

TABLE OF CONTENTS

MO1.O-1: HONORING DR. JAKOB VAN ZYL - INNOVATOR AND MENTOR IN GEOSCIENCE AND REMOTE SENSING

MO1.O-1.1: JAKOB VAN ZYL: LIFE AND LEGACY..... 1
Charles Elachi, California Institute of Technology, United States

MO1.O-1.4: THE EIGENVECTOR-EIGENVALUE IDENTITY AND RADAR POLARIMETRY..... 2
Scott Hensley, NASA Jet Propulsion Laboratory, California Institute of Technology, United States

MO1.O-1.5: MAKING SAR ACCESSIBLE: EDUCATION & TRAINING IN PREPARATION FOR NISAR 6
Franz J. Meyer, University of Alaska Fairbanks, United States; Paul Rosen, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Africa Flores, Eric R. Anderson, Emil A. Cherrington, NASA / SERVIR Science Coordination Office, United States

MO1.O-1.6: FOREST STRUCTURE ESTIMATION BY MEANS OF POL-INSAR TECHNIQUES: ACTUAL STATUS AND CHALLENGES 10
Konstantinos P. Papathanassiou, Matteo Pardini, Jun-Su Kim, Roman Guliaev, Alberto Alonso-Gonzalez, Victor Cazcarra-Bes, German Aerospace Center (DLR), Germany

MO1.O-2: THE CONTRIBUTIONS OF JOSÉ MANUEL BIOUCAS-DIAS TO REMOTE SENSING DATA PROCESSING

MO1.O-2.1: AN OVERVIEW OF THE CONTRIBUTIONS OF JOSÉ MANUEL BIOUCAS-DIAS TO REMOTE SENSING IMAGE PROCESSING 13
Antonio Plaza, University of Extremadura, Spain; Jun Li, Sun Yat-Sen University, China; Mário A. T. Figueiredo, Instituto Superior Técnico, Universidade de Lisboa, Portugal

MO1.O-2.3: ON HYPERSPECTRAL UNMIXING 17
Wing-Kin Ma, Chinese University of Hong Kong, China

MO1.O-2.4: SPARSE UNMIXING OF HYPERSPECTRAL DATA: THE LEGACY OF SUNSAL..... 21
Mario Parente, University of Massachusetts Amherst, United States; Marian-Daniel Iordache, VITO, Belgium

MO1.O-2.5: SPARSE REPRESENTATIONS AND DICTIONARY LEARNING: FROM IMAGE FUSION TO MOTION ESTIMATION 25
Jean-Yves Tourneret, Adrian Basarab, University of Toulouse, France; Nora Ouzir, University of Paris Saclay, France; Qi Wei, J. P. Morgan, United States

MO1.O-2.6: ON HYPERSPECTRAL SUPER-RESOLUTION..... 29
Jocelyn Chanussot, Université Grenoble Alpes, France

MO1.O-3: TOWARD A MORE GENDER-BALANCED GEOSCIENCE AND REMOTE SENSING WORLD

MO1.O-3.1: WOMEN IN COPERNICUS: RECOMMENDATIONS FROM WOMEN TESTIMONIALS 33
Nathalie Stephenne, Public Service of Wallonia, Belgium; Barbara Riedler, University of Salzburg, Austria; Estefania Aguilar Moreno, Universitat Jaume I, Spain; Marie Jagaille, GIS Bretel - Brittany Remote Sensing Group, France; Aida Monfort-Muriach, Universitat Jaume I, Spain; Grazia Fiore, EURISY - European Association of Space Agencies, France; Natassa Antoniou, EARSC - European Association of Remote Sensing Companies, Belgium

MO1.O-3.3: WOMEN IN GEOGRAPHIC INFORMATION SECTOR.....	37
<i>Marion Murphy, Mallon Technology, Ireland; Monica Sebillio, University of Salerno, Italy; Annelies Van Alphen, Geo Solutions, Belgium</i>	
MO1.O-3.4: GEOCHICAS, IMPROVING HOW OPEN MAPPING REPRESENTS THE WORLD	40
<i>Miriam Gonzalez, Geochicas, UP42 and Humanitarian OpenStreetMap, Germany</i>	
MO1.O-3.5: SPACE GIRLS SPACE WOMEN – A UNIQUE EXHIBITION TOURS	43
NEREUS-REGIONS AND PROMOTES FEMALE ROLE MODELS IN SPACE <i>Roya Ayazi, NEREUSaisbl, Belgium</i>	
MO1.O-3.6: WOMEN IN GEOSPATIAL+ - CHANGING THE STATUS QUO BY CREATING A	46
STRONG NETWORK OF WOMEN+ LEADERS AND CHANGEMAKERS <i>Alina-Mihaela Vizireanu, British Cartographic Society, United Kingdom; Julia Wagemann, Julia Wagemann Consulting, Germany; Sabrina H. Szeto, Sabrina Szeto Consulting, Germany; Cristina-Andra Vranceanu, Nottingham University, United Kingdom</i>	
 MO1.O-4: UAV AND LOW-COST SENSOR NETWORKS FOR LAND MONITORING AND CAL/ VAL	
MO1.O-4.1: REACHING STAGE 4 OF VEGETATION PRODUCT VALIDATION BY	49
EXPLOITING THE SYNERGY BETWEEN UAV, HR SATELLITES AND IOT MEASUREMENTS <i>Marie Weiss, INRAE, France; Wenjuan Li, HIPHEN, France; Sylvain Jay, INRAE, France; Fernando Camacho, EOLAB, Spain; Hongliang Fang, LREIS, China; Frédéric Baret, INRAE, France</i>	
MO1.O-4.3: POTENTIAL OF AUTOMATED DIGITAL HEMISPHERICAL PHOTOGRAPHY AND	53
WIRELESS QUANTUM SENSORS FOR ROUTINE CANOPY MONITORING AND SATELLITE PRODUCT VALIDATION <i>Luke Brown, Harry Morris, University of Southampton, United Kingdom; Erika Albero, Ernesto Lopez-Baeza, University of Valencia, Spain; Frank Tiedemann, Lukas Siebicke, Alexander Knohl, University of Göttingen, Germany; Carolina da Silva Gomes, Gabriele Bai, Christophe Lerebourg, ACRI-ST, France; Nadine Gobron, Christian Lanconelli, Marco Clerici, European Commission, Joint Research Centre, Italy; Darius Culvenor, Environmental Sensing Systems, Australia; Jadunandan Dash, University of Southampton, United Kingdom</i>	
MO1.O-4.5: COMPARISON OF CALIBRATION PANELS FROM FIELD SPECTROSCOPY AND	60
UAV HYPERSPECTRAL IMAGERY ACQUIRED UNDER DIFFUSE ILLUMINATION <i>J. Pablo Arroyo-Mora, National Research Council of Canada, Canada; Margaret Kalacska, McGill University, Canada; Raymond J. Soffer, National Research Council of Canada, Canada; Oliver Lucanus, McGill University, Canada</i>	
MO1.O-4.6: CLASSIFICATION OF AN INTERTIDAL REEF BY MACHINE LEARNING	64
TECHNIQUES USING UAV BASED RGB AND MULTISPECTRAL IMAGERY <i>Débora Borges, Interdisciplinary Centre of Marine and Environmental Research of the University of Porto, Portugal; Luís Pádua, University of Trás-os-Montes e Alto Douro/Centre for Robotics in Industry and Intelligent Systems, Portugal; Isabel Costa Azevedo, Joelen Silva, Interdisciplinary Centre of Marine and Environmental Research of the University of Porto, Portugal; Joaquim J. Sousa, University of Trás-os-Montes e Alto Douro/Centre for Robotics in Industry and Intelligent Systems, Portugal; Isabel Sousa-Pinto, Interdisciplinary Centre of Marine and Environmental Research of the University of Porto/Faculty of Science of the University of Porto, Portugal; José Alberto Gonçalves, Faculty of Science of the University of Porto, Portugal</i>	
 MO1.O-5: THE EOEXPOSURE PROJECT: BUILDING A PROCESSING FRAMEWORK TO TRACK HUMAN EXTERNAL EXPOSOME USING EARTH OBSERVATION AND GROUND-BASED DATA	
MO1.O-5.1: BIG EARTH DATA AND ADVANCED PROCESSING TECHNIQUES FOR	68
MONITORING WATER QUALITY <i>Alba German, Anabella Ferral, Mario Gulich Institute, Argentina; Carlos Marcelo Scavuzzo, Comisión Nacional de Actividades Espaciales, Argentina; Michal Shimoni, Royal Military Academy, Argentina</i>	

MO1.O-5.3: ALERT SYSTEM FOR ALGAE BLOOM DETECTION IN INLAND WATERS OF LATIN AMERICA: AN ONGOING PROJECT	72
<i>Felipe Lobo, Federal University of Pelotas, Brazil; Gustavo Nagel, Daniel Maciel, National Institute for Space Research, Brazil; Anabella Ferral, Alba German, Comisión Nacional de Actividades Espaciales, Argentina; Lino Carvalho, Federal University of Rio de Janeiro, Brazil; Vitor Martins, Michigan State University, United States; Claudio Barbosa, Evlyn Novo, National Institute for Space Research, Brazil; Martin Fernandez, Dirección Nacional de Medio Ambiente, Uruguay; Virginia Fernandez, Universidad de la República, Uruguay; João Yunes, Federal University of Rio Grande, Brazil; Gilberto Collares, Federal University of Pelotas, Brazil; Steve Greb, University of Wisconsin, United States; Giuliana Beltramone, Comisión Nacional de Actividades Espaciales, Argentina; Liliana Piedra-Castro, Universidad Nacional, Costa Rica; Waterloo Pereira Filho, Federal University of Santa Maria, Brazil; Elizabeth Montoya, Universidad Nacional Autónoma de México, Mexico; Carlos Marcelo Scavuzzo, Comisión Nacional de Actividades Espaciales, Argentina; Marisol Sanchez, Universidad de Antioquia, Colombia; Michal Shimoni, Royal Military Academy, Belgium</i>	
MO1.O-5.4: SPATIO-TEMPORAL ANALYSIS OF WATER SURFACE TEMPERATURE IN A RESERVOIR AND ITS RELATION WITH WATER QUALITY IN A CLIMATE CHANGE CONTEXT	76
<i>Anabella Ferral, Alba German, Giuliana Beltramone, Matias Bonansea, Maximiliano Burgos, CONICET (Consejo Nacional de Investigaciones Científicas y Técnicas), Argentina; Lino Saunders de Carvalho, Universidad Federal de Rio de Janeiro, Argentina; Michal Shimoni, Royal Academy of Belgym, Argentina; Mariana Roque, APRHI, Argentina; Carlos Marcelo Scavuzzo, Comisión Nacional de Actividades Espaciales, Argentina</i>	
MO1.O-5.5: SEMI-AUTOMATIC TOOL TO COUNT MOSQUITO EGGS IN OVITRAP STICK IMAGES	80
<i>Charles Beumier, Belgian Royal Military Academy, Belgium; Jorge Rubio, Instituto de Altos Estudios Espaciales, Argentina; Verónica Andreo, CONICET (Consejo Nacional de Investigaciones Científicas y Técnicas), Argentina; Claudio Guzman, Direccion de Epidemiologia de Cordoba, Argentina; Ximena Porcasi, Instituto de Altos Estudios Espaciales, Argentina; Carlos Marcelo Scavuzzo, Comisión Nacional de Actividades Espaciales, Argentina; Michal Shimoni, Belgian Royal Military Academy, Belgium</i>	
MO1.O-5.6: PREDICTING AEDES AEGYPTI EGGS COUNT USING REMOTE SENSING DATA AND A GENERALIZED LINEAR MODEL	84
<i>Oladimeji Mudele, University of Pavia, Italy; Verónica Andreo, Ximena Porcasi, Instituto de Altos Estudios Espaciales, Argentina; Carlos Marcelo Scavuzzo, Comisión Nacional de Actividades Espaciales, Argentina; Laura Lopez, Ministerio de Salud de la Provincia de Córdoba., Argentina; Paolo Gamba, University of Pavia, Italy</i>	
MO1.O-6: REMOTE SENSING OF WETLANDS: THE AI AND BIG DATA ERA	
MO1.O-6.1: MONITORING OF 30 YEARS WETLAND CHANGES IN NEWFOUNDLAND, CANADA	88
<i>Masoud Mahdianpari, C-CORE and Memorial University of Newfoundland, Canada; Hamid Jafarzadeh, University of Tehran, Canada; Jean Granger, Fariba Mohammadimanesh, C-CORE, Canada; Brian Brisco, NRCan Canada, United States; Bahram Salehi, ESF University, United States; Saeid Homayouni, INRS University, United States; Qihao Weng, Indiana State University, United States</i>	
MO1.O-6.3: IMPROVING PEATLAND MAPPING AND MONITORING CAPABILITY ACROSS BROAD REGIONS USING SAR IN CLOUD COMPUTING PLATFORMS	92
<i>Laura Bourgeau-Chavez, Michael Battaglia, Andrew Poley, Dorthea Leisman, Jeremy Graham, Sarah Grelik, Michigan Technological University, United States</i>	
MO1.O-6.4: WETLAND MAPPING OF NORTHERN PROVINCES OF IRAN USING SENTINEL-1 AND SENTINEL-2 IN GOOGLE EARTH ENGINE	96
<i>MohammadAli Hemati, Mahdi Hasanlou, University of Tehran, Iran; Masoud Mahdianpari, C-CORE and Memorial University of Newfoundland, Canada; Fariba Mohammadimanesh, C-CORE, Canada</i>	

MO1.O-6.5: WETLAND CLASSIFICATION USING SIMULATED NISAR DATA: A CASE STUDY IN LOUISIANA 100

Sarina Adeli, Bahram Salehi, State University of New York, College of Environmental Science and Forestry, United States; Masoud Mahdianpari, C-CORE and Memorial University of Newfoundland, Canada; Lindi J. Quackenbush, State University of New York, College of Environmental Science and Forestry, United States; Bruce Chapman, NASA Jet Propulsion Laboratory, United States

MO1.O-6.6: CLASSIFICATION OF OPEN WATER FEATURES USING OBIA AND DEEP LEARNING 104

Michael Merchant, Ducks Unlimited Canada, Canada

MO1.O-7: INTERNATIONAL SPACEBORNE IMAGING SPECTROSCOPY MISSIONS: UPDATES AND NEWS OF PLANNED MISSION

MO1.O-7.1: COPERNICUS HYPERSPECTRAL IMAGING MISSION FOR THE ENVIRONMENT (CHIME) 108

Michael Rast, Jens Nieke, European Space Agency (ESA), Italy; Jennifer Adams, RHEA Group Spa, Italy; Claudia Isola, Ferran Gascon, European Space Agency (ESA), Netherlands

MO1.O-7.3: NASA'S SURFACE BIOLOGY AND GEOLOGY CONCEPT STUDY: STATUS AND NEXT STEPS 112

David Thompson, David Bearden, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Ian Brosnan, NASA Ames Research Center, United States; Kerry Cawse-Nicholson, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Jonathan Chrono, NASA Langley Research Center, United States; Robert Green, NASA Jet Propulsion Laboratory, California Institute of Technology, Australia; Nancy Glenn, University of New South Wales, Australia; Liane Guild, NASA Ames Research Center, United States; Raymond Kokaly, United States Geological Survey, United States; Christine Lee, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Jeffrey Luvall, NASA Marshall Space Flight Center, United States; Charles Miller, Jamie Nastal, Ryan Pavlick, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Benjamin Poulter, NASA Goddard Space Flight Center, United States; David Schimel, Fabian Schneider, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Stephanie Schollaert Uz, NASA Goddard Space Flight Center, United States; Amit Sen, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Shawn Serbin, Brookhaven National Laboratory, United States; Natasha Stavros, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Kurtis Thome, NASA Goddard Space Flight Center, United States; Philip Townsend, University of Wisconsin-Madison, United States; Woody Turner, National Aeronautics and Space Administration (NASA), United States; Kevin Turpie, NASA Goddard Space Flight Center, University of Maryland Baltimore County, United States; Weile Wang, NASA Ames Research Center, United States

MO1.O-7.4: THE FLUORESCENCE EXPLORER (FLEX) MISSION: FROM SPECTRAL MEASUREMENTS TO HIGH-LEVEL SCIENCE PRODUCTS 115

Jose Moreno, University of Valencia, Spain

MO1.O-7.5: NASA'S EARTH SURFACE MINERAL DUST SOURCE INVESTIGATION: AN EARTH VENTURE IMAGING SPECTROMETER SCIENCE MISSION 119

Robert Green, David Thompson, NASA Jet Propulsion Laboratory, California Institute of Technology, United States

MO1.O-7.6: THE ENMAP SATELLITE – MISSION STATUS AND SCIENCE PREPARATORY ACTIVITIES 123

Sabine Chabrilat, Maximilian Brell, Karl Segl, Saskia Foerster, Helmholtz Center Potsdam, GFZ German Research Center for Geosciences, Germany; Luis Guanter, Universitat Politècnica de València, Spain; Anke Schickling, Space Administration, German Aerospace Center (DLR), Germany; Tobias Storch, Earth Observation Center (EOC), German Aerospace Center (DLR), Germany; Hans-Peter Honold, OHB System AG, Germany; Sebastian Fischer, Space Administration, German Aerospace Center (DLR), Germany

MO1.O-8: INTEGRATING INFORMATION FROM OPTICAL AND THERMAL WAVELENGTHS FOR GEOLOGIC INFORMATION

MO1.O-8.1: CHARACTERISATION OF MASSIVE SULPHIDE DEPOSITS IN THE IBERIAN PYRITE BELT BASED ON THE INTEGRATION OF DIGITAL OUTCROPS AND MULTI-SCALE, MULTI-SOURCE HYPERSPECTRAL DATA 126

Moritz Kirsch, Sandra Lorenz, Samuel Thiele, Richard Gloaguen, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Germany

MO1.O-8.2: NUMERICAL MODELING OF LAND SURFACE TEMPERATURE AND NEW INSIGHTS FOR GEOLOGICAL APPLICATIONS 130

Saeid Asadzadeh, Carlos Roberto Souza Filho, University of Campinas, Brazil

MO1.O-8.3: MULTISCALE HYPERSPECTRAL IMAGING OF HYDROTHERMAL ALTERATION IN YELLOWSTONE NATIONAL PARK, USA 132

Todd Hoefen, Raymond Kokaly, U.S. Geological Survey, United States; Eric Livo, U.S. Geological Survey, Emeritus, United States; John Meyer, Colorado School of Mines - U.S. Geological Survey, United States; JoAnn Holloway, U.S. Geological Survey, United States

MO1.O-8.4: TEMPORAL STABILITY OF MINERAL INDICES IN A SEMI-ARID AREA 136

Harald van der Werff, Janneke Ettema, Akhil Sampatirao, Rob Hewson, University of Twente, Netherlands

MO1.O-9: GLOBAL NAVIGATION SATELLITE SYSTEMS REFLECTOMETRY (GNSS-R) AND SIGNALS OF OPPORTUNITY (SOOP) APPLICATIONS

MO1.O-9.1: GNSS-REFLECTED SIGNALS FOR PERMAFROST MONITORING 140

Kimmo Rautiainen, Finnish Meteorological Institute, Finland; Davide Comite, Sapienza University of Rome, Italy; Juval Cohen, Finnish Meteorological Institute, Finland; Martin Unwin, Surrey Satellite Technology Ltd, United Kingdom; Nazzareno Pierdicca, Sapienza University of Rome, Italy

MO1.O-9.3: THE IMPORTANT ROLE OF ANTENNA PATTERN CHARACTERIZATION IN THE ABSOLUTE CALIBRATION OF GNSS-R MEASUREMENTS 144

Tianlin Wang, Christopher Ruf, University of Michigan, United States; Andrew O'Brien, The Ohio State University, United States; Scott Gleason, University Corporation for Atmospheric Research, United States; Darren McKague, Anthony Russel, University of Michigan, United States

MO1.O-9.4: GNSS-R SOIL MOISTURE RETRIEVAL WITH A DEEP LEARNING APPROACH 147

T. Maximillian Roberts, Ian Colwell, Rashmi Shah, Stephen Lowe, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Clara Chew, University Corporation For Atmospheric Research, United States

MO1.O-9.6: RETRIEVAL OF ROOT-ZONE SOIL MOISTURE PROFILES FROM MULTI-FREQUENCY SIGNALS OF OPPORTUNITY: A SIMULATION STUDY 155

Seho Kim, James L. Garrison, Purdue University, United States

MO1.O-10: FUTURE TECHNOLOGY DEMONSTRATION THROUGH COMPACT INSTRUMENTS ON CUBESAT AND SMALLSAT

MO1.O-10.5: SNOOPI: DEMONSTRATING P-BAND REFLECTOMETRY FROM ORBIT..... 164

James L. Garrison, Purdue University, United States; Rashmi Shah, NASA Jet Propulsion Laboratory, United States; Benjamin Nold, Justin Mansell, Purdue University, United States; Manuel Vega, Juan Raymond, Rajat Bindlish, NASA Goddard Space Flight Center, United States; Mehmet Kurum, Mississippi State University, United States; Jeffrey Piepmeier, NASA Goddard Space Flight Center, United States; Seho Kim, Purdue University, United States; Roger Banting, NASA Goddard Space Flight Center, United States; Kameron Larsen, NASA Jet Propulsion Laboratory, United States

MO1.O-10.6: EO-ALERT: A SATELLITE ARCHITECTURE FOR DETECTION AND MONITORING OF EXTREME EVENTS IN REAL TIME	168
<i>Murray Kerr, Stefania Tonetti, Stefania Cornara, Juan Bravo, Robert Hinz, Antonio Latorre, Francisco Membibre, Alexis Ramos, DEIMOS Space, Spain; Stefan Wiehle, German Aerospace Center (DLR), Germany; Otto Koudelka, TUGRAZ, Austria; Enrico Magli, Politecnico di Torino, Italy; Riccardo Freddi, OHB-I, Italy; Silvia Fraile, DEIMOS Imaging, Spain; Cecilia Marcos, Agencia Estatal de Meteorología (AEMet), Spain</i>	
MO1.O-11: ADVANCED REMOTE SENSING DATA ANALYSIS FOR SUSTAINABLE DEVELOPMENT	
MO1.O-11.1: SPACEBORNE EARTH OBSERVATION FOR OFFSHORE WIND ENERGY APPLICATIONS	172
<i>Ioanna Karagali, Merete Badger, Charlotte Hasager, Technical University of Denmark, Denmark</i>	
MO1.O-11.3: STRUCTURAL HEALTH MONITORING ON URBAN AREAS BY USING MULTI TEMPORAL INSAR AND DEEP LEARNING.	176
<i>Gabriel Martin Hernandez, Sivasakthy Selvakumaran, University of Cambridge, United Kingdom; Andrea Marinoni, UiT the Arctic University of Norway, Norway; Zahra Sadeghi, University of Leeds, United Kingdom; Campbell Middleton, University of Cambridge, United Kingdom</i>	
MO1.O-11.4: GLOBAL CROPLAND YIELD MONITORING WITH GAUSSIAN PROCESSES	180
<i>Maria Piles, Anna Mateo-Sanchís, Jordi Muñoz-Marí, Gustau Camps-valls, Universitat de València, Spain; François Waldner, Felix Rembold, Michele Meroni, European Commission, Italy</i>	
MO1.O-11.5: FULLY UNSUPERVISED BI-TEMPORAL CHANGE DETECTION FRAMEWORK FOR VHR SAR	184
<i>Shaunak De, Lloyd Hughes, Davide Castelletti, Ganesh Yalla, Capella Space Corporation, United States</i>	
MO1.O-11.6: GEO-DATA FOR MAPPING SCENIC BEAUTY: EXPLORING THE POTENTIAL OF REMOTE SENSING AND SOCIAL MEDIA	188
<i>Ilan Havinga, Diego Marcos, Wageningen University, Netherlands; Patrick Bogaart, Statistics Netherlands, Netherlands; Lars Hein, Wageningen University, Netherlands; Devis Tuia, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
MO1.O-12: ADVANCES IN OBSERVING AND MODELLING CARBON CYCLE AND PHENOLOGY	
MO1.O-12.1: SEASONAL VARIABILITY OF GPP AND PHENOLOGY IN REMOTE SENSED OBSERVATIONS AND LAND SURFACE MODELS	192
<i>Jan De Pue, Royal Meteorological Institute, Belgium; Sebastian Wieneke, University of Leipzig, Germany; José Miguel Barrios, Royal Meteorological Institute, Belgium; Liyang Lui, Atomic Energy and Alternative Energies Commission, France; Maral Maleki, University of Antwerp, Belgium; Philippe Ciaï, Atomic Energy and Alternative Energies Commission, France; Alirio Arboleda, Rafiq Hamdi, Royal Meteorological Institute, Belgium; Ana Bastos, Max Planck Institute for Biogeochemistry, Germany; Ivan Janssens, University of Antwerp, Belgium; Fabienne Maignan, Atomic Energy and Alternative Energies Commission, France; Françoise Gellens-Meulenberghs, Royal Meteorological Institute, Belgium; Manuela Balzarolo, University of Antwerp, Belgium</i>	
MO1.O-12.2: INTEGRATING SATELLITE-DERIVED VEGETATION VARIABLES INTO THE ISBA MODEL: A SEQUENTIAL DATA ASSIMILATION APPROACH	196
<i>Jean-Christophe Calvet, Bertrand Bonan, Anthony Mucia, Daniel Shamambo, Yongjun Zheng, Meteo-France, France; Clément Albergel, European Space Agency (ESA), United Kingdom</i>	

