## PROCEEDINGS OF SPIE

# Land Surface Remote Sensing II

Thomas J. Jackson Jing Ming Chen Peng Gong Shunlin Liang Editors

13–16 October 2014 Beijing, China

Sponsored by SPIE

Cosponsored by

State Key Laboratory of Remote Sensing Science (China) NASA—National Aeronautics and Space Administration (United States) Ministry of Earth Sciences (India)

#### Cooperating Organizations

Institute of Remote Sensing and Digital Earth (China) • JAXA—Japan Aerospace Exploration Agency (Japan) • NICT—National Institute of Information and Communications Technology (Japan) • ISRO—Indian Space Research Organization (India) • National Satellite Meteorological Center (China) • State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing (China) • State Key Laboratory of Resources and Environmental Information System (China) • Center For Earth System Science, Tsinghua University (China) • College of Global Change and Earth System Science, Beijing Normal University (China) • Key Laboratory of Digital Earth Science (China)

Published by SPIE

Volume 9260

Part One of Two Parts

Proceedings of SPIE 0277-786-786X, V.9260

The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:

Author(s), "Title of Paper," in Land Surface Remote Sensing II, edited by Thomas J. Jackson, Jing Ming Chen, Peng Gong, Shunlin Liang, Proceedings of SPIE Vol. 9260 (SPIE, Bellingham, WA, 2014) Article CID Number.

ISSN: 0277-786X ISBN: 9781628413274

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445 SPIE.org

Copyright © 2014, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/14/\$18.00.

Printed in the United States of America Vm7 i ffUb 5 app WJUHY or #WZi bXYf" WV bayY Zfca 'GD-9.

Publication of record for individual papers is online in the SPIE Digital Library.



**Paper Numbering:** Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print. Papers are published as they are submitted and meet publication criteria. A unique citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc.

The CID Number appears on each page of the manuscript. The complete citation is used on the first page, and an abbreviated version on subsequent pages.

## Contents

- xi Authors
- xv Symposium Committees
- xvii Conference Committee

### Part One

SESSION 1	VEGETATION AND CROPS
9260 02	Monitoring phenological stages of swiddening in northern Laos during the dry season [9260-1]
9260 03	Crop growth dynamics modeling using time-series satellite imagery [9260-163]
9260 04	Crop classification based on multi-temporal satellite remote sensing data for agroadvisory services [9260-3]
9260 05	Crop classification using multi-temporal HJ satellite images: case study in Kashgar, Xinjiang [9260-4]
9260 06	Inversion of a radiative transfer model for estimation of rice chlorophyll content using support vector machine [9260-5]
SESSION 2	URBAN
9260 07	Unsupervised building extraction using remote sensing data to detect changes in land use [9260-6]
9260 OA	Simulation of urban land surface temperature based on sub-pixel land cover in a coastal city [9260-10]
SESSION 3	SOIL MOISTURE ACTIVE PASSIVE (SMAP) MISSION
9260 OD	Passive/active microwave soil moisture retrieval disaggregation using SMAPVEX12 data [9260-13]
SESSION 4	SNOW
9260 OL	Determination of snow cover for the Tibetan Plateau (1983-1999) from NOAA-AVHRR LTDR [9260-21]

SESSION 5	SOIL MOISTURE I
9260 00	Inter-comparison of soil moisture products from SMOS, AMSR-E, ECWMF and GLDAS over the Mongolia Plateau [9260-24]
9260 OP	Comparison between microwave coherent and incoherent scattering models for wetland vegetation in Poyang Lake area [9260-25]
9260 OQ	Simulation of microwave brightness temperature over heterogeneous land surface using L-MEB model in HIWATER [9260-26]
9260 OR	A new algorithm for phase transition water content retrieval during soil freeze-thaw process using microwave radiometer [9260-27]
SESSION 6	SOIL MOISTURE II
9260 OS	Analysis of soil moisture retrieval from airborne passive/active L-band sensor measurements in SMAPVEX 2012 [9260-170]
9260 OT	Rough surface effects on active and passive microwave remote sensing of soil moisture at L-band using 3D fast solution of Maxwell's equations [9260-29]
9260 OU	Soil moisture content inversion research using multi-source remote sensing data [9260-30]
9260 OW	Co-location decision tree model for extracting exposed carbonate rocks in karst rocky desertification area [9260-80]
9260 OX	Dual state-parameter estimation of land surface model through assimilating microwave brightness temperature $[9260\text{-}32]$
SESSION 7	LAND SURFACE TEMPERATURE
9260 OY	A novel interpolation method for MODIS land surface temperature data on the Tibetan Plateau [9260-33]
9260 OZ	Time-series monitoring result of land surface temperature variation at Mt. Baekdu using Landsat images [9260-34]
9260 11	Production of large area LST products of HJ-1B IRS based on a fusion framework [9260-35]
9260 13	Estimate of land surface temperature from MTSAT-1R observations [9260-37]
9260 15	Land surface thermal environment during heat wave event measured by satellite observation [9260-142]

