

36th International Symposium on Remote Sensing of Environment (ISRSE 2015)

International Archives of the Photogrammetry, Remote Sensing
and Spatial Information Sciences Volume XL-7/W3

Berlin, Germany
11 – 15 May 2015

Part 1 of 2

ISBN: 978-1-5108-3413-2

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© (2015) by International Center for Remote Sensing of the Environment, Inc. (ICRSE)
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact International Center for Remote Sensing of the Environment, Inc. (ICRSE) at the address below.

International Center for Remote Sensing of the Environment, Inc. (ICRSE)
1955 E. Sixth Street, Suite 115
Tucson, AZ 85719
USA

Phone: (520) 621-8567
Fax: (520) 621-7834

isrse@symposia.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: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PART 1

AGRICULTURE AND FOOD SAFETY

SATELLITE IMAGE SIMULATIONS FOR MODEL-SUPERVISED, DYNAMIC RETRIEVAL OF CROP TYPE AND LAND USE INTENSITY	1
<i>H. Bach, P. Klug, T. Ruf, S. Migdall, F. Schlenz, T. Hank, W. Mauser</i>	
ESTIMATION OF GRASS YIELD IN LARGE REGION ON GEOGRAPHICALLY WEIGHTED REGRESSION MODEL	8
<i>L. Chengfeng, Y. Xiujuan, L. Caijuan, D. Yingkun</i>	
SATELLITE-BASED ASSESSMENT OF GRASSLAND YIELDS	13
<i>K. Grant, R. Siegmund, M. Wagner, S. Hartmann</i>	
THE IMPACT OF MULTI-SENSOR DATA ASSIMILATION ON PLANT PARAMETER RETRIEVAL AND YIELD ESTIMATION FOR SUGAR BEET	17
<i>M. Hodrius, S. Migdall, H. Bach, T. Hank</i>	
RELATIONSHIPS BETWEEN PRIMARY PRODUCTION AND CROP YIELDS IN SEMI-ARID AND ARID IRRIGATED AGRO-ECOSYSTEMS	24
<i>H. H. Jaafar, F. A. Ahmad</i>	
SPECTRAL DISCRIMINATION AND REFLECTANCE PROPERTIES OF VARIOUS VINE VARIETIES FROM SATELLITE, UAV AND PROXIMATE SENSORS	28
<i>C. Karakizi, M. Oikonomou, K. Karantzalos</i>	
COMPARISON OF BIOPHYSICAL AND SATELLITE PREDICTORS FOR WHEAT YIELD FORECASTING IN UKRAINE	35
<i>A. Kolotii, N. Kussul, A. Shelestov, S. Skakun, B. Yailymov, R. Basarab, M. Lavreniuk, T. Oliinyk, V. Ostapenko</i>	
REGIONAL SCALE CROP MAPPING USING MULTI-TEMPORAL SATELLITE IMAGERY	41
<i>N. Kussul, S. Skakun, A. Shelestov, M. Lavreniuk, B. Yailymov, O. Kussul</i>	
OPERATIONAL 333M BIOPHYSICAL PRODUCTS OF THE COPERNICUS GLOBAL LAND SERVICE FOR AGRICULTURE MONITORING	49
<i>R. Lacaze, B. Smets, F. Baret, M. Weiss, D. Ramon, B. Montersleet, L. Wandrebeck, J.-C. Calvet, J.-L. Roujean, F. Camacho</i>	
A LABORATORY PROCEDURE FOR MEASURING AND GEOREFERENCING SOIL COLOUR.....	53
<i>Á. Marqués-Mateu, M. Balaguer-Puig, H. Moreno-Ramón, S. Ibáñez-Asensio</i>	
ESTIMATION OF CHLOROPHYLL CONCENTRATION IN MAIZE USING SPECTRAL REFLECTANCE	61
<i>L. j. Martinez, A. Ramos</i>	
PHENOLOGICAL TRACKING OF AGRICULTURAL FIELDS INVESTIGATED BY USING DUAL POLARIMETRY TANDEM-X IMAGES	68
<i>S. Mirzaee, M. Motagh, H. Arefi, A. Nooryazdan</i>	
RICE-PLANTED AREA EXTRACTION BY TIME SERIES ANALYSIS OF ENVISAT ASAR WS DATA USING A PHENOLOGY-BASED CLASSIFICATION APPROACH: A CASE STUDY FOR RED RIVER DELTA, VIETNAM	72
<i>D. Nguyen, W. Wagner, V. Naeimi, S. Cao</i>	
RICE CROP MONITORING AND YIELD ESTIMATION THROUGH COSMO SKYMED AND TERRASAR-X: A SAR-BASED EXPERIENCE IN INDIA.....	79
<i>S. Pazhanivelan, P. Kannan, P. Christy Nirmala Mary, E. Subramanian, S. Jeyaraman, A. Nelson, T. Setiyono, F. Holecz, M. Barbieri, M. Yadav</i>	
EARLY VALIDATION OF PROBA-V GEOV1 LAI, FAPAR AND FCOVER PRODUCTS FOR THE CONTINUITY OF THE COPERNICUS GLOBAL LAND SERVICE	87
<i>J. Sánchez, F. Camacho, R. Lacaze, B. Smets</i>	
THE Tasseled CAP TRANSFORMATION FOR RAPIDEYE DATA AND THE ESTIMATION OF VITAL AND SENESCENT CROP PARAMETERS	95
<i>M. Schönert, E. Zillmann, H. Weichelt, J. U. H. Eitel, T. S. Magney, H. Lilienthal, B. Siegmann, T. Jarmer</i>	
BIOMASS ESTIMATION TO SUPPORT PASTURE MANAGEMENT IN NIGER	103
<i>A. Schucknecht, M. Meroni, F. Kayitakire, F. Rembold, A. Boureima</i>	
EVALUATIONS ON THE POTENTIAL PRODUCTIVITY OF WINTER WHEAT BASED ON AGRO-ECOLOGICAL ZONE IN THE WORLD	109
<i>H. Wang, Q. Li, X. Du, L. Zhao, Y. Lu, D. Li, J. Liu</i>	

RICE CROP MONITORING AND YIELD ASSESSMENT WITH MODIS 250M GRIDDED VEGETATION PRODUCTS: A CASE STUDY OF SA KAEO PROVINCE, THAILAND	114
<i>J. S. J. Wijesingha, N. L. Deshapriya, L. Samarakoon</i>	
PRELIMINARY STUDY ON THE RADAR VEGETATION INDEX (RVI) APPLICATION TO ACTUAL PADDY FIELDS BY ALOS/PALSAR FULL-POLARIMETRY SAR DATA	121
<i>Y. Yamada</i>	
RESEARCH ON RICE ACREAGE ESTIMATION IN FRAGMENTED AREA BASED ON DECOMPOSITION OF MIXED PIXELS	124
<i>H. Zhang, Q. Z. Li, F. Lei, X. Du, J. D. Wei</i>	
THE APPLICATION OF MODIFIED NORMALIZED DIFFERENCE WATER INDEX (MNDWI) BY LEAF AREA INDEX IN THE RETRIEVAL OF REGIONAL DROUGHT MONITORING	131
<i>H.-W. Zhang, H.-L. Chen</i>	
CROP GROUND COVER FRACTION AND CANOPY CHLOROPHYLL CONTENT MAPPING USING RAPIDEYE IMAGERY	138
<i>E. Zillmann, M Schönert, H. Lilienthal, B. Siegmann, T Jarmer, P. Rosso, T. Weichelt</i>	