MO1.O-12.3: ACCOUNTING THE DROUGHT INTO THE IN SITU VEGETATION INDICES IN HEATHLAND ECOSYSTEM	200
<i>Maral Maleki, University of Antwerp, Belgium; Nicola Arriga, European Commission, Joint Research Centre, Italy; Marilyn Roland, Sebastian Wieneke, University of Antwerp, Belgium; José Miguel Barrios, Royal Meteorological Institute, Belgium; Roel Van Hoolst, Vito, Flemish Institute for Technological Research, Belgium; Ivan Janssens, Manuela Balzarolo, University of Antwerp, Belgium</i>	
MO1.O-12.4: MEASURING AND UNDERSTANDING THE DYNAMICS OF SOLAR-INDUCED FLUORESCENCE (SIF) AND ITS RELATION TO PHOTOCHEMICAL AND NON-PHOTOCHEMICAL ENERGY DISSIPATION – SCALING LEAF LEVEL REGULATION TO CANOPY AND ECOSYSTEM REMOTE SENSING	203
<i>Uwe Rascher, Kelvin Acebron, Juliane Bendig, Julie Krämer, Vera Krieger, Juan Quirós-Vargas, Bastian Siegmann, Onno Muller, Forschungszentrum Jülich, Germany</i>	
MO1.O-13: AUTOMATION OF IMAGE ANALYSIS TASKS FOR OPERATIONAL GEOSPATIAL SERVICES	
MO1.O-13.3: TRACKING HUMANITARIAN CRISIS – AN AI-DRIVEN CHANGE ANALYSIS APPROACH	216
<i>Kristin Fleischer, Peter Schauer, Elke Krätzschar, Jörg Ullrich, Industrieanlagen Betriebsgesellschaft mbH, Germany</i>	
MO1.O-13.4: IMPROVING PERFORMANCE OF AIRCRAFT DETECTION IN SATELLITE IMAGERY WHILE LIMITING THE LABELLING EFFORT: HYBRID ACTIVE LEARNING.	220
<i>Julie Imbert, Gohar Dashyan, Alex Goupilleau, Tugdual Ceillier, Marie-Caroline Corbineau, Preligens (ex-Earthcube), France</i>	
MO1.O-13.5: A NEAR REAL TIME CFAR APPROACH FOR SHIP DETECTION ON SAR DATA BASED ON A GENERALISED-K DISTRIBUTED CLUTTER ESTIMATION	224
<i>Corrado Avolio, Massimo Zavagli, Giuliano Paterino, Paola Nicolosi, Mario Costantini, e-GEOS, Italy</i>	
MO1.O-13.6: MULTIMODAL DATA FUSION OF SOCIAL MEDIA AND SATELLITE IMAGES FOR EMERGENCY RESPONSE AND DECISION-MAKING	228
<i>Ilias Gialampoukidis, Stelios Andreadis, Stefanos Vrochidis, Ioannis Kompatsiaris, Centre for Research and Technology Hellas, Greece</i>	
MO1.O-14: AVALANCHE MAPPING WITH SATELLITES	
MO1.O-14.1: MAPPING AVALANCHES WITH SATELLITES - THE VISION OF MORE COMPLETE AVALANCHE DATASETS	232
<i>Yves Bühler, Elisabeth Hafner, Frank Techel, WSL Institute for Snow and Avalanche Research SLF, Switzerland</i>	
MO1.O-14.3: NORWAY'S OPERATIONAL AVALANCHE ACTIVITY MONITORING SYSTEM USING SENTINEL-1	236
<i>Karsten Mueller, NVE - Norwegian Water and Energy Resource Directorate, Norway; Markus Eckerstorfer, Jakob Grah, Eirik Malnes, NORCE - Norwegian Research Centre, Norway; Rune Engeset, NVE - Norwegian Water and Energy Resource Directorate, Norway; Tore Humstad, Norwegian Public Roads Administration, Norway; Aron Widforss, NVE - Norwegian Water and Energy Resource Directorate, Norway</i>	
MO1.O-14.4: SNOW AVALANCHE BACKSCATTER CHARACTERISTICS AND THEIR BENEFIT FOR AVALANCHE MAPPING WITH LOCAL RESOLUTION WEIGHTING	239
<i>Cedric Tompkin, Silvan Leinss, ETH Zurich, Switzerland</i>	
MO1.O-14.5: MONITORING SNOW AVALANCHES ACTIVITIES INFERRED FROM SENTINEL-1 SAR IMAGES AT REGIONAL SCALE	243
<i>Anna Karas, Fatima Karbou, Université Grenoble Alpes, Université de Toulouse, Météo-France, CNRS, CNRM, Centre d'Etudes de la Neige, France; Nicolas Eckert, UR ETNA, INRAE, Univ. de Grenoble Alpes, France; Sophie Giffard-Roisin, ISTERRE, Univ. de Grenoble Alpes, France; Philippe Durand, CNES, France</i>	

MO1.O-14.6: MANUAL AND AUTOMATIC DETECTION OF DRY SNOW AVALANCHES IN SENTINEL-1 SAR IMAGES	247
<i>Markus Eckerstorfer, NORCE - Norwegian Research Centre, Norway; Karsten Mueller, NVE - Norwegian Water and Energy Resource Directorate, Norway; Eirik Malnes, NORCE - Norwegian Research Centre, Norway; Hilde Daugstad Oterhals, University of Oslo, Norway</i>	
MO1.O-15: COMBINING EO, CROWDSOURCING AND AI TO MAKE THE MOST OF THE DATA	
MO1.O-15.1: ESA'S AI4EO INITIATIVE – BRIDGING THE GAP BETWEEN THE AI & EARTH OBSERVATION COMMUNITIES	251
<i>Annekatrien Debien, SpaceTec Partners, Belgium; Mauro Casaburi, Planetek Italia, Italy; Grega Milcinski, Sinergise, Slovenia; Marcello Maranesi, GMATICS, Italy</i>	
MO1.O-15.3: CROWDSOURCING IN-SITU DATA COLLECTION USING GAMIFICATION	254
<i>Steffen Fritz, Tobias Sturn, Mathias Karner, Santosh Karanam, Linda See, Juan Carlos Bayas, Ian McCallum, IIASA, Austria</i>	
MO1.O-15.4: AI OPPORTUNITIES AND CHALLENGES FOR CROP TYPE MAPPING USING SENTINEL-2 AND DRONE DATA	258
<i>Artur Nowakowski, Dario Spiller, Noelle Cremer, European Space Agency (ESA), Italy; Rogerio Bonifacio, World Food Programme, Italy; Michael Marszalek, European Space Agency (ESA), Italy; Manuel Garcia-Herranz, UNICEF, United States; Pierre Philippe Mathieu, European Space Agency (ESA), Italy; Do-Hyung Kim, UNICEF, United States</i>	
MO1.O-15.5: A NEW USER ORIENTED PLATFORM TO DEVELOP AI FOR THE ESTIMATION OF BIO-GEOPHYSICAL PARAMETERS FROM EO DATA	262
<i>Leonardo De Laurentiis, Davide De Santis, University of Rome, Italy; Daniele Latini, GEO-K, Italy; Giovanni Schiavon, University of Rome, Italy; Alessandro Marin, Gaetano Pace, Kevin Rossini, Cesare Rossi, Stefano Marra, CGI Italia, Italy; Sveinung Loekken, ESA / ESRIN, Italy; Fabio Del Frate, University of Rome, Italy</i>	
MO1.O-15.6: A NOVEL GRAPH-THEORETIC DEEP REPRESENTATION LEARNING METHOD FOR MULTI-LABEL REMOTE SENSING IMAGE RETRIEVAL	266
<i>Gencer Sumbul, Begüm Demir, Faculty of Electrical Engineering and Computer Science, Technische Universität Berlin, Germany</i>	
MO1.O-16: DATA FUSION: THE AI ERA	
MO1.O-16.1: FROM LOCAL ALGORITHMS TO GLOBAL RESULTS: HUMAN-MACHINE COLLABORATION FOR ROBUST ANALYSIS OF GEOGRAPHICALLY DIVERSE IMAGERY	270
<i>Nebojsa Jojic, Microsoft Research, United States; Nikolay Malkin, Yale University, United States; Caleb Robinson, Anthony Ortiz, Microsoft AI for Good Research Lab, United States</i>	
MO1.O-16.3: ROOFTOPS OR FOOTPRINTS? RELIABLE BUILDING FOOTPRINT EXTRACTION FROM HIGH-RESOLUTION SATELLITE IMAGES	274
<i>Jean-Philippe Bauchet, LuxCarta Technology, France; Willard Mapurisa, LuxCarta Capetown, South Africa; Arno Gobbin, Sebastien Tripodi, Yuliya Tarabalka, Liuyun Duan, Lionel Laureore, LuxCarta Technology, France</i>	
MO1.O-16.4: SPECTRAL AND SPATIAL RESIDUAL ATTENTION NETWORK FOR JOINT HYPERSPECTRAL AND LIDAR DATA CLASSIFICATION	278
<i>Jing Wang, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia; Jun Zhou, Griffith University, Australia; Xinwen Liu, University of Queensland, Australia; Farah Jahan, University of Chittagong, Bangladesh</i>	
MO1.O-16.5: MULTIMODAL CONVOLUTIONAL NEURAL NETWORKS WITH CROSS-CHANNEL RECONSTRUCTION	282
<i>Danfeng Hong, German Aerospace Center (DLR), Germany; Xin Wu, Beijing Institute of Technology, China; Jing Yao, Lianru Gao, Bing Zhang, Chinese Academy of Sciences, China; Jocelyn Chanussot, Université Grenoble Alpes, INRIA, CNRS, Grenoble INP, LJK, France</i>	

MO1.O-16.6: SURFACE WATER DETECTION FROM SENTINEL-1	286
<i>Brookie Guzder-Williams, Hamed Alemohammad, Radiant Earth Foundation, United States</i>	
 MO1.O-17: E-SHAPE AND EUROGEO REGIONAL INITIATIVE: DEVELOPING A CONDUCTIVE ENVIRONMENT TO DEVELOP EARTH OBSERVATION OPERATIONAL SERVICES	
MO1.O-17.1: EUROGEO – THE EUROPEAN COMPONENT OF GEO	290
<i>Erwin Goor, European Commission - EASME, Belgium; Jean Dusart, Marjan Van Meerloo, Gilles Ollier, Jan Ramboer, European Commission - DG RTD, Belgium; Izabela Freytag, Gaëlle Le Bouler, European Commission - EASME, Belgium</i>	
MO1.O-17.3: E-SHAPE – EUROGEO SHOWCASES: APPLICATION POWERED BY EUROPE	293
CONTRIBUTION TO EUROGEO AND TO THE DEVELOPMENT OF THE EO INDUSTRY	
<i>Thierry Ranchin, Lionel Menard, Nicolas Fichaux, MINES ParisTech - PSL University / ARMINES, France; Mathieu Reboul, ARMINES, France</i>	
MO1.O-17.4: EXPANDING USAGES OF EARTH OBSERVATION DATA: A CO-DESIGN	296
APPROACH TO GROW AN ECOSYSTEM OF EFFICIENT SERVICE DESIGNERS	
<i>Raphaëlle Barbier, Skander Ben Yahia, Pascal Le Masson, Benoit Weil, MINES ParisTech - PSL University / ARMINES, France</i>	
MO1.O-17.5: LOOKING FOR REPRODUCIBILITY FOR EARTH OBSERVATION	300
APPLICATIONS AT THE ABSTRACT LEVEL	
<i>Marie-Francoise Voidrot-Martinez, Ingo Simonis, OGCE, Belgium; Raphaëlle Barbier, Pascal Le Masson, Nicolas Fichaux, Thierry Ranchin, MINES ParisTech - PSL University / ARMINES, France</i>	
MO1.O-17.6: UPSCALING EUROPEAN EARTH OBSERVATION SOLUTIONS THROUGH A	303
COMPREHENSIVE PORTFOLIO OF TOOLS – THE CASE OF E-SHAPE	
<i>Eleftherios Mamais, Evenflow, Belgium; Francesca Piatto, EARSC, Belgium; Daire Boyle, Stefka Domuzova, Evenflow, Belgium; Emmanuel Pajot, EARSC, Belgium; Nico Thom, Evenflow, Belgium</i>	
 MO1.O-18: GRSS/ISPRS JOINT SESSION: MAPPING AT THE NATIONAL AND REGIONAL SCALE	
MO1.O-18.3: GLOBAL UPSCALING OF THE MODIS LAND COVER WITH GOOGLE EARTH	309
ENGINE AND LANDSAT DATA	
<i>Emma Izquierdo-Verdiguier, University of Natural Resources and Life Sciences (BOKU), Austria; Alvaro Moreno-Martínez, Jose Adsuara, University of Valencia, Spain; Jordi Muñoz-Marí, Gustau Camps-Valls, Universitat de València, Spain; Marco P. Maneta, John Kimball, University of Montana, United States; Nicholas Clinton, Google, Inc, United States; Steven W Running, University of Montana, United States</i>	
MO1.O-18.4: AN APPROACH BASED ON LOW RESOLUTION LAND-COVER-MAPS AND	313
DOMAIN ADAPTATION TO DEFINE REPRESENTATIVE TRAINING SETS AT LARGE SCALE	
<i>Iwona Podsiadlo, Claudia Paris, Lorenzo Bruzzone, University of Trento, Italy</i>	

MO1.O-26: EMERGENCY SESSION CHAIR HOLDER

TU1.O-1: SAR INTERFEROMETRY: MISSIONS, APPLICATIONS AND METHODS

TU1.O-1.1: THE BIOMASS DEM PROTOTYPE PROCESSOR: OVERVIEW AND FIRST 2126 RESULTS

Muriel Pinheiro, German Aerospace Center (DLR), Germany; Simone Mancon, Aresys s.r.l., Italy; Mauro Mariotti d'Alessandro, Polimi, Italy; Pau Prats, Joel Amao-Oliva, Nida Sakar, Gustavo Martin del Campo Becerra, Matteo Nannini, Rolf Scheiber, Alberto Alonso, Marc Jaeger, Nestor Yague-Martinez, German Aerospace Center (DLR), Italy; Francesco Banda, Davide Giudici, Aresys s.r.l., Italy; Stefano Tebaldini, Polimi, Italy; Konstantinos P. Papathanassiou, German Aerospace Center (DLR), Germany; Klaus Scipal, European Space Agency (ESA), Italy

TU1.O-1.2: CHANGE DETECTION WITHIN THE PROCESSING OF THE TANDEM-X 2130 CHANGE DEM

Barbara Schweissshelm, Marie Lachaise, Thomas Fritz, German Aerospace Center (DLR), Germany

TU1.O-1.3: WIDE-SWATH OCEAN TOPOGRAPHY USING FORMATION FLYING UNDER 2134 SQUINTED GEOMETRIES: THE HARMONY MISSION CASE

Andreas Theodosiou, Marcel Kleinherenbrink, Paco López-Dekker, TU Delft, Netherlands

TU1.O-1.4: SENTINEL-1 AZIMUTH SUBBANDING FOR MULTIPLE APERTURE 2138 INTERFEROMETRY - TEST CASE OVER THE ROI BAUDOIN ICE SHELF, EAST ANTARCTICA

Murielle Kirkove, Université de Liège, Belgium; Quentin Glaude, Université libre De Bruxelles, Belgium; Dominique Derauw, Universidad Nacional De Río Negro, Argentina; Christian Barbier, Université de Liège, Belgium; Frank Pattyn, Université libre De Bruxelles, Belgium; Anne Orban, Université de Liège, Belgium

TU1.O-1.5: THE GEOWAM CAMPAIGN: AN UPDATE 2142

Joel Amao-Oliva, Muriel Pinheiro, Marc Jaeger, Rolf Scheiber, Ralf Horn, Andreas Reigber, German Aerospace Center (DLR), Germany

TU1.O-1.6: A KU-BAND AIRBORNE INSAR FOR SNOW CHARACTERIZATION AT TRAIL 2146 VALLEY CREEK

Paul Siqueira, Max Adam, Simon Kraatz, Dustin Lagoy, Marc Closa Tarres, University of Massachusetts, United States; Leung Tsang, Jiyue Zhu, University of Michigan, United States; Chris Derksen, Joshua King, Environment and Climate Change Canada, Canada

TU1.O-2: DEEP LEARNING BASED FEATURE EXTRACTION

TU1.O-2.1: GENERALIZED SCALABLE NEIGHBORHOOD COMPONENT ANALYSIS FOR 2150 SINGLE AND MULTI-LABEL REMOTE SENSING IMAGE CHARACTERIZATION

Jian Kang, School of Electronic and Information Engineering, Soochow University, China; Ruben Fernandez-Beltran, Institute of New Imaging Technologies, University Jaume I, Spain; Antonio Plaza, Hyperspectral Computing Laboratory, University of Extremadura, Spain

TU1.O-2.2: MOATNET: REGISTRATION FOR MULTI-TEMPORAL OPTICAL REMOTE 2154 SENSING IMAGES USING DEEP CONVOLUTIONAL FEATURES

Chao Li, Yanan You, Jingyi Cao, Wenli Zhou, Beijing University of Posts and Telecommunications, China

TU1.O-2.3: HYPERSPECTRAL IMAGE DENOISING BASED ON MULTI-STREAM DENOISING 2158 NETWORK

Yan Gao, Feng Gao, Junyu Dong, Ocean University of China, China

TU1.O-2.4: LSTM-ADVERSARIAL AUTOENCODER FOR SPECTRAL FEATURE LEARNING IN 2162 HYPERSPECTRAL ANOMALY DETECTION

Tongbin Ouyang, Jinshen Wang, Xinyue Zhao, Shujie Wu, Beihang University, China

TU1.O-2.5: GRAPH REGULARIZED AUTOENCODER BASED FEATURE EXTRACTION FOR HYPERSPECTRAL IMAGE CLASSIFICATION	2166
<i>Xiaotian Fan, Jingzhou Chen, Yuntao Qian, Zhejiang University, China</i>	
TU1.O-2.6: HYPERSPECTRAL IMAGE SUPER-RESOLUTION BASED ON MULTISCALE RESIDUAL BLOCK AND MULTILEVEL FEATURE FUSION	2170
<i>Gang Yu, Feng Zhang, Ting Hu, Wei Li, Ran Tao, Beijing Institute of Technology, China</i>	
TU1.O-3: NOVEL SEGMENTATION METHODS OF ROADS AND BUILDINGS	
TU1.O-3.1: SUB-PIXEL WIDTH ROAD NETWORK EXTRACTION USING SENTINEL-2 IMAGERY	2174
<i>Christian Ayala, Carlos Aranda, Tracasa Instrumental, Spain; Mikel Galar, Public University of Navarre, Spain</i>	
TU1.O-3.2: JOINT SUPERPIXEL SEGMENTATION AND GRAPH CONVOLUTIONAL NETWORK ROAD EXTRACTION FOR HIGH-RESOLUTION REMOTE SENSING IMAGERY	2178
<i>Fumin Cui, Ruyi Feng, Lizhe Wang, China University of Geosciences, China; Lifei Wei, Hubei University, China</i>	
TU1.O-3.3: ROAD EXTRACTION FROM SATELLITE IMAGE VIA AUXILIARY ROAD LOCATION PREDICTION	2182
<i>Jingtao Hu, Qi Wang, Xuelong Li, Northwestern Polytechnical University, China</i>	
TU1.O-3.4: DID-LINKNET: POLISHING D-BLOCK WITH DENSE CONNECTION AND ITERATIVE FUSION FOR ROAD EXTRACTION	2186
<i>Haotian Yan, Chuang Zhang, Junli Yang, Ming Wu, Jinyu Chen, Beijing University of Posts and Telecommunications, China</i>	
TU1.O-3.5: SPD-LINKNET: UPGRADED D-LINKNET WITH STRIP POOLING FOR ROAD EXTRACTION	2190
<i>Yutao Deng, Junli Yang, Chenyi Liang, YINUO Jing, Beijing University of Posts and Telecommunications, China</i>	
TU1.O-3.6: POST-DISASTER CLASSIFICATION OF BUILDING DAMAGE USING TRANSFER LEARNING	2194
<i>Chang Liu, Linlin Ge, Samad M. E. Sepasgozar, University of New South Wales, Australia</i>	
TU1.O-4: ADVANCED TARGET DETECTION METHOD IN SAR/POLSAR IMAGES	
TU1.O-4.1: REAL TIME SAR SHIP DETECTION USING NOVEL SARNEDE METHOD	2198
<i>Anil Raj J, Sumam Mary Idicula, Binu Paul, Cochin University of Science and Technology, India</i>	
TU1.O-4.2: A FALSE ALARM SUPPRESSION METHOD VIA SELECTIVE ANCHOR GENERATOR FOR SHIP DETECTION IN SAR IMAGES	2202
<i>Yu Tian, Zongyong Cui, Zongjie Cao, Yiming Pi, University of Electronic Science and Technology of China, China</i>	
TU1.O-4.3: CROSS-DOMAIN TRANSFER FOR SHIP INSTANCE SEGMENTATION IN SAR IMAGES	2206
<i>Chunbo Zhu, Danpei Zhao, Beihang University, China; Jing Qi, DFH Satellite Co., Ltd., China; Xinhui Qi, Space Star Technology Co., Ltd., China; Zhenwei Shi, Beihang University, China</i>	
TU1.O-4.4: VEHICLE DETECTION VIA POLARIMETRIC SAR IMAGE	2210
<i>Dai Xiaokang, Yin Junjun, University of Science and Technology Beijing, China; Yang Jian, Tsinghua University, China; Zhou Liangjiang, Chinese Academy of Sciences, China</i>	
TU1.O-4.5: SIMPLIFIED POWER-BASED DETECTORS FOR SHIP DETECTION OF POLSAR IMAGERY	2214
<i>Tao Zhang, Tsinghua University, China; Hongping Gan, Northwestern Polytechnical University, China; Zhen Yang, Jiangxi Science and Technology Normal University, China; Bing Zeng, University of Electronic Science and Technology of China, China; Jian Yang, Tsinghua University, China</i>	

TU1.O-4.6: SMALL VESSEL DETECTION BASED ON ADAPTIVE DUAL-POLARIMETRIC SAR	2218
FEATURE FUSION AND ATTENTION-ENHANCED FEATURE PYRAMID NETWORK	
<i>Feixiang Zhang, Yongsheng Zhou, Fan Zhang, Qiang Yin, Fei Ma, Beijing University of Chemical Technology, China</i>	
 TU1.O-5: DEEP LEARNING FOR HYPERSPECTRAL IMAGE CLASSIFICATION I	
TU1.O-5.1: SPATIAL-SPECTRAL TENSOR GRAPH CONVOLUTIONAL NETWORK FOR	2222
HYPERSPECTRAL IMAGE CLASSIFICATION	
<i>Jin-Yu Yang, Heng-Chao Li, Ze-Chen Li, Tian-Yu Ma, Southwest Jiaotong University, China</i>	
TU1.O-5.2: CASCADE NETWORK FOR HYPERSPECTRAL IMAGE CLASSIFICATION	2226
<i>Shuai Fang, Wen Zhang, Jing Zhang, Hefei University of Technology, China; Yang Cao, University of Science and Technology of China, China; Weikai Shi, Macau University of Science and Technology, China</i>	
TU1.O-5.3: SELF-ATTENTION AND MUTUAL-ATTENTION FOR FEW-SHOT	2230
HYPERSPECTRAL IMAGE CLASSIFICATION	
<i>Kai Huang, Xinyang Deng, Jie Geng, Wen Jiang, Northwestern Polytechnical University, China</i>	
TU1.O-5.4: AUTOMATIC DESIGN RECURRENT NEURAL NETWORK FOR HYPERSPECTRAL	2234
IMAGE CLASSIFICATION	
<i>Jie Feng, Gaiqin Bai, Zizhuo Gao, Xiangrong Zhang, Xu Tang, Xidian University, China</i>	
TU1.O-5.5: A NOVEL CLASSIFICATION FRAMEWORK FOR HYPERSPECTRAL IMAGE	2238
CLASSIFICATION BASED ON MULTI-SCALE DENSE NETWORK	
<i>Hao Zhang, Haoyang Yu, Zhen Xu, Dalian Maritime University, China; Ke Zheng, Lianru Gao, Chinese Academy of Sciences, China</i>	
TU1.O-5.6: WATER RETRIEVAL EMBEDDED DEEP NETWORK FOR HYPERSPECTRAL	2242
IMAGE REFINED CLASSIFICATION	
<i>Xuejian Liang, Ye Zhang, Junping Zhang, Xinyuan Miao, Xinyu Zhou, Harbin Institute of Technology, China</i>	
 TU1.O-6: REGISTRATION AND MATCHING	
TU1.O-6.1: A REMOTE SENSING IMAGE REGISTRATION BENCHMARK FOR OPERATIONAL	2246
SENTINEL-2 AND SENTINEL-3 PRODUCTS	
<i>Damian Ibañez, Ruben Fernandez-Beltran, Filiberto Pla, University Jaume I, Spain</i>	
TU1.O-6.2: A FEATURE DECOMPOSITION FRAMEWORK FOR MULTI-MODAL IMAGE	2250
PATCH MATCHING	
<i>Baorui Duan, Dou Quan, Yi Li, Ruiqi Lei, Shuang Wang, Biao Hou, Licheng Jiao, Xidian University, China</i>	
 TU1.O-7: RECENT ANALYSIS METHODS OF FOREST	
TU1.O-7.1: EVALUATION OF XGBOOST AND LGBM PERFORMANCE IN TREE SPECIES	5803
CLASSIFICATION WITH SENTINEL-2 DATA	
<i>Helena Loś, Goncalo Sousa Mendes, David Cordeiro, Nuno Grosso, Deimos Engenharia, Portugal; Hugo Costa, Pedro Benevides, Mário Caetano, Direção Geral do Território, Portugal</i>	
TU1.O-7.2: EXPLORING THE POTENTIAL OF SENTINEL-2 DATA FOR TREE CROWN	5807
MAPPING IN OAK AGRO-FORESTRY SYSTEMS	
<i>Hugo Costa, Inês Machado, Francisco D. Moreira, Pedro Benevides, Daniel Moraes, Mário Caetano, Direção-Geral do Território, Portugal</i>	
TU1.O-7.3: RESEARCH ON THE DIRECTIONAL DEPENDENCE OF THE SAMPLING SCALE	5811
OF CANOPY CLUMPING INDEX	
<i>Yidong Tong, Ziti Jiao, Lei Cui, Siyang Yin, Xiaoning Zhang, Jing Guo, Rui Xie, Zidong Zhu, Sijie Li, Beijing Normal University, China</i>	

TU1.O-7.4: SPRUCE CROWN TRANSPARENCY LEVELS DETECTED FROM SENTINEL-2 USING GOOGLE EARTH ENGINE	5815
<i>Carsten Montzka, Bagher Bayat, Andreas Tewes, David Mengen, Harry Vereecken, Forschungszentrum Jülich, Germany</i>	
TU1.O-7.5: A MACHINE LEARNING APPROACH TO DETECT DEAD TREES CAUSED BY LONGHORNED BORER IN EUCALYPTUS STANDS USING UAV IMAGERY	5818
<i>André Duarte, Nuno Borralho, Forest and Paper Research Institute (RAIZ), Portugal; Mário Caetano, NOVA Information Management School (NOVAIMS) Universidade Nova de Lisboa, Portugal</i>	
TU1.O-8: CROP MAPPING AND MONITORING USING OPTICAL SPACEBORNE IMAGERY	
TU1.O-8.1: TOWARDS QUANTIFYING NON-PHOTOSYNTHETIC VEGETATION FOR AGRICULTURE USING SPACEBORNE IMAGING SPECTROSCOPY	5822
<i>Katja Berger, Ludwig-Maximilians-Universitaet Muenchen (LMU), Germany; Andrej Halabuk, Slovak Academy of Sciences, Slovakia; Jochem Verrelst, University of Valencia, Spain; Matej Mojses, Katarina Gerháťová, Slovak Academy of Sciences, Slovakia; Giulia Tagliabue, University of Milano - Bicocca, Italy; Matthias Wocher, Tobias Hank, Ludwig-Maximilians-Universitaet Muenchen (LMU), Germany</i>	
TU1.O-8.2: OLIVE TREE WATER STRESS DETECTION USING DAILY MULTISPECTRAL IMAGERY	5826
<i>James Brinkhoff, University of New England, Australia; Alex Schultz, NSW Department of Primary Industries, Australia; Luz Angelica Suarez, Andrew Robson, University of New England, Australia</i>	
TU1.O-8.3: SEN4AGRINET: A HARMONIZED MULTI-COUNTRY, MULTI-TEMPORAL BENCHMARK DATASET FOR AGRICULTURAL EARTH OBSERVATION MACHINE LEARNING APPLICATIONS	5830
<i>Dimitris Sykas, Ioannis Papoutsis, Dimitrios Zografakis, National Observatory of Athens, Greece</i>	
TU1.O-8.4: 3D FULLY CONVOLUTIONAL NEURAL NETWORKS WITH INTERSECTION OVER UNION LOSS FOR CROP MAPPING FROM MULTI-TEMPORAL SATELLITE IMAGES	5834
<i>Sina Mohammadi, Mariana Belgiu, Alfred Stein, University of Twente, Netherlands</i>	
TU1.O-8.5: ANNUAL CROP CLASSIFICATION EXPERIMENTS IN PORTUGAL USING SENTINEL-2	5838
<i>Pedro Benevides, Hugo Costa, Francisco D. Moreira, Daniel Moraes, Mário Caetano, Direção-Geral do Território, Portugal</i>	
TU1.O-8.6: PHENOLOGY-BASED CLASSIFICATION OF CROP FIELDS USING CROSS-CORRELATION: A CASE STUDY	5842
<i>Roberto Luciani, Giovanni Laneve, Riccardo Orsi, Sapienza University of Rome, Italy</i>	
TU1.O-9: EXTREME AND COASTAL WINDS	
TU1.O-9.1: HURRICANE OCEAN SURFACE WIND RETRIEVAL FROM ALOS-2 PALSAR-2 CROSS-POLARIZED MEASUREMENTS	7291
<i>Osamu Isoguchi, Remote Sensing Technology Center of Japan, Japan; Takeo Tadono, Masato Ohki, Japan Aerospace Exploration Agency (JAXA), Japan; Udai Shimada, Munehiko Yamaguchi, Masahiro Hayashi, Wataru Yanase, Meteorological Research Institute, Japan</i>	
TU1.O-9.2: THE RETRIEVAL OF HURRICANE WIND SPEED BASED ON THE SUPPORT VECTOR MACHINE	7295
<i>Shanshan Mu, Xiaofeng Li, Institute of Oceanography, Chinese Academy of Sciences, China</i>	
TU1.O-9.3: A FURTHER EVALUATION OF THE QUALITY INDICATOR JOSS FOR KU-BAND WIND SCATTEROMETRY IN TROPICAL REGIONS	7299
<i>Xingou Xu, Key Laboratory of Microwave Remote Sensing, National Space Science Center, China; Ad Stoffelen, Royal Netherlands Meteorological Institute [KNMI], Netherlands</i>	

