30th European Association of Remote Sensing Laboratories Symposium 2010

Paris, France
31 May-3 June 2010

Editors:

Rainer Reuter

ISBN: 978-1-61782-366-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2010) by the European Association of Remote Sensing Laboratories (EARSeL)
All rights reserved.

Printed by Curran Associates, Inc. (2011)

For permission requests, please contact the European Association of Remote Sensing Laboratories (EARSeL)
at the address below.

EARSel Secretariat
c/o Gesine Boettcher
IPI-Technical University of Hannover
Nienburg Strasse 1
D-30167 Hannover Germany

Phone: 49 511 762 2482
Fax: 49 511 762 2483

secretariat@earsel.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

Proceedings of EARSeL Symposium 2010

30th EARSeL Symposium
Remote Sensing for Science, Education, and Natural and Cultural Heritage

UNESCO, Paris (France), 31 May - 3 June 2010

Editor: Rainer Reuter, University of Oldenburg, Germany

Preface

1. UNESCO and Space Partners Assisting World Heritage

Cultural Heritage Spatial Data Infrastructures (SDI) 1-8
Anthony J CORNS, and Robert SHAW

Remote Sensing and Image Understanding as Reflected in Poetical Literature of Iran 9-18
Seyed Kazem ALAVIPANAH, Kolsoum GHAZANFARI, and Bahere KHAKBAZ

Cultural Heritage between the Mountains and the Sea in the Eastern Adriatic 19-28
Vlasta BEGOVIC, and Ivancica SCHRUNK

Monitoring of UNESCO Sites in Danger, Including Samarra (Iraq) and Chan Chan (Peru), Using Optical and Radar Data 29-36
Nicole DORE, Jolanda PATRUNO, Francesco SARTI, Ana B. RUESCAS, and Mario HERNANDEZ

Remote Sensing of Reedbeds 37-44
Alex O ONOJEGHUO, and George A BLACKBURN

SARVisor: an Integrated Tool to Facilitate SAR Data Selection 45-52
Nadine POURTHIE, Aurélie SAND, Roger FJØRTOFT, Fifamè KOUDOGBO, Javier DURO, Anne URDIROZ, and Mario HERNANDEZ

2. Remote Sensing for Archaeology

Advancement in Automatic Monitoring and Detection of Archaeological Sites Using a Hybrid Process of Remote Sensing, GIS Techniques and a Shape Detection Algorithm 53-64
Alessio DI IORIO, Nazzareno STRACCIA, and Renzo CARLUCCI

Kemmelberg (Belgium) Case Study: Comparison of DTM Analysis Methods for the Detection of Relicts from the First World War 65-72
Cornelis STAL, Jean BOURGEOIS, Philippe DE MAEYER, Guy DE MULDER, Alain DE WULF, Rudi GOOSSENS, Timothy NUTTENS, and Birger STICHELBAUT

Public Spatial Data in Service of Polish Archaeologists. Advantages and Disadvantages of Web Map Servers Usage 73-80
Lukasz BANASZEK

Considering uncertainty in Archaeological Predictive Modelling: A Case Study in southern Rhineland-Palatinate (Germany) 81-88
Silke BOOS, Sabine HORNUNG, and Hartmut MUELLER

Probability Modelling of Archaeological Sites with the Use of Geoinformation 89-94
Athanasios MOYSIADIS, and Konstantinos PERAKIS

A Medieval Town (Szamotuly) as a Testing Area for Non-invasive Methods - GPR MALA ProEx95 95-100
Andrzej KIJOWSKI, Marcin SLOWIK, and Wlodzimierz RACZKOWSKI

Documentation of the Abandoned Town La Ciudad Perdida in Peru Combining VHR Satellite Data and Terrestrial Measurement 101-106
Karel PAVELKA, Michal BUKOVINSKY, and Jirina SVATUSKOVA

Application of Close Range Photogrammetry in San Agustin (Huila), Colombia, World Historical Heritage 107-112
William BARRAGAN ZAQUE, Aureliano CAMPOS ORJUELA, and Alexander MARTINEZ RIVILLAS

Archaeological Application of an Advanced Visualisation Technique Based on Diffuse Illumination 113-120
Žiga KOKALJ, Klemen ZAKŠEK, and Krištof OŠTIR

GPS RTK Mapping, Kite Aerial Photogrammetry, Geophysical Survey and GIS Based Analysis of Surface Artifact Distribution at the pre-Hispanic site of the Castillo de Huarmey, North Coast of Peru 121-130
Miron BOGACKI, Milosz GIERSZ, Patrycja PRZADKA-GIERSZ, Wieslaw MALKOWSKI, and Krzysztof MISIEWICZ

