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## KEY=US - ASHLEY SIDNEY

### 2020 JOINT AGENCY COMMERCIAL IMAGERY EVALUATION

### REMOTE SENSING SATELLITE COMPENDIUM

### THE MINIMUM DESCRIPTION LENGTH PRINCIPLE

MIT Press This introduction to the MDL Principle provides a reference accessible to graduate students and researchers in statistics, pattern classification, machine learning, and data mining, to philosophers interested in the foundations of statistics, and to researchers in other applied sciences that involve model selection.

### INTRODUCTION TO MICROWAVE REMOTE SENSING

CRC Press Introduction to Microwave Remote Sensing offers an extensive overview of this versatile and extremely precise technology for technically oriented undergraduates and graduate students. This textbook emphasizes an important shift in conceptualization and directs it toward students with prior knowledge of optical remote sensing: the author dispels any linkage between microwave and optical remote sensing. Instead, he constructs the concept of microwave remote sensing by comparing it to the process of audio perception, explaining the workings of the ear as a metaphor for microwave instrumentation. This volume takes an "application-driven" approach. Instead of describing the technology and then its uses, this textbook justifies the need for measurement then explains how microwave technology addresses this need. Following a brief summary of the field and a history of the use of microwaves, the book explores the physical properties of microwaves and the polarimetric properties of electromagnetic waves. It examines the interaction of microwaves with matter, analyzes passive atmospheric and passive surface measurements, and describes the operation of altimeters and scatterometers. The textbook concludes by explaining how high resolution images are created using radars, and how techniques of interferometry can be applied to both passive and active sensors.

### YEARBOOK ON SPACE POLICY 2016

### SPACE FOR SUSTAINABLE DEVELOPMENT

Springer The Yearbook on Space Policy, edited by the European Space Policy Institute (ESPI), is the reference publication analysing space policy developments. Each year it presents issues and trends in space policy and the space sector as a whole. Its scope is global and its perspective is European. The Yearbook also links space policy with other policy areas. It highlights specific events and issues, and provides useful insights, data and information on space activities. The first part of the Yearbook sets out a comprehensive overview of the economic, political, technological and institutional trends that have affected space activities. The second part of the Yearbook offers a more analytical perspective on the yearly ESPI theme and consists of external contributions written by professionals with diverse backgrounds and areas of expertise. The third part of the Yearbook carries forward the character of the Yearbook as an archive of space activities. The Yearbook is designed for government decision-makers and agencies, industry professionals, as well as the service sectors, researchers and scientists and the interested public.

### SPACE CAPACITY BUILDING IN THE XXI CENTURY

Springer Nature This book, edited by the European Space Policy Institute, is the first international publication, following UNISPACE+50, to analyze how space capacity building can empower the international community towards fully accessing all the economic and societal benefits that space assets and data can offer. New innovation models are increasingly spreading across various sectors and disciplines, including space, which is becoming an integral part of many societal activities (e.g. telecoms, weather, climate change and environmental monitoring, civil protection, infrastructures, transportation and navigation, healthcare and education). The book helps readers construct their own space capacity building roadmaps, which take into account key stakeholders and also new private actors, NGOs and civil society. Starting from a policy and strategy perspective, it addresses key aspects of capacity building, including innovation and exploration, global health, climate change and resilient societies. It outlines the available options and summarizes the ideal programmatic conditions for their successful implementation. Showcasing reflections from a range of senior space professionals around the world, with their unique perspectives and solutions, it provides a rich mosaic in which various cultural and policy approaches to space are translated into actionable programs and ideas so that space may truly benefit all of humankind.

### REMOTE SENSING OF PLANT BIODIVERSITY

Springer Nature This Open Access volume aims to methodologically improve our understanding of biodiversity by linking disciplines that incorporate remote sensing, and uniting data and perspectives in the fields of biology, landscape ecology, and geography. The book provides a framework for how biodiversity can be detected and evaluated--focusing particularly on plants--using proximal and remotely sensed hyperspectral data and other tools such as LiDAR. The volume, whose chapters bring together a large cross-section of the biodiversity community engaged in these methods, attempts to establish a common language across disciplines for understanding and implementing remote sensing of biodiversity across scales. The first part of the book offers a potential basis for remote detection of biodiversity. An overview of the nature of biodiversity is described, along with ways for determining traits of plant biodiversity through spectral analyses across spatial scales and linking spectral data to the tree of life. The second part details what can be detected spectrally and remotely. Specific instrumentation and technologies are described, as well as the technical challenges of detection and data synthesis, collection and processing. The third part discusses spatial resolution and integration across scales and ends with a vision for developing a global biodiversity monitoring system. Topics include spectral and functional variation across habitats and biomes, biodiversity variables for global scale assessment, and the prospects and pitfalls in remote sensing of biodiversity at the global scale.