TU1.O-9.4: COASTAL SEA WIND FIELD: WRF VERSUS SAR WIND ANALYSIS IN THE GULF OF NAPLES	7303
<i>Haroon Akhtar Qureshi, Andrea Buono, Diana Di Luccio, Ferdinando Nunziata, Guido Benassai, Maurizio Migliaccio, Università degli Studi di Napoli Parthenope, Pakistan</i>	
TU1.O-9.5: TOWARDS QUIKSCAT-DERIVED COASTAL WINDS	7307
<i>Giuseppe Grieco, Marcos Portabella, Barcelona Expert Center (BEC) Institute of Marine Sciences (ICM-CSIC), Spain; Ad Stoffelen, Jur Vogelzang, Anton Verhoef, Royal Netherlands Meteorological Institute, Netherlands</i>	
TU1.O-9.6: ON RETRIEVAL OF THE ATMOSPHERIC BOUNDARY LAYER DYNAMIC PARAMETERS BASED ON COLLOCATED MEASUREMENTS OF THE SFMR AND NOAA GPS DROPWINDSONDES IN HURRICANE	7311
<i>Evgeny Poplavsky, Nikita Rusakov, Yuliya Troitskaya, Institute of Applied Physics, Russian Academy of Sciences, Russia</i>	
TU1.O-10: RECENT ADVANCES IN GNSS-R I	
TU1.O-10.1: SOIL MOISTURE RETRIEVAL USING THE FMPL-2/FSSCAT GNSS-R AND MICROWAVE RADIOMETRY DATA	7638
<i>Joan Francesc Munoz-Martin, David Llavería, Christoph Herbert, Universitat Politècnica de Catalunya, Spain; Miriam Pablos, Institut de Ciències del Mar and Barcelona Expert Center, Spain; Adriano Camps, Universitat Politècnica de Catalunya, Spain</i>	
TU1.O-10.2: DESERT ROUGHNESS RETRIEVAL USING CYGNSS GNSS-R DATA	7642
<i>Mehrez Zribi, Donato Stilla, CNRS, France; Nazzareno Pierdicca, Sapienza University, Italy</i>	
TU1.O-10.3: SAHARA SUBSURFACE CHARACTERIZATION USING CYGNSS GNSS-R DATA	7646
<i>Mehrez Zribi, Donato Stilla, CNRS, France; Nazzareno Pierdicca, Sapienza University, Italy; Nicolas Baghdadi, INRAE, France</i>	
TU1.O-10.5: SOIL MOISTURE ESTIMATION USING AMPLITUDE ATTENUATION FACTOR OF LOW-COST GNSS RECEIVER BASED SNR OBSERVATIONS	7654
<i>Yunwei Li, Wuhan University, China; Kegen Yu, China University of Mining and Technology, China; Taoyong Jin, Xin Chang, Wuhan University, China; Qiang Zhang, Chongqing Meteorological Bureau, China, China; Changhui Xu, Chinese Academy of Surveying & Mapping, China; Jiancheng Li, Wuhan University, China</i>	
TU1.O-10.6: VERIFICATION OF THE TOPOGRAPHICALLY ACCURATE REFLECTION POINT PREDICTION ALGORITHM FOR OPERATIONAL GNSS-REFLECTOMETRY USING TDS-1 AND DOT-1	7658
<i>Lucinda King, University of Surrey, United Kingdom; Martin Unwin, Jonathan Rawlinson, Surrey Satellite Technology Ltd., United Kingdom; Raffaella Guida, Craig Underwood, University of Surrey, United Kingdom</i>	
TU1.O-11: ADVANCED METHODS FOR POLARIMETRIC INFORMATION EXTRACTION I	
TU1.O-11.3: TARGET SCATTERING CHARACTERIZATION IN SAR POLARIMETRY USING MODEL-FREE APPROACHES	323
<i>Subhadip Dey, Avik Bhattacharya, Indian Institute of Technology Bombay, India; Alejandro C. Frery, Victoria University of Wellington, New Zealand; Carlos López-Martínez, Universitat Politècnica de Catalunya, Spain</i>	
TU1.O-11.4: CHARACTERIZATION AND EXTRACTION OF ROADS USING POLARIMETRY METHODS IN L-BAND SAR IMAGES	327
<i>Nathan Paillou, Laëtítia Thirion-Lefevre, Régis Guinvarc'h, Université Paris-Saclay, CentraleSupélec, France</i>	
TU1.O-11.5: AVERAGED STOKES VECTOR FEATURES BASED MAN-MADE TARGETS ANALYSIS USING POLSAR DATA	331
<i>Fang Shang, Natsuki Fujiwara, Naoto Kishi, University of Electronics-Communication, Japan</i>	

TU1.O-11.6: A FULL-PARAMETERS MICROWAVE PROPERTIES MEASUREMENT SYSTEM OF 20M DIAMETER ANECHOIC CHAMBER	335
<i>Wei Tian, Yun Shao, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Zhiqu Liu, Laboratory of Target Microwave Properties, China; Qiufang Wei, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Zihua Tang, Cong Ni, Institute of Remote Sensing Satellite, China Academy of Space Technology, China</i>	
 TU1.O-12: ADVANCEMENT OF UAV APPLICATION WITH ARTIFICIAL INTELLIGENCE FOR PRECISION AGRICULTURE	
TU1.O-12.2: PERFORMANCE IMPACT OF JP2 COMPRESSION ON SEMANTIC SEGMENTATION OF POLSAR IMAGES	339
<i>Juhi Checker, University of Mumbai, India; Shaunak De, IEEE, United States; Varsha Turkar, Don Bosco College of Engineering, Goa University, India; Gulab Singh, Indian Institute of Technology Bombay, India</i>	
TU1.O-12.3: CRITICAL ANALYSIS OF MACHINE LEARNING APPROACHES FOR VEGETATION FRACTIONAL COVER ESTIMATION USING DRONE AND SENTINEL-2 DATA	343
<i>Ajay Maurya, IIT Roorkee, India; Maryam Nadeem, Jamia Hamdard, New Delhi, India; Dharmendra Singh, IIT Roorkee, India; Keshav Prasad Singh, Naveen Singh Rajput, IIT BHU, India</i>	
TU1.O-12.4: AN INFORMATION FUSION APPROACH OF UAV AND SATELLITE DATA FOR INTRA FIELD CLASSIFICATION	347
<i>Anjana Kukuluri, Deepak Murugan, Dharmendra Singh, Indian Institute of Technology Roorkee, India</i>	
TU1.O-12.5: SEMANTIC SEGMENTATION OF POLSAR IMAGES FOR VARIOUS LAND COVER FEATURES	351
<i>Rahul Kotru, Musab Shaikh, Varsha Turkar, Shreyas Simu, Satyaswarup Banerjee, Don Bosco College of Engineering, Goa University, India; Gulab Singh, Indian Institute of Technology Bombay, India</i>	
TU1.O-12.6: RAILWAY TRACK SLEEPER DETECTION IN LOW ALTITUDE UAV IMAGERY USING DEEP CONVOLUTIONAL NEURAL NETWORK	355
<i>Arun Kumar Singh, Arun Kant Dwivedi, Nimish Nahar, Dharmendra Singh, Indian Institute of Technology Roorkee, India</i>	
 TU1.O-13: AI FOR WEATHER RADARS	
TU1.O-13.1: DEEP LEARNING FOR SURFACE PRECIPITATION ESTIMATION USING MULTIDIMENSIONAL POLARIMETRIC RADAR MEASUREMENTS	359
<i>Haonan Chen, V. Chandrasekar, Colorado State University, United States</i>	
TU1.O-13.3: A MULTI-CHANNEL 3D CONVOLUTIONAL-RECURRENT NEURAL NETWORK FOR CONVECTIVE STORM NOWCASTING	363
<i>Wei Zhang, Rui Zhang, Ocean University of China, China; Haonan Chen, Colorado State University, United States; Guangxin He, Nanjing University of Information Science and Technology, China; Yurong Ge, Lei Han, Ocean University of China, China</i>	
TU1.O-13.4: HIGH EFFICIENCY WEATHER RADAR MOSAIC IMAGE GENERATION FRAMEWORK	367
<i>Jingyin Tang, Citadel LLC, United States; Corene Matyas, University of Florida, United States</i>	
TU1.O-13.5: IDENTIFICATION OF CONVECTIVE PRECIPITATION FEATURE OBSERVED BY TRMM/GPM PR USING A REVISED UNSUPERVISED CLUSTERING PROPOSAL	370
<i>Lei Ji, Weixin Xu, Sun Yat-Sen University, China; Haonan Chen, Colorado State University, United States; Hao Chen, Sun Yat-Sen University, China</i>	

TU1.O-14: ALOS SERIES MISSIONS, CAL/VAL AND APPLICATIONS

- TU1.O-14.1: ALOS-2 OPERATION STATUS AND DATA DISTRIBUTION 372**
Shin-ichi Sobue, Akiko Noda, Takashi Omote, Hiroshi Kido, Fumio Kudoh, Japan Aerospace Exploration Agency (JAXA), Japan
- TU1.O-14.3: EFFECTS OF IONOSPHERE AND TROPOSPHERE ON L-BAND SAR 375**
GEOMETRIC ACCURACY
Haruya Hirano, Osamu Isoguchi, Remote Sensing Technology Center of JAPAN (RESTEC), Japan; Takeshi Motohka, Takeo Tadono, Japan Aerospace Exploration Agency (JAXA), Japan
- TU1.O-14.4: UPDATES OF CALIBRATION AND VALIDATION PLAN OF THE ADVANCED 379**
OPTICAL SATELLITE (ALOS-3)
Takeo Tadono, Yousei Mizukami, Japan Aerospace Exploration Agency (JAXA), Japan; Junichi Takaku, Fumi Ohgushi, Hiroki Kai, Remote Sensing Technology Center of Japan, Japan
- TU1.O-14.5: AN OVERVIEW OF GEOMETRIC CALIBRATION AND DSM GENERATION FOR 383**
ALOS-3 OPTICAL IMAGERIES
Junichi Takaku, Remote Sensing Technology Center of Japan, Japan; Takeo Tadono, Japan Aerospace Exploration Agency (JAXA), Japan; Hiroki Kai, Fumi Ohgushi, Masanori Doutsu, Remote Sensing Technology Center of Japan, Japan
- TU1.O-14.6: CURRENT STATUS OF DEVELOPING ALOS-4 WITH KEY MISSIONS: PALSAR-3 387**
AND SPAISE3
Mina Konaka, Takeshi Motohka, Kazuhide Yamamoto, Yukihiro Kankaku, Yoshihisa Arikawa, Shinichi Suzuki, Japan Aerospace Exploration Agency (JAXA), Japan
- TU1.O-15: DEEP INSIGHT SAR I**
- TU1.O-15.1: CAN WE EVALUATE THE DISTINGUISHABILITY OF THE OPENSARURBAN 391**
DATASET ?
Ning Liao, Shanghai Jiao Tong University, China; Mihai Datcu, German Aerospace Center (DLR), Germany; Zenghui Zhang, Shanghai Jiao Tong University, China; Weiwei Guo, Tongji University, China; Wenxian Yu, Shanghai Jiao Tong University, China
- TU1.O-15.3: NONCOHERENT IMAGING EXPERIMENTS OF CIRCULAR SAR 395**
Yuxiao Luo, Daoxiang An, Leping Chen, Jingwei Chen, Xiaotao Huang, National University of Defence Technology, China
- TU1.O-15.4: SELF-CALIBRATED CONVOLUTIONAL NEURAL NETWORK FOR SAR IMAGE 399**
DESPECKLING
Ye Yuan, Yan Jiang, Yanxia Wu, Harbin Engineering University, China; Richard Jiang, Lancaster University, United Kingdom
- TU1.O-15.5: PROPOSAL OF POLSAR LAND CLASSIFICATION USING QUATERNION 403**
CONVOLUTIONAL NEURAL NETWORKS
Yuya Matsumoto, Ryo Natsuaki, Akira Hirose, University of Tokyo, Japan
- TU1.O-15.6: A DEEP FEATURE TRANSFORMATION METHOD BASED ON DIFFERENTIAL 407**
VECTOR FOR FEW-SHOT LEARNING
Qian Guo, Feng Xu, Fudan University, China
- TU1.O-16: DEEP LEARNING AND SAR DESPECKLING: AN OPEN AND CHALLENGING ISSUE**
- TU1.O-16.1: A REVIEW OF DEEP-LEARNING TECHNIQUES FOR SAR IMAGE RESTORATION..... 411**
Loïc Denis, Université de Lyon, Université Jean-Monnet Saint-Etienne, France; Emanuele Dalsasso, Florence Tupin, Telecom Paris, France

TU1.O-16.3: IMPACT OF TRAINING SET DESIGN IN CNN-BASED SAR IMAGE DESPECKLING	415
<i>Antonio Mazza, Giuseppe Scarpa, Luisa Verdoliva, Giovanni Poggi, University Federico II, Italy</i>	
TU1.O-16.4: A MULTI-OBJECTIVE APPROACH FOR MULTI-CHANNEL SAR DESPECKLING	419
<i>Sergio Vitale, Università degli Studi di Napoli Parthenope, Italy; Hossein Aghababaei, University of Twente, Netherlands; Giampaolo Ferraioli, Vito Pascazio, Gilda Schirinzi, Università degli Studi di Napoli Parthenope, Italy</i>	
TU1.O-16.5: COMPARATIVE EVALUATION OF DEEP LEARNING-BASED SAR-OPTICAL IMAGE MATCHING APPROACHES	423
<i>Lloyd Hughes, Lloyd Hughes Consulting, South Africa; Michael Schmitt, Munich University of Applied Sciences, Germany</i>	
TU1.O-16.6: A COHERENT GENERATIVE SCHEME FOR SAR IMAGE REPRESENTATION	427
<i>Dong-Xiao Yue, Feng Xu, Fudan University, China</i>	
 TU1.O-17: EARTH OBSERVATION USING SCATTEROMETER	
TU1.O-17.1: EXPLORING USE OF KU-BAND SCATTEROMETER DATA FROM SCATSAT-1 FOR CROP MONITORING IN INDIA, A CASE STUDY FOR JUTE CROP	431
<i>Rojalin Tripathy, B.K. Bhattacharya, AED, BPSG. EPSA, Spaced Applications Centre, ISRO, India</i>	
TU1.O-17.3: DETECTION OF CRYOSPHERIC PARAMETERS WITH ARTIFICIAL NEURAL NETWORK OVER ANTARCTIC REGION USING KU-BAND BASED ISRO'S SCATSAT-1 DATA	435
<i>Sartajvir Singh, Chitkara University, India; Reet Kamal Tiwari, Indian Institute of Technology, India</i>	
TU1.O-17.4: DETECTION OF TWO RECENT CALVING EVENTS IN ANTARCTICA FROM SCATSAT-1	439
<i>Nanaoba Singh Khoisnam, National Institute of Technology Manipur, India; Kamaljit Singh Rajkumar, Manipur Technical University, India; Mamata Maisnam, National Institute of Technology Manipur, India; Jayaprasad P, Saroj Maity, Deepak Putrevu, Arundhati Misra, Space Applications Centre, Indian Space Research Organisation, India</i>	
TU1.O-17.5: NWP OCEAN CALIBRATION FOR THE CFOSAT WIND SCATTEROMETER	443
<i>Zhen Li, Ad Stoffelen, Anton Verhoef, Jeroen Verspeek, Royal Netherlands Meteorological Institute, Netherlands</i>	
 TU1.O-18: HAZARDS MONITORING AND ASSESSMENT USING MULTI-SOURCE OBSERVATIONS AND BIG DATA MINING: METHODOLOGIES AND CASE STUDIES	
TU1.O-18.3: MULTI-MISSION REMOTE SENSING OBSERVATIONS FOR OPTIMIZING HYDROLOGICAL HAZARD PREDICTIONS	451
<i>Cecile Kittel, Daniel Druce, DHI-GRAS, Denmark; Karina Nielsen, Peter Bauer-Gottwein, Technical University of Denmark, Denmark; Christian Tøttrup, DHI-GRAS, Denmark</i>	
TU1.O-18.4: QUANTITATIVE, NEAR REAL-TIME MAPPING OF BUSHFIRES THROUGH INTEGRATION OF OPTICAL AND SAR REMOTE SENSING TECHNIQUES	455
<i>Linlin Ge, University of New South Wales, Australia; Yufei Wang, Piesat Information Technology, Australia; Qi Zhang, Zheyuan Du, Chang Liu, Yifei Dong, Tony Sleigh, University of New South Wales, Australia; Tao Guo, Xia Lei, Zhewen Ma, Piesat Information Technology, Australia</i>	
TU1.O-18.6: DOWNSCALING OF SATELLITE SOIL MOISTURE PRODUCTS AND ITS APPLICATIONS IN DROUGHT MONITORING	462
<i>Jicheng Liu, Yuan Zhou, Laboratory of Environmental Model & Data Optima (EMDO), United States</i>	

TU1.O-19: HYPERSPECTRAL IMAGING FOR SUSTAINABLE AGRICULTURE AND FOOD SECURITY

TU1.O-19.3: INTRODUCING THE POTENTIAL OF THE ENMAP-BOX FOR AGRICULTURAL APPLICATIONS USING DESIS AND PRISMA DATA 467

Tobias Hank, Katja Berger, Matthias Woche, Ludwig-Maximilians-Universitaet Muenchen (LMU), Germany; Martin Danner, Bavarian Ministry of Food, Agriculture and Forestry, Germany; Wolfram Mauser, Ludwig-Maximilians-Universitaet Muenchen (LMU), Germany

TU1.O-19.4: HYNUTRI: ESTIMATING THE NUTRITIONAL COMPOSITION OF WHEAT FROM MULTI-TEMPORAL PRISMA DATA 471

Mariana Belgiu, Michael Marshall, Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Netherlands; Mirco Boschetti, Monica Pepe, Institute for Electromagnetic Sensing of the Environment, Italian National Research Council, Italy; Alfred Stein, Caroline Lievens, Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Netherlands

TU1.O-19.5: MAPPING CELLULOSE ABSORPTION BAND IN NPV USING PRISMA DATA 475

Loredana Pompilio, Mirco Boschetti, CNR-IREA, Italy; Matteo Petito, University of Padova, Italy; Michele Pisante, University of Teramo, Italy; Luigi Ranghetti, Monica Pepe, CNR-IREA, Italy

TU1.O-19.6: DESIS AND PRISMA: A STUDY OF A NEW GENERATION OF SPACEBORNE HYPERSPECTRAL SENSORS IN THE STUDY OF WORLD CROPS 479

Itiya Aneece, Prasad Thenkabil, US Geological Survey, United States

TU1.O-20: HYPERSPECTRAL IMAGING FOR SOIL MAPPING AND MONITORING

TU1.O-20.1: ESTIMATION OF FIELD SCALE TOPSOIL PROPERTIES OF AGRONOMIC INTEREST FROM PRISMA IMAGING SPECTROMETER DATA 480

Raffaele Casa, Massimo Tolomio, Nada Mzid, University of Tuscia, Italy; Stefano Pignatti, Simone Pascucci, National Research Council (CNR), Italy

TU1.O-20.3: CROPLAND TOPSOIL PROPERTIES MAPPING BY APPLYING A MACHINE LEARNING ALGORITHM TO OPEN ACCESS COPERNICUS DATA 484

Nikolaos Tziolas, Nikolaos Tsakiridis, George Zalidis, Aristotle University Of Thessaloniki, Greece

TU1.O-20.4: ANALYSIS OF SENSITIVE SPECTRAL CHARACTERISTICS OF FARMLAND SOIL ORGANIC MATTER CONTENT BASED ON AHSI/ZY1-02D DATA 488

Yayu Yang, Kun Shang, Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of China, China; Yuanjin Xu, China University of Geosciences, China

TU1.O-20.5: SOIL ORGANIC CARBON MODELLING WITH DIGITAL SOIL MAPPING AND REMOTE SENSING FOR PERMANENTLY VEGETATED AREAS 492

Laura Poggio, Luis de Sousa, Giulio Genova, ISRIC World Soil Information, Netherlands; Pablo d'Angelo, Peter Schwind, Uta Heiden, German Aerospace Center (DLR), Germany

TU1.O-20.6: EVALUATING SOIL REFLECTANCE COMPOSITES GENERATED BY SCMAP USING DIFFERENT SENTINEL-2 REFLECTANCE DATA INPUTS 495

Uta Heiden, Pablo d'Angelo, Peter Schwind, Raquel de los Reyes Lopez, Rupert Mueller, DLR Oberpfaffenhofen, Remote Sensing Technology Institute, Germany

TU2.MM-1: SAR INTERFEROMETRY: METHODS AND APPLICATIONS I

TU2.MM-1.1: DELINEATING RELIABLE GROUND CONTROL POINTS IN SBAS-INSAR ANALYSIS WITH PHASE DERIVATIVE VARIANCE 3360

Yan Yan, University of Electronic Science and Technology of China, China; Yong Wang, East Carolina University, United States

TU2.MM-1.2: SAR-GMTI BASED ON ATI WITH NORMALIZED AMPLITUDE WEIGHTED PHASE DIFFERENCE	3364
<i>Qinghua Liu, Junfeng Wang, Xingzhao Liu, Shanghai Jiao Tong University, China</i>	
TU2.MM-1.3: AN ADAPTIVE SUBPIXEL COREGISTRATION FOR HIGH RESOLUTION INSAR IMAGE DATA	3368
<i>Zheyi Jiang, Shuangxi Zhang, Rui Guo, Yuxin Gao, Yongfeng Zhi, Northwestern Polytechnical University, China</i>	
TU2.MM-1.4: A COMPARATIVE STUDY OF DERAMPING TECHNIQUES FOR SENTINEL-1 TOPS IN THE CONTEXT OF INTERFEROMETRY	3372
<i>Roland Akiki, Université Paris-Saclay & Kayros, France; Raphaël Grandin, Institut de Physique du Globe de Paris – Université Paris VII, France; Carlo de Franchis, Université Paris-Saclay & Kayros, France; Gabriele Facciolo, Jean-Michel Morel, Université Paris-Saclay, France</i>	
TU2.MM-1.5: JOINT PHASE UNWRAPPING AND SPECKLE FILTERING BY USING CONVOLUTIONAL NEURAL NETWORKS	3376
<i>Giampaolo Ferraioli, Vito Pascazio, Gilda Schirinzi, Sergio Vitale, Università degli Studi di Napoli Parthenope, Italy; Mengdao Xing, Xidian University, China; Hanwen Yu, University of Electronic Science and Technology of China, China; Lifan Zhou, Changshu Institute of Technology, China</i>	
TU2.MM-1.6: INVESTIGATION OF THE PHASE BIAS IN THE SHORT TERM INTERFEROGRAMS	3380
<i>Yasser Maghsoudi, Milan Lazecky, Leeds University, United Kingdom; Homa Ansari, German Aerospace Center (DLR), Germany; Andy Hooper, Tim Wright, Leeds University, United Kingdom</i>	
TU2.MM-1.7: AN IMPROVED LEAST SQUARE PHASE UNWRAPPING ALGORITHM COMBINED WITH CONVOLUTIONAL NEURAL NETWORK	3384
<i>Ziwen Zhang, Qian Jiang, University of Electronic Science and Technology of China, China; Yong Wang, East Carolina University, United States; Xiaobo Yang, University of Electronic Science and Technology of China, China</i>	
TU2.MM-1.8: A PHASE FILTERING METHOD BASED ON DEEP LEARNING NETWORK	3388
<i>Yifan Liu, Ziwen Zhang, Jiang Qian, University of Electronic Science and Technology of China, China; Yong Wang, East Carolina University, United States; Xiaobo Yang, University of Electronic Science and Technology of China, China</i>	
TU2.MM-1.9: PARALLEL CS-INSAR FOR MAPPING NATIONWIDE DEFORMATION IN CHINA	3392
<i>Yixian Tang, Chao Wang, Hong Zhang, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Haihang You, Weikang Zhang, Institute of Computing Technology, Chinese Academy of Sciences, China; Wei Duan, Jing Wang, Longkai Dong, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TU2.MM-2: FEATURE EXTRACTION IN PASSIVE AND ACTIVE REMOTE SENSING	
TU2.MM-2.1: AUTOMATED DAMAGED BUILDINGS IDENTIFICATION FROM HIGH-SPATIAL-RESOLUTION IMAGERY WITH TEXTURE AND SPECTRAL INFORMATION	3396
<i>Jiali Xie, Jianwu Jiang, Feng Wang, Jingwen Li, Yingnan Zhang, Yanling Lu, Guilin University of Technology, China</i>	
TU2.MM-2.2: TARGET-CONSTRAINED PARTICLE SWARM OPTIMIZATION-BASED BAND SELECTION FOR HYPERSPECTRAL TARGET DETECTION	3400
<i>Xiaodi Shang, Shihui Liu, Meiping Song, Dalian Maritime University, China</i>	
TU2.MM-2.3: BAND SELECTION FOR SPECIFIC TARGET DETECTION OF HYPERSPECTRAL IMAGERY	3404
<i>Xudong Sun, Site Li, Hongqi Zhang, Fengqiang Xu, Xianping Fu, Dalian Maritime University, China</i>	
TU2.MM-2.4: EFFECT OF SEARCH METHODS ON FEATURE SELECTION WITH HYPERSPECTRAL DATA	3408
<i>Yogender Yadav, Faculty of ITC, University of Twente, Netherlands; Mahesh Pal, National Institute of Technology, Kurukshetra, India</i>	