SESSION 8	SOILS
9260 17	Soil aggregate stability and wind erodible fraction in a semi-arid environment of White Nile State, Sudan [9260-40]
9260 18	Angkor site monitoring and evaluation by radar remote sensing [9260-41]
SESSION 9	LAND SURFACE CHANGE AND SUBSIDENCE
9260 1C	Small baseline subsets approach of DInSAR for investigating land surface deformation along the high-speed railway [9260-45]
9260 1D	A study of mining-induced subsidence in Hebi coalfield based on D-InSAR [9260-46]
SESSION 10	HYDROLOGIC VARIABLES AND STATES
9260 1G	Estimation evapotranspiration over the large landscape by using remote sensing data [9260-50]
9260 1H	Detecting terrestrial water storage variations in northwest China by GRACE [9260-51]
SESSION 11	FORESTS
<b>SESSION 11</b> 9260 1L	FORESTS  A spectral index for highlighting forest cover from remotely sensed imagery [9260-105]
9260 1L	A spectral index for highlighting forest cover from remotely sensed imagery [9260-105]  Monitoring expansion of plantations in Lao tropical forests using Landsat time series
9260 1L 9260 1M	A spectral index for highlighting forest cover from remotely sensed imagery [9260-105]  Monitoring expansion of plantations in Lao tropical forests using Landsat time series [9260-56]  The microwave emission and transmission characters of deciduous forest at L-band
9260 1L 9260 1M 9260 1O	A spectral index for highlighting forest cover from remotely sensed imagery [9260-105]  Monitoring expansion of plantations in Lao tropical forests using Landsat time series [9260-56]  The microwave emission and transmission characters of deciduous forest at L-band [9260-58]  Forest canopy growth dynamic modeling based on remote sensing products and
9260 1L 9260 1M 9260 1O 9260 1P	A spectral index for highlighting forest cover from remotely sensed imagery [9260-105]  Monitoring expansion of plantations in Lao tropical forests using Landsat time series [9260-56]  The microwave emission and transmission characters of deciduous forest at L-band [9260-58]  Forest canopy growth dynamic modeling based on remote sensing prodcuts and meteorological data in Daxing'anling of Northeast China [9260-59]
9260 1L 9260 1M 9260 1O 9260 1P SESSION 12	A spectral index for highlighting forest cover from remotely sensed imagery [9260-105]  Monitoring expansion of plantations in Lao tropical forests using Landsat time series [9260-56]  The microwave emission and transmission characters of deciduous forest at L-band [9260-58]  Forest canopy growth dynamic modeling based on remote sensing products and meteorological data in Daxing'anling of Northeast China [9260-59]  BIOMASS AND NPP

SESSION 13	LAND COVER AND CLIMATE CHANGE
9260 21	Satellite image time series clustering under collaborative principal component analysis [9260-70]
SESSION 14	LAND REMOTE SENSING TOPICS
9260 22	A target detection method with morphological knowledge for high-spatial resolution remote sensing image applying for search and rescue in aviation disaster [9260-72]
9260 23	A methodology to estimate representativeness of LAI station observation for validation: a case study with Chinese Ecosystem Research Network (CERN) in situ data [9260-73]
9260 24	LAnd surface remote sensing Products VAlidation System (LAPVAS) and its preliminary application [9260-74]
	POSTER SESSION
9260 26	A new method to inverse soil moisture based on thermal infrared and passive microwave remote sensing [9260-28]
9260 28	Variational level set segmentation for forest based on MCMC sampling [9260-76]
9260 2C	A method for quickly extracting seismogeological hazards in Yingxiu, Sichuan Province, China [9260-81]
9260 2G	Land surface phenology detection with multisource remote sensing data: a comparative analysis [9260-85]
9260 2H	Trends of NDVI, precipitation and their relationship in different forest ecological zone of China during 1982 to 2006 [9260-86]
Part Two	
9260 21	Remote sensing change detection study based on adaptive threshold in pixel ratio method [9260-87]
9260 2J	Simulation of regional rice growth by combination remote sensing data and crop model [9260-88]
9260 2L	Winter wheat field transformation monitoring through remote sensing in Beijing suburb [9260-90]
9260 2M	Spatio-temporal pattern of NPP and related analyses with terrain factors in Wuling mountainous area [9260-91]
9260 2N	Estimate the soil moisture over semi-arid region of Loess Plateau using Radarsat-2 SAR data [9260-92]