ATMOSPHERE, WEATHER AND CLIMATE

NDVI DYNAMICS OF THE TAIGA ZONE IN CONNECTION WITH MODERN CLIMATE CHANGES	145
<i>A. Bobkov, E. Panidi, N. Torlopova, V. Tsepelev</i>	
THE GREENHOUSE GAS PROJECT OF ESA'S CLIMATE CHANGE INITIATIVE (GHG-CCI): OVERVIEW, ACHIEVEMENTS AND FUTURE PLANS	152
<i>M. Buchwitz, M. Reuter, O. Schneising, H. Boesch, I. Aben, M. Alexe, R. Armante, P. Bergamaschi, H. Bovensmann, D. Brunner, B. Buchmann, J. P. Burrows, A. Butz, F. Chevallier, A. Chédin, C. D. Crevoisier, S. Gonzi, M. De Mazière, E. De Wachter, R. Detmers, B. Dils, C. Frankenberg, P. Hahne, O. P. Hasekamp, W. Hewson, J. Heymann, S. Houweling, M. Hilker, T. Kaminski, G. Kuhlmann, A. Laeng, T. T. V. Leeuwen, G. Lichtenberg, J. Marshall, S. Noël, J. Notholt, P. Palmer, R. Parker, M. Scholze, G. P. Stiller, T. Warneke, C. Zehner</i>	
RETRIEVAL OF OZONE TOTAL COLUMNS OVER EVORA-PORTUGAL USING REMOTE SENSING INSTRUMENTS DURING 2007-2011	160
<i>A. F. Domingues, D. Bortoli, A. M. Silva, P. Kulkarni, R. Mendes</i>	
SATELLITE RADIOTHERMOVISION OF ATMOSPHERIC MESOSCALE PROCESSES: CASE STUDY OF TROPICAL CYCLONES	165
<i>D. M. Ermakov, E. A. Sharkov, A. P. Chernushich</i>	
COMPARISONS OF AEROSOL OPTICAL DEPTH PROVIDED BY SEVIRI SATELLITE OBSERVATIONS AND CAMX AIR QUALITY MODELLING	173
<i>A. Fernandes, M. Riffler, J. Ferreira, S. Wunderle, C. Borrego, O. Tchepel</i>	
THE INFLUENCE OF THE TIME EQUATION ON REMOTE SENSING DATA INTERPRETATION	180
<i>B. Fichtelmann, E. Borg, E. Schwarz</i>	
DATA AND TECHNIQUES FOR STUDYING THE URBAN HEAT ISLAND EFFECT IN JOHANNESBURG	187
<i>C. H. Hardy, A. L. Nel</i>	
ASSESSING THE IMPACT OF URBANIZATION ON URBAN CLIMATE BY REMOTE SATELLITE PERSPECTIVE: A CASE STUDY IN DANANG CITY, VIETNAM	191
<i>N. Hoang Khanh Linh, H. Van Chuong</i>	
CLIMATE ABSOLUTE RADIANCE AND REFRACTIVITY OBSERVATORY (CLARREO)	197
<i>J. Leckey</i>	
DISCUSS ON SATELLITE-BASED PARTICULATE MATTER MONITORING TECHNIQUE	202
<i>B. Li, L. Hou</i>	
RESPONSES OF VEGETATION GROWTH TO CLIMATE CHANGE IN CHINA	207
<i>Z. Li, T. Zhou</i>	
TIME SERIES ANALYSIS OF SATELLITE-MEASURED VEGETATION PHENOLOGY AND AEROSOL OPTICAL THICKNESS OVER THE KOREAN PENINSULA	212
<i>S. Park</i>	
A RAPID CLOUD MASK ALGORITHM FOR SUOMI NPP VIIRS IMAGERY EDRS	217
<i>M. Piper, T. Bahr</i>	
PRELIMINARY RESEARCH ON RADIANCE FOG DETECTION BASED ON TIME SERIES MTSAT DATA	223
<i>X. Wen, Z. Li, S. Zhang, S. Shen, D. Hu, X. Xiao</i>	

CLOUD PHOTOGRAMMETRY FROM SPACE	227
<i>K. Zakšek, A. Gerst, J. Von Der Lieth, G. Ganci, M. Hort</i>	
EXPLORING THE RELATIONSHIPS OF BETWEEN LAND SURFACE TEMPERATURE, GROUND COVERAGE RATIO AND BUILDING VOLUME DENSITY IN AN URBANIZED ENVIRONMENT	235
<i>Q. Zhan, F. Meng, Y. Xiao</i>	
 <u>FORESTS, BIODIVERSITY AND TERRESTRIAL ECOSYSTEMS</u>	
DOES TOPOGRAPHIC NORMALIZATION OF LANDSAT IMAGES IMPROVE FRACTIONAL TREE COVER MAPPING IN TROPICAL MOUNTAINS?	241
<i>H. Adhikari, J. Heiskanen, E. E Maeda, P. K. E. Pellikka</i>	
ENVIRONMENTAL ASSESSMENT OF MANGROVE COMMUNITIES IN TARUT BAY, EASTERN ARABIAN PENINSULA, BASED ON MULTIDISCIPLINARY APPROACH	248
<i>A. M. Al-Ali, A. G. Del Campo, C. Rocha</i>	
PROSPECT INVERSION FOR INDIRECT ESTIMATION OF LEAF DRY MATTER CONTENT AND SPECIFIC LEAF AREA	256
<i>A. Ali, R. Darvishzadeh, A.-K. Skidmore, I.-V. Duren, U. Heiden, M. Heurich</i>	
ESTIMATION OF GRASSLAND USE INTENSITIES BASED ON HIGH SPATIAL RESOLUTION LAI TIME SERIES	264
<i>S. Asam, D. Klein, S. Dech</i>	
CATCHMENT PROPERTIES IN THE KRUGER NATIONAL PARK DERIVED FROM THE NEW TANDEM-X INTERMEDIATE DIGITAL ELEVATION MODEL (IDEM)	271
<i>J. Baade, C. Schmullius</i>	
MONITORING THE URBAN TREE COVER FOR URBAN ECOSYSTEM SERVICES - THE CASE OF LEIPZIG, GERMANY	279
<i>E. Banzhaf, H. Kollai</i>	
ASTER AND WORLDVIEW-2 SATELLITE DATA COMPARISON FOR IDENTIFICATION OF GROUNDWATER SALINIZATION EFFECTS ON THE CLASSE PINE FOREST VEGETATION (RAVENNA, ITALY)	284
<i>M. Barbarella, M. De Giglio, N. Greggio, L. Panciroli</i>	
NATIONAL SCALE MONITORING REPORTING AND VERIFICATION OF DEFORESTATION AND FOREST DEGRADATION IN GUYANA	292
<i>P. Bholanath, K. Cort</i>	
MULTI-YEAR GLOBAL LAND COVER MAPPING AT 300 M AND CHARACTERIZATION FOR CLIMATE MODELLING: ACHIEVEMENTS OF THE LAND COVER COMPONENT OF THE ESA CLIMATE CHANGE INITIATIVE	300
<i>S. Bontemps, M. Boettcher, C. Brockmann, G. Kirches, C. Lamarche, J. Radoux, M. Santoro, E. Vanbogaert, U. Wegmüller, M. Herold, F. Achard, F. Ramoino, O. Arino, P. Defourny</i>	
LAND-USE AND LAND-COVER DYNAMICS MONITORED BY NDVI MULTITEMPORAL ANALYSIS IN A SELECTED SOUTHERN AMAZONIAN AREA (BRAZIL) FOR THE LAST THREE DECADES	306
<i>D. Borini Alves, F. Pérez-Cabello, M. Rodrigues Mimbreno</i>	
PERFORMANCE OF THE ENHANCED VEGETATION INDEX TO DETECT INNER-ANNUAL DRY SEASON AND DROUGHT IMPACTS ON AMAZON FOREST CANOPIES	313
<i>B. Brede, J. Verbesselt, L. Dutrieux, M. Herold</i>	
A BIOMEBGC-BASED EVALUATION OF DRYNESS STRESS OF CENTRAL EUROPEAN FORESTS	321
<i>H. Buddenbaum, J. Hientgen, S. Dotzler, W. Werner, J. Hill</i>	
FOREST COVER CHANGE AND SOIL EROSION IN TOLEDO'S RIO GRANDE WATERSHED	328
<i>S. Chicas, K. Omine</i>	
EROSION MODELLING IN A MEDITERRANEAN SUBCATCHMENT UNDER CLIMATE CHANGE SCENARIOS USING PAN-EUROPEAN SOIL EROSION RISK ASSESSMENT (PESERA)	334
<i>A. Cilek, S. Berberoglu, M. Kirkby, B. Irvine, C. Donmez, M. A. Erdogan</i>	
LAND COVER CHANGE ANALYSIS IN MEXICO USING 30M LANDSAT AND 250M MODIS DATA	341
<i>R. R. Colditz, R. M. Llamas, R. A. Ressler</i>	
DETECTION AND CHARACTERIZATION OF COLOMBIAN WETLANDS USING ALOS PALSAR AND MODIS IMAGERY	349
<i>L. M. Estupinan-Suarez, C. Florez-Ayala, M. J. Quinones, A. M. Pacheco, A. C. Santos</i>	