TU2.MM-2.5: MULTI-SOURCE REMOTE SENSING IMAGE REGISTRATION BASED ON LOCAL DEEP LEARNING FEATURE	3412
<i>Yongxian Zhang, Wuhan University, China; Zhijun Zhang, Xining Center of Natural Resources Comprehensive Survey, China Geological Survey, Qinghai, China; Guorui Ma, Jiao Wu, Wuhan University, China</i>	
TU2.MM-2.6: METRIC LEARNING FOR 2D IMAGE PATCH AND 3D POINT CLOUD VOLUME MATCHING	3416
<i>Baiqi Lai, Weiquan Liu, Cheng Wang, Xiamen University, China; Shuting Chen, Jimei University, China; Xuesheng Bian, Xiuhong Lin, Chenglu Wen, Xiamen University, China; Jonathan Li, University of Waterloo, Canada</i>	
TU2.MM-2.7: MULTI-ANGULAR SAR SCATTERING ANISOTROPY ANALYSIS BASED ON LOW-RANK MATRIX DECOMPOSITION	3420
<i>Xiaoyang Yue, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Yun Lin, North China University of Technology, China; Fei Teng, Shanshan Feng, Wen Hong, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TU2.MM-2.8: SEA-LAND COARSE SEGMENTATION WITH TWO AND THREE-TERM LRS DECOMPOSITIONS IN MULTISQUINT SPACEBORNE SAR IMAGERY	3424
<i>Yulun Li, Wei Yang, Yuming Jiang, Chunsheng Li, Beihang University, China</i>	
TU2.MM-2.9: CLASSIFICATION OF OIL SPILLS AND LOOK-ALIKES FROM SAR IMAGES USING BAG OF VISUAL WORDS METHOD OF FEATURE EXTRACTION	3428
<i>Anagha Dhavalikar, Pranali Choudhari, Father C. Rodrigues Institute of Technology, India</i>	
 TU2.MM-3: SEMANTIC SEGMENTATION IN OPTICAL DATA II	
TU2.MM-3.1: GCN-BASED SEMANTIC SEGMENTATION METHOD FOR MINE INFORMATION EXTRACTION IN GAOFEN-1 IMAGERY	3432
<i>Chenbin Liang, State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences; School of Artificial Intelligence, University of Chinese Academy of Sciences, China; Baihua Xiao, State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, China; Bo Cheng, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TU2.MM-3.2: SEMANTIC LABELING OF VERY HIGH-RESOLUTION IMAGERY BY LEVERAGING CONTEXTUAL INFORMATION WITH OPTIMIZED NON-LOCAL NEURAL NETWORK	3436
<i>Xin Li, Feng Xu, Xin Lyu, Liancheng Zhao, Tao Zeng, Xinyuan Wang, Hohai University, China</i>	
TU2.MM-3.3: DUAL-STREAM HIGH RESOLUTION NETWORK FOR MULTI-SOURCE REMOTE SENSING IMAGE SEGMENTATION	3440
<i>Bo Ren, Shibin Ma, Biao Hou, Xidian University, China; Danfeng Hong, German Aerospace Center (DLR), Germany</i>	
TU2.MM-3.4: S-MOBILENETV2 + SEGNET MODEL AND RAPID IDENTIFICATION OF SUGARCANE	3444
<i>Weiguang Liu, Guoqing Zhou, Jiasheng Xu, Guilin University of Technology, China</i>	
TU2.MM-3.5: DEMOTIVATE ADVERSARIAL DEFENSE IN REMOTE SENSING	3448
<i>Adrien Chan-Hon-Tong, Gaston Lenczner, Aurélien Plyer, ONERA, France</i>	
TU2.MM-3.6: USING GANS TO AUGMENT DATA FOR CLOUD IMAGE SEGMENTATION TASK	3452
<i>Mayank Jain, Conor Meegan, Soumyabrata Dev, University College Dublin, Ireland</i>	
TU2.MM-3.7: SEMANTIC SEGMENTATION FOR HIGH-RESOLUTION REMOTE SENSING IMAGES BY LIGHT-WEIGHT NETWORK	3456
<i>Changjian Deng, Leikun Liang, Yanzhou Su, University of Electronic Science and Technology of China, China; Changtao He, Sichuan Jiuzhou Electric Group Co., Ltd, China; Jian Cheng, University of Electronic Science and Technology of China, China</i>	

TU2.MM-3.8: GRAPH-BASED APPROACH TO IMPROVE INDIVIDUAL TREE CROWN DELINEATION IN TEMPERATE FOREST USING STRUCTURAL AND SPECTRAL INFORMATION	3460
<i>Matthieu Deluzet, ONERA, France; Thierry Erudel, CS Group, France; Xavier Briottet, ONERA, France; Thomas Houet, LETG-Rennes, France; David Sheeren, Sophie Fabre, ONERA, France</i>	
TU2.MM-3.9: EXTRACTION OF OPEN-PIT MINE RECLAMATION AREA WITH CONVOLUTIONAL NEURAL NETWORK	3464
<i>Congtang Meng, Yindi Zhao, Bo Wu, China University of Mining and Technology, China</i>	
TU2.MM-3.10: SELF-SUPERVISED IMAGE COLORIZATION FOR SEMANTIC SEGMENTATION OF URBAN LAND COVER	3468
<i>Jonathan González Santiago, Fabian Schenkel, Wolfgang Middelmann, Fraunhofer IOSB, Germany</i>	
TU2.MM-4: SEMANTIC SEGMENTATION IN SAR/POLSAR DATA	
TU2.MM-4.1: FOREST CANOPY MAPPING USING SYNTHETIC APERTURE RADAR BY MEANS OF PULSE COUPLED NEURAL NETWORKS	3472
<i>Alireza Taravat, Deimos Space UK, United Kingdom; Iraj Emadodin, Kiel University, Germany</i>	
TU2.MM-4.2: AN IMPROVED DARK-SPOT SEGMENTATION BASED ON NON-CIRCULARITY ENHANCED SAR IMAGERY: A PRELIMINARY EXPLORATION	3475
<i>Haitao Lang, Chenguang Ge, Wenjing Li, Shuangmei Zhao, Chunnan Li, Lihui Niu, Guang'an Yang, Beijing University of Chemical Technology, China</i>	
TU2.MM-4.3: BAYESIAN U-NET FOR SEGMENTING GLACIERS IN SAR IMAGERY	3479
<i>Andreas Hartmann, Amirabbas Davari, Thorsten Seehaus, Matthias Braun, Andreas Maier, Vincent Christlein, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany</i>	
TU2.MM-4.4: GLACIER CALVING FRONT SEGMENTATION USING ATTENTION U-NET	3483
<i>Michael Holzmann, Amirabbas Davari, Thorsten Seehaus, Matthias Braun, Andreas Maier, Vincent Christlein, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany</i>	
TU2.MM-4.5: A SUPERPIXEL AGGREGATION METHOD BASED ON MULTI-DIRECTION GRAY LEVEL CO-OCCURRENCE MATRIX FOR SAR IMAGE SEGMENTATION	3487
<i>Meiling Cui, Yulin Huang, Rufe Wang, Jifang Pei, Weibo Huo, Yin Zhang, Haiguang Yang, University of Electronic Science and Technology of China, China</i>	
TU2.MM-4.6: DEEP LEARNING BASED OIL SPILL CLASSIFICATION USING UNET CONVOLUTIONAL NEURAL NETWORK	3491
<i>Abdul Basit, Muhammad Adnan Siddique, Information Technology University (ITU), Pakistan; Muhammad Saquib Sarfraz, Institute for Anthropomatics and Robotics, Karlsruhe Institute of Technology (KIT), Germany</i>	
TU2.MM-4.7: OIL SPILL DETECTION BASED ON CBD-NET USING MARINE SAR IMAGE	3495
<i>Yanan Zhang, Qiqi Zhu, Qingfeng Guan, China University of Geosciences, China</i>	
TU2.MM-4.8: DISTRIBUTION CHARACTERISTICS OF GREEN ALGAE IN YELLOW SEA USING AN DEEP LEARNING AUTOMATIC DETECTION PROCEDURE	3499
<i>Yuan Guo, Le Gao, Xiaofeng Li, Institute of Oceanography, Chinese Academy of Sciences, China</i>	
TU2.MM-4.9: CLASSIFYING SEA ICE TYPES FROM SAR IMAGES USING A U-NET-BASED DEEP LEARNING MODEL	3502
<i>Yan Huang, Yibin Ren, Xiaofeng Li, Institute of Oceanology, Chinese Academy of Sciences and Center for Ocean Mega-Science, Chinese Academy of Sciences, China</i>	
TU2.MM-4.10: CONVOLUTIONAL AUTOENCODER FOR UNSUPERVISED REPRESENTATION LEARNING OF POLSAR TIME-SERIES	3506
<i>Thomas Di Martino, ONERA, CentraleSupélec, Université Paris-Saclay, France; Régis Guinvarc'h, Laëtitia Thirion-Lefevre, CentraleSupélec, France; Elise Colin Koeniguer, ONERA, Université Paris-Saclay, France</i>	

TU2.MM-5: ELECTROMAGNETIC MODELING IN REMOTE SENSING I

TU2.MM-5.1: EFFECTS OF OCEAN WAVE SPECTRUM TRUNCATION ON SEA CLUTTER 3510 DISTRIBUTION IN NUMERICAL SIMULATIONS

Yanlei Du, Jian Yang, Tsinghua University, China; Tao Liu, Naval University of Engineering, China; Liang Zeng, Tao Zhang, Tsinghua University, China; Xiaofeng Yang, Aerospace Information Research Institute, Chinese Academy of Sciences, China

TU2.MM-5.2: NUMERICAL INVESTIGATION OF ACTIVE MAGNETIC RANGING METHOD 3514 FOR RELIEF WELL PROJECTS

Peng Hao, Yongpeng Zhao, Xiangyang Sun, Zaiping Nie, University of Electronic Science and Technology of China, China

TU2.MM-5.3: A GEOMETRIC-FACTOR-REVISED PERMITTIVITY MODEL FOR 3518 THREE-PHASE MIXTURE WITH ARBITRARY INCLUSION PACKING

Chen Guo, Minmin Che, Chang'an University, China; Bowen Ling, Stanford University, China

TU2.MM-5.4: RIGOROUS NUMERICAL METHOD FOR ELECTROMAGNETIC SCATTERING 3522 BY AN OBJECT BURIED BETWEEN TWO ROUGH SURFACES

Marc Songolo, Nicolas Pinel, Icam Ouest School of Engineering, France; Christophe Bourlier, Polytech Nantes, France

TU2.MM-5.5: SECOND-ORDER SCATTERING IN THE IEM2MC ROUGH SURFACE 3526 SCATTERING MODEL

Jose Luis Alvarez-Perez, University of Alcala, Spain; Matias Barber, Institute for Astronomy and Space Physics (IAFE), Argentina

TU2.MM-5.6: AN IMPROVED TWO-SCALE METHOD FOR SIMULATING THE 3530 BACKSCATTERING OF RANDOM ROUGH SURFACES

Xun Yang, Ling Tong, Ming Li, University of Electronic Science and Technology of China, China

TU2.MM-5.7: MULTI-FREQUENCY NMM3D SIMULATIONS OF WAVE PROPAGATION IN 3534 VEGETATION FOR REMOTE SENSING OF SOIL MOISTURE

Weihui Gu, Leung Tsang, University of Michigan, United States; Andreas Colliander, Simon Yueh, California Institute of Technology, United States

TU2.MM-6: SHIP DETECTION

TU2.MM-6.1: SMALL SHIP DETECTION VIA DEFORMABLE CONVOLUTIONAL NETWORK 3537

Yao Wang, Ganggang Dong, Hongwei Liu, Xidian University, China

TU2.MM-6.2: SHIPSRDET: AN END-TO-END REMOTE SENSING SHIP DETECTOR USING 3541 SUPER-RESOLVED FEATURE REPRESENTATION

Shitian He, Huanxin Zou, Yingqian Wang, Runlin Li, Fei Cheng, National University of Defence Technology, China

TU2.MM-6.3: SHIP DETECTION AND RECOGNITION IN OPTICAL REMOTE SENSING 3545 IMAGES BASED ON SCALE ENHANCEMENT ROTATING CASCADE R-CNN NETWORKS

Caiguang Zhang, Gangyao Kuang, Boli Xiong, National University of Defence Technology, China

TU2.MM-6.4: YOLOV3 BASED SHIP DETECTION IN VISIBLE AND INFRARED IMAGES 3549

Lena Chang, Yi-Ting Chen, Ming-Hung Hung, Jung-Hua Wang, National Taiwan Ocean University, Taiwan; Yang-Lang Chang, National Taipei University of Technology, Taiwan

TU2.MM-6.5: SHIP DETECTION FROM OPTICAL REMOTE SENSING IMAGERY BASED ON 3553 SCENE CLASSIFICATION AND SALIENCY-TUNED RETINANET

Ruoting Yin, Beijing University of Chemical Technology, China; Qizhi Xu, Beijing Institute of Technology, China; Ding Yifang, Institute of Beijing Remote sensing Information, China

TU2.MM-6.6: IDENTIFICATION OF UNCLASSIFIED SHIPS IMPLEMENTING AIS INFORMATION AND SAR IMAGE-BASED SHIP DETECTION RESULTS	3557
<i>Juyoung Song, Duk-jin Kim, Seoul National University, Korea (South)</i>	
TU2.MM-6.7: SHIP DETECTION AND CLASSIFICATION IN EO/IR VHR SATELLITE IMAGERY	3561
<i>Igor Zakharov, C-CORE, Canada; Daniel Lavigne, DRDC, Canada; Sherry Warren, Michael Henschel, Desmond Power, Mark Howell, C-CORE, Canada</i>	
TU2.MM-6.8: SAR SHIP DETECTION BASED ON AN IMPROVED FASTER R-CNN USING DEFORMABLE CONVOLUTION	3565
<i>Xiao Ke, Xiaoling Zhang, Tianwen Zhang, Jun Shi, Shunjun Wei, University of Electronic Science and Technology of China, China</i>	
TU2.MM-6.9: FAST SHIP DETECTION METHOD FOR SAR IMAGES IN THE INSHORE REGION	3569
<i>Xiaoya Fu, Zhaocheng Wang, Hebei University of Technology, China</i>	
TU2.MM-6.10: A FEATURE ENHANCEMENT METHOD BASED ON THE SUB-APERTURE DECOMPOSITION FOR ROTATING FRAME SHIP DETECTION IN SAR IMAGES	3573
<i>Songlin Lei, Xiaolan Qiu, Chibiao Ding, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Shujie Lei, Shanghai Radio Equipment Research Institute, China</i>	
 TU2.MM-7: SAR TARGET RECOGNITION	
TU2.MM-7.1: SAR TARGET RECOGNITION AND ANGLE ESTIMATION BY USING ROTATION-MAPPING NETWORK	3577
<i>Yuanyuan Zhou, Wei Wang, Chen Wang, Xiaqing Yang, Jun Shi, Shunjun Wei, University of Electronic Science and Technology of China, China</i>	
TU2.MM-7.2: A NOVEL DATA AUGMENTATION METHOD FOR SAR IMAGE TARGET DETECTION AND RECOGNITION	3581
<i>Xiaolong Zhang, Xinghua Chai, Yanqiao Chen, The 54th Research Institute of China Electronics Technology Group Corporation, China; Zichen Yang, Guangyuan Liu, Aiyuan He, Yangyang Li, Xidian University, China</i>	
TU2.MM-7.3: MULTI-VIEW SAR AUTOMATIC TARGET RECOGNITION BASED ON DEFORMABLE CONVOLUTIONAL NETWORK	3585
<i>Zhiyong Wang, Chenwei Wang, Jifang Pei, Yulin Huang, Yin Zhang, Haiguang Yang, University of Electronic Science and Technology of China, China; Zhiwei Xing, Civil Aviation University of China, China</i>	
TU2.MM-7.4: OPTRONIC CONVOLUTIONAL NEURAL NETWORK FOR SAR TARGET RECOGNITION	3589
<i>Ziyu Gu, Zhicheng Wang, Yesheng Gao, Xingzhao Liu, Shanghai Jiao Tong University, China; Yu Cui, Shanghai Academy of Spaceflite Technology, China</i>	
TU2.MM-7.5: AN IQE CRITERION-BASED METHOD FOR SAR IMAGES CLASSIFICATION NETWORK PRUNING	3593
<i>Jielei Wang, Zongyong Cui, Zongjie Cao, Hanzeng Wang, Changjie Cao, University of Electronic Science and Technology of China, China</i>	
TU2.MM-7.6: SPARSE SAR IMAGE BASED AUTOMATIC TARGET RECOGNITION BY YOLO NETWORK	3597
<i>Jiarui Deng, Hui Bi, Yanjie Yin, Xingmeng Lu, Nanjing University of Aeronautics and Astronautics, China; Wei Liang, Chinese Academy of Sciences, China</i>	
TU2.MM-7.7: HIERARCHICAL NONLINEAR DICTIONARY LEARNING WITH CONVOLUTIONAL NEURAL NETWORKS: APPLICATION TO SAR TARGET RECOGNITION	3601
<i>Lei Tao, Xue Jiang, Xingzhao Liu, Shanghai Jiao Tong University, China</i>	

TU2.MM-7.8: SAR AUTOMATIC TARGET RECOGNITION BASED ON MULTI-SCALE CONVOLUTIONAL FACTOR ANALYSIS MODEL WITH MAX-MARGIN CONSTRAINT	3605
<i>Yuchen Guo, Lan Du, Chen Li, Jian Chen, Xidian University, China</i>	
TU2.MM-7.9: HOW SAR IMAGE DENOISE AFFECTS THE PERFORMANCE OF DCNN-BASED TARGET RECOGNITION METHOD	3609
<i>Jiaxin Tang, Fan Zhang, Fei Ma, Beijing University of Chemical Technology, China; Fei Gao, Beihang University, China; Qiang Yin, Yongsheng Zhou, Beijing University of Chemical Technology, China</i>	
TU2.MM-8: HYPERSPECTRAL IMAGE CLASSIFICATION	
TU2.MM-8.1: A BINARY FEATURE REPRESENTATION METHOD FOR HYPERSPECTRAL IMAGE CLASSIFICATION	3613
<i>Changda Xing, Meiling Wang, Zhisheng Wang, Chaowei Duan, Yiliu Liu, Nanjing University of Aeronautics and Astronautics, China</i>	
TU2.MM-8.2: HYPERSPECTRAL IMAGE CLASSIFICATION BASED ON EXTENDED MORPHOLOGICAL PROFILE FEATURES AND GHOST MODULE	3617
<i>Size Liu, Bixiu Ding, Jing Bai, Xidian University, China; Zhu Xiao, Hunan University, China</i>	
TU2.MM-8.3: COLLABORATIVE AND LOW-RANK GRAPH FOR DISCRIMINANT ANALYSIS OF HYPERSPECTRAL IMAGERY	3621
<i>Chiranjibi Shah, Qian Du, Mississippi State University, United States</i>	
TU2.MM-8.4: GROUP-AWARE LOW-RANK REPRESENTATION FOR HYPERSPECTRAL IMAGE CLASSIFICATION	3625
<i>Changda Xing, Meiling Wang, Zhisheng Wang, Chaowei Duan, Yiliu Liu, Nanjing University of Aeronautics and Astronautics, China</i>	
TU2.MM-8.5: ADAPTIVE SPECTRAL AND SPATIAL FEATURE EXTRACTION FRAMEWORK FOR HYPERSPECTRAL CLASSIFICATION	3629
<i>Wenchao Wang, Yuan Yuan, Dandan Ma, Northwestern Polytechnical University, China</i>	
TU2.MM-8.6: KEROGEN TYPE CLASSIFICATION IN HYDROCARBON SOURCE ROCKS USING HYPERSPECTRAL DATA AND MACHINE LEARNING	3633
<i>Tainá Thomassim Guimarães, Lucas Silveira Kupssinskü, Daniel Capella Zanotta, João Gabriel Motta, Unisinos University, Brazil; André Luiz Durante Spigolon, Petrobras Research and Development Center (CENPES), Brazil; Luiz Gonzaga Jr, Maurício Roberto Veronez, Unisinos University, Brazil</i>	
TU2.MM-8.7: GLOBAL SPATIAL AND LOCAL SPECTRAL SIMILARITY BASED SAMPLE AUGMENT AND EXTENDED SUBSPACE PROJECTION FOR HYPERSPECTRAL IMAGE CLASSIFICATION	3637
<i>Xueji Shen, Haoyang Yu, Chunyan Yu, Yulei Wang, Meiping Song, Dalian Maritime University, China</i>	
TU2.MM-8.8: SPATIAL-SPECTRAL HYPERSPECTRAL IMAGE CLASSIFICATION VIA MULTIPLE RANDOM ANCHOR GRAPHS ENSEMBLE LEARNING	3641
<i>Yanling Miao, Qi Wang, Mulin Chen, Xuelong Li, Northwestern Polytechnical University, China</i>	
TU2.MM-8.9: HYPERSPECTRAL IMAGE CLASSIFICATION BASED ON CLASS CONFUSION MERGING AND SOFT BAND SELECTION	3645
<i>Xinyuan Miao, Ye Zhang, Junping Zhang, Xuejian Liang, Harbin Institute of Technology, China</i>	
TU2.MM-8.10: AUTOMATICALLY ADJUSTABLE MULTI-SCALE FEATURE EXTRACTION FRAMEWORK FOR HYPERSPECTRAL IMAGE CLASSIFICATION	3649
<i>Jiaqi Yang, Bo Du, Chen Wu, Liangpei Zhang, Wuhan University, China</i>	

TU2.MM-9: DEEP LEARNING FOR HYPERSPECTRAL IMAGE CLASSIFICATION II

TU2.MM-9.1: HYPERSPECTRAL IMAGE CLASSIFICATION BASED ON DENSE CONVOLUTION AND CONDITIONAL RANDOM FIELD 3653

Chunhui Zhao, Harbin University of Engineering, China; Boao Qin, Tong Li, Shou Feng, Yiming Yan, Harbin Engineering University, China

TU2.MM-9.2: MIRROR MOSAICKING BASED REDUCED COMPLEXITY APPROACH FOR THE CLASSIFICATION OF HYPERSPECTRAL IMAGES 3657

S N Chaudhri, Naveen Singh Rajput, K P Singh, IIT(BHU), India; Dharmendra Singh, IIT, Roorkee, INDIA, India

TU2.MM-9.3: HYPERSPECTRAL IMAGE CLASSIFICATION BASED ON SPECTRAL GRAPH AND BIDIRECTIONAL LSTM NETWORK 3661

Xu Tang, Qionglin Zhou, Fanbo Meng, Xidian University, China; Xiao Han, Geovis Spatial Technology Co.,Ltd, China; Dalei Li, Science and Technology on Electro-optic Control Laboratory, China; Xiangrong Zhang, Licheng Jiao, Xidian University, China

TU2.MM-9.4: DEEP DIFFUSION PROCESSES FOR ACTIVE LEARNING OF HYPERSPECTRAL IMAGES 3665

Abiy Tasissa, Tufts University, United States; Duc Nguyen, University of Maryland, United States; James Murphy, Tufts University, United States

TU2.MM-9.5: ENSEMBLE CNN WITH ENHANCED FEATURE SUBSPACES FOR IMBALANCED HYPERSPECTRAL IMAGE CLASSIFICATION 3669

Qinze Lv, Wei Feng, Yinghui Quan, Xidian University, China; Qiang Li, Northwestern Polytechnical University, China; Gabriel Dauphin, University Paris XIII, France; Lianru Gao, Chinese Academy of Sciences, China; Guoping Zhao, Shaan Xi Academy of Forestry, China; Mengdao Xing, Xidian University, China

TU2.MM-9.6: BOOSTING CNN FOR HYPERSPECTRAL IMAGE CLASSIFICATION 3673

Haoyu Zhang, Yushi Chen, Xin He, Harbin Institute of Technology, China; Xingliang Shen, Tianjin Navigation Instruments Research Institute, China

TU2.MM-9.7: HSGACN: HYPERSPECTRAL IMAGE CLASSIFICATION ALGORITHM BASED ON GRAPH CONVOLUTIONAL NETWORK 3677

Yi Xiao, Siying Chen, Hao Wang, Zhengang Zhao, Tao Huang, Yuchen Liang, Jin Qin, Rong Ma, Zongyao Yin, Ruiqing Yan, Xianchuan Yu, Beijing Normal University, China

TU2.MM-9.8: META TRANSFER LEARNING FOR FEW-SHOT HYPERSPECTRAL IMAGE CLASSIFICATION 3681

Fei Zhou, Lei Zhang, Wei Wei, Northwestern Polytechnical University, China; Zongwen Bai, Yanan University, China; Yanning Zhang, Northwestern Polytechnical University, China

TU2.MM-9.9: CLASSIFICATION OF MULTI-RESOLUTION HYPERSPECTRAL DATA BY CONVOLUTIONAL NEURAL NETWORKS 3685

Takato Yamada, Akira Iwasaki, University of Tokyo, Japan

TU2.MM-9.10: A COMPARATIVE STUDY OF NOISE SENSITIVITY ON DIFFERENT HYPERSPECTRAL CLASSIFICATION METHODS 3689

Congyu Li, Xinxin Liu, Xudong Kang, Shutao Li, Hunan University, China

TU2.MM-10: RETRIEVALS AND PARAMETER ESTIMATION

TU2.MM-10.1: RESEARCH ON INVERSION OF MINERAL CONTENT INFORMATION BASED ON HYPERSPECTRAL REMOTE SENSING 3693

Na Li, Xinfeng Dong, Fuping Gan, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China