3. Urban Remote Sensing

Extraction of Buildings from QuickBird Imagery for Municipal Use - the Relevance of Urban Context and Heterogeneity 131-138
Sérgio FREIRE, Teresa SANTOS, Nuno GOMES, Ana FONSECA, and José António TENEDÓRIO

Mapping Urban Change to Plan the Future: Maputo City Change Model and the Municipal Structure Plan 139-146
Cristina HENRIQUES, and José António TENEDÓRIO

Urban Atlas Updating by Semi-automatic Change Mapping 147-154
Joeri VAN WOLVELAER, César SANTOS GONZÁLES, Antonio GARZON LÓPEZ, and Anna Maria DEFLORIO

Analysis of the Relationship Between Urban Land Use and Urban Heat Island Using Remote Sensing Methods 155-164
László MUCSI, László HENITS, and János UNGER

4. Understanding Climate and Climate Change

Combining High Spatial Resolution and Revisit Capabilities in the Thermal Infrared: the MISTIGRI Mission Project 165-172
J-P LAGUARDE, M BACH, G BOULET, X BRIOTTET, S CHERCHAL, I DADOU, G DEDIEU, O HAGOLLE, F JACOB, F NERRY, A OLIOSO, C OTTLÉ, V PASCAL, JL ROUJEAN, JA SOBRINO, and F TINTÓ GARCIA-MORENO

Analysis of Land Surface Temperature Variations Due to Fire at Oil Terminal, Jaipur, India 173-176
Sumit KHANDELWAL, and Rohit GOYAL

Effect of Vegetation and Urbanization over Land Surface Temperature: Case Study of Jaipur City 177-184
Sumit KHANDELWAL, and Rohit GOYAL

5. Land Use Change Detection

Update of the European High-resolution Layer of Built-up Areas and soil Sealing 2006 with Image2009 Data 185-192
Ute GANGKOFNER, Jürgen WEICHSELBAUM, Steffen KUNTZ, Lukas BRODKSY, Karin LARSSON, and Vito DE PASQUALE

Landscape Change and Implications on Protected Areas 193-200
Hayriye ESBAH, Bulent DENIZ , Baris KARA, Birsen KESGIN, and Erdinc KUTSAL

Change Detection in Urban Areas with Landsat and Alos Imageries in Antakya, Turkey 201-206
Aysel GUZELMANSUR, and Seref KILIC

Actual State of Danube Delta Biosphere Reserve, Using Aerospace and GPS Data 207-214
Iva IVANOVA, and Roumen NEDKOV

Landscape Planning of Land-use Using High-resolution Satellite Images and Ground-based Data 215-222
Eugenia ROUMENINA, Lachezar FILCHEV, Vanya NAYDENOVA, Petar DIMITROV, and Georgi JELEV

Managing Water in Agriculture through Remote Sensing Applications 223-230
Jorge ROCHA, António PERDIGÃO, Raquel MELO, and Cristina HENRIQUES

Characterizing Land Use Change in a Complex Semi-arid Landscape by Combined Assessment of Land Transformations and Modifications 231-238
Achim RÖDER, Stella M. HUBERT, Marion STELLMES, Peter SCARTH, Susana BAUTISTA, and Jordi CORTINA

6. Land Use / Land Cover

An Approach for Accuracy Assessment Comparison between Per-pixel Supervised and Object-oriented Classifications on a QuickBird Image 239-246
Vassil VASSILEV

Integrating MODIS-EVI and Gridded Rainfall/temperature Fields for Assessing Land Degradation Dynamics in Horqin Sandy Lands, Inner Mongolia (China) 247-254
Joachim HILL, Claudia DACH, Gabriel DEL BARRIO, Marion STELLMES, Ulf HELLDÉN, and WANG Changyao

Semi-Automated LULC Classification of VHR Optical Satellite Data in the Context of Urban Planning 255-262
Holger THUNIG, Simone NAUMANN, and Alexander SIEGMUND

Land Cover/Use Mapping Using Object Based Classification of SPOT Imagery 263-272
K DIMITRAKOPOULOS, Ioannis Z GITAS, A POLYCHRONAKI, T KATAGIS, and Chara MINAKOU

Diversity of the Spatial Landscape Structure in the Region of Pomerania Presented with Remote Sensing and Cartographic Methods 273-280
Mieczyslaw KUNZ