A PROPER LAND COVER AND FOREST TYPE CLASSIFICATION SCHEME FOR MEXICO	357
<i>S. Gebhardt, P. Maeda, T. Wehrmann, J. Argumedo Espinoza, M. Schmidt</i>	
FOREST AND FOREST CHANGE MAPPING WITH C- AND L-BAND SAR IN LIWALE, TANZANIA	365
<i>J. Haarpaintner, C. Davids, H. Hindberg, E. Zahabu, R. E. Malimbwi</i>	
TROPICAL FOREST REMOTE SENSING SERVICES FOR THE DEMOCRATIC REPUBLIC OF CONGO INSIDE THE EU FP7 RECOVER PROJECT (FINAL RESULTS 2000-2012)	370
<i>J. Haarpaintner, D. De La Fuente Blanco, F. Enßle, P. Datta, A. Mazinga, C. Singa, L. Mane</i>	
MONITORING OF RAPID LAND COVER CHANGES IN EASTERN JAPAN USING TERRA/MODIS DATA	376
<i>I. Harada, K. Hara, J. Park, I. Asanuma, M. Tomita, D. Hasegawa, K. Short, M. Fujihara</i>	
COMPARISON OF FIELD AND AIRBORNE LASER SCANNING BASED CROWN COVER ESTIMATES ACROSS LAND COVER TYPES IN KENYA	382
<i>J. Heiskanen, L. Korhonen, J. Hietanen, V. Heikinheimo, E. Schäfer, P. K. E. Pellikka</i>	
POTENTIAL IMPROVEMENT FOR FOREST COVER AND FOREST DEGRADATION MAPPING WITH THE FORTHCOMING SENTINEL-2 PROGRAM	389
<i>L. Hojas-Gascon, A. Belward, H. Eva, G. Ceccherini, O. Hagolle, J. Garcia, P. Cerutti</i>	
COMPARISON OF INTERFEROMETRIC AND STEREO-RADARGRAMMETRIC 3D METRICS IN MAPPING OF FOREST RESOURCES	396
<i>K. Karila, M. Karjalainen, X. Yu, M. Vastaranta, M. Holopainen, J. Hyypä</i>	
SATELLITE-BASED DROUGHT MONITORING IN KENYA IN AN OPERATIONAL SETTING	403
<i>A. Klisch, C. Atzberger, L. Luminari</i>	
ANNUAL FOREST MONITORING AS PART OF INDONESIA'S NATIONAL CARBON ACCOUNTING SYSTEM	410
<i>K. Kustiyo, O. Roswintarti, A. Tjahjaningsih, R. Dewanti, S. Furby, J. Wallace</i>	
OPTIMIZATION OF FOREST AGE-DEPENDENT LIGHT-USE EFFICIENCY AND ITS IMPLICATIONS ON CLIMATE-VEGETATION INTERACTIONS IN CHINA	418
<i>Z. Li, T. Zhou</i>	
SEASONAL VARIATION OF LAND COVER CLASSIFICATION ACCURACY OF LANDSAT 8 IMAGES IN BURKINA FASO	424
<i>J. Liu, J. Heiskanen, E. Aynekulu, P. K. E. Pellikka</i>	
REMOTE SENSING OF HIGH TEMPERATURE EVENTS BY THE FIREBIRD MISSION	430
<i>E. Lorenz, S. Mitchell, T. Säuberlich, C. Paproth, W. Halle, O. Frauenberger</i>	
RAPID RESPONSE TOOLS AND DATASETS FOR POST-FIRE MODELING: LINKING EARTH OBSERVATIONS AND PROCESS-BASED HYDROLOGICAL MODELS TO SUPPORT POST-FIRE REMEDIATION	437
<i>M. E. Müller, M. Billmire, W. J. Elliot, K. A. Endsley, P. R. Robichaud</i>	
APPLICATIONS OF PHOTOGRAMMETRY FOR ANALYSIS OF FOREST PLANTATIONS. PRELIMINARY STUDY: ANALYSIS OF INDIVIDUAL TREES	445
<i>R. Mora, A. Barahona, H. Aguilar</i>	
QUANTIFICATION OF THE TERRESTRIAL PHYTOMASS AND CARBON IN THE MOUNTAINOUS FOREST ECOSYSTEM USING REMOTE SENSING AND IN-SITU OBSERVATIONS	450
<i>P. Patil, D. Dutta, C. Biradar, M. Singh</i>	
VEGETATION HEIGHT ESTIMATION NEAR POWER TRANSMISSION POLES VIA SATELLITE STEREO IMAGES USING 3D DEPTH ESTIMATION ALGORITHMS	455
<i>A. Qayyum, A. S. Malik, M. N. M. Saad, M. Iqbal, F. Abdullah, W. Rahseed, T. A. R. B. T. Abdullah, A. Q. Ramli</i>	
SPECTRAL MIXTURE ANALYSIS (SMA) OF LANDSAT IMAGERY FOR LAND COVER CHANGE STUDY OF HIGHLY DEGRADED PEATLAND IN INDONESIA	461
<i>A. D. Sakti, S. Tsuyuki</i>	
UTILIZING THE GLOBAL LAND COVER 2000 REFERENCE DATASET FOR A COMPARATIVE ACCURACY ASSESSMENT OF 1 KM GLOBAL LAND COVER MAPS	468
<i>M. Schultz, N. E. Tsendbazazr, M. Herold, M. Jung, P. Mayaux, H. Goehman</i>	
GLOBIL: WWF'S GLOBAL OBSERVATION AND BIODIVERSITY INFORMATION PORTAL	476
<i>A. C. Shapiro, L. Nijsten, S. Schmitt, P. Tibaldeschi</i>	
FEATURE EXTRACTION FROM GEOEYE-1 STEREO PAIRS DATA FOR FORESTED AREA	480
<i>P. Stournara, C. Georgiadis, D. Kaimaris, M. Tsakiri-Strati, V. Tsioukas</i>	
TREE NUMBER ESTIMATION WITH THE USE OF VHR NATURAL COLOUR ORTHOPHOTOS OVER A HETEROGENEOUS LANDSCAPE IN NORTHERN GREECE	486
<i>P. Stournara, M. Tsakiri-Strati, S. Siachalou, G. Doxani, G. Mallinis, V. Tsioukas</i>	

UTILIZATION OF PISAR L-2 DATA FOR LAND COVER CLASSIFICATION IN FOREST AREA USING PIXEL-BASED AND OBJECT-BASED METHODS	490
<i>B. Trisakti, A. Sutanto, H. Noviar, Kustiyo</i>	
USING THE LANDSAT DATA ARCHIVE TO ASSESS LONG-TERM REGIONAL FOREST DYNAMICS ASSESSMENT IN EASTERN EUROPE, 1985-2012	495
<i>S. Turubanova, P. Potapov, A. Krylov, A. Tyukavina, J. L. McCarty, V. C. Radeloff, M. C. Hansen</i>	
A LONG-TERM PERSPECTIVE ON DEFORESTATION RATES IN THE BRAZILIAN AMAZON	502
<i>M. D. Velasco Gomez, R. Beuchle, Y. Shimabukuro, R. Grecchi, D. Simonetti, H. D. Eva, F. Achard</i>	
LONG-TERM SOIL MOISTURE TIME SERIES ANALYSES BASED ON ACTIVE MICROWAVE BACKSCATTER MEASUREMENTS	508
<i>W. Wagner, C. Reimer, B. Bauer-Marschallinger, M. Enenkel, S. Hahn, T. Melzer, V. Naeimi, C. Paulik, W. Dorigo</i>	
ESTIMATION OF BIOMASS CARBON STOCKS OVER PEAT SWAMP FORESTS USING MULTI-TEMPORAL AND MULTI-POLARIZATIONS SAR DATA	514
<i>A. Wijaya, V. Liesenberg, A. Susanti, O. Karyanto, L. V. Verchot</i>	
ASSESSMENT OF LARGE SCALE LAND COVER CHANGE CLASSIFICATIONS AND DRIVERS OF DEFORESTATION IN INDONESIA	520
<i>A. Wijaya, R. A. Sugardiman Budiharto, A. Tosiani, D. Murdiyarto, L. V. Verchot</i>	
RESEARCH ON MONITORING THE WETLAND LANDCOVER CHANGE BASED ON THE MODERATE RESOLUTION REMOTE SENSING IMAGE.....	526
<i>M Zhou, X. Yuan, L. Sun</i>	