TU2.MM-10.2: A REMOTE SENSING METHOD TO INVERSE CHEMICAL OXYGEN DEMAND IN QINGHAI LAKE	3697
<i>Quan Guo, Dianjun Zhang, Lingjuan Cao, Jie Zhan, School of Marine Science and Technology, Tianjin University, China</i>	
TU2.MM-10.3: ESTIMATION OF MIXED FORESTS CLUMPING INDEX AND ITS SPATIAL HETEROGENEITY STUDY	3701
<i>Rui Xie, Ziti Jiao, Beijing Normal University, China; Yadong Dong, Skate Key Laboratory of Remote Sensing Science, China; Xiaoning Zhang, Siyang Yin, Lei Cui, Jing Guo, Sijie Li, Zidong Zhu, Yidong Tong, Beijing Normal University, China</i>	
TU2.MM-10.4: A MACHINE LEARNING FRAMEWORK FOR MAPPING SOIL NUTRIENTS WITH MULTI-SOURCE DATA FUSION	3705
<i>Kamal Das, Navin Twarakavi, IBM Research, India, India; Noppadon Khiripet, NSTDA - Thailand, Thailand; Panyawat Chattanrassamee, Chalerm Kijkullert, Mittr Phol - Thailand, Thailand</i>	
TU2.MM-10.5: ESTIMATING LEAF AREA INDEX AT 250M SPATIAL RESOLUTION FROM MODIS DATA USING CONVOLUTIONAL NEURAL NETWORKS	3709
<i>Yunteng Zhang, Zhiqiang Xiao, Beijing Normal University, China</i>	
TU2.MM-10.6: AMMONIA NITROGEN MONITORING OF URBAN RIVERS WITH UAV-BORNE HYPERSPECTRAL REMOTE SENSING IMAGERY	3713
<i>Zhou Wang, Lifei Wei, Chujun He, Qikai Lu, Hubei University, China</i>	
 TU2.MM-11: RETRIEVAL AND MODELING OF LAND AND ATMOSPHERE PARAMETERS	
TU2.MM-11.1: ESTIMATION OF SOIL ORGANIC CARBON CONTENT BASED ON DEEP LEARNING AND QUANTILE REGRESSION	3717
<i>Wudi Zhao, Zhilu Wu, Zhendong Yin, Harbin Institute of Technology, China</i>	
TU2.MM-11.2: AUTOMATED 3D VEGETATION DETECTION ALONG POWER LINES USING MONOCULAR SATELLITE IMAGERY AND DEEP LEARNING	3721
<i>Michele Gazzea, Sindre Aalhus, Lars Kristensen, Western Norway University of Applied Sciences, Norway; Eren Ozguven, Florida State University, United States; Reza Arghandeh, Western Norway University of Applied Sciences, Norway</i>	
TU2.MM-11.3: AN EVAPOTRANSPIRATION MODEL FOR ARID LAND TO ESTIMATE WATER LOSS IN HOTAN RIVER BASIN	3725
<i>Yongmin Yang, Aihua Long, Ji Zhang, Hongxin Liu, China Institute of Water Resources and Hydropower Research, China</i>	
TU2.MM-11.4: ESTIMATION AND EVALUATION OF THE LAND SURFACE TEMPERATURE FROM FENGYUN-3 SERIES SATELLITE DATA IN NORTHWEST CHINA	3729
<i>Hao Tu, University of Electronic Science and Technology of China, China; Hua Li, Qinhuo Liu, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Ruibo Li, Shandong University of Science and Technology, China</i>	
TU2.MM-11.5: GLOBAL DAILY 500-M EVAPOTRANSPIRATION ESTIMATION OVER VEGETATED AREAS USING RNADOM FOREST FROM MODIS DATA	3733
<i>Zhong Peng, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China; Ronglin Tang, Yazhen Jiang, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China; Meng Liu, Ministry of Agriculture/Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, China</i>	

TU2.MM-11.6: LAND SURFACE EMISSIVITY ESTIMATION FROM SATELLITE DATA WITH MACHINE LEARNING	3737
<i>Xiu-Juan Li, Hua Wu, Zhao-Liang Li, State Key Laboratory of Resources and Environmental Information System, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China; Yong-Gang Qian, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Si-Bo Duan, Key Laboratory of Agri-informatics, Ministry of Agriculture/Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, China</i>	
TU2.MM-11.7: COUPLED ESTIMATION OF DAILY GROSS PRIMARY PRODUCTION AND EVAPOTRANSPIRATION AT 84 GLOBAL FOREST SITES	3741
<i>Lingxiao Huang, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China; Meng Liu, Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, China; Yazhen Jiang, Ronglin Tang, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China</i>	
TU2.MM-11.8: PRELIMINARY VALIDATION OF THE EXTENDED LONG-TERM LAND SURFACE TEMPERATURE FROM NOAA AVHRR OVER THE HEIHE RIVER BASIN, CHINA	3745
<i>Yongjie Wang, Jin Ma, Ji Zhou, University of Electronic Science and Technology of China, China</i>	
TU2.MM-12: ENVIRONMENTAL MONITORING AND NATURAL HAZARD MITIGATION	
TU2.MM-12.1: FIRE REFERENCE PERIMETERS EXTRACTED FROM SENTINEL-2 DATA FOR VALIDATION OF BURNED AREA PRODUCTS IN AFRICA BIOMES	3749
<i>Matteo Sali, Lorenzo Busetto, Mirco Boschetti, CNR, Italy; Magí Franquesa, Emilio Chuvieco, University of Alcalá, Spain; Daniela Stroppiana, CNR, Italy</i>	
TU2.MM-12.2: DEFORESTATION DETECTION BASED ON U-NET AND LSTM IN OPTICAL SATELLITE REMOTE SENSING IMAGES	3753
<i>Jie Zhang, Zhibao Wang, Northeast Petroleum University, China; Lu Bai, Ulster University, United Kingdom; Guangfu Song, Northeast Petroleum University, China; Jinhua Tao, Liangfu Chen, University of Chinese Academy of Sciences, China</i>	
TU2.MM-12.3: DETECTION AND VOLUME ESTIMATION OF LARGE-SCALE LANDSLIDE IN ABE BAREK, AFGHANISTAN USING NONLINEAR MAPPING OF DEMS	3757
<i>Mujeeb Rahman Atefi, Hiroyuki Miura, Hiroshima University, Japan</i>	
TU2.MM-12.4: A NOVEL FOREST DISASTER MONITORING METHOD BASED ON FCM AND NEIGHBORHOOD FACTOR GENETIC ALGORITHM USING MULTISPECTRAL DATA	3761
<i>Yang Cao, Wei Feng, Yinghui Quan, Aifeng Ren, Mengdao Xing, Xidian University, China</i>	
TU2.MM-12.5: EARLY DETECTION OF WILDFIRES WITH GOES-R TIME-SERIES AND DEEP GRU NETWORK	3765
<i>Yu Zhao, Yifang Ban, Andrea Nascetti, Royal Institute of Technology, Sweden</i>	
TU2.MM-12.6: COMPARISON OF OPTICAL AND SAR DATA FOR DEFORESTATION MAPPING IN THE AMAZON RAINFOREST WITH FULLY CONVOLUTIONAL NETWORKS	3769
<i>Mabel Ortega Adarme, Raul Queiroz Feitosa, Jose Bermudez Castro, Patrick Nigri Happ, Pontifical Catholic University of Rio de Janeiro, Brazil; Cláudio Aparecido Almeida, National Institute for Space Research (INPE), Brazil</i>	
TU2.MM-12.7: DETECTION OF METHANE EMISSIONS USING PATTERN RECOGNITION	3773
<i>Elyes Ouerghi, Thibaud Ehret, Gabriele Facciolo, Enric Meinhardt-Llopis, Jean-Michel Morel, Université Paris-Saclay, France; Carlo de Franchis, Université Paris-Saclay & Kayrros, France; Thomas Lauvaux, Laboratoire des Sciences du Climat et de l'Environnement, France</i>	
TU2.MM-12.8: CORAL BLEACHING DETECTION USING SENTINEL-2B/MSI IMAGES	3777
<i>Bailu Liu, Lei Guan, Ocean University of China, China</i>	

TU2.MM-12.9: MULTI-TEMPORAL CHANGES ANALYSIS OF NATURAL VEGETATION COVER USING SERIAL NDVI AND METRIC INDICES: CASE OF TLEMCEN NATIONAL PARK (NORTHWEST OF ALGERIA)	3781
<i>Lotfi Mustapha Kazi-Tani, University of Tlemcen, Algeria; Abderrazak Bannari, Space Pix-Map International Inc., Canada</i>	
 TU2.MM-13: MULTI-TEMPORAL ANALYSIS OF SAR IMAGES	
TU2.MM-13.1: GRAPH-LEVEL NEURAL NETWORK FOR SAR IMAGE CHANGE DETECTION	3785
<i>Rongfang Wang, Liang Wang, Xidian University, China; Pinghai Dong, Tsinghua Shenzhen International Graduate School, China; Licheng Jiao, Jia-Wei Chen, Xidian University, China</i>	
TU2.MM-13.2: LAND SUBSIDENCE MONITORING IN SEMARANG, INDONESIA THROUGH OPTIMIZED HOT SPOT ANALYSIS BASED ON TIME-SERIES INSAR PROCESSING	3789
<i>Wahyu Luqmanul Hakim, Seul Ki Lee, Chang-Wook Lee, Kangwon National University, Korea (South)</i>	
TU2.MM-13.4: MULTI-TEMPORAL INSAR AND TARGET DETECTION WITH COSMO-SKYMED SAR BIG DATA TO MONITOR URBAN DYNAMICS IN WUHAN (CHINA)	3793
<i>Deodato Tapete, Francesca Cigna, Italian Space Agency (ASI), Italy; Timo Balz, Hashir Tanveer, Jinghui Wang, Haonan Jiang, Wuhan University, China</i>	
TU2.MM-13.5: SAR IMAGE CHANGE DETECTION METHOD BASED ON NEURAL-CRF STRUCTURE	3797
<i>Jianlong Zhang, Mengying Cui, Bin Wang, Xidian University, China</i>	
TU2.MM-13.6: DIURNAL CYCLES OF C-BAND TEMPORAL COHERENCE AND BACKSCATTERING COEFFICIENT OVER AN OLIVE ORCHARD IN A SEMI-ARID AREA: COMPARISON OF IN SITU AND SENTINEL-1 RADAR OBSERVATIONS	3801
<i>Adnane Chakir, LMME, Faculty of Science Semlalia, Cadi Ayyad University, Morocco; Pierre-Louis Frison, Paris-Est Marne-la-Vallée University, France; Saïd Khabba, Cadi Ayyad University, Morocco; Jamal Ezzahar, CRSA, Mohammed VI Polytechnic University / MISCOM, National School of Applied Sciences, Cadi Ayyad University, Morocco; Ludovic Villard, Fanise Pascal, Centre d'Etudes Spatiales de la Biosphère (CESBIO), University of Toulouse, IRD/CNRS/UPS/CNES, France; Nadia Ouaadi, LMME, Department of Physics, Faculty of Science Semlalia, Cadi Ayyad University, Marrakech, Morocco / CESBIO, University of Toulouse, IRD/CNRS/UPS/CNES, Morocco; Valerie Ledantec, Lionel Jarlan, Centre d'Etudes Spatiales de la Biosphère (CESBIO), University of Toulouse, IRD/CNRS/UPS/CNES, France</i>	
TU2.MM-13.7: SLOW FEATURE ANALYSIS BASED ON CONVOLUTIONAL NEURAL NETWORK FOR SAR IMAGE CHANGE DETECTION	3805
<i>Ling Wan, Lei Ma, Institute of Automation, Chinese Academy of Sciences, China; Jialong Guo, Beijing University of Technology, China; Mingliang Liu, Harbin University of Science and Technology, China; Dongpan Yao, Institute of Automation, Chinese Academy of Sciences, China</i>	
TU2.MM-13.8: DAMAGE ASSESSMENT OF BRIDGES DUE TO THE 2020 JULY FLOOD IN JAPAN USING ALOS-2 INTENSITY IMAGES	3809
<i>Wen Liu, Yoshihisa Maruyama, Chiba university, Japan; Fumio Yamazaki, National Research Institute for Earth Science and Disaster Resilience, Japan</i>	
TU2.MM-13.9: TOWARDS MONITORING OF MOUNTAIN MASS WASTING USING OBJECT-BASED IMAGE ANALYSIS USING SAR INTENSITY IMAGES	3813
<i>Shih-Yuan Lin, National Chengchi University, Taiwan; Cheng-Wei Lin, Sinotech Engineering Consultants, Taiwan; Stephan van Gasselt, National Chengchi University, Taiwan</i>	

TU2.MM-13.10: DIURNAL CYCLES OF C-BAND TEMPORAL COHERENCE AND BACKSCATTERING COEFFICIENT OVER A WHEAT FIELD IN A SEMI-ARID AREA	3817
<i>Nadia Ouaadi, Cadi Ayyad University, Morocco; Ludovic Villard, University of Toulouse, France; Jamal Ezzahar, Cadi Ayyad University, Morocco; Pierre-Louis Frison, Paris-Est Marne-la-Vallée, France; Saïd Khabba, Cadi Ayyad University, Morocco; Mohamed Kasbani, Pascal Fanise, University of Toulouse, France; Adnane Chakir, Cadi Ayyad University, Morocco; Valerie Le Dantec, University of Toulouse, France; Salah Er-Raki, Cadi Ayyad University, Morocco; Lionel Jarlan, University of Toulouse, France</i>	
 TU2.MM-14: ADVANCED METHODS OF HYPERSPECTRAL IMAGE UNMIXING	
TU2.MM-14.1: BOOSTING HYPERSPECTRAL IMAGE UNMIXING USING DENOISING: FOUR SCENARIOS	3821
<i>Behnood Rasti, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Germany; Bikram Koirala, Paul Scheunders, University of Antwerp (CDE), Belgium; Pedram Ghamisi, Richard Gloaguen, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Germany</i>	
TU2.MM-14.2: ENHANCING REWEIGHTED LOW-RANK REPRESENTATION FOR HYPERSPECTRAL IMAGE UNMIXING	3825
<i>Wu-Chao Di, Jie Huang, Jin-Ju Wang, Ting-Zhu Huang, University of Electronic Science and Technology of China, China</i>	
TU2.MM-14.3: SPECTRAL UNMIXING USING DEEP CONVOLUTIONAL ENCODER-DECODER	3829
<i>Behnood Rasti, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Helmholtz Institute Freiberg for Resource Technology, Germany; Bikram Koirala, Paul Scheunders, University of Antwerp (CDE), Belgium; Pedram Ghamisi, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Helmholtz Institute Freiberg for Resource Technology, Germany</i>	
TU2.MM-14.4: FACTOR-REGULARIZED NONNEGATIVE TENSOR DECOMPOSITION FOR BLIND HYPERSPECTRAL UNMIXING	3833
<i>Meng Ding, Ting-Zhu Huang, Xi-Le Zhao, Jie Lin, University of Electronic Science and Technology of China, China; Jing-Hua Yang, Macau University of Science and Technology, China</i>	
TU2.MM-14.5: A UNION FRAMEWORK WITH SPARSE TOPIC RELAXION AND GROUP CLUSTERING FOR HYPERSPECTRAL UNMIXING	3837
<i>Linlin Wang, Qiqi Zhu, Wen Zeng, Qingfeng Guan, China University of Geosciences, China</i>	
TU2.MM-14.6: A PENALIZATION-BASED NMF APPROACH FOR HYPERSPECTRAL UNMIXING ADDRESSING SPECTRAL VARIABILITY WITH AN ADDITIVELY-TUNED MIXING MODEL	3841
<i>Salah Eddine Brezini, Yannick Deville, Institut de Recherche en Astrophysique et Planétologie, France; Moussa Sofiane Karoui, Fatima Zohra Benhalouche, Agence Spatiale Algérienne, Centre des Techniques Spatiales, Algeria; Abdelaziz Ouamri, Université des Sciences et de la Technologie d'Oran Mohamed Boudiaf, Algeria</i>	
TU2.MM-14.7: INFLUENCE OF THE DARKEST PIXEL ON ENDMEMBERS INITIALIZATION	3845
<i>Parasuram Yadav Palla, Amba Shetty, Raghavendra BS, Narasimhadhan AV, National Institute of Technology Karnataka, India</i>	
TU2.MM-14.8: LOW-RANK SUBSPACE UNMIXING OF REMOTELY SENSED HYPERSPECTRAL IMAGE	3849
<i>Quan You, Fan Li, Shaoquan Zhang, Shengqian Wang, Chengzhi Deng, Chenguang Xu, Nanchang Institute of Technology, China</i>	
TU2.MM-14.9: SUPERPIXEL BASED LOW-RANK SPARSE UNMIXING FOR HYPERSPECTRAL REMOTE SENSING IMAGE	3853
<i>Fan Li, Nanchang Institute of Technology, China; Bingkun Liang, Sun Yat-Sen University, China; Shaoquan Zhang, Chengzhi Deng, Zhaoming Wu, Shengqian Wang, Nanchang Institute of Technology, China</i>	

TU2.MM-14.10: WEAKLY SUPERVISED CONVOLUTIONAL NEURAL NETWORKS FOR HYPER SPECTRAL UNMIXING	3857
<i>Jiayu Bai, Ruyi Feng, Lizhe Wang, China University of Geosciences, China; Yanfei Zhong, Liangpei Zhang, Wuhan University, China</i>	
 TU2.MM-15: IMAGE RESTORATION AND ENHANCEMENT	
TU2.MM-15.1: A LOW-RANK AND SPARSE CONSTRAINED DARK CHANNEL PRIOR FOR CLOUD REMOVAL IN REMOTE SENSING IMAGE SEQUENCE	3861
<i>Jin Cheng, Ye Zhang, Xinyu Zhou, Shaoqi Shi, Harbin Institute of Technology, China</i>	
TU2.MM-15.2: A RECURRENT REFINEMENT NETWORK FOR SATELLITE VIDEO SUPER-RESOLUTION	3865
<i>Yi Xiao, Xin Su, Qiangqiang Yuan, Wuhan University, China</i>	
TU2.MM-15.3: A MULTI-LOOKING APPROACH FOR SPATIAL SUPER-RESOLUTION ON LABORATORY-BASED HYPER SPECTRAL IMAGE	3869
<i>Daniel Zanotta, Ademir Marques Jr., Alysson Soares Aires, Fabiane Bordin, Graciela Racolte, João Gabriel Motta, Lucas Kupssinsku, Marianne Muller, Rafael Kenji Horota, Tainá Thomassim Guimarães, Vinícius Sales, Unisinos University, Brazil; Caroline Cazarin, Cenpes, Brazil; Luiz Gonzaga Jr, Maurício Roberto Veronez, Unisinos University, Brazil</i>	
TU2.MM-15.4: SPATIAL-SPECTRAL TOTAL VARIATION CONSTRAINED COLLABORATIVE TENSOR REGULARIZATION FOR DUAL-CAMERA COMPRESSIVE HYPER SPECTRAL IMAGING	3873
<i>Zhenghui Liang, Yang Xu, Liang Xiao, Zhihui Wei, Nanjing University of Science and Technology, China</i>	
TU2.MM-15.5: INCREASING LANDSAT 5 TM SPATIAL RESOLUTION TO 15 M USING A SUPER-RESOLUTION DEEP LEARNING MODEL TRAINED WITH PAN-SHARPENED LANDSAT 7 ETM+ DATA	3877
<i>Fabien H. Wagner, Foundation for Science, Technology and Space Applications-FUNCATE, Brazil; Peter Joyce, Roel Brienens, Emanuel Gloor, University of Leeds, United Kingdom</i>	
TU2.MM-15.6: PROBA-V-REF: REPURPOSING THE PROBA-V CHALLENGE FOR REFERENCE-AWARE SUPER RESOLUTION	3881
<i>Ngoc-Long Nguyen, Jérémy Anger, Axel Davy, Pablo Arias, Gabriele Facciolo, Université Paris-Saclay, France</i>	
TU2.MM-15.7: DEEP LEARNING FOR MULTIPLE-IMAGE SUPER-RESOLUTION OF SENTINEL-2 DATA	3885
<i>Michal Kawulok, Tomasz Tarasiewicz, Jakub Nalepa, Diana Tyrna, Daniel Kostrzewa, KP Labs / Silesian University of Technology, Poland</i>	
TU2.MM-15.8: IMPROVED IMAGE AGGREGATION FOR LARGE-SCALE CLOUD-FREE IMAGE CREATION	3889
<i>David Nagy, Zhenya Warshavsky, Lloyd Hughes, Project Canopy, United States</i>	
TU2.MM-15.9: COMPRESSED IMAGING IN FOREIGN OBJECT DEBRIS RADAR	3893
<i>Fei Qin, Xingdong Liang, Xiangxi Bu, Zhiyuan Zeng, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TU2.MM-15.10: HYPER SPECTRAL IMAGERY SUPER-RESOLUTION BASED ON SELF-CALIBRATED ATTENTION RESIDUAL NETWORK	3896
<i>Baorui Wang, Shaohui Mei, Yan Feng, Northwestern Polytechnical University, China; Qian Du, Mississippi State University, Armenia</i>	

TU2.MM-16: ADVANCED ALGORITHMS FOR GEOSPATIAL DATA ANALYSIS

TU2.MM-16.1: HIGH-QUALITY FAST COMPRESSION ALGORITHM BASED ON FRACTAL-WAVELET 3900

Zheng Wang, Bo Gao, PeiCheng Wang, Xun Gong, Ling Tong, University of Electronic Science and Technology of China, China

TU2.MM-16.2: GEOSPATIAL DATA ANALYSIS FOR GLOBAL MARITIME RISK ASSESSMENT USING THE DISCRETE GLOBAL GRID SYSTEM 3904

Andrew Rawson, University of Southampton, United Kingdom; Zoheir Sabeur, Bournemouth University, United Kingdom; Mario Brito, University of Southampton, United Kingdom

TU2.MM-16.3: SPATIAL DATA PARTITIONING METHOD BASED ON SPATIO-TEMPORAL AND SEMANTIC FEATURES 3908

Yan Zhou, Xu Wang, MengDou Qin, Cong Zhang, School of Resources and Environment, University of Electronic Science and Technology of China, China

TU2.MM-16.4: AGGLUTINATION OF SUB-BASINS USING SHREVE ORDER..... 3912

Sergio Rosim, National Institute for Space Research (INPE), Brazil; Monica De Martino, Institute of Applied Mathematics and Information Technologies - IMATI, Italy

TU2.MM-16.5: DEVELOPMENT OF GRIDDED REFERENCE GRAPHICS USING MACHINE LEARNING AND A CUSTOMIZED GEOPROCESSING WORKFLOW 3916

Adam Johantges, Bryan Jonas, Christopher Oxendine, Matthew O'Banion, United States Military Academy, United States

TU2.MM-16.6: CONSTRUCTION OF SPATIOTEMPORAL KNOWLEDGE GRAPH FOR EMERGENCY DECISION MAKING 3920

Jiahui Chen, Xingtong Ge, Weichao Li, Ling Peng, Aerospace Information Research Institute, Chinese Academy of Sciences, China

TU2.MM-16.7: LANDSLIDE RISK CLASSIFICATION BASED ON ENSEMBLE MACHINE LEARNING 3924

Leiyu Dai, University of Electronic Science and Technology of China, China; Mingcang Zhu, Department of Natural Resources of Sichuan Province, China; Zhanyong He, Yong He, Sichuan Research Institute for Eco-system Restoration & Geo-hazard Prevention, China; Zezhong Zheng, University of Electronic Science and Technology of China, China; Guoqing Zhou, Guilin University of Technology, China; Chao Wang, University of Electronic Science and Technology of China, China; Juan Ren, Hongqiong Tang, Sichuan Research Institute for Eco-system Restoration & Geo-hazard Prevention, China; Qiang Liu, Fang Huang, University of Electronic Science and Technology of China, China; Zhongnian Li, Central China Normal University, China; Mujie Li, Zhiyong Wang, Mingqi Li, Ling Jiang, University of Electronic Science and Technology of China, China

TU2.MM-16.8: DETERMINING THE OPTIMUM LOCATION FOR LANDFILL SITE IN BUTUAN CITY USING GIS-BASED ANALYSIS 3928

Arturo Cauba, Myrnalyn Badbad, Caraga State University, Philippines

TU2.MM-16.9: IMPERVIOUS LAND COVER PATTERN AND ITS IMPACT ON URBAN WATER LOGGING: CASE OF NEW DELHI, INDIA 3932

Harkesh Paras Dewangan, Surabhi Mehrotra, Maulana Azad National Institute of Technology Bhopal, India

TU2.MM-17: SEASONAL SNOW I

TU2.MM-17.1: A LOW-COST PORTABLE AUTOMATIC SYSTEM FOR SNOW SURFACE ROUGHNESS MEASUREMENTS BASED ON DIGITAL PHOTOGRAPHY. 5562

Riccardo Barella, Eurac Research / Politecnico di Milano, Italy; Carlo Marin, Callegari Mattia, Eurac Research, Italy; Marco Gianinetto, Politecnico di Milano / CNR, Italy; Thomas Moranduzzo, ColomboSky S.r.l., Italy; Claudia Notarnicola, Eurac Research, Italy

TU2.MM-17.2: ESTIMATING CLOUD-FREE FRACTIONAL SNOW COVER FROM HIMAWARI-8, FY-4A AND MODIS OBSERVATION	5566
<i>Fangbo Pan, Lingmei Jiang, Beijing Normal University, China; Gongxue Wang, Information Engineering University, China; Xu Su, Xiaonan Zhou, Beijing Normal University, China</i>	
TU2.MM-17.3: ESTIMATION AND VALIDATION THE FRACTIONAL SNOW COVER FROM SENTINEL-2 MSI OVER THE TIBET PLATEAU	5570
<i>Xu Su, Lingmei Jiang, Beijing Normal University, China; Gongxue Wang, Information Engineering University, China</i>	
TU2.MM-17.4: EVALUATION OF GRIDDED SNOW WATER EQUIVALENT PRODUCTS USING CLOUDSAT-CPR SNOWFALL ESTIMATES	5574
<i>Fraser King, Christopher Fletcher, University of Waterloo, Canada</i>	
TU2.MM-17.5: PREDICTION OF SNOW DEPTH BASED ON MULTI-SOURCE DATA AND MACHINE LEARNING ALGORITHMS	5578
<i>Dejing Qiao, College of Surveying and Geo-Informatics, North China University of Water Resources and Electric Power, China; Zhen Li, Ping Zhang, Jianmin Zhou, Shuang Liang, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TU2.MM-17.6: FEASIBILITY OF ESTIMATING SNOW EMISSIVITY VIA ASSIMILATION OF MULTIFREQUENCY PASSIVE MICROWAVE DATA	5582
<i>Sayed M. Bateni, University of Hawaii at Manoa, United States; Mahdi Navari, University of Maryland and NASA, United States; Sujay Kumar, National Aeronautics and Space Administration (NASA), United States; Essam Heggy, University of Southern California and California Institute of Technology, United States</i>	
TU2.MM-17.7: SPATIAL AND TEMPORAL VARIABILITY OF WET SNOW IN THE FRENCH MOUNTAINS USING A COLOR-SPACE BASED SEGMENTATION TECHNIQUE ON SENTINEL-1 SAR IMAGES	5586
<i>Fatima Karbou, CNRM/CEN, France; Philippe Durand, CNES, France; Isabelle Gouttevin, CNRM/CEN, France</i>	
TU2.MM-17.8: COMBINED USE OF OPTICAL AND SAR DATA FOR THERMOKARST TERRAIN: A CASE STUDY IN CENTRAL YAKUTIA	5589
<i>Yoon Taek Jung, Yeji Lee, Minhwa Kim, Sang-Eun Park, Sejong University, Korea (South)</i>	
TU2.MM-17.9: EVALUATION AND COMPARISON OF SNOW REFLECTANCE MODELS	5592
<i>Gongxue Wang, Information Engineering University, China; Lingmei Jiang, Beijing Normal University, China; Yongsheng Zhang, Information Engineering University, China</i>	
TU2.MM-17.10: THE RELATIONSHIP OF SAMPLING DISTRIBUTION AND BRDF IN DIFFERENT WAVELENGTH FOR SNOW SURFACE	5596
<i>Jing Guo, Ziti Jiao, Xiaoning Zhang, Lei Cui, Siyang Yin, Rui Xie, Sijie Li, Zidong Zhu, Yidong Tong, Beijing Normal University, China</i>	
TU2.MM-18: DATA PROCESSING, MANAGEMENT AND VISUALIZATION I	
TU2.MM-18.1: USE OF SATELLITE COMMUNICATION SYSTEMS FOR COLLECTING AND TRANSMITTING DATA ON THE STATE OF THE ARCTIC SEA ICE COVER	5732
<i>Alexander Kuzmichev, Vladimir Smirnov, Natalia Zakhvatkina, Irina Bychkova, Arctic and Antarctic Research Institute, Russia</i>	
TU2.MM-18.2: EFFICIENT EXAMPLES OF EARTH OBSERVATION SATELLITE DATA PROCESSING USING THE JAXA SUPERCOMPUTER SYSTEM AND THE FUTURE FOR THE NEXT SUPERCOMPUTER SYSTEM	5735
<i>Masaki Yamada, Akira Fujioka, Naoyuki Fujita, Makiko Hashimoto, Yoko Ueda, Takanobu Aoki, Takahiro Minami, Japan Aerospace Exploration Agency (JAXA), Japan; Masaya Torii, Tadahiyo Yamamoto, Fujitsu Limited, Japan</i>	
TU2.MM-18.3: AN ONTOLOGY MODEL FOR CLIMATIC DATA ANALYSIS	5739
<i>Jiantao Wu, University College Dublin, Ireland; Fabrizio Orlandi, Trinity College Dublin, Ireland; Declan O'Sullivan, The ADAPT SFI Research Centre, Ireland; Soumyabrata Dev, University College Dublin, Ireland</i>	