### ADVANCES IN GEOSCIENCES

### SOLID EARTH (SE)

World Scientific This invaluable volume set of Advances in Geosciences continues the excellent tradition of the Asia-Oceania scientific community in providing the most up-to-date research results on a wide range of geosciences and environmental science. The information is vital to the understanding of the effects of climate change, extreme weathers on the most populated regions and fastest moving economies in the world. Besides, these volumes also highlight original papers from many prestigious research institutions which are doing cutting edge study in atmospheric physics, hydrological science and water resource, ocean science and coastal study, planetary exploration and solar system science, seismology, tsunamis, upper atmospheric physics and space science.

### RADAR CROSS SECTION

SciTech Publishing The leading text and reference on radar cross section (RCS) theory and applications, this work presents a comparison of two radar signal strengths. One is the strength of the radar beam sweeping over a target, the other is the strength of the reflected echo senses by the receiver. This book shows how the RCS "gauge" can be predicted for theoretical objects.

### NATIONAL VEGETATION CLASSIFICATION

### FIELD GUIDE TO WOODLAND

### THE SPACE ECONOMY AT A GLANCE 2014

OECD Publishing Space Economy at a Glance provides a statistical overview of the global space sector and its contributions to economic activity. This new edition provides indicators and statistics based on both official and private data, in over forty countries, and identifies new dynamics in the space sector.

### RETURNING PEOPLE TO THE MOON AFTER APOLLO

### WILL IT BE ANOTHER FIFTY YEARS?

Springer July 2019 marks 50 years since Neil Armstrong took his famous first steps on the surface of the Moon. As people around the world celebrate the anniversary of this great American achievement, they might wonder why there have been no further human missions to the Moon since Apollo 17 in 1972. This book assesses the legacy of the Apollo missions based on several decades of space developments since the program's end. The question of why we haven't sent humans back to the Moon is explored through a multidisciplinary lens that weaves together technological and historical perspectives. The nine manned Apollo missions, including the six that landed on the Moon, are described here by an author who has 50 years of experience in the space industry and whose work spanned the Apollo 8-13 missions. The final section of the book provides a comprehensive assessment of today's programs and current plans for sending humans to the Moon.

### SPACE STRATEGY AT A CROSSROADS

### OPPORTUNITIES AND CHALLENGES FOR 21ST CENTURY COMPETITION

This monograph incorporates a series of essays on the opportunities and challenges for U.S. military space strategy in the 21st century. Each chapter takes a different approach to exploring the possibilities for U.S. space strategy. The issues considered here include the military space requirements for broader competition, the unique value space provides for militaries, the human capital required

to build space strategy, the comparative advantages of U.S. allies in space, the role of space strategy for our competitors, and how to think about integrating space into broader defense strategy. We have found many signs of progress in identifying new strategic challenges in space and developing new strategic thought. There has been good progress in linking U.S. military strategy to the broader imperatives of an era of strategic rivalry and competition among major powers. But progress is not success. And the latter appears to be a long way off. Among the expert community we have found substantial dissatisfaction with the rate of progress relative to the rate of change and to the need for ideas well founded in current realities. This small volume is intended to help catalyze and inform thinking about these challenges. It draws on work at CGSR and elsewhere exploring the links between competitive strategies and the U.S. military space enterprise. It also draws on discussions from a workshop we convened in December 2019.