9260 20	Analysis on vegetation changes of Maqu alpine wetlands in the Yellow River source region [9260-94]
9260 2P	Dynamic changes of ecosystem service value of water conversation based on time series Landsat images [9260-95]
9260 2Q	Study on interferometric combination for multi-temporal InSAR optimization [9260-96]
9260 2R	Topographical effects of climate dataset and their impacts on the estimation of regional net primary productivity [9260-97]
9260 2S	Study on soil erosion in Hudan River basin based on TM imagery [9260-98]
9260 2U	Temporal and spatial analysis of vegetation coverage changes in Ordos area based on time series GIMMS-NDVI data [9260-100]
9260 2V	Spectral data analysis of rock and mineral in Hatu Western Junggar Region, Xinjiang [9260-101]
9260 2X	Estimating vegetation optical depth using L-band passive microwave airborne data in HiWATER [9260-103]
9260 30	Rural impervious surfaces extraction from Landsat 8 imagery and rural impervious surface index [9260-107]
9260 32	Integration of remote sensing (RS) and geographic information system (GIS) techniques for change detection of the land use and land cover (LULC) for soil management in the southern Port Said region, Egypt [9260-109]
9260 33	Analysis of light use efficiency and gross primary productivity based on remote sensing data over a phragmites-dominated wetland in Zhangye, China [9260-110]
9260 34	Assessment of ecological security in Changbai Mountain Area, China based on MODIS data and PSR model [9260-112]
9260 35	Comparison of analogous terrestrial and Martian drainage systems: a remote sensing based study [9260-113]
9260 38	A method for monitoring land-cover disturbance using satellite time series images [9260-116]
9260 39	Dynamic monitoring of lake based on HJ-CCD Images: a case study of Poyang Lake [9260-117]
9260 3D	The dynamic monitoring of coal resources exploitation in the ecological function regionalization of Hulun Buir City based on remote sensing [9260-121]
9260 3E	Comparison of Huanjing and Landsat satellite remote sensing of the spatial heterogeneity of Qinghai-Tibet alpine grassland [9260-122]
9260 3G	Comparison of the sensor dependence of vegetation indices and vegetation water indices based on radiative transfer model [9260-124]

9260 3H	Snow cover mapping over China using FY-2 and MTSAT-2 data [9260-125]
9260 3I	Estimation of forest biomass by integrating ALOS PALSAR And HJ1B data [9260-126]
9260 3N	Snow cover correlation between Mt. Villarrica and Mt. Lliama in Chile [9260-131]
9260 3P	Remote sensing albedo product validation over heterogenicity surface based on WSN: preliminary results and its uncertainty [9260-133]
9260 3Q	Estimation of aboveground woody biomass using HJ-1 and Radarsat-2 data for deciduous forests in Daxing'anling, China [9260-134]
9260 3R	Estimating the seasonal maximum light use efficiency [9260-136]
9260 3S	A bag-of-visual-words model based framework for object-oriented land-cover classification [9260-137]
9260 3T	Comparison of chemical analysis results of the Khangal River pollution with LandSat satellite data [9260-138]
9260 3U	The relationship between vegetation supply water index and forest resource of Bogd Khaan Mountain in the Mongolia [9260-139]
9260 3V	Change detection of polarimetric SAR images based on the KummerU distribution [9260-140]
9260 3W	A method of fast mosaic for massive UAV images [9260-141]
9260 3X	Monitoring coastal land reclamation and land use change around Hangzhou Bay using Landsat dataset (1970s-2014) [9260-143]
9260 3Y	Variability of change detection results for 2011 Tohoku, Japan earthquake using very high-resolution satellite images [9260-145]
9260 41	Analysis on the electromagnetic scattering properties of crops at multi-band [9260-148]
9260 43	Evaluation of the harmonic-analysis method for surface soil heat flux estimation: a case study in Heihe River Basin [9260-151]
9260 44	The propagation of VLF wave in layered earth-ionosphere waveguide [9260-152]
9260 45	Monitoring the carbon storage change in Tonghua City of Changbai mountain area [9260-153]
9260 48	A nearly real-time UAV video flow mosaic method [9260-157]
9260 49	The research by topographic correction methods of airborne hyperspectral remote sensing data based on DEM [9260-158]
9260 4A	Digital Earth system based river basin data integration [9260-160]

9260 4B	Fractional vegetation cover estimation over large regions using GF-1 satellite data [9260-161]
9260 4D	Thermal anomaly before earthquake and damage assessment using remote sensing data for 2014 Yutian earthquake [9260-165]
9260 4E	Eco-geological environment assessment of Datong Basin using satellite remote sensing [9260-166]
9260 4G	Estimation of soil erosion in Selenge and Darkhan Provinces of Mongolia [9260-168]
9260 41	National level biomass database comparison for Mexico in relation to vegetation degradation stages [9260-171]
9260 4K	Analysis between AMSR-E swath brightness temperature and snow cover area in winter time over Sierra Nevada, Western U.S. [9260-173]
9260 4L	Three-dimensional range-gated flash LIDAR for land surface remote sensing [9260-175]
9260 4N	Spatial distributing characteristics of land use in the southern slope of mid-Himalaya Mountains [9260-177]