- TU2.MM-18.4: THE DREAM DATABASE: A MULTIMODE DATABASE INCLUDING OPTICS, RADAR, DSM (SRTM) AND OSM LABELS FOR DEEP MACHINE LEARNING PURPOSES** 5743
Elise Colin Koeniguer, Onera, France; Alexandre Mayerowitz, Airbus, France; Nathan Letheule, Aurélien Plyer, Onera, France
- TU2.MM-18.5: MOSIS LAB HYPERSPECTRAL - VISUALIZATION AND CORRELATION OF HYPERSPECTRAL DATA ON IMMERSIVE VIRTUAL REALITY** 5747
Tainá Thomassim Guimarães, Diego Henrique Diemmer Mariani, Lucas Silveira Kupssinskü, Pedro Rossa, Rafael Kenji Horota, Rafael de Freitas, Luiz Roupinha, Branda Eloá Weppo, Aline Weschenfelder, Unisinos University, Brazil; André Luiz Durante Spigolon, Petrobras Research and Development Center (CENPES), Brazil; Luiz Gonzaga Jr, Maurício Roberto Veronez, Unisinos University, Brazil
- TU2.MM-18.6: VIZSPECTRALDATA: A WEB-BASED APPLICATION FOR HYPERSPECTRAL DATA VISUALIZATION** 5751
Lucas Silveira Kupssinskü, Tainá Thomassim Guimarães, Unisinos University, Brazil; Caroline Lessio Cazarin, Petrobras Research and Development Center (CENPES), Brazil; Luiz Gonzaga Jr, Maurício Roberto Veronez, Unisinos University, Brazil
- TU2.MM-18.7: DESIGN AND DEVELOPMENT OF SPATIO-TEMPORAL FUSION AND OPERATION PLATFORM FOR ANCIENT AND MODERN MAPS** 5755
Liyan Ren, Yingcheng Li, Jincheng Xiao, China TopRS Technology Co. Ltd, China; Bin Liu, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China
- TU2.MM-18.8: SIMULTANEOUSLY AZIMUTH-PITCH SUPER-RESOLUTION IMAGING FOR GROUND-TO-AIR RADAR** 5759
Qiping Zhang, Yin Zhang, Yongchao Zhang, Yulin Huang, Jianyu Yang, University of Electronic Science and Technology of China, China
- TU2.MM-18.9: SPATIOTEMPORAL VARIATION OF VEGETATION LEAF AREA INDEX BEFORE AND AFTER IMPLEMENTATION OF ECOLOGICAL RESTORATION PROGRAM IN FUXIAN LAKE BASIN** 5763
Dandan Wei, Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of China, China; Zhiguang Zhang, Chinese Academy of Geological Sciences, China; Hang Cui, Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of China, China
- TU2.MM-18.10: SCIENTIFIC WORKFLOW SCHEDULING BASED ON DATA TRANSFORMATION GRAPH FOR REMOTE SENSING APPLICATION** 5767
Zhuojing Tian, Beijing Union University, China; Qiwen Zhou, Zhenchun Huang, Tsinghua University, China
- TU2.MM-19: LAND COVER DYNAMICS I**
- TU2.MM-19.1: VEGETATION NET PRIMARY PRODUCTIVITY ESTIMATION BASED ON MULTISPECTRAL REMOTE SENSING IMAGES IN QINGHAI LAKE BASIN** 6465
Jie Zhan, Dianjun Zhang, Lingjuan Cao, Quan Guo, Tianjin University, China
- TU2.MM-19.2: MAPPING FOREST TYPE WITH MULTI-SEASONAL LANDSAT DATA AND MULTIPLE ENVIRONMENTAL FACTORS IN YUNNAN PROVINCE BASED ON GOOGLE EARTH ENGINE** 6468
Ruonan Li, Leiguang Wang, Guanglong Ou, Weiheng Xu, Qinling Dai, Southwest Forestry University, China
- TU2.MM-19.3: ASSESSING ENVIRONMENTAL QUALITY DYNAMICS AND ITS RESPONSE TO VEGETATION CHANGE IN THE UPPER MINJIANG RIVER WATERSHED BY MODIS AND SPOT PRODUCTS** 6472
Enxu Yu, Mingfang Zhang, School of Resources and Environment, University of Electronic Science and Technology of China, China; Yiping Hou, University of British Columbia (Okanagan Campus), Canada; Zhiwei Jiang, Lihao Deng, Sheng Zhang, Chen Yang, Yali Xu, Shiyu Deng, School of Resources and Environment, University of Electronic Science and Technology of China, China

TU2.MM-19.4: THE EFFECT OF WAR ON LAND USE DYNAMICS IN MOSUL IRAQ USING REMOTE SENSING AND GIS TECHNIQUES	6476
<i>Huda Jamal Jumaah, Technical College of Kirkuk, Northern Technical University, Iraq; Bahareh Kalantar, Naonori Ueda, RIKEN Center for Advanced Intelligence Project, Japan; Ojogbane Success Sani, Universiti Putra Malaysia, Malaysia; Qayssar Mahmood Ajaj, Kirkuk Technical College, Northern Technical University, Iraq; Sarah Jamal Jumaah, College of Education for Pure Sciences, University of Kirkuk, Iraq</i>	
TU2.MM-19.5: GEOSPATIAL ANALYSIS OF LANDSCAPE FRAGMENTATION UNDER RAPID HUMAN INTERVENTION IN THE KELANI RIVER BASIN: ISSUES AND HYDROLOGICAL CONSEQUENCES	6480
<i>Sandamali Wijeratne, Gang Li, Muhammad Sajid Mehmood, Northwest University, China</i>	
TU2.MM-19.6: A DYNAMICS TREND ANALYSIS METHOD OF THERMOKARST LAKES BASED ON THE MACHINE LEARNING ALGORITHM	6484
<i>Hong Chen, Liqiang Tong, Zhaocheng Guo, Jienan Tu, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China; Hua Wu, State Key Laboratory of Resources and Environmental Information System, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences and University of Chinese Academy of Sciences, China; Peng He, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China</i>	
TU2.MM-19.7: MONITORING OF THE TREND OF TIMBERLINES IN TAIWAN AMIDST CLIMATE CHANGE THROUGH MULTI-TEMPORAL SATELLITE IMAGES	6488
<i>Ming-En Chung, Nova Doyog, Chinsu Lin, National Chiayi University, Taiwan</i>	
TU2.MM-19.8: MAPPING AND ASSESSMENT OF LAND USE AND LAND COVER FOR DIFFERENT ECOREGIONS OF ECUADOR USING PHENOLOGY-BASED CLASSIFICATION.	6492
<i>Gladys Villegas, Frieke Van Coillie, Ghent University, Belgium; Daniel Ochoa, ESPOL Polytechnic University, Ecuador</i>	
TU2.MM-19.9: BURN SEVERITY AND ALBEDO ANALYSIS CONCERNING THE MENDOCINO COMPLEX FIRE	6496
<i>Tasos Tentoglou, Julia Burmistrova, Erin Hestir, University of California, Merced, United States</i>	
 TU2.MM-20: NOVEL SAR IMAGING TECHNIQUES	
TU2.MM-20.1: STUDY ON THE PIVOTAL IMAGING TECHNOLOGY OF MINI SAR ON UAV	3936
<i>Weidi Xu, Maosheng Xiang, Bingnan Wang, Chong Song, Rongrong Wang, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TU2.MM-20.2: ELEVATION VARIATION EFFECTS COMPARISON BETWEEN LEO AND GEO SAR	3940
<i>Faguang Chang, Dexin Li, Zhen Dong, Zhihua He, Xing Chen, College of Electronic Science and Technology, National University of Defense Technology, China</i>	
TU2.MM-20.3: ANALYSIS OF SENTINEL-1 TOPSAR RAW DATA FOR SYNTHESIZING SINGLE LOOK COMPLEX IMAGE	3944
<i>Kyeongrok Kim, Jae-Hyun Kim, Ajou University, Korea (South)</i>	
TU2.MM-20.4: SHIFT-FREQUENCY JAMMING IMAGING AND ANALYSIS BASED ON ACTIVE RADAR CALIBRATOR	3948
<i>Guikun Liu, Liang Li, University of Chinese Academy of Sciences, China; Jun Hong, Feng Ming, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TU2.MM-20.5: ESTIMATING SAFETY FACTOR AGAINST ROOT LODGING USING SENTINEL-1 DATA	3952
<i>Sugandh Chauhan, Roshanak Darvishzadeh, University of Twente, Netherlands; Mirco Boschetti, CNR-IREA, National Research Council, Italy; Sander van Delden, Wageningen University, Netherlands; Andy Nelson, University of Twente, Netherlands</i>	

TU2.MM-20.6: RESEARCH ON FORWARD-LOOKING IMAGING TECHNOLOGY BASED ON MANEUVERING MOTION	3955
<i>Xiandong Meng, Yesheng Gao, Zhicheng Wang, Xingzhao Liu, Shanghai Jiao Tong University, China</i>	
TU2.MM-20.7: VIDEO FORMATION METHOD FOR UAV SAR UTILIZING TENSOR RECOVERY ALGORITHM	3959
<i>Hongyang An, Junjie Wu, Jingyi Qu, Zhichao Sun, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
TU2.MM-20.8: LOW PROBABILITY OF INTERCEPT WAVEFORM OPTIMIZATION METHOD FOR SAR IMAGING	3963
<i>Mingyue Lou, Taineng Zhong, Min Li, Xinzhou Li, Zhongyu Li, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
TU2.MM-20.9: FRONT-DOWNWARD-LOOKING 3D SAR IMAGING USING FREQUENCY DIVERSITY ARRAY	3967
<i>Jifa Shen, Kefei Liao, Shan Ouyang, Haitao Wang, Qiaoying Yu, School of Information and Communications, Guilin University of Electronic Technology, China</i>	
TU2.MM-20.10: FREQUENCY SCAN FOR TIME-OF-ECHO COMPRESSION IN SAR SYSTEMS	3971
<i>Marwan Younis, Felipe Queiroz de Almeida, Michelangelo Villano, Tobias Bollian, Alberto Moreira, German Aerospace Center (DLR), Germany</i>	
 TU2.MM-21: AGRICULTURE + MACHINE LEARNING	
TU2.MM-21.1: CROP CLASSIFICATION FROM SENTINEL-2 TIME SERIES WITH TEMPORAL CONVOLUTIONAL NEURAL NETWORKS	6500
<i>Sara Perez-Carabaza, University College Dublin, Ireland; Vasileios Syrris, Pieter Kempeneers, Pierre Soille, European Commission, Joint Research Centre, Italy</i>	
TU2.MM-21.2: SEGMENTATION AND CLASSIFICATION OF UAV-BASED ORTHOPHOTO OF WATERMELON FIELD USING SUPPORT VECTOR MACHINE TECHNIQUE	6504
<i>Zixun Lin, Nova Doyog, Shin-Fu Huang, Chinsu Lin, National Chiayi University, Taiwan</i>	
TU2.MM-21.3: PLANT COUNTS IN DENSE RED BEET CROPS: A COMPUTER VISION APPROACH	6508
<i>Amirhossein Hassanzadeh, Jan van Aardt, Rochester Institute of Technology, United States; Julie Kikkert, Cornell Cooperative Extension, United States; Sarah Pethybridge, Sean Murphy, Cornell University, United States; Daniel Cross, Love Beets Production LLC, United States</i>	
TU2.MM-21.4: COCONUT TREES DETECTION ON THE TENARUNGA USING HIGH-RESOLUTION SATELLITE IMAGES AND DEEP LEARNING	6512
<i>Juepeng Zheng, Tsinghua University, China; Wenzhao Wu, National Supercomputing Center in Wuxi, China; Le Yu, Haohuan Fu, Tsinghua University, China</i>	
TU2.MM-21.5: PALM TREES CROWN DETECTION AND DELINEATION FROM VERY HIGH SPATIAL RESOLUTION IMAGES USING DEEP NEURAL NETWORK (U-NET)	6516
<i>Rhinane Hassan, Hassan II University of Casablanca, Morocco; Bannari Abderazzak, Arabian Gulf University, Canada; Maanan Mehdi, Aderdour Nacer, Hassan II University of Casablanca, Morocco</i>	
TU2.MM-21.6: AUTOMATIC CLASSIFICATION OF AGRICULTURAL SUMMER CROPS IN URUGUAY	6520
<i>Adrián Cal, Instituto Nacional de Investigación Agropecuaria, Uruguay; Javier Preciozzi, Pablo Musé, Universidad de la República, Facultad de Ingeniería, Uruguay</i>	

- TU2.MM-21.7: AUTOMATIC DETECTION OF ANOMALOUS TIME TRENDS FROM 6524**
SATELLITE IMAGE SERIES TO SUPPORT AGRICULTURAL MONITORING
Corrado Avolio, Alessia Tricomi, Massimo Zavagli, Laura De Vendictis, Fabio Volpe, Mario Costantini, e-GEOS - an Italian Space Agency and Telespazio company, Italy
- TU2.MM-21.8: STUDY ON SPATIAL AUTO-REGRESSION WITHIN SOIL 6528**
PHYSICAL-CHEMICAL INDICATORS IN TYPICAL KARST DEMONSTRATION ZONE
Hui Yin, Jiasheng Chen, Huizhou University, China; Zhongcheng Jiang, Chinese Academy of Geological Sciences, China
- TU2.MM-22: OCEAN WAVES AND CURRENTS**
- TU2.MM-22.1: CAN GNSS-REFLECTOMETRY SUPPORT GLOBAL MONITORING OF 7520**
FLOATING MATTER IN THE OCEAN?
Jennifer King, Daniel Pascual, Maria Paola Clarizia, Deimos Space UK Ltd, United Kingdom; Peter de Maagt, European Space Agency (ESA), Netherlands
- TU2.MM-22.2: HIGH-RESOLUTION RADAR OBSERVATION SEA SURFACE STATES DURING 7522**
AMK82 CRUISE
Aleksey Ermoshkin, Alexander Kupaev, Alexander Molkov, Institute of Applied Physics, Russian Academy of Sciences, Russia
- TU2.MM-22.3: AIRBORNE VALIDATION EXPERIMENTS FOR SPACEBORNE DOPPLER 7525**
SCATTEROMETERS AND THE JOINT OBSERVATION OF WIND AND CURRENTS
Jingyu Zhang, Xiaolong Dong, Di Zhu, National Space Science Center, CAS, China; Qingliu Bao, Piesat Information Technology Co.,Ltd., China; Xingou Xu, Risheng Yun, Jianying Ma, Yuanjing Miao, National Space Science Center, CAS, China
- TU2.MM-22.4: TOWARDS A CHARACTERIZATION OF THE KA-BAND OCEAN SURFACE 7529**
BACKSCATTERING MECHANISMS
Federica Polverari, Alexander Wineteer, Ernesto Rodriguez, Dragana Perkovic-Martin, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Paul Siqueira, University of Massachusetts Amherst, United States; J. Thomas Farrar, Woods Hole Oceanographic Institution, United States; J. Max Adam, University of Massachusetts Amherst, United States; James Edson, Woods Hole Oceanographic Institution, United States
- TU2.MM-22.5: SEASONAL VARIABILITY OF SURFACE CURRENTS IN THE GULF OF 7533**
TONKIN DERIVED FROM HF RADAR OBSERVATIONS
Manh Cuong Tran, Alexei Sentchev, Laboratoire d’Océanologie et de Géosciences - UMR 8187 LOG, France; Kim Cuong Nguyen, VNU University of Science, Viet Nam
- TU2.MM-22.6: METHODS OF COMPARING THE WAVE MODEL SIMULATION DATA WITH 7537**
THE KA-BAND RADAR DATA
Mariya Panfilova, Alexandra Kuznetsova, Yuriy Titchenko, Daniil Sergeev, Yuliya Troitskaya, Vladimir Karaev, Institute of Applied Physics, Russian Academy of Sciences, Russia
- TU2.MM-22.7: A NEW ALGORITHM FOR RETRIEVING SEA SURFACE CURRENT 7541**
DIRECTION FROM SAR DOPPLER INFORMATION
Xiaobo Yang, Yijun He, Nanjing University of Information Science and Technology, China
- TU2.MM-22.8: EXPERIMENTAL MEASUREMENTS OF THE STATISTICAL 7545**
CHARACTERISTICS OF THE SEA WAVES USING UNDERWATER ACOUSTIC WAVEGAUGE AND
COMPARISON WITH ADCP MEASUREMENTS
Mariya Ryabkova, Yury Titchenko, Vladimir Karaev, Eugeny Meshkov, Roman Belyaev, Mariya Panfilova, Institute of Applied Physics, Russian Academy of Sciences, Russia; Vladimir Baranov, Vladimir Ocherednik, Shirshov Institute of Oceanology of Russian Academy of Sciences, Russia

TU2.MM-23: RADIOMETER SYSTEMS AND CALIBRATION

TU2.MM-23.1: A STUDY OF FRONT END ARCHITECTURES FOR THE POLARRAD 0.5-2 GHZ 7982 MICROWAVE RADIOMETER

Mark Andrews, Joel Johnson, The Ohio State University, United States; Matthew Mclinden, NASA Goddard Space Flight Center, United States; Sidharth Misra, NASA Jet Propulsion Laboratory, United States

TU2.MM-23.2: DESIGN OF INTERMEDIATE FREQUENCY MODULE OF MICROWAVE 7984 RADIOMETER BASED ON POLYPHASE FILTER BANK

Shijian Fu, Ling Tong, Xun Gong, Xinyi Gao, Peicheng Wang, Bo Gao, Yukai Liu, Kun Zhang, University of Electronic Science and Technology of China, China

TU2.MM-23.3: FURTHER DEVELOPMENT OF THE MECHANICALLY-ACTUATED 7988 RECONFIGURABLE REFLECTARRY (MARR) FOR THE MICROWAVE SINGLE PIXEL IMAGER (MSPI)

Justin Bobak, Scott Rudolph, Blerta Markowski, David Bonanno, Michael Nurnberger, Brian Hicks, Hatim Alqadah, William Bounds, US Naval Research Laboratory, United States

TU2.MM-23.4: CALIBRATION OF A WIDEBAND AUTOCORRELATION RADIOMETER (WIBAR) 7991 ENHANCED WITH A COMB FILTER IN TIME DOMAIN MODE

Maryam Salim, Roger De Roo, Kamal Sarabandi, University of Michigan, United States

TU2.MM-23.5: INTERCALIBRATION OF FY-3D MWTS AGAINST S-NPP ATMS BASED ON 7995 RADIATIVE TRANSFER MODEL

Xian-Hui Su, Geng-Ming Jiang, Fudan University, China

TU2.MM-23.6: ATMOSPHERIC EMISSION AT LOW MICROWAVE FREQUENCIES: A 7999 SITE-BASED ANALYSIS

Ada Vittoria Bosisio, Marco Brogioni, Giovanni Macelloni, CNR, Italy

TU2.MM-23.7: WIND VECTOR AND SST DEPENDENCE OF KU- AND KA- BAND OCEAN 8003 SURFACE NRCS AT LOW INCIDENCE ANGLES

Alamgir Hossain, W. Linwood Jones, University of Central Florida, United States

TU2.MM-23.8: BACKSCATTERING SIGNATURES AT KU BAND OVER AFRICA FROM JASON-3 8007 AND SWIM

Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Fabien Blarel, LEGOS, France; Zacharie Aoulad, ISPA, France; Catherine Prigent, LERMA, France; Eric Mougin, GET, France; Fabrice Papa, LEGOS, France; Philippe Paillou, LAB, France; Mehrez Zribi, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Cassandra Normandin, LAB, France; Pierre Zeiger, LEGOS, France; José Darrozes, Luc Bourrel, GET, France; Christophe Moisy, Jean-Pierre Wigneron, ISPA, France

TU2.MM-23.9: LINEAR DECONVOLUTION PROCESSING ON RESOLUTION 8011 ENHANCEMENT FOR SCATTEROMETER

Liling Liu, China University of Mining and Technology, China; Xiaolong Dong, National Space Science Center, Chinese Academy of Sciences, China; Wenming Lin, Nanjing University of Information Science and Technology, China; Liting Wang, North China Institute of Computing Technology, China

TU2.MM-24: LANDSLIDES AND EARTHQUAKES

TU2.MM-24.1: VIDEO MONITORING OF LANDSLIDE BASED ON BACKGROUND 8432 SUBTRACTION WITH GAUSSIAN MIXTURE MODEL ALGORITHM

Yang Liu, Chang'an University, China; Gucheng Tang, Zhejiang Academy of Surveying and Mapping, China; Weibao Zou, Chang'an University, China

TU2.MM-24.2: LANDSLIDE MAPPING USING SAR IMAGERY WITH PRECISE 8436 REGISTRATION

Taku Teshima, Akira Iwasaki, University of Tokyo, Japan

TU2.MM-24.3: A COMPARISON OF CNN AND DENSENET FOR LANDSLIDE DETECTION	8440
<i>Tong Liu, Tao Chen, China University of Geosciences, China</i>	
TU2.MM-24.4: PIXEL BASED LANDSLIDE IDENTIFICATION USING LANDSAT 8 AND GEE.....	8444
<i>Pawan Singh, Vipin Maurya, Ramji Dwivedi, Motilal Nehru National Institute of Technology Allahabad, India</i>	
TU2.MM-24.5: AREAS PRONE TO LAND SUBSIDENCE AND THEIR EVOLUTIONS IN	8448
BELGIUM DURING THE LAST 30 YEARS	
<i>Pierre-Yves Declercq, Atefe Choopani, Royal Belgium Institute of Natural Sciences, Belgium; Alain Dassargues, University of Liège, Belgium; Xavier Devleeschouwer, Royal Belgium Institute of Natural Sciences, Belgium</i>	
TU2.MM-24.6: POST-EARTHQUAKE LANDSLIDE EXTRACTION BASED ON FEATURE	8452
EXPANSION U-NET MODEL	
<i>Xiao Gao, Tao Chen, China University of Geosciences, China</i>	
TU2.MM-24.7: THE DEVELOPMENT OF RAPID EARTHQUAKE DISASTER ASSESSMENT	8456
SYSTEM BASED ON SPACE-AIR-GROUND INTEGRATED EARTH OBSERVATION	
<i>Xiang Ding, Xiaoqing Wang, Aixia Dou, Ling Ding, Xiaoxiang Yuan, Institute of Earthquake Forecasting, CEA, China; Shuming Wang, Institute of Earthquake Forecasting, China</i>	
TU2.MM-24.8: AUTOMATIC DETECTION OF LANDSLIDES BASED ON MACHINE LEARNING	8460
FRAMEWORK	
<i>Meghanadh Devara, Vipin Maurya, Manish Kumar, Ramji Dwivedi, MNNIT ALLAHABAD, India</i>	
 TU2.MM-25: MACHINE LEARNING METHODS IN HAZARD ASSESSMENT	
TU2.MM-25.1: AUTOMATIC DETECTION OF WIDELY DISTRIBUTED LOCAL-SCALE	8464
SUBSIDENCE BOWLS IN RAPIDLY URBANIZING METROPOLITAN REGION USING TIME-SERIES	
INSAR AND DEEP LEARNING METHODS	
<i>Zherong Wu, Zhuoyi Zhao, Yi Zheng, Peifeng Ma, Chinese University of Hong Kong, China</i>	
TU2.MM-25.2: CYCLONE IDENTIFY USING TWO-BRANCH CONVOLUTIONAL NEURAL	8468
NETWORK FROM GLOBAL FORECASTING SYSTEM ANALYSIS	
<i>Fan Meng, Qingyu Tian, China University of Petroleum (East China), China; Handan Sun, China University of Petroleum, China; Danya Xu, Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), China; Tao Song, China University of Petroleum (East China), China</i>	
TU2.MM-25.3: TROPICAL CYCLONE SIZE ESTIMATION USING DEEP CONVOLUTIONAL	8472
NEURAL NETWORK	
<i>Fan Meng, Pengfei Xie, Ying Li, China University of Petroleum (East China), China; Handan Sun, China University of Petroleum, China; Danya Xu, Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), China; Tao Song, China University of Petroleum (East China), China</i>	
TU2.MM-25.4: USE ENSEMBLE LEARNING TO ESTIMATE THE POPULATION AND ASSETS	8476
EXPOSED TO TROPICAL CYCLONES	
<i>Fan Meng, China University of Petroleum (East China), China; Tongmao Ma, Polytechnical University of Madrid, Spain; Pengfei Xie, China University of Petroleum (East China), China; Handan Sun, China University of Petroleum, China; Danya Xu, Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), China; Tao Song, China University of Petroleum (East China), China</i>	
TU2.MM-25.5: VOLCANIC SO2 NEAR-REAL TIME RETRIEVAL USING TROPOMI DATA AND	8480
NEURAL NETWORKS: THE DECEMBER 2018 ETNA TEST CASE	
<i>Davide De Santis, Ilaria Petracca, University of Rome, Italy; Stefano Corradini, Lorenzo Guerrieri, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Matteo Picchiani, GEO-K s.r.l, Italy; Luca Merucci, Dario Stelitano, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Fabio Del Frate, University of Rome, Italy; Fred Prata, AIRES Pty Ltd., Australia; Giovanni Schiavon, University of Rome, Italy</i>	