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## **FUTURE U.S. WORKFORCE FOR GEOSPATIAL INTELLIGENCE**

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*National Academies Press* We live in a changing world with multiple and evolving threats to national security, including terrorism, asymmetrical warfare (conflicts between agents with different military powers or tactics), and social unrest. Visually depicting and assessing these threats using imagery and other geographically-referenced information is the mission of the National Geospatial-Intelligence Agency (NGA). As the nature of the threat evolves, so do the tools, knowledge, and skills needed to respond. The challenge for NGA is to maintain a workforce that can deal with evolving threats to national security, ongoing scientific and technological advances, and changing skills and expectations of workers. *Future U.S. Workforce for Geospatial Intelligence* assesses the supply of expertise in 10 geospatial intelligence (GEOINT) fields, including 5 traditional areas (geodesy and geophysics, photogrammetry, remote sensing, cartographic science, and geographic information systems and geospatial analysis) and 5 emerging areas that could improve geospatial intelligence (GEOINT fusion, crowdsourcing, human geography, visual analytics, and forecasting). The report also identifies gaps in expertise relative to NGA's needs and suggests ways to ensure an adequate supply of geospatial intelligence expertise over the next 20 years.

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## **IMAGING FROM SPACEBORNE AND AIRBORNE SARs, CALIBRATION, AND APPLICATIONS**

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*CRC Press* Sixty years after its birth, Synthetic Aperture Radar (SAR) evolved as a key player of earth observation, and it is continually upgraded by enhanced hardware functionality and improved overall performance in response to user requirements. The basic information gained by SAR includes the backscattering coefficient of targets, their phases (the truncated distance between SAR and its targets), and their polarization dependence. The spatiotemporal combination of the multiple data operated on the satellite or aircraft significantly increases its sensitivity to detect changes on earth, including temporal variations of the planet in amplitude and the interferometric change for monitoring disasters; deformations caused by earthquakes, volcanic activity, and landslides; environmental changes; ship detection; and so on. Earth-orbiting satellites with the appropriate sensors can detect environmental changes because of their large spatial coverage and availability. *Imaging from Spaceborne and Airborne SARs, Calibration, and Applications* provides A-to-Z information regarding SAR researches through 15 chapters that focus on the JAXA L-band SAR, including hardware description, principles of SAR imaging, theoretical description of SAR imaging and error, ScanSAR imaging, polarimetric calibration, in-flight antenna pattern, SAR geometry and ortho rectification, SAR calibration, defocusing for moving targets, large-scale SAR imaging and mosaic, interferometric SAR processing, irregularities, application, and forest estimation. Sample data are created by using L-band SAR, JERS-1, PALSAR, PALSAR-2, and Pi-SAR-L2. This book is based on the author's experience as a principal researcher at JAXA with responsibilities for L-band SAR operation and researches. It reveals the inside of SAR processing and application researches performed at JAXA, which makes this book a valuable reference for a wide range of SAR researchers, professionals, and students.

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## **EXTREME ENVIRONMENT ELECTRONICS**

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*CRC Press* Unfriendly to conventional electronic devices, circuits, and systems, extreme environments represent a serious challenge to designers and mission architects. The first truly comprehensive guide to this specialized field, *Extreme Environment Electronics* explains the essential aspects of designing and using devices, circuits, and electronic systems intended to operate in extreme environments, including across wide temperature ranges and in radiation-intense scenarios such as space. The *Definitive Guide to Extreme Environment Electronics* featuring contributions by some of the world's foremost experts in extreme environment electronics, the book provides in-depth information on a wide array of topics. It begins by describing the extreme conditions and then delves into a description of suitable semiconductor technologies and the modeling of devices within those technologies. It also discusses reliability issues and failure mechanisms that readers need to be aware of, as well as best practices for the design of these electronics. Continuing beyond just the "paper design" of building blocks, the book rounds out coverage of the design realization process with verification techniques and chapters on electronic packaging for extreme environments. The final set of chapters describes actual chip-level designs for applications in energy and space exploration. Requiring only a basic background in electronics, the book combines theoretical and practical aspects in each self-contained chapter. Appendices supply additional background material. With its broad coverage and depth, and the expertise of the contributing authors, this is an invaluable reference for engineers, scientists, and technical managers, as well as researchers and graduate students. A hands-on resource, it explores what is required to successfully operate electronics in the most demanding conditions.