DATA AND INFORMATION SYSTEMS AND SPATIAL DATA INFRASTRUCTURE

FUSION OF HYPERSPECTRAL AND LIDAR DATA BASED ON DIMENSION REDUCTION AND MAXIMUM LIKELIHOOD.....	531
<i>B. Abbasi, H. Arefi, B. Bigdeli, M. Motagh, S. Roessner</i>	
AUTOMATIC GENERATION OF TRAINING DATA FOR HYPERSPECTRAL IMAGE CLASSIFICATION USING SUPPORT VECTOR MACHINE.....	536
<i>B. Abbasi, H. Arefi, B. Bigdeli, S. Roessner</i>	
GEOMATICS FOR MAPPING OF GROUNDWATER POTENTIAL ZONES IN NORTHERN PART OF THE UNITED ARAB EMIRATIS - SHARJAH CITY	542
<i>R. Al-Ruzouq, A. Shanableh, T. Merabtene</i>	
SHADOW DETECTION IMPROVEMENT USING SPECTRAL INDICES AND MORPHOLOGICAL OPERATORS IN HIGH RESOLUTION IMAGES FROM URBAN AREAS.....	548
<i>S. C. Azevedo, E. A. Silva, M. M. Pedrosa</i>	
A MODIFIED APPROACH FOR CHANGE DETECTION USING CHANGE VECTOR ANALYSIS IN POSTERIOR PROBABILITY SPACE.....	554
<i>S. A. Azzouzi, A. Vidal, H. A. Bentounes</i>	
ENHANCEMENT OF THE DOUBLE FLEXIBLE PACE SEARCH THRESHOLD DETERMINATION FOR CHANGE VECTOR ANALYSIS.....	560
<i>S. A. Azzouzi, A. Vidal, H. A. Bentounes</i>	
EVALUATION OF FUTURE INTERNET TECHNOLOGIES FOR PROCESSING AND DISTRIBUTION OF SATELLITE IMAGERY	565
<i>J. Becedas, R. Pérez, G. González, J. Álvarez, F. García, F. Maldonado, A. Sucari, J. García</i>	
CLOUD OPTIMIZED IMAGE FORMAT AND COMPRESSION	572
<i>P. Becker, L. Plesea, T. Maurer</i>	
A DYNAMIC THRESHOLD CLOUD DETECTING APPROACH BASED ON THE BRIGHTNESS TEMPERATURE FROM FY-2 VISSR DATA	575
<i>X. Daxiang, T. Debao, W. Xiongfei, W. Qiao</i>	
DATA MINING AND KNOWLEDGE DISCOVERY TOOLS FOR EXPLOITING BIG EARTH-OBSERVATION DATA	584
<i>D. Espinoza Molina, M Datcu</i>	
BIO-OPTICAL DATA INTEGRATION BASED ON A 4 D DATABASE SYSTEM APPROACH	591
<i>N. N. Imai, M. H. Shimabukuro, A. F. C. Carmo, E. H. Alcântara, T. W. P. Rodrigues, F. S. Y. Watanabe</i>	
WPS-BASED TECHNOLOGY FOR CLIENT-SIDE REMOTE SENSING DATA PROCESSING	598
<i>E. Kazakov, A. Terekhov, E. Kapralov, E. Panidi</i>	
3D-INFORMATION FUSION FROM VERY HIGH RESOLUTION SATELLITE SENSORS.....	605
<i>T. Krauss, P. D'Angelo, G. Kuschik, J. Tian, T. Partovi</i>	

SOLID WASTE MANAGEMENT IN GREATER SHILLONG PLANNING AREA (GSPA) USING SPATIAL MULTI-CRITERIA DECISION ANALYSIS FOR SITE SUITABILITY ASSESSMENT	611
<i>B. S. Mipun, R. Hazarika, M. Mondal, S. Mukhopadhyay</i>	
HETEROGENEOUS ACCESS AND PROCESSING OF EO-DATA ON A CLOUD BASED INFRASTRUCTURE DELIVERING OPERATIONAL PRODUCTS	617
<i>F. Niggemann, F. Appel, H. Bach, J. De La Mar, B. Schirpke, K. Dütting, G. Rücker, D. Leimbach</i>	
AUTOMATIC NEAR-REAL-TIME IMAGE PROCESSING CHAIN FOR VERY HIGH RESOLUTION OPTICAL SATELLITE DATA	622
<i>K. Oštir, K. Cotar, A. Marsetic, P. Pehani, M. Perše, K. Zakšek, J. Zaletelj, T. Rodic</i>	
VALIDATION OF AEROSOL ESTIMATION IN ATMOSPHERIC CORRECTION ALGORITHM ATCOR	630
<i>B. Pflug, M. Main-Knorn, A. Makarau, R. Richter</i>	
THE SWARM ARCHIVING PAYLOAD DATA FACILITY, AN INSTANCE CONFIGURATION OF THE ESA MULTI-MISSION FACILITY	637
<i>B. Pruiñ, A. Martini, P. Shanmugam, C. Lopes</i>	
BIG DATA BREAKING BARRIERS - FIRST STEPS ON A LONG TRAIL	642
<i>S. Schade</i>	
A ROBUST FALSE MATCHING POINTS DETECTION METHOD FOR REMOTE SENSING IMAGE REGISTRATION	649
<i>X. J. Shan, P. Tang</i>	
COMPARISON AMONG OPERATORS FOR DETECTING AND/OR EXTRACTING ROADS USING THE MATLAB SOFTWARE AND THE CARTOMORPH SOFTWARE	653
<i>E. A. Silva, C. D. Chaves, A. F. Santos</i>	
NEW METHODS IN ACQUISITION, UPDATE AND DISSEMINATION OF NATURE CONSERVATION GEODATA - IMPLEMENTATION OF AN INTEGRATED FRAMEWORK	657
<i>G. Tintrup Gen. Suntrup, T. Jalke, L. Streib, N. Keck, S. Nieland, N. Moran, B. Kleinschmit, M. Trapp</i>	
HARMONISATION INITIATIVES OF COPERNICUS DATA QUALITY CONTROL	663
<i>F. D. Vescovi, T. Lankester, E. Coleman, G. Ottavianelli</i>	
TOPOGRAPHIC CORRECTION MODULE AT STORM (TC@STORM)	670
<i>K. Zakšek, K. Cotar, T. Veljanovski, P. Pehani, K. Oštir</i>	
AUTOMATIC PROCESSING OF CHINESE GF-1 WIDE FIELD OF VIEW IMAGES	678
<i>Y. Zhang, Y. Wan, B. Wang, Y. Kang, J. Xiong</i>	
MULTIPLE AUTO-ADAPTING COLOR BALANCING FOR LARGE NUMBER OF IMAGES	684
<i>X. Zhou</i>	
COMPUTING AND MONITORING POTENTIAL OF PUBLIC SPACES BY SHADING ANALYSIS USING 3D LIDAR DATA AND ADVANCED IMAGE ANALYSIS	692
<i>A. Zwolinski, M. Jarzemski</i>	