TU2.MM-25.6: TOWARDS IMPROVED FORECASTING OF VOLCANIC HAZARDS USING MACHINE LEARNING APPLIED TO INSAR DATA	8484
<i>Andrew Hooper, Matt Gaddes, University of Leeds, United Kingdom; Marco Bagnardi, NASA, United States; Fabien Albino, University of Bristol, United Kingdom</i>	
TU2.MM-25.7: A MACHINE LEARNING METHODOLOGY FOR NEXT DAY WILDFIRE PREDICTION	8487
<i>Stella Girtsou, Alexis Apostolakis, National Observatory of Athens, Greece; Giorgos Giannopoulos, Athena Research Center, Greece; Charalampos Kontoes, National Observatory of Athens, Greece</i>	
TU2.MM-25.8: SEMI-SUPERVISED PHENOLOGY ESTIMATION IN COTTON PARCELS WITH SENTINEL-2 TIME-SERIES	8491
<i>Vasileios Sitokonstantinou, Alkiviadis Koukos, Charalampos Kontoes, Nikolaos S. Bartsotas, National Observatory of Athens, Greece; Vassilia Karathanassi, National Technical University of Athens, Greece</i>	
TU2.MM-25.9: WATER BODY DETECTION USING DEEP LEARNING WITH SENTINEL-1 SAR SATELLITE DATA AND LAND COVER MAPS	8495
<i>Hyungyun Jeon, Duk-jin Kim, Junwoo Kim, Seoul National University, Korea (South)</i>	
TU2.MM-25.10: DEEP REINFORCEMENT LEARNING INTERDEPENDENT HEALTHCARE CRITICAL INFRASTRUCTURE SIMULATION MODEL FOR DYNAMICALLY VARYING COVID-19 SCENARIO – A CASE STUDY OF A METRO CITY	8499
<i>Srikanth Gollavilli, Nivedita Nukavarapu, Surya Durbha, Indian Institute of Technology Bombay, India</i>	
 TU2.MM-26: STUDENT PAPER CONTEST I	
TU2.MM-26.1: A MACHINE LEARNING APPROACH TO MASS-CONSERVING ICE THICKNESS INTERPOLATION	8664
<i>Thomas Teisberg, Dustin Schroeder, Emma MacKie, Stanford University, United States</i>	
TU2.MM-26.2: ROTATION CONSISTENCY-PRESERVED GENERATIVE ADVERSARIAL NETWORKS FOR CROSS-DOMAIN AERIAL IMAGE SEMANTIC SEGMENTATION	8668
<i>Te Shi, Yansheng Li, Yongjun Zhang, School of Remote Sensing and Information Engineering, Wuhan University, China</i>	
TU2.MM-26.3: SEMANTIC SEGMENTATION OF REMOTE SENSING IMAGES COMBINING HIERARCHICAL PROBABILISTIC GRAPHICAL MODELS AND DEEP CONVOLUTIONAL NEURAL NETWORKS	8672
<i>Martina Pastorino, Gabriele Moser, Sebastiano Serpico, Università degli Studi di Genova, Italy; Josiane Zerubia, Université Cote d'Azur, France</i>	
TU2.MM-26.4: TOWARDS OUT-OF-DISTRIBUTION DETECTION FOR REMOTE SENSING	8676
<i>Jakob Gawlikowski, German Aerospace Center (DLR), Germany; Sudipan Saha, Anna Kruspe, Xiao Xiang Zhu, Technical University of Munich, Germany</i>	
TU2.MM-26.5: POSSIBLE EVIDENCE OF EARTHQUAKE PRECURSORS OBSERVED IN IONOSPHERIC SCINTILLATION EVENTS OBSERVED FROM SPACEBORNE GNSS-R DATA	8680
<i>Carlos Molina, Badr-Eddine Boudriki Semlali, Hyuk Park, Adriano Camps, Universitat Politècnica de Catalunya, Spain</i>	
 TU3.O-1: MICROWAVE REMOTE SENSING OF OCEAN WINDS	
TU3.O-1.1: NUMERICAL SIMULATIONS AND ANALYSIS OF BEAM-RESOLVED IN-PLANE BISTATIC SCATTERING IN A WAVETANK SETUP	7315
<i>Jakov Toporkov, Jeffrey Ouellette, US Naval Research Laboratory, United States</i>	

TU3.O-1.3: AN EVALUATION OF NOAA CYGNSS WINDS DERIVED FROM V3.0 CYGNSS NORMALIZED BISTATIC RADAR CROSS SECTION	7322
<i>Faozi Said, NOAA/GST, United States; Zorana Jelenak, NOAA/UCAR, United States; Paul S. Chang, National Oceanic and Atmospheric Administration (NOAA), United States</i>	
TU3.O-1.4: ESTIMATING SEA SURFACE VORTICITY FROM THE RAPIDSCAT SCATTEROMETER KU-BAND NRCS BY USING COINCIDENT SUB-FOOTPRINT SCALE WINDS AND DUAL POLARIZATION ANALYSIS	7326
<i>David Weissman, Hofstra University, United States; Mark Bourassa, Florida State University, United States</i>	
TU3.O-1.5: OCEAN VECTOR WIND MEASUREMENTS FROM GPM TO STUDY DIURNAL CYCLES OF TROPICAL WINDS	7330
<i>Alamgir Hossain, University of Central Florida, United States; Maria Jacob, Universidad Nacional de Córdoba, Argentina; W. Linwood Jones, University of Central Florida, United States</i>	
TU3.O-1.6: AN OPERATIONAL ALL-WEATHER WIND SPEED FROM AMSR2	7334
<i>Suleiman Alswiss, Joseph Sapp, Zorana Jelenak, Paul S. Chang, NOAA/NESDIS/STAR, United States</i>	
 TU3.O-2: SATELLITE MISSION DERIVED ANALYTICS	
TU3.O-2.1: A DEEP LEARNING SYSTEM FOR PRECIPITATION ESTIMATION USING MEASUREMENTS FROM THE ADVANCED BASELINE IMAGER (ABI) ON THE GOES-R SERIES	7662
<i>Yang Liu, Ocean University of China, China; Haonan Chen, Colorado State University, United States; Lei Han, Ocean University of China, China; Jieying He, Chinese Academy of Sciences, China</i>	
TU3.O-2.2: CHARACTERIZATION OF GLOBAL VEGETATION ROUGHNESS INDEX (VRI) PRODUCTS DERIVED FROM THE SGLI SENSOR ONBOARD GCOM-C	7666
<i>Lu Xu, Jiangsu Normal University, China; Hongliang Fang, Sijia Li, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China</i>	
TU3.O-2.3: EVALUATION OF MC-CNN BASED STEREO MATCHING PIPELINE FOR THE CO3D EARTH OBSERVATION PROGRAM	7670
<i>Véronique Defonte, Loïc Dumas, CS Group, France; Myriam Cournet, Emmanuelle Sarrazin, Centre National d'Etudes Spatiales (CNES), France</i>	
TU3.O-2.4: RSTAC: AN R PACKAGE TO ACCESS SPATIOTEMPORAL ASSET CATALOG SATELLITE IMAGERY	7674
<i>Rolf Simoes, Felipe Carvalho de Souza, Matheus Zaglia, Gilberto Ribeiro de Queiroz, Rafael D. C. dos Santos, Karine Reis Ferreira, Instituto Nacional de Pesquisas Espaciais, Brazil</i>	
TU3.O-2.5: PROTOTYPING VEGETATION TRAITS MODELS IN THE CONTEXT OF THE HYPER SPECTRAL CHIME MISSION PREPARATION	7678
<i>Jochem Verrelst, Charlotte De Grave, Eatidal Amin, Pablo Reyes, Miguel Morata, Enrique Portales, Santiago Belda, University of Valencia, Spain; Giulia Tagliabue, Cinzia Panigada, University of Milano - Bicocca, Italy; Mirco Boschetti, Gabriele Candiani, National Research Council (CNR-IREA), Italy; Karl Segl, Stephane Guillasso, GFZ, Germany; Katja Berger, Mattias Wocher, Tobias Hank, Ludwig-Maximilians-Universität Muenchen (LMU), Germany; Uwe Rascher, Forschungszentrum Jülich, Germany; Claudia Isola, European Space Agency (ESA), Netherlands</i>	
TU3.O-2.6: EARTH OBSERVATION SIMULATOR (EO-SIM): AN OPEN-SOURCE SOFTWARE FOR OBSERVATION SYSTEMS DESIGN	7682
<i>Vinay Ravindra, Ryan Ketzner, Sreeja Nag, NASA Ames Research Center, United States</i>	
 TU3.O-3: RADIOMETRIC SOUNDING AND IMAGING	
TU3.O-3.1: DEVELOPMENT OF A POLARIMETRIC 50 GHZ SPECTROMETER FOR TEMPERATURE SOUNDING IN THE MIDDLE ATMOSPHERE	7686
<i>Witali Krochin, Gunter Stober, Axel Murk, University of Bern, Switzerland</i>	

TU3.O-3.2: SAPHIR-NG HIGH RESOLUTION MICROWAVE SOUNDER: TOWARDS AN ENHANCED OBSERVATION OF THE ATMOSPHERE	7689
<i>Jérôme Puech, Laura Hermozo, CNES, France; Hélène Brogniez, LATMOS, France; Philippe Chambon, METEO France, France; Rémy Roca, LEGOS, France; Valerio Cipolla, Christophe Goldstein, CNES, France; Bruno Picard, FLUCTUS, France; Ralf Bennartz, Earth and Environmental Sciences, Vanderbilt University, France; Benjamin Carayon, Jean-Claude Orlhac, Christophe Malassingne Costes, Laurent Costes, Nicolas Jeannin, Adrien Moraine, AIRBUS Defence and Space, France</i>	
TU3.O-3.3: NOISE SUPPRESSION IN ATMS SPATIAL RESOLUTION ENHANCEMENT USING ADAPTIVE WINDOW METHOD	7693
<i>Jun Zhou, Hu Yang, University of Maryland, United States</i>	
TU3.O-3.4: ROTARY-MOTION-EXTENDED ARRAY SYNTHESIS (R-MXAS): SIMULTANEOUS SPARSITY AND SENSITIVITY IN A SYNTHETIC APERTURE IMAGING RADIOMETER	7696
<i>John Kendra, Greg Bloy, Leidos, United States; Joseph Hughes, ASTRA, LLC, United States</i>	
TU3.O-3.5: A NEW ANTENNA PATTERN DECONVOLUTION METHOD TO ENHANCE THE SPATIAL RESOLUTION OF MULTI-CHANNEL MICROWAVE RADIOMETER MEASUREMENTS	7700
<i>Matteo Alparone, Ferdinando Nunziata, Università degli Studi di Napoli Parthenope, Italy; Claudio Estatico, Università degli Studi di Genova, Italy; Maurizio Migliaccio, Università degli Studi di Napoli Parthenope, Italy</i>	
TU3.O-3.6: MILLIMETER LUNAR MICROWAVE RADIANCE: MODEL SIMULATION AND SATELLITE OBSERVATIONS	7704
<i>Hu Yang, University of Maryland, United States</i>	
 TU3.O-4: UAV AND CLOSE SENSING APPLICATIONS IV	
TU3.O-4.1: UAVS FOR FINE-SCALE OPEN-SOURCE LANDFILL MAPPING	8217
<i>Coraline Wyard, Benjamin Beaumont, Institut scientifique de service public (ISSeP), Belgium; Taïs Grippa, Stefanos Georganos, Université libre De Bruxelles, Belgium; Eric Hallot, Institut scientifique de service public (ISSeP), Belgium</i>	
TU3.O-4.2: TEMPORAL RELATIONS MATTER: A TWO-PATHWAY NETWORK FOR AERIAL VIDEO RECOGNITION	8221
<i>Pu Jin, Lichao Mou, Yuansheng Hua, Technical University of Munich, Germany; Gui-Song Xia, Wuhan University, China; Xiao Xiang Zhu, Technical University of Munich, Germany</i>	
TU3.O-4.3: COMPARISON OF REFLECTANCE CALIBRATION WORKFLOWS FOR A UAV-MOUNTED MULTI-CAMERA ARRAY SYSTEM	8225
<i>Erekle Chakhvashvili, Bastian Siegmann, Juliane Bendig, Uwe Rascher, Forschungszentrum Jülich, Germany</i>	
TU3.O-4.4: A ROBUST FRAMEWORK TO ESTIMATE THE SPATIAL RESOLUTION OF OVERHEAD IMAGES USING OFF-THE-SHELF OBJECT DETECTORS	8229
<i>Haolin Liang, Shawn Newsam, University of California, Merced, United States</i>	
TU3.O-4.5: DEVELOPMENT OF A BEST PRACTICES WORKFLOW FOR RAPID BEACH SURVEYING USING A LOWER-COST MOBILE LIDAR SYSTEM	8233
<i>Isabel Garcia, Michael Starek, Texas A&M University - Corpus Christi, United States</i>	
TU3.O-4.6: ANOMALY DETECTION IN AERIAL VIDEOS VIA FUTURE FRAME PREDICTION NETWORKS	8237
<i>Pu Jin, Lichao Mou, Technical University of Munich, Germany; Gui-Song Xia, Wuhan University, China; Xiao Xiang Zhu, Technical University of Munich, Germany</i>	

TU3.O-5: ELECTROMAGNETIC MODELING IN REMOTE SENSING II

TU3.O-5.1: A WIDEBAND METHOD OF MOMENTS TARGET MODELING AND FEATURE 2258 EXTRACTION APPROACH FOR GPR IMAGING

Zacharie Idriss, Raghu Raj, Naval Research Laboratory, United States; Ram Narayanan, Pennsylvania State University, United States

TU3.O-5.2: SIMULATIONS OF THE OPTICAL PROPERTIES OF NONSPHERICAL 2262 DIELECTRIC PARTICLES IN THE ATMOSPHERE

Ping Yang, Jiachen Ding, Masanori Saito, James Coy, R. Lee Panetta, Texas A&M University, United States

TU3.O-5.3: BIOMASS END-TO-END PERFORMANCE SIMULATOR: DESCRIPTION OF THE 2266 IONOSPHERE MODULE

Adriano Camps, Universitat Politècnica de Catalunya, Spain; Jose Barbosa, Ioannis Nestoras, Adriano Jordão, RDA, Switzerland; Maria Sanjuan-Ferrer, Marc Rodriguez, German Aerospace Center (DLR), Germany

TU3.O-5.4: EXTENSION OF THE SCALAR KIRCHHOFF APPROXIMATION FOR 2270 CALCULATING THE COHERENT SCATTERING FROM MULTI-LAYERS WITH RANDOM ROUGH INTERFACES

Nicolas Pinel, Icam Ouest, France

TU3.O-5.5: WAVE SCATTERING FROM A MODULATED ROUGH SURFACE 2274

Ying Yang, Kun-Shan Chen, Guilin University of Technology, China

TU3.O-6: SAR INTERFEROMETRY: METHODS AND APPLICATIONS II

TU3.O-6.1: IMPACTS OF IONOSPHERIC EFFECTS ON SPACEBORNE SINGLE-PASS SAR 2282 IMAGING AND INTERFEROMETRY OF LUTAN-1

Haoyu Lin, Yunkai Deng, Heng Zhang, Da Liang, Tingzhu Fang, Robert Wang, Aerospace Information Research Institute, Chinese Academy of Sciences, China

TU3.O-6.2: ASSESSMENT OF THE ACCURACY OF TROPOSPHERIC ATMOSPHERIC 2286 CORRECTION USING A HIGH-EFFICIENCY WRF SIMULATION DRIVEN BY ERA5

Qinghua Liu, Qiming Zeng, Jian Jiao, Peking University, China

TU3.O-6.3: SPATIO-TEMPORAL TROPOSPHERIC VARIABILITY IN SAR INTERFEROGRAMS 2290 WITH EXTREMELY HIGH TEMPORAL RESOLUTION

Fengming Hu, Fudan University, China; Ramon F. Hanssen, Delft University of Technology, Netherlands

TU3.O-6.4: THE TRIPLET NETWORK ENHANCED SPECTRAL DIVERSITY (T-NESD) 2294 METHOD FOR THE CORRECTION OF TOPS DATA CO-REGISTRATION ERRORS FOR NON- STATIONARY SCENES

Pietro Mastro, Università degli Studi della Basilicata, Italy; Antonio Pepe, Italian National Council of Research, Italy

TU3.O-6.5: MONITORING SURFACE DEFORMATION OVER OILFIELD USING MT-INSAR 2298 AND PRODUCTION WELL DATA

Sarah Narges Fatholahi, Hongjie He, Lanying Wang, Awase Khirni Syed, Jonathan Li, University of Waterloo, Canada

TU3.O-6.6: EFFICIENCY OF CONTEXTUAL INFORMATION IN PROCESSING OF 2302 INTERFEROMETRIC DATA STACKS

Roghayeh Zamani, University of Napoli Parthenope, Italy; Hossein Aghababaei, University of Twente, Netherlands; Giampaolo Ferrioli, University of Napoli Parthenope, Italy

TU3.O-7: IMAGE SEGMENTATION: DATA AND APPLICATIONS

TU3.O-7.1: EXPLORING TEMPORAL CONTEXT AT MULTIPLE SCALES FOR CROP 2305 MAPPING WITH FULLY CONVOLUTIONAL RECURRENT NETS AND FULLY CONNECTED CRFS

Marcos Rogozinski, Jorge Andres Chamorro Martinez, Patrick Nigri Happ, Raul Queiroz Feitosa, Pontifical Catholic University of Rio de Janeiro, Brazil

TU3.O-7.2: DATA AUGMENTATION FOR LAND COVER CLASSIFICATION USING 2309 GENERATIVE ADVERSARIAL NETWORKS

Kamel Aouaidjia, Issam Boukerch, Algerian Space Agency, Algeria

TU3.O-7.3: THE WEAKLY-LABELED RAND INDEX 2313

Dylan Stewart, Anna Hampton, Alina Zare, University of Florida, United States; Jeff Dale, James Keller, University of Missouri, United States

TU3.O-7.4: MODERATE RESOLUTION REMOTE SENSING AND MACHINE LEARNING FOR 2317 HUMAN RIGHTS MONITORING: THE CASE OF RAKHINE STATE, MYANMAR

Josh Redmond, University of Exeter, United Kingdom

TU3.O-7.5: AN OPENSTREETMAP-BASED DATASET OF BUILDING FOOTPRINTS FOR 2321 ANALYSING DIFFERENT TYPES OF LABEL NOISE

Jonas Gütter, German Aerospace Center (DLR), Jena, Germany, Germany; Kruspe Anna, Xiao Xiang Zhu, German Aerospace Center (DLR); Technical University of Munich (TUM), Germany

TU3.O-7.6: ATTENTION BASED SEMANTIC SEGMENTATION ON UAV DATASET FOR 2325 NATURAL DISASTER DAMAGE ASSESSMENT

Tashnim Chowdhury, Maryam Rahnemoonfar, University of Maryland Baltimore County, United States

TU3.O-8: OPTICAL II - VEHICLE/AIRCRAFT DETECTION

TU3.O-8.1: VEHICLE DETECTION USING DEEP LEARNING WITH DEFORMABLE 2329 CONVOLUTION

Yuanhang Wang, Shujia Ye, Yang Bai, Guoming Gao, Yanfeng Gu, Harbin Institute of Technology, China

TU3.O-8.2: LEARNING VIA WATCHING: A WEAKLY SUPERVISED MOVING OBJECT 2333 DETECTOR FOR SATELLITE VIDEOS

Junpeng Zhang, University of New South Wales Canberra, Australia; Jue Zhang, University of New South Wales, Australia; Xiuping Jia, University of New South Wales Canberra, Australia

TU3.O-8.3: SELF-SUPERVISED DEEP LEARNING FOR VEHICLE DETECTION IN 2337 HIGH-RESOLUTION SATELLITE IMAGERY

Zeyad Awwad, Massachusetts Institute of Technology, United States; Faisal Alnasser, Tariq Alshahrani, King Abdulaziz City for Science and Technology, Saudi Arabia; Matthew Moraguez, Massachusetts Institute of Technology, United States; Ahmad Alabdulkareem, King Abdulaziz City for Science and Technology, Saudi Arabia; Olivier de Weck, Massachusetts Institute of Technology, United States

TU3.O-8.4: ADAPTING VEHICLE DETECTOR TO TARGET DOMAIN BY ADVERSARIAL 2341 PREDICTION ALIGNMENT

Yohei Koga, Independent researcher, Japan; Hiroyuki Miyazaki, Ryosuke Shibasaki, University of Tokyo, Japan

TU3.O-8.5: INVERSE DOMAIN ADAPTATION FOR REMOTE SENSING IMAGES USING 2345 WASSERSTEIN DISTANCE

Ziyao Li, Wuhan University, China; Rui Wang, Man-On Pun, Chinese University of Hong Kong, China; Zhiguo Wang, Sichuan University, China; Huiliang Yu, Shanghai CAS-NOVA Satellite Technology Company Limited, China

TU3.O-8.6: MULTI-VIEW ATTENTION NETWORK FOR REMOTE SENSING IMAGE 2349 CAPTIONING

Yun Meng, Yu Gu, Xiutiao Ye, Jingxian Tian, Shuang Wang, Xidian University, China; He Zhang, Northwest University, China; Biao Hou, Licheng Jiao, Xidian University, China

TU3.O-9: DEEP LEARNING FOR SEMANTIC SEGMENTATION AND IMAGE CLASSIFICATION II

TU3.O-9.1: ENSEMBLE CNN BASED ON PIXEL-PAIR AND RANDOM FEATURE SELECTION 2353 FOR HYPERSPECTRAL IMAGE CLASSIFICATION WITH SMALL-SIZE TRAINING SET

Shuxian Dong, Yinghui Quan, Wei Feng, Xidian University, China; Qiang Li, Northwestern Polytechnical University, China; Gabriel Dauphin, University Paris XIII, France; Mengdao Xing, Xidian University, China

TU3.O-9.2: NEURAL STOCHASTIC DIFFERENTIAL EQUATION FOR HYPERSPECTRAL 2357 IMAGE CLASSIFICATION

Xiao Zhang, Wei Wei, Lei Zhang, Northwestern Polytechnical University, China; Chen Ding, Xi'an University of Posts and Telecommunications, China

TU3.O-9.3: SEMI-SUPERVISED SAR ATR VIA CONDITIONAL GENERATIVE ADVERSARIAL 2361 NETWORK WITH MULTI-DISCRIMINATOR

Xiaoyu Liu, Yulin Huang, Chenwei Wang, Jifang Pei, Weibo Huo, Yin Zhang, Jianyu Yang, University of Electronic Science and Technology of China, China

TU3.O-9.4: SELF-SUPERVISED AUTO-ENCODING MULTI-TRANSFORMATIONS FOR 2365 AIRPLANE CLASSIFICATION

Yin Xu, Ziteng Cui, Shanghai Jiao Tong University, China; Weiwei Guo, Tongji University, China; Zenghui Zhang, Wenxian Yu, Shanghai Jiao Tong University, China

TU3.O-9.5: ADVERSARIAL FINE-GRAINED ADAPTATION NETWORK FOR CROSS-SCENE 2369 CLASSIFICATION

Sihan Zhu, Fulin Luo, Bo Du, Liangpei Zhang, Wuhan University, China

TU3.O-9.6: PERFORMANCE OF DIFFERENT U-NET ARCHITECTURES FOR INVENTORY 2373 OF COCONUT PLANTATIONS USING CARTOSAT-2 MULTISPECTRAL DATA

Sujeeth Vankudari, Navneet Raju, Anirudh Maiya, PES University, India; Hebbar R, National Remote Sensing Centre-ISRO, India; Uma D, Shylaja SS, PES University, India; Ganesha Raj, National Remote Sensing Centre-ISRO, India

TU3.O-10: ADVANCES IN PARAMETER RETRIEVAL AND APPLICATIONS

TU3.O-10.1: PROTOTYPE FOR SURFACE ALBEDO RETRIEVAL BASED ON SENTINEL-3 2377 OLCI AND SLSTR DATA IN THE FRAMEWORK OF COPERNICUS CLIMATE CHANGE

Jorge Sánchez-Zapero, Fernando Camacho, EOLAB, Spain; Jonathan León-Tavares, VITO, Belgium; Enrique Martínez-Sánchez, Javier Gorroño, EOLAB, Spain; Iskander Benhadj, Carolien Toté, Else Swinnen, VITO, Belgium; Joaquín Muñoz-Sabater, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom

TU3.O-10.2: A METHOD OF RETRIEVING 10-M SPECTRAL SURFACE ALBEDO PRODUCTS 2381 FROM SENTINEL-2 AND MODIS DATA

Rui Song, Jan-Peter Muller, Alistair Francis, University College London, United Kingdom

TU3.O-10.3: SINGLE UNDERWATER IMAGE RESTORATION BY CONTRASTIVE LEARNING 2385

Junlin Han, Mehrdad Shoeiby, Tim Malthus, Elizabeth Botha, Janet Anstee, Saeed Anwar, Ran Wei, Lars Petersson, Mohammad Ali Armin, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

TU3.O-10.4: ESTIMATING BIOMASS FROM SENTINEL-3 ALTIMETRY DATA: A SENSITIVITY 2389 ANALYSIS

Davide Comite, Nazzareno Pierdicca, Sapienza University of Rome, Italy; Maria Paola Clarizia, Deimos Space, United Kingdom; Giuseppina De Felice Proia, Leila Guerriero, Cristina Vittucci, Tor Vergata University, Italy; Daniel Pascual, Deimos Space, United Kingdom; Marco Restano, SERCO, Italy; Jérôme Benveniste, European Space Agency (ESA), Italy

TU3.O-10.6: REGRESSION NETWORKS FOR CALCULATING ENGLACIAL LAYER THICKNESS	2393
<i>Debvrat Varshney, Maryam Rahnemoonfar, Masoud Yari, University of Maryland Baltimore County, United States; John Paden, University of Kansas, United States</i>	
 TU3.O-11: ADVANCED METHODS FOR POLARIMETRIC INFORMATION EXTRACTION II	
TU3.O-11.1: POLARIMETRIC ANALYSIS USING THE ALGEBRAIC REAL REPRESENTATION OF THE SCATTERING MATRIX	499
<i>Madalina Ciuca, Grenoble Images Parole Signal Automatique (GIPSA-lab) Grenoble INP/ University POLITEHNICA of Bucharest (UPB), Romania; Gabriel Vasile, Michel Gay, Grenoble Images Parole Signal Automatique (GIPSA-lab) Grenoble INP, France; Andrei Anghel, Silviu Ciochina, University Politehnica of Bucharest, Romania</i>	
TU3.O-11.2: POLARIMETRIC SAR SIGNATURE FOR CROP CHARACTERIZATION	503
<i>Abhinav Verma, Subhadip Dey, Narayanarao Bhogapurapu, Dipankar Mandal, MRS Lab, India; Dipanwita Haldar, Indian Institute of Remote Sensing (IIRS-ISRO), India; Avik Bhattacharya, MRS Lab, India</i>	
TU3.O-11.3: FAST MATRIX BASED COMPUTATION OF EIGENVALUES IN POLSAR DATA	507
<i>Allan A. Nielsen, Technical University of Denmark, Denmark</i>	
TU3.O-11.4: RECONSTRUCTION OF PSEUDO QUAD-POL IMAGES FROM GENERAL COMPACT POLARIMETRIC DATA	511
<i>Junjun Yin, University of Science and Technology Beijing, China; Jian Yang, Tsinghua University, China</i>	
 TU3.O-12: LAND COVER CLASSIFICATION AND OBJECT EXTRACTION	
TU3.O-12.1: DISENTANGLED NON-LOCAL NETWORK FOR HYPERSPECTRAL AND LIDAR DATA CLASSIFICATION	2397
<i>Wenxia Liu, Feng Gao, Junyu Dong, Ocean University of China, China</i>	
TU3.O-12.2: HYPERSPECTRAL AND LIDAR DATA CLASSIFICATION BASED ON LINEAR SELF-ATTENTION	2401
<i>Min Feng, Feng Gao, Jian Fang, Junyu Dong, Ocean University of China, China</i>	
TU3.O-12.3: INVESTIGATING FUSION STRATEGIES ON ENCODER-DECODER NETWORKS FOR CROP SEGMENTATION USING SAR AND OPTICAL IMAGE SEQUENCES	2405
<i>Laura Elena Cué La Rosa, Pontifical Catholic University of Rio de Janeiro, Brazil; Dário Augusto Borges Oliveira, IBM Research, Brazil, Brazil; Raul Queiroz Feitosa, Pontifical Catholic University of Rio de Janeiro, Brazil</i>	
TU3.O-12.4: SOFNET: SAR-OPTICAL FUSION NETWORK FOR LAND COVER CLASSIFICATION	2409
<i>Di Zhang, Martin Gade, Jianwei Zhang, University of Hamburg, Germany</i>	
TU3.O-12.5: ROAD EXTRACTION AND ROAD WIDTH ESTIMATION VIA FUSION OF AERIAL OPTICAL IMAGERY, GEOSPATIAL DATA, AND STREET-LEVEL IMAGES	2413
<i>Andrea Grillo, University of Genoa, Italy; Vladimir Krylov, Dublin City University, Ireland; Gabriele Moser, University of Genoa, Italy; Sebastiano Serpico, Università degli Studi di Genova, Italy</i>	
TU3.O-12.6: STRUCTURED BUILDING EXTRACTION FROM HIGH-RESOLUTION SATELLITE IMAGES WITH A HYBRID CONVOLUTIONAL NEURAL NETWORK	2417
<i>Jianing Wang, Hanjiang Xiong, Jianya Gong, Xianwei Zheng, Wuhan University, China</i>	

