Remote Sensing and Digital Image Processing

Volume 20

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Multitemporal Remote Sensing

Methods and Applications
Preface

The idea for this book was conceived at the 1st International Workshop on Temporal Analysis of Satellite Images that I organized in Mykonos, Greece during May 23–25, 2012. The workshop was announced only a few months earlier when the EARSeL Special Interest Group on Temporal Analysis of Satellite Images was established and I became the co-chair. The organizing committee was expecting 30–40 participants for a one and half day event. We were pleasantly surprised, however, that the workshop attracted over 100 participants from 28 countries with 100 presentations covering a variety of topics. This clearly demonstrated strong interests in multitemporal analysis from the remote sensing community. Two months later on July 23, 2012, the Landsat program celebrated its 40th anniversary and then Landsat-8 was launched on Feb. 11, 2013, marking two significant milestones in multitemporal remote sensing.

In 2012, the world also witnessed natural disasters striking across the globe, from flooding, hurricanes and earthquakes to droughts, heat waves and wildfires, killing thousands and inflicting billions of dollars in property and infrastructural damage. Furthermore, our planet is facing unprecedented environmental challenges including rapid urbanization, deforestation, pollution, loss of biodiversity, sea-level rising, melting polar ice-caps and climate change. With its synoptic view and repeatability, remote sensing offers a powerful and effective means to observe disaster damages and monitor our changing planet at local, regional and global scale. Since the launch of Landsat-1 in 1972, numerous Earth Observation satellites have been launched providing huge volumes of multitemporal data. Significant progress has been made to develop methods and techniques for multitemporal analysis, change detection and time series processing. A wide range of applications has been conducted to monitor global environmental changes and to assess disaster damages. It became apparent that a book on multitemporal remote sensing was overdue to provide an overview of the methods and techniques developed and to showcase a variety of application examples. With the enthusiastic support from the authors, the book proposal was submitted and approved by Springer in late 2013.

The chapters in this book are contributed by leading scientists in multitemporal remote sensing from around the world. I would like to express my sincere gratitude
to all authors for their commitment to this endeavor and for their patience in the long process. I would also like to thank all reviewers for volunteering their time to review the chapters and for their constructive comments and suggestions that helped to improve the chapters. Special thanks to the former Book Series Editor of EARSeL, André Marcal, and to the former Chairman of EARSeL, Ioannis Manakos for their support to the book project. Many thanks to Dorothy Furberg and Jan Haas for proofreading and language editing selected chapters.

I am grateful to my family for their enduring love and support. I am also thankful to my parents for their love and strong commitment to my education. Special thanks to my father who changed the subject in my university application to Computer Cartography at Nanjing University that lead me to remote sensing where I found my true passion.

Stockholm, Sweden

July, 2016
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Contributors

Vahid Akbari Earth Observation Laboratory, Department of Physics and Technology, University of Tromsø – The Arctic University of Norway, Tromsø, Norway

Silvia M. Alfieri Department of Geoscience and Remote Sensing, Faculty of Civil Engineering, Delft University of Technology, Delft, The Netherlands

Institute for Mediterranean Agricultural and Forest Systems (ISAFOM), Naples, Italy

Krista Alikas Department of Remote Sensing, Tartu Observatory, Tartumaa, Estonia

Yifang Ban Division of Geoinformatics, KTH Royal Institute of Technology, Stockholm, Sweden

Frédéric Baret EMMAH-UMR 1114 – INRA UAPV, Avignon, France

Christopher W. Bater Forest Management Branch, Forestry Division, Alberta Agriculture and Forestry, Edmonton, AB, Canada

José María Beltrán-Abauanza Department of Ecology, Environment and Plant Sciences, Stockholm University, Stockholm, Sweden

Francesca Bovolo Center for Information and Communication Technology, Fondazione, Bruon Kessler, Trento, Italy

Nicholas D. A. Brown Department of Geography and Environmental Studies, Carleton University, Ottawa, ON, Canada

Lorenzo Bruzzone Department of Information Engineering and Computer Science, University of Trento, Trento, Italy

Xin Cao State Key Laboratory of Earth Surface Processes and Resource Ecology, Beijing Normal University, Beijing, China
Jin Chen  State Key Laboratory of Earth Surface Processes and Resource Ecology, Beijing Normal University, Beijing, China

Jun Chen  National Geomatics Center of China, Beijing, China

Lijun Chen  National Geomatics Center of China, Beijing, China

Nicholas C. Coops  Integrated Remote Sensing Studio, Department of Forest Resources Management, University of British Columbia, Vancouver, BC, Canada

Mário Cunha  Faculdade de Ciências da Universidade do Porto, Department of GAOT & Centro de Investigação em Ciências Geo-Espaciais, Universidade do Porto, Porto, Portugal

Fabio Dell’Acqua  Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia, Italy

Anthony P. Doulgeris  Earth Observation Laboratory, Department of Physics and Technology, University of Tromsø – The Arctic University of Norway, Tromsø, Norway

Peijun Du  Department of Geographical Information Science, Nanjing University, Nanjing, China

Lars Eklundh  Department of Physical Geography and Ecosystem Science, Lund University, Lund, Sweden