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## **GOVERNMENT FINANCIAL REPORTING MANUAL 2010-11**

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The Stationery Office Known as FReM. Ring binder available separately (ISBN 9780115601422). Also available with binder (ISBN 9780115601439)

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## **MEASUREMENT FOR THE SEA**

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### **SUPPORTING THE MARINE ENVIRONMENT AND THE BLUE ECONOMY**

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*Springer* In the history of humankind, the sea has always played a key role as a privileged medium for communication, commerce and contact among population centers. It constitutes an essential ecosystem, and an invaluable reservoir and source of food for all living beings. Therefore, its health is a critical challenge for the survival of all humanity, particularly as one of the most important environmental components targeted by global warming. Measuring and monitoring techniques are key tools for managing the marine environment and for supporting the Blue Economy. With this perspective, a series of annual international events, entitled *Metrology for the Sea (MetroSea for short)* was begun in 2017. Their increasing success inspired this book, which provides an anthology of tutorials dealing with a representative selection of topics of concern to a broad readership. The book covers two broad application areas, marine hydrography and meteorology, and then deals with instrumentation for measurement at sea. Typical metrological issues such as calibration and traceability, are considered, for both physical and chemical quantities. Key techniques, such as underwater acoustic investigation, remote sensing, measurement of waves and monitoring networks, are treated alongside marine geology and the monitoring of animal species. Economic and legal aspects of metrology for navigation are also discussed. Such an unparalleled wide vision of measurement for the sea will be of interest to a broad audience of scientists, engineers, economists, and their students.

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## **SPACE ANTENNA HANDBOOK**

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*John Wiley & Sons* This book addresses a broad range of topics on antennas for space applications. First, it introduces the fundamental methodologies of space antenna design, modelling and analysis as well as the state-of-the-art and anticipated future technological developments. Each of the topics discussed are specialized and contextualized to the space sector. Furthermore, case studies are also provided to demonstrate the design and implementation of antennas in actual applications. Second, the authors present a detailed review of antenna designs for some popular applications such as satellite communications, space-borne synthetic aperture radar (SAR), Global Navigation Satellite Systems (GNSS) receivers, science instruments, radio astronomy, small satellites, and deep-space applications. Finally it presents the reader with a comprehensive path from space antenna development basics to specific individual applications. Key Features: Presents a detailed review of antenna designs for applications such as satellite communications, space-borne SAR, GNSS receivers, science instruments, small satellites, radio astronomy, deep-space applications. Addresses the space antenna development from different angles, including electromagnetic, thermal and mechanical design strategies required for space qualification. Includes numerous case studies to demonstrate how to design and implement antennas in practical scenarios. Offers both an introduction for students in the field and an in-depth reference for antenna engineers who develop space antennas. This book serves as an excellent reference for researchers, professionals and graduate students in the fields of antennas and propagation, electromagnetics, RF/microwave/millimetrewave systems, satellite communications, radars, satellite remote sensing, satellite navigation and spacecraft system engineering. It also aids engineers technical managers and professionals working on antenna and RF designs. Marketing and business people in satellites, wireless, and electronics area who want to acquire a basic understanding of the technology will also find this book of interest.

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## **SCATTERING, NATURAL SURFACES, AND FRACTALS**

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*Elsevier* *Scattering, Natural Surfaces, and Fractals* provides a comprehensive overview of electromagnetic scattering from natural surfaces, ranging from the classical to the more recent (fractal) approach. As remote sensing applications become increasingly important, this text provides readers with a solid background in interpretation, classification and thematization of microwave images. The "scattering problem" is discussed in detail with emphasis on its application to electromagnetic wave propagation, remote sensing, radar detection, and electromagnetic diagnostics. Natural surface and fractals complete this treatise focusing on how the fractal model represents our natural environment and other planets in our solar system, most recently as used to research the planet Venus and Titan, one of the moons of Saturn. An example of how scattering, fractals, and natural surfaces are of great importance is the following: Natural oil slicks in the ocean have been found to be fractal while man-made ones (generated by illegal washing of oil carrying ships) are not. Processing of an ocean image from space may detect the latter by means of a fractal analysis. An elegant and clear treatment of a rigorous topic with informative prose and realistic illustrations of scattering. Provides readers with a solid background in interpretation, classification, and thematization of microwave images. The only book available on fractal models and their application to scattering.

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## **THRIVING ON OUR CHANGING PLANET**

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### **A DECADAL STRATEGY FOR EARTH OBSERVATION FROM SPACE**

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*National Academies Press* We live on a dynamic Earth shaped by both natural processes and the impacts of humans on their environment. It is in our collective interest to observe and understand our planet, and to predict future behavior to the extent possible, in order to effectively manage resources, successfully respond to threats from natural and human-induced environmental change, and capitalize on the opportunities that such knowledge can bring. By continuously monitoring and exploring Earth, developing a deep understanding of its evolving behavior, and characterizing the processes that shape and reshape the environment in which we live, we not only advance knowledge and basic discovery about our planet, but we further develop the foundation upon which benefits to society are built. *Thriving on Our Changing Planet* presents prioritized science, applications, and observations, along with related strategic and programmatic guidance, to support the U.S. civil space Earth observation program over the coming decade.