Updating the 1/50.000 Geological Maps of IGME with Remote Sensing Data, GPS Measurements and GIS Techniques. The Case of Antiparos Island 281-288
Konstantinos G NIKOLAKOPOULOS, and Panagiotis I TSOMBOS

HUMBOLDT Scenario: Protected Areas - Harmonisation Capabilities for a Future ESDI 289-296
Paolo VILLA, Roderic MOLINA, Mario A GOMARASCA, and Emanuele ROCCATAGLIATA

Road Classification from VHR Imagery 297-304
Marketa POTUCKOVA, Lucie KUPKOVA, and Sona KOLANKIEWICZOVA

7. Developing Countries

Use of Multi-temporal Satellite Data for Land-Use/Land-Cover Change Analyses and its Impacts on Soil Properties in the Northern Part of Gadarif Region, Sudan 305-312
Khalid BIRO, Biswajeet PRADHAN, Manfred BUCHROITHNER, and Franz MAKESCHIN

Developing a Monitoring System for Sand Dunes Migration in Dakhla Oasis, Western Desert, Egypt 313-320
Mohammed GHADIRY, and Barbara KOCH

8. Forestry and Vegetation

Tree Species Classification Based on the Analysis of Hyperspectral Remote Sensing Data 321-328
Petra KRAHWINKLER, and Jürgen ROSSMANN

Classification of TerraSAR-X Imagery for the Characterization of Amazon Tropical Forests 329-334
JR SANTOS, JC MURA, HJH KUX, CE GARCIA, S KUNTZ, IF BROWN, and NV PANTOJA

Digital Photogrammetric Survey in the National Forest Inventory (NFI) in the Czech Republic 335-342
Filip HÁJEK, and Radim ADOLT

Deforestation Analysis by Multi-temporal Landsat Imagery in the Bulisa Region (Uganda) 343-350
Eva Savina MALINVERNI, and Gabriele FANGI

Integration of Remote Sensing, GIS and Terrestrial Forest Inventory in Estimation of *Acacia senegal* Tree Parameters 351-356
Hassan Elnour ADAM, and Elmar CSALOVICS

Analysis of the Dynamics of Vegetation Parameters LAI, EVI and FPAR for Forest Areas Using MODIS Data 357-364
Vanya NAYDENOVA, Petar DIMITROV, Georgi JELEV, and Eugenia ROUMENINA

The Use of LIDAR Technology for Sustainable Forest Management in Glen Affric 365-370
Chue Poh TAN, Iain WOODHOUSE, Juan SUAREZ, Colin EDWARDS, and Mike PERKS

9. Disaster Monitoring and Response

International Charter-Space and Major Disasters - Experience 371-

of CNES and of the French Civil Protection. Haiti Earthquake January 2010 378
André HUSSON, Catherine PROY, and Pierre CHASTANET

Vulnerability Analysis of Floods in Urban Areas Using Remote Sensing and GIS 379-386
Orkan OZCAN, and Nebiye MUSAOGLU

Identification of Structural Changes Caused by Natural Disasters in Agriculture by Synergistic Use of Optical and Radar Data 387-394
Gizella NADOR, Diána FENYES, and György SUREK

Use of Remote Sensing Data and GIS to Produce a Landslide Susceptibility Map of a Landslide Prone Area Using a Weight of Evidence Model 395-402
Biswajeet PRADHAN, Hyon-Joo OH, and Manfred BUCHROITHNER

Flood Risk Analysis Using Information Diffusion Theory - A Case Study: Ayamama Creek 403-408
Aybike SARAL, Orkan OZCAN, and Nebiye MUSAOGLU

Impact of Fire on Savanna Vegetation Trends in Madagascar Assessed Using a Remote-Sensing Based Statistical Analysis 409-422
Anne JACQUIN, Véronique CHERET, David SHEEREN, and Michel GOULARD

10. Forest Fires

Forest Fire Damage Estimation Using Remote Sensing and GIS 423-430
Ugur ALGANCI, Elif SERTEL, and Cankut ORMECI

Fire-Induced Changes in Vegetation, Albedo and Land Surface Temperature Assessed with MODIS 431-438
Sander VERAVERBEKE, Ruben VAN DE KERCHOVE, Willem VERSTRAETEN, Stefaan LHERMITTE, and Rudi GOOSSENS

MODIS Data Mining to Map Burned Areas 439-446
C QUINTANO, A STEIN, W BIJKER, and A FERNÁNDEZ-MANSO