NATURAL DISASTERS MONITORING, WARNING AND RESPONSE

THE POTENTIAL OF GEOMATICS IN THE REALIZATION OF A MAP OF DESERTIFICATION SENSITIVITY SOUTHERN MASSIF BELEZMA - BATNA - (ALGERIA)	700
<i>H. Benmessaoud, F. Chergui, R. Sahnouni, C. Chafai</i>	
ENHANCING DINSAR CAPABILITIES FOR LANDSLIDE MONITORING BY APPLYING GIS-BASED MULTICRITERIA FILTERING ANALYSIS	706
<i>F. Beyene, S. Knospe, W. Busch</i>	
REAL-TIME STREAM PROCESSING FOR ACTIVE FIRE MONITORING ON LANDSAT 8 DIRECT RECEPTION DATA	714
<i>C. Böhme, P. Bouwer, M. J. Prinsloo</i>	

PART 2

EXPOSER INTENSITY, VULNERABILITY INDEX AND LANDSCAPE CHANGE ASSESSMENT IN OLOMOUC, CZECH REPUBLIC	720
<i>M. S. Boori, V. Vozenilek, K. Choudhary</i>	
COMBINED USE OF SAR AND OPTICAL DATA FOR ENVIRONMENTAL ASSESSMENTS AROUND REFUGEE CAMPS IN SEMIARID LANDSCAPES	726
<i>A. Braun, V. Hochschild</i>	

SAR-BASED CHANGE DETECTION USING HYPOTHESIS TESTING AND MARKOV RANDOM FIELD MODELLING	732
<i>W. Cao, S. Martinis</i>	
USING ECOGNITION TO AUTOMATICALLY DETECT AND MAP AVALANCHE DEPOSITS FROM THE SPRING 2009 AVALANCHE CYCLE IN THE TATRA MTS., SLOVAKIA	740
<i>R. Frauenfelder, M. J. Lato, M. Biskupic</i>	
FIRE MONITORING - THE USE OF MEDIUM RESOLUTION SATELLITES (AVHRR, MODIS, TET) FOR LONG TIME SERIES PROCESSING AND THE IMPLEMENTATION IN USER DRIVEN APPLICATIONS AND SERVICES	745
<i>E.-M. Fuchs, E. Stein, G. Strunz, C. Strobl, C. Frey</i>	
MULTI-SCALE MONITORING OF LANDSCAPE CHANGE AFTER THE 2011 TSUNAMI	753
<i>K. Hara, Y. Zhao, I. Harada, M. Tomita, J. Park, E. Jung, N. Kamagata, Y. Hirabuki</i>	
AUTOMATED MAPPING OF BURNED AREAS IN SEMI-ARID ECOSYSTEMS USING MODIS TIME-SERIES IMAGERY	758
<i>L. A. Hardtke, P. D. Blanco, H. F. Del Valle, G. I. Metternicht, W. F. Sione</i>	
THE CEOS RECOVERY OBSERVATORY PILOT	762
<i>S. Hosford, C. Proy, A. Giros, A. Eddy, I. Petiteville, C. Ishida, F. Gaetani, S. Frye, S. Zoffoli, J. Danzeglocke</i>	
AN APPROACH FOR DETECTING CHANGES RELATED TO NATURAL DISASTERS USING SYNTHETIC APERTURE RADAR DATA	766
<i>N. Milisavljevic, D. Closson, F. Holecz, F. Collivignarelli, P. Pasquali</i>	
LONG-TERM MONITORING OF A DEEP-SEATED, SLOW-MOVING LANDSLIDE BY MEAN OF C-BAND AND X-BAND ADVANCED INTERFEROMETRIC PRODUCTS: THE CORVARA IN BADIA CASE STUDY (DOLOMITES, ITALY)	774
<i>M. Mulas, M. Petitta, A. Corsini, S. Schneiderbauer, F. V. Mair, C. Iasio</i>	
JAMUNA RIVER EROSIONAL HAZARDS, ACCRETION & ANNUAL WATER DISCHARGE – A REMOTE SENSING & GIS APPROACH	777
<i>E. U. Pahlowan, A. T. M. S. Hossain</i>	
GLOBAL HUMAN SETTLEMENT ANALYSIS FOR DISASTER RISK REDUCTION	782
<i>M. Pesaresi, D. Ehrlich, S. Ferri, A. Florczyk, S. Freire, F. Haag, M. Halkia, A. M. Julea, T. Kemper, P. Soille</i>	
WCDRR AND THE CEOS ACTIVITIES ON DISASTERS	789
<i>I. Petiteville, C. Ishida, J. Danzeglocke, A. Eddy, F. Gaetani, S. Frye, B. Kuligowski, S. Zoffoli, M. Poland, B. Jones</i>	
DATA COLLECTION FOR DISASTER RESPONSE FROM THE INTERNATIONAL SPACE STATION	795
<i>W. L. Stefanov, C. A. Evans</i>	
THE USE OF SAR INTERFEROMETRY FOR LANDSLIDE MAPPING IN THE INDIAN HIMALAYAS	800
<i>M. Vöge, R. Frauenfelder, K. Ekseth, M. K. Arora, A. Bhattacharya, R. K. Basin</i>	
ANALYSIS OF LANDSLIDE HAZARD AREA IN LUDIAN EARTHQUAKE BASED ON RANDOM FORESTS	807
<i>J.-C. Xie, R. Liu, H.-W. Li, Z.-L. Lai</i>	
TSUNAMI AFFECTED FARMLAND EXTRACTION USING MORPHOLOGICAL PROFILES (MPS) METHOD BY SATELLITE IMAGES INCLUDING SAR AND VISIBLE NEAR-INFRARED BAND DATA	812
<i>Y. Yamada</i>	
LAVA FLOW MONITORING USING TET-1 SATELLITE	817
<i>K. Zakšek, E. Lorenz, M. Hort</i>	
IMPACT OF CLIMATE AND ANALYSIS OF DESERTIFICATION PROCESSES IN SEMI ARID LAND IN ALGERIA: USING DATA OF ALSAT-1 AND LANDSAT	823
<i>Z. Ahmed, M. Habib, H. Sid Ali, K. Sofiane</i>	
 <u>ENERGY AND GEOLOGICAL RESOURCES</u>	
MULTICRITERIA ANALYSIS FOR SOURCES OF RENEWABLE ENERGY USING DATA FROM REMOTE SENSING	828
<i>L. Matejicek</i>	
A COMPARISON OF LANDSAT 8 (OLI) AND LANDSAT 7 (ETM+) IN MAPPING GEOLOGY AND VISUALISING LINEAMENTS: A CASE STUDY OF CENTRAL REGION KENYA	836
<i>M. W. Mwaniki, M. S. Moeller, G. Schellmann</i>	

COMPLEMENTARY USE OF INFORMATION FROM SPACE-BASED DINSAR AND FIELD MEASURING SYSTEMS FOR OPERATIONAL MONITORING PURPOSES IN OPEN PIT IRON MINES OF CARAJÁS MINING COMPLEX (BRAZILIAN AMAZON REGION)	843
<i>W. R. Paradella, J. C. Mura, F. F. Gama, A. R. Santos, G. G. Silva, M. Galo, P. O. Camargo, A. Q. Silva</i>	
AN EQUITABLE APPROACH FOR COMPENSATING MUNICIPALITIES OF THE RIO GRANDE WATERSHED FOR ELECTRICITY GENERATED BY THE FURNAS HYDROPOWER PLANT, BRAZIL	850
<i>C. A. A. S. Ribeiro, D. J. Mounts, S. Jr. C. Menezes, R. R. C. Rocha, M. A. Chaves, N. L. M. Castro, K. O. Barros, B. F. Martins, J. M. Gleriani, V. P. Soares</i>	
FRACTAL DIMENSIONS FOR RADIOISOTOPE POLLUTION PATTERNS BY NUCLEAR POWER PLANT ACCIDENTS	856
<i>K. Saito, S. Ogawa</i>	