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## **REMOTE SENSING IMAGERY**

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*John Wiley & Sons* Dedicated to remote sensing images, from their acquisition to their use in various applications, this book covers the global lifecycle of images, including sensors and acquisition systems, applications such as movement monitoring or data assimilation, and image and data processing. It is organized in three main parts. The first part presents technological information about remote sensing

(choice of satellite orbit and sensors) and elements of physics related to sensing (optics and microwave propagation). The second part presents image processing algorithms and their specificities for radar or optical, multi and hyper-spectral images. The final part is devoted to applications: change detection and analysis of time series, elevation measurement, displacement measurement and data assimilation. Offering a comprehensive survey of the domain of remote sensing imagery with a multi-disciplinary approach, this book is suitable for graduate students and engineers, with backgrounds either in computer science and applied math (signal and image processing) or geo-physics. About the Authors Florence Tupin is Professor at Telecom ParisTech, France. Her research interests include remote sensing imagery, image analysis and interpretation, three-dimensional reconstruction, and synthetic aperture radar, especially for urban remote sensing applications. Jordi Inglada works at the Centre National d'Études Spatiales (French Space Agency), Toulouse, France, in the field of remote sensing image processing at the CESBIO laboratory. He is in charge of the development of image processing algorithms for the operational exploitation of Earth observation images, mainly in the field of multi-temporal image analysis for land use and cover change. Jean-Marie Nicolas is Professor at Telecom ParisTech in the Signal and Imaging department. His research interests include the modeling and processing of synthetic aperture radar images.

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### **EARTH OBSERVATIONS FOR ADDRESSING GLOBAL CHALLENGES**

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"Earth Observations for Addressing Global Challenges" presents the results of cutting-edge research related to innovative techniques and approaches based on satellite remote sensing data, the acquisition of earth observations, and their applications in the contemporary practice of sustainable development. Addressing the urgent tasks of adaptation to climate change is one of the biggest global challenges for humanity. As His Excellency António Guterres, Secretary-General of the United Nations, said, "Climate change is the defining issue of our time and we are at a defining moment. We face a direct existential threat." For many years, scientists from around the world have been conducting research on earth observations collecting vital data about the state of the earth environment. Evidence of the rapidly changing climate is alarming: according to the World Meteorological Organization, the past two decades included 18 of the warmest years since 1850, when records began. Thus, Group on Earth Observations (GEO) has launched initiatives across multiple societal benefit areas (agriculture, biodiversity, climate, disasters, ecosystems, energy, health, water, and weather), such as the Global Forest Observations Initiative, the GEO Carbon and GHG Initiative, the GEO Biodiversity Observation Network, and the GEO Blue Planet, among others. The results of research that addressed strategic priorities of these important initiatives are presented in the monograph.

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### **PROCESSING OF SAR DATA**

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#### **FUNDAMENTALS, SIGNAL PROCESSING, INTERFEROMETRY**

Springer Science & Business Media Written for students, remote sensing specialists, researchers and SAR system designers, Processing of SAR Data shows how to produce quality SAR images. In particular, this practical reference presents new methods and algorithms concerning the interferometric processing of SAR data with emphasis on system and signal theory, namely how SAR imagery is formed, how interferometry SAR images are created, and a detailed mathematical description of different focussing algorithms. Starting with the processing basics and progressing to the final geo-coded SAR data product, the book describes the complete processing steps in detail. Algorithms based on the effects of side-looking geometry are developed to correct foreshortening, shadowing and layover.