11. Hydrology

Determination and Comparison of Hydrological Properties of Basins from Topographic Maps, DTM and SRTM DEM. A Case Study of Part of the Roman Water Supply System (Thrace, Turkey) 447-456
Cihan UYSAL, Irfan AKAR, Gizem INCE, Derya MAKTAV, and James CROW

Using High Resolution Ground Survey and LIDAR Data to Monitor Embryo Dune Development in a Conservation Area, North Lincolnshire (UK) 457-464
Anne-Lise MONTREUIL, and Joanna E BULLARD

Groundwater Flow Paths Delineation Using Remote Sensing Techniques and GIS 465-474
Constantine PAPATHEODOROU

Determination of Surface Water Resources Changes by Multitemporal Satellite Imagery and Investigations of Groundwater with Geostatistical Methods 475-482
Yasemin ÖZDEMIR

12. 3D Remote Sensing

Geometric Potentiality of GeoEye-1 In-Track Stereo Pairs and Accuracy Assessment of Generated Digital Surface Models 483-490
Paola CAPALDO, Mattia CRESPI, Laura De VENDICTIS, Francesca FRATARCANGELI, Gabriele MURCHIO, Andrea NASCETTI, and Francesca PIERALICE

Producing a Building Change Map for Urban Management Purposes 491-498
Teresa SANTOS, Sérgio FREIRE, Ana FONSECA, and José António TENEDÓRIO

DEM Extraction from High Resolution Satellite Stereopairs to Investigate the Hydraulic Hazard of Areas Subjected to Rivers Flood 499-506
Francesca FRATARCANGELI, Alessio FURINI, Andrea NASCETTI, and Alberto PELLEGRINELLI

Accuracy Control of ALOS DSM 507-514
Konstantinos G NIKOLAKOPOULOS, and Evagelia GIOTI

Accuracy Control of ASTER GDEM and Comparison to DSM Created with Classical Photogrammetric Techniques 515-520
Konstantinos G NIKOLAKOPOULOS, and Panagiotis I TSOMBOS

Comparison of ASTER GDEMs with SRTM Height Models 521-526
Karsten JACOBSEN

DSM Generation and Filtering from High Resolution Optical Stereo Satellite Data 527-536
Peter REINARTZ, Pablo D'ANGELO, Thomas KRAUSS, and Houda CHAABOUNI-CHOUAYAKH

Analysis of 3D Forest Canopy Height Models Resulting from Stereo-Radargrammetric Processing of TerraSAR-X Images 537-544
Roland PERKO, Hannes RAGGAM, Karlheinz GUTJAHR, and Mathias SCHARDT

Digital Height Models Generation by Means of Optical Stereoscopy and Interferometry - Case Study 545-552
Iulia DANA

Three-Dimensional Visualization of the Spatial Development of the city of Torun (Poland) Based on a Digital Photogrammetric Workstation 553-560
Marek WLODEK, and Mieczyslaw KUNZ

Learning Tools for Laser Scanner Data: Wiimote and IRpen 561-564
Dante ABATE, Graziano FURINI, Silvio MIGLIORI, and Samuele PIERATTINI

13. Radar Remote Sensing

Automatic Mapping of Earthquake Damage Using Post-Event Radar Satellite Data: the Story Goes On 565-572
Diego Aldo POLLI, Fabio DELL'ACQUA, and Gianni LISINI

Georeference of High Resolution TerraSAR-X Images with RPFs 573-580
Dimitra VASSILAKI, and Charalambos IOANNIDIS

Multitemporal RADARSAT-2 Polarimetric SAR Data for Urban Land Cover Classification Using Support Vector Machine 581-588
Xin NIU, and Yifang BAN

Radargrammetric Application with COSMO-SkyMed Imagery: Definition and Implementation of an Orientation Model for 589-596

Spotlight Stereo Pairs
Mattia CRESPI, Paola CAPALDO, Francesca FRATARCANGELI, Andrea NASCETTI, and Francesca PIERALICE

Evaluation of DEMs Derived by TerraSAR-X InSAR Data 597-610
Umut SEFERCIK, and Uwe SOERGEL

3-pass and 2-pass Differential Interferometry and Result Comparison 611-616
Milan BORIK, and Barbora KNECHTLOVA

14. Instruments and Methods

Observing the Earth from Space as an Integrated System: The USA/F/J A-Train Concept 617-634
Gérard BEGNI, Didier RENAUT, Didier TANRE, and Jacques PELON