MARINE AND COASTAL ENVIRONMENT, RESOURCES AND DYNAMICS

TRACKING VESSELS TO ILLEGAL POLLUTANT DISCHARGES USING MULTISOURCE VESSEL INFORMATION	863
<i>J. Busler, H. Wehn, L. Woodhouse</i>	
GENERATING A LONG-TERM SERIES OF SST AND CHLOROPHYLL-A FOR THE COAST OF IRELAND	869
<i>G. Casal, T. Furey, T. Dabrowski, G. Nolan</i>	
ANALYSES OF MULTI-YEAR SYNTHETIC APERTURE RADAR IMAGERY OF DRY-FALLEN INTERTIDAL FLATS	877
<i>M. Gade, S. Melchionna, L. Kemme</i>	
LONG-TERM MARINE TRAFFIC MONITORING FOR ENVIRONMENTAL SAFETY IN THE AEGEAN SEA	884
<i>T. Giannakopoulos, S. Gyftakis, E. Charou, S. Perantonis, Z. Nivolianitou, I. Koromila, A. Makrygiorgos</i>	
AUTOMATIC EXTRACTION OF TIDE-COORDINATED SHORELINE USING OPEN SOURCE SOFTWARE AND LANDSAT IMAGERY	888
<i>G. Gonçalves, N. Duro, E. Sousa, I. Figueiredo</i>	
JOINT OFFSHORE WIND FIELD MONITORING WITH SPACEBORNE SAR AND PLATFORM-BASED DOPPLER LIDAR MEASUREMENTS	893
<i>S. Jacobsen, S. Lehner, J. Hieronimus, J. Schneemann, M. Kühn</i>	
MARITIME PRODUCTS USING TERRASAR-X AND SENTINEL-1 IMAGERY	901
<i>S. Lehner, B. Tings</i>	
VESSEL CLASSIFICATION IN COSMO-SKYMED SAR DATA USING HIERARCHICAL FEATURE SELECTION	908
<i>A. Makedonas, C. Theoharatos, V. Tsagaris, V. Anastasopoulos, S. Costicoglou</i>	
SATELLITE-BASED RADAR MEASUREMENTS FOR VALIDATION OF HIGHRESOLUTION SEA STATE FORECAST MODELS IN THE GERMAN BIGHT	916
<i>A. Pleskachevsky, C. Gebhardt, W. Rosenthal, S. Lehner, P. Hoffmann, J. Kieser, T. Bruns, A. Lindenthal, F. Jansen, A. Behrens</i>	
ANALYSIS OF THE SHORELINE POSITION EXTRACTED FROM LANDSAT TM AND ETM+ IMAGERY	924
<i>E. Sánchez-García, J. E. Pardo-Pascual, A. Balaguer-Beser, J. Almonacid-Caballer</i>	
NEAR REAL TIME APPLICATIONS FOR MARITIME SITUATIONAL AWARENESS	932
<i>E. Schwarz, D. Krause, M. Berg, H. Daedelow, H. Maass</i>	
MAPPING OF ALGAE RICHNESS USING SPATIAL DATA INTERPOLATION	937
<i>F. O. Tapia-Silva, O. E. Hernández-Cervantes, M. I. Vilchis-Alfaro, A. Sentés, K. M. Dreckmann</i>	
BENTHIC HABITAT MAPPING AND BIODIVERSITY ANALYSIS IN THE PRIMEIRAS AND SEGUNDAS ARCHIPELAGO RESERVE	941
<i>L. Teixeira, M. Nilsson, J. Hedley, A. Shapiro</i>	
DETECTION OF SHIP TARGETS IN POLARIMETRIC SAR DATA USING 2D-PCA DATA FUSION	949
<i>C. Theoharatos, A. Makedonas, N. Fragoulis, V. Tsagaris, S. Costicoglou</i>	
INLAND-LAKES PROTECTION APPLICATION WITH HIGH RESOLUTION SATELLITE IMAGERY IN WUHAN CITY	957
<i>X. Wen, Z. Li, D. Xiang, S. Shen, D. Hu, X. Xiao</i>	
WATERLINE DETECTION AND MONITORING IN THE GERMAN WADDEN SEA USING HIGH RESOLUTION SATELLITE-BASED RADAR MEASUREMENTS	961
<i>S. Wiehle, S. Lehner, A. Pleskachevsky</i>	

POLAR AND COLD REGIONS

APPLICATION OF A NEW POLARIMETRIC FILTER TO RADARSAT-2 DATA OF DECEPTION ISLAND (ANTARCTIC PENINSULA REGION) FOR SURFACE COVER CHARACTERIZATION	966
<i>S. Guillaso, T. Schmid, J. López-Martínez, O. D'Hondt</i>	
SPACEBORNE QUANTITATIVE ASSESSMENT OF PRIMARY PRODUCTION VARIATIONS IN THE ARCTIC OCEAN OVER THE PREVIOUS DECADE	971
<i>D. Pozdnyakov, D. Petrenko</i>	
NAVIGATION ASSISTANCE FOR ICE-INFESTED WATERS THROUGH AUTOMATIC ICEBERG DETECTION AND ICE CLASSIFICATION BASED ON TERRASAR-X IMAGERY	979
<i>R. Ressel, A. Frost, S. Lehner</i>	
INTEGRATED SAR TECHNOLOGIES FOR MONITORING THE STABILITY OF MINE SITES: APPLICATION USING TERRASAR-X AND RADARSAT-2 IMAGES	987
<i>M. Rheault, Y. Bouroubi, V. Sarago, P. T. Nguyen-Xuan, P. Bugnet, C. Gosselin, M. Benoit</i>	
MONITORING OF WET SNOW AND ACCUMULATIONS AT HIGH ALPINE GLACIERS USING RADAR TECHNOLOGIES	993
<i>A. Wendleder, A. Heilig, A. Schmitt, C. Mayer</i>	

NATIONAL, REGIONAL AND INTERNATIONAL PROGRAMS INCLUDING EDUCATION AND OUTREACH

URTHECAST SECOND-GENERATION EARTH OBSERVATION SENSORS	999
<i>Dr. K. Beckett</i>	
EARTH OBSERVATION IN SUPPORT OF SCIENCE AND APPLICATIONS DEVELOPMENT IN THE FIELD “LAND AND ENVIRONMENT”: SYNTHESIS RESULTS FROM THE ESA-MOST DRAGON COOPERATION PROGRAMME	1004
<i>C. Cartalis, D. N. Asimakopulos, Y. Ban, Y. Bao, Y. Bi, P. Defourny, G. Del Barrio, J. Fan, Z. Gao, H. Gong, J. Gong, P. Gong, C. Li, S. Pignatti, A. Sarris, G. Yang</i>	
PULL VS. PUSH: HOW OMNIEARTH DELIVERS BETTER EARTH OBSERVATION INFORMATION TO SUBSCRIBERS	1011
<i>C. Fish, S. Slagowski, L. Dyrud, J. Fentzke, B. Hargis, M. Steerman</i>	
REMOTE SENSING TERTIARY EDUCATION MEETS HIGH INTENSITY INTERVAL TRAINING	1016
<i>K. E. Joyce, B. White</i>	
CREATION OF A HIGH-RESOLUTION PRODUCT CLC2006_BACKDATING BY A BACKWARD LOOK FROM THE DIGITAL LAND COVER MODEL DLM-DE2009 TO 2006 - A CONTRIBUTION TO THE GERMAN CORINE LAND COVER 2012 PROJECT WITHIN A BOTTOM-UP APPROACH	1020
<i>M. Keil, T. Esch, S. Feigenspan, M. Marconcini, A. Metz, M. Ottinger, J. Zeidler</i>	
HYDROLOGIC AND CRYOSPHERIC PROCESSES OBSERVED FROM SPACE	1028
<i>M. Menenti, X. Li, J. Wang, H. Vereecken, J. Li, M. Mancini, Q. Liu, L. Jia, J. Li, C. Kuenzer, S. Huang, H. Yesou, J. Wen, Y. Kerr, X. Cheng, N. Gourmelen, C. Ke, R. Ludwig, H. Lin, M. Eineder, Y. Ma, Z. B. Su</i>	