Torbjørn Eltoft  Earth Observation Laboratory, Department of Physics and Technology, University of Tromsø – The Arctic University of Norway, Tromsø, Norway

Paolo Gamba  Department of Electrical, Computer and Biomedical Engineering, University of Pavia, Pavia, Italy

Rachel Gaulton  School of Civil Engineering and Geosciences, Newcastle University, Newcastle upon Tyne, UK

Thomas Gumbricht  Karttur AB, Stockholm, Sweden

Therese Harvey  Department of Ecology, Environment and Plant Sciences, Stockholm University, Stockholm, Sweden

Tao He  Department of Geographical Sciences, University of Maryland, College Park, MD, USA

Thomas Hilker  (Deceased Sep 5, 2016) Department of Geography and Environment, University of Southampton, Southampton, UK

Alexander Jacob  Division of Geoinformatics, KTH Royal Institute of Technology, Stockholm, Sweden

Li Jia  Institute of Remote Sensing and Digital Earth (RADI, CAS), Beijing, China
Contributors xi

Per Jönsson  Group for Materials Science and Applied Mathematics, Malmö University, Malmö, Sweden

Daroonwan Kamthonkiat  Department of Geography, Faculty of Liberal Arts, Thammasat University, Bangkok, Thailand

Sivasathivel Kandasamy  CCRS, Ottawa, ON, Canada

Susanne Kratzer  Department of Ecology, Environment and Plant Sciences, Stockholm University, Stockholm, Sweden

Samantha Lavender  Pixalytics Ltd, Plymouth, Devon, UK

Shunlin Liang  Department of Geographical Sciences, University of Maryland, College Park, MD, USA

State Key Laboratory of Remote Sensing Science, School of Geography, Beijing Normal University, Beijing, China

Anping Liao  National Geomatics Center of China, Beijing, China

Sicong Liu  Department of Information Engineering and Computer Science, University of Trento, Trento, Italy

Carmine Maffei  Department of Geoscience and Remote Sensing, Faculty of Civil Engineering, Delft University of Technology, Delft, The Netherlands

H. R. Ghafarian Malamiri  Department of Geoscience and Remote Sensing, Faculty of Civil Engineering, Delft University of Technology, Delft, The Netherlands

Yazd University, Yazd, Iran

André R. S. Marcal  Faculdade de Ciências da Universidade do Porto, Department of Matemática & INESC TEC, Universidade do Porto, Porto, Portugal

Heather McNairn  Agriculture and Agri-Food Canada, Ottawa, ON, Canada

Massimo Menenti  Department of Geoscience and Remote Sensing, Faculty of Civil Engineering, Delft University of Technology, Delft, The Netherlands

Institute of Remote Sensing and Digital Earth (RADI, CAS), Beijing, China

Evgeny Morozov  Department of Ecology, Environment and Plant Sciences, Stockholm University, Stockholm, Sweden

NIERSC, St. Petersburg, Russia

Selima Ben Mustapha  Department of Ecology, Environment and Plant Sciences, Stockholm University, Stockholm, Sweden

Institut Maurice-Lamontagne, Peches et Océans Canada, Mont-Joli, Québec, Canada

Trisalyn Nelson  School of Geographical Sciences and Urban Planning, Arizona State University, Tempe, AZ, USA
Daniele Perissin  Lyle School of Civil Engineering, Purdue University, West Lafayette, IN, USA

Shuhua Qi  Ministry of Education’s Key Laboratory of Poyang Lake Wetland and Watershed Research, School of Geography and Environmental Science, Jiangxi Normal University, Nanchang, Jiangxi, China

Arlete Rodrigues  Faculdade de Ciências da Universidade do Porto, Department of GAOT & Centro de Investigação em Ciências Geo-Espaciais, Universidade do Porto, Porto, Portugal

Haolu Shang  Department of Geoscience and Remote Sensing, Faculty of Civil Engineering, Delft University of Technology, Delft, The Netherlands

Institute of Remote Sensing and Digital Earth (RADI, CAS), Beijing, China

Jiali Shang  Agriculture and Agri-Food Canada, Ottawa, ON, Canada

Gordon B. Stenhouse  Foothills Research Institute, Hinton, AB, Canada

Aleixandre Verger  CREAF, Cerdanyola del Vallès, Catalonia, Spain

Tuong-Thuy Vu  Department of Physics, International University, Vietnam National University HCMC, Ho Chi Minh City, Vietnam

Yeqiao Wang  Department of Natural Resources Science, University of Rhode Island, Kingston, RI, USA

Ministry of Education’s Key Laboratory of Poyang Lake Wetland and Watershed Research, School of Geography and Environmental Science, Jiangxi Normal University, Nanchang, Jiangxi, China

Michael A. Wulder  Canadian Forest Service (Pacific Forestry Centre), Natural Resources Canada, Victoria, BC, Canada

Jian Xu  Ministry of Education’s Key Laboratory of Poyang Lake Wetland and Watershed Research, School of Geography and Environmental Science, Jiangxi Normal University, Nanchang, Jiangxi, China

College of Chemistry and Chemical Engineering, Jiangxi Normal University, Nanchang, Jiangxi, China

Osama Yousif  Division of Geoinformatics, KTH Royal Institute of Technology, Stockholm, Sweden