolution radar systems, such as SAR.

" Information fusion resulting from multi-source processing, often called multisensor data fusion when sensors are the main sources of information, is a relatively young (less than

20 years) technology domain. It provides techniques and methods for: Integrating data from multiple sources and using the complementarity of this data to derive maximum information about the phenomenon being observed; Analyzing and deriving the meaning of these observations; Selecting the best course of action; and Controlling the actions. Various sensors have been designed to detect some specific phenomena, but not others. Data fusion applications can combine synergically information from many sensors, including data provided by satellites and contextual and encyclopedic knowledge, to provide enhanced ability to detect and recognize anomalies in the environment, compared with conventional means. Data fusion is an integral part of multisensor processing, but it can also be applied to fuse non-sensor information (geopolitical, intelligence, etc.) to provide decision support for a timely and effective situation and threat assessment. One special field of application for data fusion is satellite imagery, which can provide extensive information over a wide area of the electromagnetic spectrum using several types of sensors (Visible, Infra-Red (IR), Thermal IR, Radar, Synthetic Aperture Radar (SAR), Polarimetric SAR (PolSAR), Hyperspectral...). Satellite imagery provides the coverage rate needed to identify and monitor human activities from agricultural practices (land use, crop types identification...) to defence-related surveillance (land/sea target detection and classification). By acquiring remotely sensed imagery over earth regions that land sensors cannot access, valuable information can be gathered for the defence against terrorism. This books deals with the following research areas: Target recognition/classification and tracking; Sensor systems; Image processing; Remote sensing and remote control; Belief functions theory; and Situation assessment. "

Radar-related technology is mainly processed within the time and frequency domains but, at the same time, is a multi-dimensional integrated system including a spatial domain for transmitting and receiving electromagnetic waves. As a result of the enormous technological advancements of the pioneers actively discussed in this book, research and development in multi-dimensional undeveloped areas is expected to continue. This book contains state-of-the-art work that should guide your research.

The main objective of this book is to provide a common platform for diverse concepts in satellite image processing. In particular it presents the state-of-the-art in Artificial Intelligence (AI) methodologies and shares findings that can be translated into real-time applications to benefit humankind. Interdisciplinary in its scope, the book will be of interest to both newcomers and experienced scientists working in the fields of satellite image processing, geo-engineering, remote sensing and Artificial Intelligence. It can be also used as a supplementary textbook for graduate students in various engineering branches related to image processing.

Inventory and monitoring of coastal aquaculture and fisheries structures provide important baseline data for decision-making in planning and development, including regulatory laws, environmental protection and revenue collection. Mapping these structures can be performed with good accuracy and at regular intervals by satellite remote sensing, which allows observation of vast areas, often of difficult accessibility, at a fraction of cost of traditional surveys. This study is based on interpretation of satellite imaging radar data and a detailed image analysis procedure id described. The report aims at the necessary technology transfer for and operational use of the approach indicated in other similar environments.

This book is a printed edition of the Special Issue "Application of Artificial Neural Networks in Geoinformatics" that was published in Applied Sciences