AIRBORNE AND INNOVATIVE REMOTE SENSING PLATFORMS AND TECHNIQUES

ENABLING EARTH SCIENCE MEASUREMENTS WITH NASA UAS CAPABILITIES	1038
<i>R. Albertson, S. Schoenung, M. Fladeland, F. Cutler, B. Tagg</i>	
SEMANTIC SEGMENTATION AND DIFFERENCE EXTRACTION VIA TIME SERIES AERIAL VIDEO CAMERA AND ITS APPLICATION	1045
<i>S. N. K. Amit, S. Saito, S. Sasaki, Y. Kiyoki, Y. Aoki</i>	
THE PHIL-LIDAR 2 PROGRAM: NATIONAL RESOURCE INVENTORY OF THE PHILIPPINES USING LIDAR AND OTHER REMOTELY SENSED DATA	1049
<i>A. C. Blanco, A. M. Tamondong, A. M. C. Perez, M. R. C. O. Ang, E. C. Paringit</i>	
DETAILED AND HIGHLY ACCURATE 3D MODELS OF HIGH MOUNTAIN AREAS BY THE MACS-HIMALAYA AERIAL CAMERA PLATFORM	1054
<i>J. Brauchle, D. Hein, R. Berger</i>	

QUALITY ASSESSMENT FOR THE FIRST PART OF THE TANDEM-X GLOBAL DIGITAL ELEVATION MODEL	1062
<i>B. Bräutigam, M. Martone, P. Rizzoli, C. Gonzalez, C. Wecklich, D. Borla Tridon, M. Bachmann, D. Schulze, M. Zink</i>	
THE MATHEMATICAL MODEL OF OPTICAL REMOTE SENSING SYSTEM SIGNAL CONSIDERING BROKEN CLOUDINESS EFFECTS	1069
<i>V. P. Budak, O. V. Shagalov</i>	
APPLYING TERRAIN AND HYDROLOGICAL EDITING TO TANDEM-X DATA TO CREATE A CONSUMER-READY WORLDDDEM PRODUCT	1073
<i>J. Collins, Dr. G. Riegler, H. Schrader, M. Tinz</i>	
VALIDATION OF SPECTRAL CONTINUITY BETWEEN PROBA-V AND SPOT-VEGETATION GLOBAL DAILY DATASETS	1079
<i>W. Dierckx, E. Swinnen, P. Kempeneers</i>	
MISSION ADAPTIVE UAS CAPABILITIES FOR EARTH SCIENCE AND RESOURCE ASSESSMENT	1087
<i>S. Dunagan, M. Fladeland, C. Ippolito, M. Knudson, Z. Young</i>	
HIGH TEMPORAL RESOLUTION PERMAFROST MONITORING USING A MULTIPLE STACK INSAR TECHNIQUE	1095
<i>J. Eppler, M. Kubanski, J. Sharma, J. Busler</i>	
DATA VALIDATION AND CASE STUDIES USING THE TET-1 THERMAL INFRARED SATELLITE SYSTEM	1101
<i>C. Fischer, D. Klein, G. Kerr, E. Stein, E. Lorenz, O. Frauenberger, E. Borg</i>	
VALIDATION OF SMOS L2 AND L3 SOIL MOISTURE PRODUCTS OVER THE DUERO BASIN AT DIFFERENT SPATIAL SCALES	1107
<i>A. González-Zamora, N. Sánchez, A. Gumuzzio, M. Piles, E. Olmedo, J. Martínez-Fernández</i>	
AIRBORNE CAMERA SYSTEM FOR REAL-TIME APPLICATIONS – SUPPORT OF A NATIONAL CIVIL PROTECTION EXERCISE	1113
<i>V. Gstaiger, H. Römer, D. Rosenbaum, F. Henkel</i>	
A CLASS-OUTLIER APPROACH FOR ENVIRONNEMENTAL MONITORING USING UAV HYPERSPECTRAL IMAGES	1119
<i>S. Hemissi, I. Riadh Farah</i>	
INVERSION OF THREE LAYERS MULTI-SCALE SPM MODEL BASED ON NEURAL NETWORK TECHNIQUE FOR THE RETRIEVAL OF SOIL MULTI-SCALE ROUGHNESS AND MOISTURE PARAMETERS	1124
<i>I. Hosni, M. Jaafrihamki, L. Bennaceur Farah, M. S. Naceur</i>	
A HADOOP-BASED ALGORITHM OF GENERATING DEM GRID FROM POINT CLOUD DATA	1131
<i>X. Jian, X. Xiao, H. Chengfang, Z. Zhizhong, W. Zhaohui, Z. Dengzhong</i>	
INITIAL CHECKOUT RESULTS OF THE COMPACT INFRARED CAMERA (CIRC) FOR EARTH OBSERVATION	1137
<i>E. Kato, H. Katayama, M. Sakai, Y. Nakajima, T. Kimura, K. Nakau, H. Tonooka</i>	
CITIZEN SCIENCE FOR EARTH OBSERVATION: APPLICATIONS IN ENVIRONMENTAL MONITORING AND DISASTER RESPONSE	1143
<i>V. Kotovirta, T. Toivanen, R. Tergujeff, T. Häme, M. Molinier</i>	
ADVANCEMENTS IN ESTIMATING CROP GROWTH STAGES USING RADARSAT-2 AND TERRASAR-X POLARIMETRIC DATA	1149
<i>G. Lampropoulos, Y. Li, T. Liu</i>	
COMPREHENSIVE CALIBRATION AND VALIDATION SITE FOR INFORMATION REMOTE SENSING	1155
<i>C. R. Li, L. L. Tang, L. L. Ma, Y. S. Zhou, C. X. Gao, N. Wang, X. H. Li, X. H. Wang, X. H. Zhu</i>	
OBJECT-ORIENTED CHANGE DETECTION BASED ON SPATIOTEMPORAL RELATIONSHIP IN MULTITEMPORAL REMOTE-SENSING IMAGES	1163
<i>L. Liang, G. Ying, X. Wen, Y. Zhang</i>	
CALIBRATION AND VALIDATION PLAN FOR THE L2A PROCESSOR AND PRODUCTS OF THE SENTINEL-2 MISSION	1171
<i>M. Main-Knorn, B. Pflug, V. Debaecker, J. Louis</i>	
ALIGNMENT OF HYPERSPECTRAL IMAGERY AND FULL-WAVEFORM LIDAR DATA FOR VISUALISATION AND CLASSIFICATION PURPOSES	1178
<i>M. Miltiadou, M. A. Warren, M. Grant, M. Brown</i>	
SIGNIFICANT WAVE HEIGHT DETERMINED FROM SEQUENCE OF X-BAND RADAR IMAGES USING TEAGER-HUANG TRANSFORM	1186
<i>M. R. Mortazavi, C. J. Huang, L. C. Wu</i>	

COMPARISON OF UNSUPERVISED VEGETATION CLASSIFICATION METHODS FROM VHR IMAGES AFTER SHADOWS REMOVAL BY INNOVATIVE ALGORITHMS	1190
<i>A. Movia, A. Beinat, F. Crosilla</i>	
MAPPING LAND COVER IN THE TAITA HILLS, SE KENYA, USING AIRBORNE LASER SCANNING AND IMAGING SPECTROSCOPY DATA FUSION	1198
<i>R. Piironen, J. Heiskanen, E. Maeda, P. Hurskainen, J. Hietanen, P. Pellikka</i>	
VISIR-SAT – A PROSPECTIVE MICRO-SATELLITE BASED MULTI-SPECTRAL THERMAL MISSION FOR LAND APPLICATIONS	1204
<i>G. Ruecker, G. Menz, S. Heinemann, M. Hartmann, D. Oertel</i>	
VIRTUALIZING SUPER-COMPUTATION ON-BOARD UAS	1211
<i>E. Salami, J. A. Soler, R. Cuadrado, C. Barrado, E. Pastor</i>	
MULTISENSOR EXPERIMENTS OVER VINEYARD: NEW CHALLENGES FOR THE GNSS-R TECHNIQUE	1219
<i>N. Sánchez, A. Alonso-Arroyo, J. Martínez-Fernández, A. Camps, A. González-Zamora, M. Pablos, C. M. Herrero-Jiménez, A. Gumuzzio</i>	
RESEARCH ON BATHYMETRY ESTIMATION BY WORLDVIEW-2 BASED WITH THE SEMI-ANALYTICAL MODEL	1224
<i>L. Sheng, J. Bai, G.-W. Zhou, Y. Zhao, Y.-C. Li</i>	
EVALUATION OF THE AEROSOL TYPE EFFECT ON THE SURFACE REFLECTANCE RETRIEVAL USING CHRIS/PROBA IMAGES OVER LAND	1229
<i>C. Tirelli, C. Manzo, G. Curci, C. Bassani</i>	
POTENTIAL OF FULL WAVEFORM AIRBORNE LASER SCANNING DATA FOR URBAN AREA CLASSIFICATION – TRANSFER OF CLASSIFICATION APPROACHES BETWEEN MISSIONS	1235
<i>G. Tran, D. Nguyen, M. Milenkovic, N. Pfeifer</i>	
A BOX-COUNTING METHOD TO CHARACTERIZE DEGREES OF FOLIAGE CLUMPING USING AIRBORNE AND SIMULATED LIDAR DATA	1242
<i>M. Van Leeuwen, J. A. N. Van Aardt, T. Kampe, K. Krause</i>	
GYROCOPTER-BASED REMOTE SENSING PLATFORM	1249
<i>I. Weber, A. Jenal, C. Kneer, J. Bongartz</i>	
USE OF LANDSAT-SERIES DATA IN NATIONAL GEOGRAPHIC CONDITION MONITORING IN CHINA	1254
<i>J. Bai, Y. Zhao, L. Sheng, Y. Li, G. Lv</i>	
TANDEM-X MISSION STATUS	1260
<i>M. Zink</i>	