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### **OIL SPILL MONITORING HANDBOOK**

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CSIRO PUBLISHING Oil spills can be difficult to manage, with reporting frequently delayed. Too often, by the time responders arrive at the scene, the slick has moved, dissolved, dispersed or sunk. This Oil Spill Monitoring Handbook provides practical advice on what information is likely required following the accidental release of oil or other petroleum-based products into the marine environment. The book focuses on response phase monitoring for maritime spills, otherwise known as Type I or operational monitoring. Response phase monitoring tries to address the questions – what? where? when? how? how much? – that assist responders to find, track, predict and clean up spills, and to assess their efforts. Oil spills often occur in remote, sensitive and logistically difficult locations, often in adverse weather, and the oil can change character and location over time. An effective response requires robust information provided by monitoring, observation, sampling and science. The Oil Spill Monitoring Handbook completely updates the Australian Maritime Safety Authority's 2003 edition of the same name, taking into account the latest scientific advances in physical, chemical and biological monitoring, many of which have evolved as a consequence of major oil spill disasters in the last decade. It includes sections on the chemical properties of oil, the toxicological impacts of oil exposure, and the impacts of oil exposure on different marine habitats with relevance to Australia and elsewhere. An overview is provided on how monitoring integrates with the oil spill response process, the response organisation, the use of decision-support tools such as net environmental benefit analysis, and some of the most commonly used response technologies. Throughout the text, examples are given of lessons learned from previous oil spill incidents and responses, both local and international. General guidance of spill monitoring approaches and technologies is augmented with in-depth discussion on both response phase and post-response phase monitoring design and delivery. Finally, a set of appendices delivers detailed standard operating procedures for practical observation, sample and data collection. The Oil Spill Monitoring Handbook is essential reading for scientists within the oil industry and environmental and government agencies; individuals with responder roles in industry and government; environmental and ecological monitoring agencies and consultants; and members of the maritime sector in Australia and abroad, including officers in ports, shipping and terminals.

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### **SPACE DEBRIS**

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#### **MODELS AND RISK ANALYSIS**

Springer Science & Business Media The future evolution of the debris environment will be forecast on the basis of traffic models and possible hazard mitigation practices. The text shows how large trackable objects will have re-entry pinpointed and predictions made on related risk assessment for possible ground impact. Models will also be described for meteoroids which are also a prevailing risk.

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### **EARTH OBSERVATION FOR LAND AND EMERGENCY MONITORING**

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John Wiley & Sons Earth Observation Science (EOS) is the study of the global Earth land-ocean-atmosphere system through observations. The principal tools for such studies are measurements from space since these provide the coverage of the planet that is necessary to capture the behaviour of the entire coupled system. In addition, surface observations, and measurements from aircraft, balloons and sounding rockets provide valuable contributors to what are now termed "integrated, global observing systems." Coupled with models, the EOS measurement suites provide powerful tools for research into the factors controlling and changing the Earth system in which we live. The objectives of this book are to describe new methods and applications of satellite technology in the fields of land and emergency monitoring. It draws on new research outcomes from the European FP7 project GIONET (European Centre of Excellence in Earth Observation Research Training). GIONET combines industrial partners with universities and research institutes, and this book provides a perspective on Earth Observation applications that is motivated by the cross-fertilisation of both sectors. Hence, this book will find readers in both industry and academia. This book highlights a broad range of innovative uses of Earth Observation technology to support environmental management, decision making, crisis management and climate policies. It uses advanced concepts of multi-sensor image integration, multi-temporal analysis and synergies between data and models. This is a truly interdisciplinary subject that encompasses a range of applications in various fields which are discussed in detail throughout the text. If you are interested in remote sensing applications and looking for inspiration, this is the book for you.

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### **BIOMASS AND STEM VOLUME EQUATIONS FOR TREE SPECIES IN EUROPE**

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A review of stem volume and biomass equations for tree species growing in Europe is presented. The mathematical forms of the empirical models, the associated statistical parameters and information about the size of the trees and the country of origin were collated from scientific articles and from technical reports. The collected information provides a basic tool for estimation of carbon stocks and nutrient balance of forest ecosystems across Europe as well as for validation of theoretical models of biomass allocation.