The PROBA-V Mission: Data Continuity for Daily Global Vegetation Monitoring 635-640
Jean-Christophe SCHYNS

Digital Elevation Models as Data Source for Land Suitability Analysis in Colombia 641-648
Luis Joel MARTÍNEZ MARTINEZ, and Oscar Javier MUNAR VIVAS

Automated Methods for Change Detection 649-656
Manfred EHLERS, Sascha KLONUS, Daniel TOMOWSKI, Ulrich MICHEL, and Peter REINARZ

Estimates of Yield Reduction Caused by Drought 657-662
Katarzyna DABROWSKA-ZIELINSKA, Andrzej CIOLKOSZ , Alicja MALINSKA, Jedrzej BOJANOWSKI, Wanda KOWALIK, Maria BUDZYNSKA, and Maciej BARTOLD

Development of a Spectral Library for Mediterranean Land Cover Types 663-668
Ioannis MANAKOS, Kiril MANEVSKI, George P. PETROPOULOS, Mohamed ELHAG, and Chariton KALAITZIDIS

15. Specific Applications of Remote Sensing

Multi-Temporal MODIS Snow Cover Monitoring over Alpine Regions for Civil Protection Applications 669-676
Nico MÖLG, Philipp RASTNER, Luca IRSARA, Thomas SCHELLENBERGER, Claudia NOTARNICOLA, Christian STEURER, and Marc ZEBISCH

Remote Sensing and GIS in Bulgarian Archaeology 677-682
Stefan STAMENOV

Updating Object for Topographic Map Information Using High Resolution Satellite Images of Zonguldak Testfield 683-690
Mehmet ALKAN, Umut Günes SEFERCIK, Aycan Murat MARANGOZ, Serkan KARAKIS

Effects of Aliasing and Mis-Registration on Pan-Sharpening Methods Based on Either Component Substitution or Multi-Resolution Analysis 691-698
Andrea GARZELLI, Bruno AIAZZI, Luciano ALPARONE, Stefano BARONTI, and Massimo SELVA

The Possibilities of New Satellite Image Types in the Control of Area-based Subsidies and in Ragweed Monitoring System 699-706

Gábor CSORNAI, István LÁSZLÓ, Gábor MIKUS, Gizella NÁDOR, Irén HUBIK, Katalin LIPTÁK, Mónika ANTAL, Katalin ÓCSAI, István FEKETE, and Dávid GERA

Towards a Harmonised Biomass Potential Assessment in Europe: User Requirements and Initial Developments Using EO and Terrestrial Data 707-714
Chariton KALAITZIDIS, Manuela HIRSCHMUGL, and Roland PERKO

Spectral Remote Sensing of Tomato Plants (*Lycopersicon esculentum L.*) Infected with Tomato Mosaic Virus (ToMV) 715-722
Dora KREZHOVA, Dimitrinka HRISTOVA, and Tony YANEV

Chlorophyll Fluorescence Analysis of Tomato Plants (*Lycopersicon esculentum L.*) Infected with Tomato Mosaic Virus (ToMV) 723-730
Dora KREZHOVA, Ilko ILIEV, Tony YANEV, and Dimitrinka HRISTOVA

16. Education and Training

Using Remote Sensing Data in the Context of Education for Sustainable Development 731-738
Markus JAHN, Michelle HASPEL, and Alexander SIEGMUND

Remote Sensing Education at Bulgarian Universities and High Schools - State of the Art, Perspectives and Significance 739-744
Lachezar FILCHEV, and Stefan STAMENOV

First-Year Science Students' Understanding of the Relationship between Scientific Epistemological Beliefs and the Nature of Science 745-748
Fulya OZTAS

Monteverdi - Remote Sensing Software from Educational to Operational Context 749-756
Manuel GRIZONNET, and Jordi INGLADA

17. Late Contributions

Using Remote Sensing Data for Improving the Distinction Between Distinct Types of Urban Land Use and Form Using Spatial Metrics 757-764
Sven VANDERHAEGEN, and Frank CANTERS

Land Cover Mapping by an Optimized Object-Oriented Approach. Case of Study: Mediterranean Landscapes 765-774
Javier SANCHEZ, Estíbaliz MARTINEZ, Agueda ARQUERO, and Diego RENZA
also published in EARSeL eProceedings 9(2): 42-51, 2010

Drought Estimation Maps by Means of Multidate Landsat Fused Images 775-782
Diego RENZA, Estíbaliz MARTINEZ, Agueda ARQUERO, and Javier SANCHEZ