SOCIOECONOMIC ISSUES INCLUDING HEALTH, URBANIZATION AND HUMAN HERITAGE

URBAN DENSITY INDICES USING MEAN SHIFT-BASED UPSAMPLED ELEVATION DATA	1268
<i>E. Charou, S. Gyftakis, E. Bratsolis, T. Tsenoglou, Th. D. Papadopoulou, N. Vassilas</i>	
APPLICATION OF LIDAR DATA AND 3D-CITY MODELS IN VISUAL IMPACT SIMULATIONS OF TALL BUILDINGS	1273
<i>K. Czyska</i>	
INNOVATION TECHNOLOGIES AND APPLICATIONS FOR COASTAL ARCHAEOLOGICAL SITES	1281
<i>A. Di Iorio, D. Biliouris, R. Guzinski, L. B. Hansen, M. Bagni</i>	
COMPARISON OF TWO SATELLITE IMAGING PLATFORMS FOR EVALUATING SAND DUNE MIGRATION IN THE UBARI SAND SEA (LIBYAN FAZZAN)	1288
<i>A. Els, S. Merlo, J. Knight</i>	
WITH GEOSPATIAL IN PATH OF SMART CITY	1294
<i>A. S. Homainejad</i>	
TOWARDS AN AUTOMATED MONITORING OF HUMAN SETTLEMENTS IN SOUTH AFRICA USING HIGH RESOLUTION SPOT SATELLITE IMAGERY	1301
<i>T. Kemper, N. Mudau, P. Mangara, M. Pesaresi</i>	
STUDY OF CITY LANDSCAPE HERITAGE USING LIDAR DATA AND 3D-CITY MODELS	1307
<i>P. Rubinowicz, K. Czyska</i>	
USING LIGHT-AT-NIGHT (LAN) SATELLITE DATA FOR IDENTIFYING CLUSTERS OF ECONOMIC ACTIVITIES IN EUROPE	1315
<i>N. A. Rybnikova, B. A. Portnov</i>	

ANALYSIS OF URBAN DEVELOPMENT BY MEANS OF MULTI-TEMPORAL FRAGMENTATION METRICS FROM LULC DATA	1322
<i>M. Sapena, L. A. Ruiz</i>	
UNMANNED AERIAL SYSTEMS AND SPECTROSCOPY FOR REMOTE SENSING APPLICATIONS IN ARCHAEOLOGY	1330
<i>K. Themistocleous, A. Agapiou, B. Cuca, D. G. Hadjimitsis</i>	
AUTOMATED 3D ARCHITECTURE RECONSTRUCTION FROM PHOTOGRAMMETRIC STRUCTURE-AND-MOTION: A CASE STUDY OF THE ONE PILLA PAGODA, HANOI, VIENAM	1335
<i>T. To, D. Nguyen, G. Tran</i>	
FRACTAL ANALYSIS OF COLORS AND SHAPES FOR NATURAL AND URBANSCAPES URBANSCAPES.....	1340
<i>J. Wang, S. Ogawa</i>	

WATER CYCLE

BRAZILIAN INLAND WATER BIO-OPTICAL DATASET TO SUPPORT CARBON BUDGET STUDIES IN RESERVOIRS AS WELL AS ANTHROPOGENIC IMPACTS IN AMAZON FLOODPLAIN LAKES: PRELIMINARY RESULTS	1348
<i>C. Barbosa, E. Novo, R. Ferreira, L. Carvalho, C. Cairo, F. Lopes, J. Stech, E. Alcantara</i>	
RAINFALL IN AN EXPERIMENTAL WATERSHED: A COMPARISON BETWEEN OBSERVED AND TRMM 3B42V7 DATASET	1356
<i>L. R. Barbosa, E. S. Freitas, C. N. Almeida, D. C. D. Melo</i>	
ADAPTING AND IMPROVING RESILIENCE TO CLIMATE CHANGE IN COMMUNITIES (MORAVIAN COMMUNITY AS A PILOT), BY CREATING NEW CAPABILITIES BASED ON THE IMPLEMENTATION OF A NEW WATER CULTURE; PROTECTION AND MANAGEMENT OF NATURAL RESOURCES	1362
<i>A. Campos Gallo</i>	
SOIL DEGRADATION ASSESSMENT IN NORTH NILE DELTA USING REMOTE SENSING AND GIS TECHNIQUES	1370
<i>A. H. El Nahry, M. M. Ibrahim, A. A. El Baroudy</i>	
DETERMINING AND MONITORING THE WATER QUALITY OF KIZILIRMAK RIVER OF TURKEY: FIRST RESULTS.....	1377
<i>Ö. Gürsoy, A. C. Birdal, F. Özyonar, E. Kasaka</i>	
TECHNOLOGY TARGETING FOR SUSTAINABLE INTENSIFICATION OF CROP PRODUCTION IN THE DELTA REGION OF BANGLADESH	1383
<i>U. Schulthess, T. J. Krupnik, Z. U. Ahmed, A. J. McDonald</i>	
INTEGRATION OF REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM IN GROUND WATER QUALITY ASSESSMENT AND MANAGEMENT.....	1390
<i>N. Shakak</i>	
CHANGES IN THE LAND COVER AND LAND USE OF THE ITACAIUNAS RIVER WATERSHED, ARC OF DEFORESTATION, CARAJAS, SOUTHEASTERN AMAZON	1398
<i>P. W. M. Souza-Filho, W. R. Nascimento Jr., B. R. Versiani De Mendonça, R. O. Silva Jr., J. T. F. Guimarães, R. Dall'Agnol, J. O. Siqueira</i>	
ENGAGING THE APPLICATIONS COMMUNITY OF THE FUTURE SURFACE WATER AND OCEAN TOPOGRAPHY (SWOT) MISSION.....	1404
<i>M. Srinivasan, A. Andral, M. Dejus, F. Hossain, C. Peterson, E. Beighley, T. Pavelsky, Y. Chao, B. Doorn, E. Bronner, L. Houpert</i>	
HYDROLOGICAL CHARACTERIZATION OF THE USUMACINTA RIVER BASIN TOWARDS THE PRESERVATION OF ENVIRONMENTAL SERVICES	1412
<i>F.-O. Tapia-Silva, A.-I. Contreras-Silva, E.-R. Rosales-Arriaga</i>	
CAN SINGLE EMPIRICAL ALGORITHMS ACCURATELY PREDICT INLAND SHALLOW WATER QUALITY STATUS FROM HIGH RESOLUTION, MULTI-SENSOR, MULTI-TEMPORAL SATELLITE DATA?.....	1417
<i>I. Theologou, M. Patelaki, K. Karantzalos</i>	
EVALUATION METHOD OF WATER QUALITY FOR RIVER BASED ON MULTI-SPECTRAL REMOTE SENSING DATA.....	1423
<i>X. Xiao, X. Jian, W. Xiongfei, H. Chengfang, C. Xuejun, W. Zhaohui, Z. Dengzhong</i>	
Author Index	