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### **THE JUNO MISSION**

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Springer The Juno mission to Jupiter is one of the most ambitious, daring and challenging solar system exploration missions ever conceived. Next to the Sun, Jupiter is the largest object in our solar system. As such, it is both a record and driver of the formation and evolution of the planets -- no other object in our solar system can tell us more about the origin of planetary systems. Understanding the details of giant planet formation, structure, composition and powerful magnetospheric environment required a new perspective close up and over the poles of Jupiter -- an orbit never before attempted. Juno was specifically designed for this challenge, entering into the harshest planetary environment known in the solar system. This volume describes the mission design, scientific strategies and instrument payload that enable Juno to peer deep into Jupiter's atmosphere and reveal the fundamental process of the formation and early evolution of our solar system. In these papers, the Juno instrument teams describe their investigations, which include gravity radio science, microwave radiometers, magnetometers, an infrared imager auroral mapper, an ultraviolet imager and spectrograph, a visible light imager known as JunoCam, low and high energy particle detectors and plasma wave and radio electromagnetic sensors. The articles also describe a radiation monitoring experiment and the extensive laboratory measurements undertaken to assist with the analysis and interpretation of Juno's pioneering investigation of Jupiter's deep atmosphere. Originally published in Space Science Reviews, Volume 213, Issue 1-4, November 2017

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### **REMOTE SENSING OF GEOMORPHOLOGY**

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Elsevier 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

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### **SYNTHETIC APERTURE RADAR PROCESSING**

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CRC Press Synthetic Aperture Radar Processing simply and methodically presents principles and techniques of Synthetic Aperture Radar (SAR) image generation by analyzing its system transfer function. The text considers the full array of operation modes from strip to scan, emphasizes processing techniques, enabling the design of operational SAR codes. A simple example then follows. This book will be invaluable to all SAR scientists and engineers working in the field. It may be used as the basis for a course on SAR image generation or as a reference book on remote sensing. It contains a wide spectrum of information presented with clarity and rigor.

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## SMALL SATELLITES FOR EARTH OBSERVATION

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### SELECTED CONTRIBUTIONS

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Springer Science & Business Media *The 6th IAA Symposium on Small Satellites for Earth Observation*, initiated by the International Academy of Astronautics (IAA), was again hosted by DLR, the German Aerospace Center. The participation of scientists, engineers, and managers from 24 countries reflected the high interest in the use of small satellites for dedicated missions applied to Earth observation. The contributions showed that dedicated Earth observation missions cover a wide range of very different tasks.

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### COMPARATIVE CLIMATOLOGY OF TERRESTRIAL PLANETS

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University of Arizona Press "Through the contributions of more than sixty leading experts in the field, *Comparative Climatology of Terrestrial Planets* sets forth the foundations for this emerging new science and brings the reader to the forefront of our current understanding of atmospheric formation and climate evolution"--Provided by publisher.

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### THE MAN WHO TOOK THE RAP

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### SIR ROBERT BROOKE-POPHAM AND THE FALL OF SINGAPORE

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Naval Institute Press *This is the first biography of Sir Robert Brooke-Popham, a key figure in the early development of airpower, whose significant and varied achievements have been overlooked because of his subsequent involvement in the fall of Singapore. It highlights Brooke-Popham's role in developing the first modern military logistic system, the creation of the Royal Air Force Staff College and the organizational arrangements that underpinned Fighter Command's success in the Battle of Britain. Peter Dye challenges longstanding views about performance as Commander-in-Chief Far East and, based on new evidence, offers a more nuanced narrative that sheds light on British and Allied preparations for the Pacific War, inter-service relations and the reasons for the disastrous loss of air and naval superiority that followed the Japanese attack. "The Man Who Took the Rap" highlights the misguided attempts at deterrence, in the absence of a coordinated information campaign, and the unprecedented security lapse that betrayed the parlous state of the Allied defenses.*

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### THE BALANCE BETWEEN INDUSTRY AND AGRICULTURE IN ECONOMIC DEVELOPMENT

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Springer

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### SPACE ECONOMICS

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AIAA

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### THE SCIENCE OF EARTHQUAKES

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Gareth Stevens Publishing LLLP *In January 1994, an earthquake shook a neighborhood in Los Angeles, California, so hard that highway overpasses immediately collapsed. Gas pipes burst and buildings caught on fire. Sixteen people died in a fallen apartment building. As one of the most common natural disasters in the world, earthquakes can be a terrifying force of nature. Readers will be introduced to the amazing science behind an earthquake occurrence in addition to modern examples of earthquakes from all over the world. Including seismology and disaster relief, accessible content will engage readers while full-color photographs augment detailed timelines of featured earthquakes. Powered by information, readers will be ready to do more than just duck and cover when an earthquake hits.*

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### VENUS III

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### THE VIEW AFTER VENUS EXPRESS

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Springer *The Venus Express spacecraft, which was launched in November 2005 and ceased activity in December 2014, has brought about a new wealth of data on Venus's atmosphere, surface, and space environment. Following the completion of this landmark mission, an overview of the current state of scientific understanding of Venus has been assembled into a single collection. The ten papers in this book, written by an international team of specialists, are the products of this effort. They review our knowledge of Venus's interior structure, surface composition, and atmosphere in terms of thermal structure, dynamics, composition, chemistry, clouds, aeronomy, and interaction with the solar wind. Additionally, they identify the questions and measurements that remain open for study in ongoing and future research and exploration efforts. The resulting volume is primarily intended for students and researchers of planetary science. This book is a follow-up to the pioneering book *Venus*, published in 1983, and its successor volume *Venus II*, published in 1997, stood at their respective times as the most authoritative single-volume works available on the planet. Originally published in *Space Science Reviews in the Topical Collection "Venus III"**

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### MEASURING LAND SUBSIDENCE FROM SPACE

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### CIRCULARLY POLARIZED ANTENNAS

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John Wiley & Sons *This book presents a comprehensive insight into the design techniques for different types of CP antenna elements and arrays. In this book, the authors address a broad range of topics on circularly polarized (CP) antennas. Firstly, it introduces to the reader basic principles, design techniques and characteristics of various types of CP antennas, such as CP patch antennas, CP helix antennas, quadrifilar helix antennas (QHA), printed quadrifilar helix antennas (PQHA), spiral antenna, CP slot antennas, CP dielectric resonator antennas, loop antennas, crossed dipoles, monopoles and CP horns. Advanced designs such as small-size CP antennas, broadband, wideband and ultra-wideband CP antennas are also discussed, as well as multi-band CP antennas and dual CP antennas. The design and analysis of different types of CP array antennas such as broadband CP patch arrays, dual-band CP arrays, CP printed slot arrays, single-band and multi-band CP reflectarrays, high-gain CP waveguide slot antennas, CP dielectric resonator antenna arrays, CP active arrays, millimetre-waveband CP arrays in LTCC, and CP arrays with electronically beam-switching or beam-steering capabilities are described in detail. Case studies are provided to illustrate the design and implementation of CP antennas in practical scenarios such as dual-band Global Navigation Satellite Systems (GNSS) receivers, satellite communication mobile terminals at the S-band, Radio Frequency Identification (RFID) readers at 2.4 GHz, and Ka-band high-speed satellite communication applications. It also includes the detailed designs for a wideband Logarithmic spiral antenna that can operate from 3.4-7.7 GHz. In addition, the book offers a detailed review of the recent developments of different types of CP antennas and arrays. Presents comprehensive discussions of design techniques for different types of CP antennas: small-size CP antennas, broadband CP antennas, multi-band CP antennas and CP arrays. Covers a wide range of antenna technologies such as microstrip antennas, helix, quadrifilar helix antenna, printed quadrifilar helix antenna, dielectric resonator antennas, printed slots, spiral antennas, monopoles, waveguide slot arrays, reflectarrays, active arrays, millimetre-wave arrays in LTCC, electronically beam-switching arrays and electronically beam-steerable arrays. Reviews recent developments in different types of CP antennas and arrays, reported by industries, researchers and academics worldwide. Includes numerous case studies to demonstrate how to design and implement different CP antennas in practical scenarios. Provides both an introduction for students in the field and an in-depth reference for antenna/RF engineers who work on the development of CP antennas. Circularly Polarized Antennas will be an invaluable guide for researchers in R&D organizations; system engineers (antenna, telecom, space and satellite); postgraduates studying the subjects of antenna and propagation, electromagnetics, RF/microwave/millimetre-wave systems, satellite communications and so on; technical managers and professionals in the areas of antennas and propagation.*

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### REAPER FORCE - INSIDE BRITAIN'S DRONE WARS

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Kings Road Publishing *This unique insight into RAF Reaper operations in Afghanistan, Iraq and Syria is based on unprecedented research access to the Reaper squadrons and personnel at RAF Waddington in Lincolnshire and Creech Air Force Base in Nevada, USA. The author has observed lethal missile strikes against Islamic State jihadists in Syria and Iraq alongside the crews involved. He has also conducted extensive interviews with Reaper pilots, sensor operators, mission intelligence coordinators, and spouses and partners. The result is an intimate portrait of the human aspect of remote air warfare in the twenty-first century.*

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