TU3.O-13: GEOSPATIAL INTELLIGENCE

TU3.O-13.1: OCRE: FUNDING OPPORTUNITIES FOR THE EUROPEAN RESEARCH COMMUNITY FOR USING OCRE'S PROCURED CLOUD AND EARTH OBSERVATION COMMERCIAL SERVICES 2421

Jose Manuel Delgado Blasco, Antonio Romeo, RHEA Group, Spain; David Heyns, GEANT, Netherlands; Natassa Antoniou, EARSC, Belgium; Rob Carrillo, Trust-IT, Italy

TU3.O-13.2: AN EFFICIENT VARIANT OF THE GARBRECHT AND MARTZ ALGORITHM FOR CALCULATING FLOW DIRECTIONS OVER FLAT SURFACES IN RASTER DIGITAL ELEVATION MODELS 2424

Lihui Song, Guiyun Zhou, Zhonghua Su, University of Electronic Science and Technology of China, China; Yang Chen, Beijing Normal University, China; Xiang Zhou, Rong Zhao, University of Electronic Science and Technology of China, China

TU3.O-13.4: A PORTABLE APPROACH TO INTEGRATING DIVERSE GEO-SCIENCE DATA USING STARE-AWARE DATABASES AND TRANSITIONING TO CLOUD 2428

Michael Rilee, Rilee Systems Technologies LLC, United States; Kwo-Sen Kuo, Bayesics, LLC, United States; Niklas Griessbaum, James Frew, University of California, United States; James Gallagher, OPeNDAP, Inc., United States

TU3.O-13.5: DEVELOPING A SYSTEM TO MAP AND MONITOR BEACHED SARGASSUM ON THE CARIBBEAN COAST OF MEXICO 2432

Giles Foody, University of Nottingham, United Kingdom; Hansel Aragon, Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, Mexico; Betsabe de la Barreda-Bautista, Doreen Boyd, University of Nottingham, United Kingdom; Sergio Estrada, Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, Mexico; Pablo Lopez, Centro de Investigación en Ciencias de Información Geoespacial, Mexico; Adolfo Magaldi, National Autonomous University of Mexico, Mexico; Sarah Metcalfe, University of Nottingham, United Kingdom; Susana Perera-Valderrama, Rainer Ressel, Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, Mexico; Oscar Siordia, Centro de Investigación en Ciencias de Información Geoespacial, Mexico; Sofie Sjøgersten, University of Nottingham, United Kingdom; Geoff Smith, Specto Natura Ltd, United Kingdom

TU3.O-13.6: HIGH-RESOLUTION DATA GRIDS TO ASSESS URBAN DENSITY AND ENVIRONMENTAL QUALITY: THE CASE OF SÃO PAULO CITY 2436

Mayumi C. M. Hirye, QUAPA Research Lab, Brazil; Angelo S. Filardo Jr., Faculty of Architecture and Urbanismo, Brazil; Fabien H. Wagner, GeoProcessing Division, Brazil

TU3.O-14: SEASONAL SNOW II

TU3.O-14.1: DEVELOPMENT OF DYNAMIC SNOW DENSITY METHODOLOGY FOR GLOBSNOW SWE RETRIEVAL 5469

Pinja Venäläinen, Kari Luojus, Juha Lemmetyinen, Jouni Pulliainen, Mikko Moisander, Matias Takala, Finnish Meteorological Institute, Finland

TU3.O-14.2: SNOW WATER EQUIVALENT RETRIEVAL FROM COSMO-SKYMED OBSERVATIONS THROUGH MACHINE LEARNING ALGORITHMS AND MODEL SIMULATIONS 5473

Emanuele Santi, Simonetta Paloscia, Simone Pettinato, Institute of Applied Physics, National Research Council (IFAC-CNR), Italy; Claudia Notarnicola, Giovanni Cuzzo, Ludovica De Gregorio, EURAC Research, Institute for Earth Observation, Italy; Francesca Cigna, Deodato Tapete, Italian Space Agency (ASI), Italy

TU3.O-14.3: INTEGRATION OF DMRT AND SNOWPACK MODELS FOR SIMULATING BACKSCATTERING AND COMPARISON WITH COSMO-SKYMED DATA 5477

Fabrizio Baroni, Simone Pilia, Alessandro Lapini, Simonetta Paloscia, Simone Pettinato, Emanuele Santi, Leonardo Santurri, CNR/IFAC, Italy; Mauro Valt, ARPAV- Centro Valanghe di Arabba, Italy

TU3.O-14.4: A MULTISOURCE STATISTICAL METHOD TO DOWNSCALE SNOW COVER FRACTION IN MOUNTAIN REGIONS 5481

Valentina Premier, University of Trento, Italy; Carlo Marin, Claudia Notarnicola, Eurac Research, Italy; Lorenzo Bruzzone, University of Trento, Italy

TU3.O-14.5: EVALUATION OF A HIGH-RESOLUTION OPERATIONAL SNOW COVER AREA CLASSIFICATION ALGORITHM	5485
<i>Zacharie Barrou Dumont, Simon Gascoin, Center for the Study of the Biosphere from Space, France</i>	
TU3.O-14.6: AHP BASED ASSESSMENT OF GLOF SUSCEPTIBILITY OF SOUTH LHONAK GLACIAL LAKE, SIKKIM HIMALAYA, INDIA	5489
<i>Pranata Hazra, Akhouri Pramod Krishna, Birla Institute of Technology, Mesra, India</i>	
 TU3.O-15: DATA PROCESSING, MANAGEMENT AND VISUALIZATION III	
TU3.O-15.1: A FRAGILE WATERMARKING IN CIPHERTEXT DOMAIN BASED ON MULTI-PERMUTATION SUPERPOSITION CODING FOR REMOTE SENSING IMAGE	5664
<i>Li Jiang, Hao Zheng, Chaoxing Zhao, Zhengzhou University, China</i>	
TU3.O-15.2: STARE COMPANION FILES FOR NASA EARTH SCIENCE DATA	5668
<i>James Gallagher, OPeNDAP, United States; Edward Hartnett, Intelligent Data Design, Inc., United States; Michael Rilee, Rilee SystemsTechnologies, LLC, United States; Kwo-Sen Kuo, Bayesics, LLC, United States</i>	
TU3.O-15.3: AUTOMATED IMAGE PROCESSING WORKFLOW FOR UNMANNED AERIAL VEHICLES	5672
<i>Samuel Oswald, Dries Raymaekers, Wouter Dierckx, Dominique De Munck, Stephen Kempnaers, Jens Verrydt, Dieter Meeus, Bram Janssen, Tim Deroose, Pieter-Jan Baeck, Jan Biesemans, VITO, Belgium</i>	
TU3.O-15.4: GEO-IMAGERY MANAGEMENT AND STATISTICAL PROCESSING IN A REGIONAL CONTEXT USING OPEN DATA CUBE	5676
<i>Urtzi Otamendi, Izar Azpiroz, Marco Quartulli, Igor Olaizola, Vicomtech, Spain; Francisco J. Perez, David Alda, Xabier Garitano, Hazi, Spain</i>	
TU3.O-15.5: ADVANTAGES AND BOTTLENECKS OF QUANTUM MACHINE LEARNING FOR REMOTE SENSING	5680
<i>Daniela Zaidenberg, Massachusetts Institute of Technology, United States; Alessandro Sebastianelli, University of Sannio, Italy; Dario Spiller, Bertrand Le Saux, European Space Agency (ESA), Italy; Silvia Liberata Ullo, University of Sannio, Italy</i>	
TU3.O-15.6: A NEW WEB-BASED SOFTWARE TOOL FOR ICESAT AND ICESAT-2 LASER ALTIMETRY DATA PROCESSING AND VISUALIZATION	5684
<i>Bruno Silva, Luiz Guerreiro Lopes, University of Madeira, Portugal; Pedro Campos, Interactive Technologies Institute (ITI/LARSyS) and University of Madeira, Portugal</i>	
 TU3.O-16: EDUCATION AND REMOTE SENSING	
TU3.O-16.1: USER UPTAKE OF COPERNICUS RESOURCES: A USE CASE FOR LAND MONITORING	5688
<i>Lorenza Apicella, Alfonso Quarati, National Research Council (CNR), Italy; Sergio Rosim, Instituto Nacional de Pesquisas Espaciais, Brazil; Monica De Martino, National Research Council (CNR), Italy</i>	
TU3.O-16.2: ONLINE EDUCATION OF REMOTE SENSING IN CHINA DURING THE COVID-19 PANDEMIC: A CASE OF STUDY IN JIANGSU NORMAL UNIVERSITY	5692
<i>Qi Zhang, Qingmiao Ma, Yingjie Li, Shuguo Wang, Tianchen Qu, Zhuohao Liu, Ying Zhang, Chengzhi Gao, Jiangsu Normal University, China</i>	
TU3.O-16.3: WEARABLE ELECTRONICS EDUCATION FOR NEUROLOGICAL DISEASES	5696
<i>Hua Fan, Huajiang Xie, University of Electronic Science and Technology of China, China; Rami Ghannam, University of Glasgow, United Kingdom</i>	
TU3.O-16.4: GEO-ETHICS IN SLUM MAPPING	5700
<i>Maxwell Owusu, Monika Kuffer, Mariana Belgiu, University of Twente, Netherlands; Taïs Grippa, Moritz Lennert, Stefanos Georganos, Sabine Vanhuyse, Université libre De Bruxelles, Belgium</i>	

TU3.O-16.6: STRIVING FOR DIVERSITY, EQUITY, AND INCLUSION IN REMOTE SENSING EDUCATION 5704

Reginald Blake, Janet Liou-Mark, Hamidreza Norouzi, Julia Rivera, New York City College of Technology, United States; Abdou Rachid Bah, City University of New York, Graduate Center, United States

TU3.O-17: HIGH RESOLUTION AGRICULTURAL APPLICATIONS USING FLUORESCENCE/HYPERSPECTRAL DATA

TU3.O-17.1: COMPARING THE RETRIEVAL OF CHLOROPHYLL FLUORESCENCE FROM TWO AIRBORNE HYPERSPECTRAL IMAGERS WITH DIFFERENT SPECTRAL RESOLUTIONS FOR PLANT PHENOTYPING STUDIES 5845

Anirudh Belwalkar, Tomas Poblete, Andrew Longmire, University of Melbourne, Australia; Alberto Hornero, Swansea University, Consejo Superior de Investigaciones Científicas, United Kingdom; Pablo Zarco-Tejada, University of Melbourne, Consejo Superior de Investigaciones Científicas, Australia

TU3.O-17.2: EARLY DETECTION OF ROOT-KNOT NEMATODE (MELOIDOGYNE INCOGNITA) INFESTATION IN COTTON USING HYPERSPECTRAL DATA 5849

Sathishkumar Samiappan, Raju Beemanahalli, Assistant Research Professor, United States; Meilun Zhou, Research Associate, United States; John Brooks, Martin Wubben, USDA Agricultural Research Service, United States

TU3.O-17.3: ASSESSING THE CONTRIBUTION OF AIRBORNE-RETRIEVED CHLOROPHYLL FLUORESCENCE FOR NITROGEN ASSESSMENT IN ALMOND ORCHARDS 5853

Yue Wang, Lola Suarez, University of Melbourne, Australia; Xiaojin Qian, Chinese Academy of Sciences, China; Tomas Poblete, University of Melbourne, Australia; Victoria Gonzalez-Dugo, Consejo Superior de Investigaciones Científicas (CSIC), Spain; Dongryeol Ryu, Pablo J. Zarco-Tejada, University of Melbourne, Australia

TU3.O-17.4: DENOISING HYPERSPECTRAL FIELD SPECTRA OF VEGETATION WITH A PROSAIL-FED DENOISING AUTOENCODER 5857

Zihua Wu, Qiming Qin, Peking University, China

TU3.O-17.5: RESPONSE OF BEAN (PHASEOLUS VULGARIS L.) TO ELEVATED [CO₂] IN YIELD, BIOMASS AND CHLOROPHYLL FLUORESCENCE 5861

Juan Quirós-Vargas, Forschungszentrum Jülich, Germany; Rafael Diogo Caldeira, Universidade Católica Portuguesa, Portugal; Nicolas Zendonadi dos Santos, Lars Zimmermann, Bastian Siegmann, Forschungszentrum Jülich, Germany; Thorsten Kraska, University of Bonn, Germany; Marta W. Vasconcelos, Universidade Católica Portuguesa, Portugal; Uwe Rascher, Onno Muller, Forschungszentrum Jülich, Germany

TU3.O-17.6: LAI MODELING IN DEGRADED MEDITERRANEAN RAINFED CULTIVATED CROP LINKED WITH SOIL EROSION STAGES BASED ON VNIR-SWIR HYPERSPECTRAL DATA 5865

Robert Milewski, Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Germany; Thomas Schmid, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas, Spain; Sabine Chabrilat, Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Germany

TU3.O-18: ACTIVE RS FOR SOIL MOISTURE RETRIEVAL

TU3.O-18.1: TIME-SERIES SOIL MOISTURE RETRIEVAL USING S-BAND BACKSCATTER MEASUREMENTS FROM THE SMEX02 CAMPAIGN 5869

Dustin Horton, Alexandra Bringer, Joel Johnson, The Ohio State University, United States; Jeonghwan Park, Rajat Bindlish, NASA Goddard Space Flight Center, United States

TU3.O-18.2: SOIL MOISTURE RETRIEVAL USING A TIME-SERIES RATIO ALGORITHM FOR THE NISAR MISSION 5873

Jeonghwan Park, NASA Goddard Space Flight Center/GST, United States; Rajat Bindlish, NASA Goddard Space Flight Center, United States; Alexandra Bringer, Dustin Horton, Joel Johnson, ElectroScience Laboratory, The Ohio State University, United States

TU3.O-18.3: A NEW FULLY CONSTRAINED LEAST SQUARES-BASED FUSION APPROACH OF OPTICAL, THERMAL, AND SAR REMOTE SENSING DATA FOR SOIL MOISTURE CONTENT ESTIMATION	5877
<i>Oualid Yahia, Moussa Sofiane Karoui, Agence Spatiale Algérienne, Algeria; Raffaella Guida, University of Surrey, United Kingdom</i>	
TU3.O-18.4: SOIL MOISTURE RETRIEVAL USING L-BAND SAR OVER LANDSLIDE REGIONS IN NORTHERN CALIFORNIA GRASSLANDS	5881
<i>Tien-Hao Liao, California Institute of Technology, United States; Seung-Bum Kim, Alexander Handwerker, Eric J. Fielding, NASA Jet Propulsion Laboratory, United States</i>	
TU3.O-18.5: COMPLEX PERMITTIVITY AND PENETRATION DEPTH ESTIMATION FROM AIRBORNE P-BAND SAR DATA APPLYING A HYBRID DECOMPOSITION METHOD	5884
<i>Anke Fluhrer, Thomas Jagdhuber, German Aerospace Center (DLR), Germany; Alireza Tabatabaenejad, University of Southern California, United States; Hamed Alemohammad, Radiant Earth Foundation, United States; Carsten Montzka, Forschungszentrum Jülich, Germany; Maike Schumacher, University of Aalborg, Germany; Harald Kunstmann, University of Augsburg, Germany</i>	
TU3.O-18.6: RELATIONSHIP BETWEEN RETRIEVALS OF SURFACE SOIL MOISTURE AND ROUGHNESS USING SAR DATA AT L-BAND	5888
<i>Seungbum Kim, NASA Jet Propulsion Laboratory, United States; Tienhao Liao, California Institute of Technology, United States</i>	
 TU3.O-19: REMOTE SENSING APPLICATIONS IN WETLANDS	
TU3.O-19.1: MANGROVE SPECIES MAPPING USING DEEP LEARNING WITH FUSION OF HYPERSPECTRAL AND HIGH-RESOLUTION MULTISPECTRAL IMAGES	5892
<i>Luoma Wan, Chinese University of Hong Kong, China; Hongsheng Zhang, University of Hong Kong, China; Peifeng Ma, Chinese University of Hong Kong, China; Guanghui Lin, Tsinghua University, China</i>	
TU3.O-19.2: CONSTRUCTING A COASTAL PLAINS WETLAND DELINEATION MODEL USING HYPERSPATIAL LIDAR DATA	5896
<i>Narcisa Pricope, Asami Minei, Joanne Halls, University of North Carolina Wilmington, United States</i>	
TU3.O-19.3: CHARACTERIZATION OF NATURAL WETLANDS WITH CUMULATIVE SUMS OF POLARIMETRIC SAR TIMESERIES	5899
<i>Javier Ruiz-Ramos, The Open University, United Kingdom; Armando Marino, University of Stirling, United Kingdom; Andrea Berardi, The Open University, United Kingdom; Andy Hardy, Aberystwyth University, United Kingdom; Matthew Simpson, 35 percent, United Kingdom</i>	
TU3.O-19.4: WATER DEPTH RETRIEVAL IN THE EVERGLADES USING CYGNSS	5903
<i>Brandi Downs, Andrew O'Brien, The Ohio State University, United States; Mary Morris, Cinzia Zuffada, NASA Jet Propulsion Laboratory, California Institute of Technology, United States</i>	
TU3.O-19.5: BASELINE INVASIVE SPECIES COMMUNITY MAPPING AT LOWER KLAMATH WETLAND, OREGON-CALIFORNIA (USA)	5907
<i>Margarita Huesca, University of Twente, Netherlands; Susan Ustin, University of California, Davis, United States</i>	
TU3.O-19.6: TROPICAL PEATLAND CLASSIFICATION USING MULTI-SENSOR SENTINEL IMAGERY AND RANDOM FOREST ALGORITHM IN GREATER AMANZULE, GHANA	5910
<i>Alex Amoakoh, Paul Aplin, Kwame Awuah, Irene Delgado-Fernandez, Cherith Moses, Edge Hill University, United Kingdom; Carolina Alonso, Universidad de Las Palmas de Gran Canaria, United Kingdom</i>	
 TU3.O-20: PRECIPITATION OBSERVATIONS	
TU3.O-20.1: PROGRESS IN CONVECTIVE SYSTEM OBSERVATION BY COMBINATION OF DIFFERENT SATELLITES	7067
<i>Tran-Vu La, Christophe Messager, Extreme Weather Expertises (EXWEXs), France</i>	

TU3.O-20.2: SATELLITE STUDY OF ATMOSPHERIC CYCLONES AND RIVERS AROUND ANTARCTICA	7071
<i>Leonid Mitnik, Vladimir Kuleshov, V.I.Il'ichev Pacific Oceanological Institute, Far Eastern Branch, Russian Academy of Sciences, Russia; Mariya Panfilova, Vladimir Karaev, Institute of Applied Physics, Russian Academy of Sciences, Russia; Maia Mitnik, Anastasiya Baranyuk, V.I.Il'ichev Pacific Oceanological Institute, Far Eastern Branch, Russian Academy of Sciences, Russia</i>	
TU3.O-20.3: HURRICANE PRECIPITATION RETRIEVAL USING FY-3C MWRI BRIGHTNESS TEMPERATURE	7075
<i>Ruanyu Zhang, Shanghai Spaceflight Institute of TT&C and Telecommunication, China; Lanjie Zhang, Beijing Information Science and Technology University, China; Lifei Jiang, Xue Li, Enchen Li, Pingkai Wang, Shanghai Spaceflight Institute of TT&C and Telecommunication, China</i>	
TU3.O-20.4: UPSCALING IMD GROUND RADAR VERTICAL REFLECTIVITY USING TRMM PR OBSERVATIONS AND ARTIFICIAL NEURAL NETWORK	7079
<i>Alok Sharma, Srinivasa Ramanujam Kannan, Indian Institute of Technology Bhubaneswar, India</i>	
TU3.O-20.5: SAMPLING EVALUATION TO MEASURE OBSERVING SYSTEM REPRESENTATIVENESS	7083
<i>Jordan Stern, Paul Grogn, Stevens Institute of Technology, United States</i>	
 TU2.MM-26: STUDENT PAPER CONTEST II	
TU2.MM-26.1: REAL-TIME, DEEP SYNTHETIC APERTURE SONAR (SAS) AUTOFOCUS	8684
<i>Isaac Gerg, Vishal Monga, Penn State University, United States</i>	
TU2.MM-26.2: QUANTIFYING SPATIAL RELATIONSHIPS IN ICE PENETRATING RADAR MEASUREMENT UNCERTAINTY THROUGH CLUTTER SIMULATION	8688
<i>Emma MacKie, Dustin Schroeder, Gregor Steinbrugge, Riley Culberg, Stanford University, United States</i>	
TU2.MM-26.3: AN INNOVATIVE PUSH-TO-TALK (PTT) SYNCHRONIZATION SCHEME FOR FUTURE DISTRIBUTED SAR	8692
<i>Yanyan Zhang, Robert Wang, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TU2.MM-26.4: SATELLITE PASSIVE MICROWAVE REMOTE SENSING FOR SEISMIC THERMAL ANOMALY: PHENOMENA AND MECHANISMS	8696
<i>Yuan Qi, Lixin Wu, Wenfei Mao, Yifan Ding, Yingjia Liu, Central South University, China</i>	
TU2.MM-26.5: PROPOSAL OF A GROUND PENETRATING RADAR SYSTEM UTILIZING POLARIZATION INFORMATION BY USING PHASOR-QUATERNION SELF-ORGANIZING MAP	8700
<i>Yicheng Song, Akira Hirose, University of Tokyo, Japan</i>	
 TU4.O-1: EMERGENCY RESPONSE DURING COVID-19: NEW TECHNIQUES FOR REAL-TIME URBAN FLOOD MAPPING, SHORT-TERM FLOOD PREDICTION AND COMMUNICATION TO THE EMERGENCY MANAGEMENT COMMUNITY	
TU4.O-1.1: CURRENT LIMITATIONS AND EMERGING TRENDS IN REAL-TIME MAPPING OF NATURAL DISATERS AND THE EMERGENCE OF DISASTER DASHBOARDS FOR COMMUNICATING RISK	515
<i>Heather McGrath, Natural Resources Canada, Canada; Shabnam Jabari, University of New Brunswick, Canada</i>	
TU4.O-1.2: CERC-HAND-D: A TOOL FOR SUPPORTING ON-THE-FLY FLOOD MAPPING IN CANADA	519
<i>Blair Scriven, University of Calgary, Canada; Heather McGrath, Natural Resources Canada, Canada; Emmanuel Stefanakis, University of Calgary, Canada</i>	

TU4.O-1.3: CANADA’S EMERGENCY GEOMATICS SERVICE NEAR REAL-TIME FLOOD MAPPING FROM MULTI-SOURCE DATA	523
<i>Ian Olthof, Vincent Decker, Simon Tolszczuk-Leclerc, Victor Neufeld, Brad Lehrbass, Nicolas Svacina, Tom Rainville, Elise Bergeron, Emergency Geomatics Service, Canada</i>	
TU4.O-1.4: URBAN FLOOD DETECTION USING SENTINEL1-A IMAGES	527
<i>Shadi Sadat Baghermanesh, Shabnam Jabari, University of New Brunswick, Canada; Heather McGrath, Natural Resources Canada, Canada</i>	
TU4.O-1.5: BUILDING DAMAGE DETECTION IN POST-EVENT HIGH-RESOLUTION IMAGERY USING DEEP TRANSFER LEARNING	531
<i>Ghasem Abdi, Morteza Esfandiari, Shabnam Jabari, University of New Brunswick, Canada</i>	
TU4.O-2: GETTING READY FOR THE NASA-ISRO SAR MISSION	
TU4.O-2.3: NISAR’S CAPABILITIES IN SUPPORT OF THE APPLICATIONS COMMUNITY	539
<i>Cathleen Jones, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Batuhan Osmanoglu, NASA Goddard Space Flight Center, United States; Nathan Torbick, Applied GeoSolutions, LLC, United States</i>	
TU4.O-2.4: NISAR REQUIREMENTS AND VALIDATION APPROACH FOR SOLID EARTH SCIENCE	543
<i>Mark Simons, David Bekaert, California Institute of Technology, United States; Adrian Borsa, University of California, San Diego, United States; Andrea Donnellan, Eric J. Fielding, Cathleen Jones, California Institute of Technology, United States; Rowena Lohman, Cornell University, United States; Zhong Lu, Southern Methodist University, United States; Franz J. Meyer, University of Alaska-Fairbanks, United States; Susan Owen, Paul Rosen, California Institute of Technology, United States; Howard Zebker, Stanford University, United States</i>	
TU4.O-2.5: ECOSYSTEM SCIENCES WITH NISAR	547
<i>Paul Siqueira, University of Massachusetts, United States; John Armston, University of Maryland, United States; Bruce Chapman, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Anup Das, Indian Space Research Organisation, India; Ralph Dubayah, University of Maryland, United States; Josef Kellndorfer, Earth Big Data, United States; Kyle McDonald, City University of New York, United States; Chakrapani Patnaik, Indian Space Research Organisation, India; Sassan Saatchi, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Nathan Torbick, Applied GeoSolutions, LLC, United States</i>	
TU4.O-2.6: CRYOSPHERE SCIENCES WITH NISAR	550
<i>Ian Joughin, University of Washington, United States; Rick Forster, University of Utah, United States; Alex Gardner, Ben Holt, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Eric Rignot, Bernd Scheuchl, University of California, Irvine, United States</i>	
TU4.O-3: INTEGRATING EARTH OBSERVATION AND GEOSPATIAL DATA AND ANALYTICS TO MONITOR AND ASSESS RISK AND RESILIENCE	
TU4.O-3.1: INTEGRATING HYDROLOGIC MODELS AND EARTH OBSERVATION DATA FOR GLOBAL FLOOD FORECASTING AND ALERTING IN NEAR REAL-TIME	554
<i>Margaret Glasscoe, University of Alabama in Huntsville, United States; Douglas Bausch, Pacific Disaster Center, United States; Prativa Sharma, University of Missouri Kansas City, United States; Jun Wang, Indiana University, United States; ZhiQiang Chen, Molan Zhang, University of Missouri Kansas City, United States; Guy Schumann, Remote Sensing Solutions, United States; Marlon Pierce, Indiana University, United States; Clay Woods, Kristy Tiampo, University of Colorado Boulder, United States; Ronald Eguchi, ImageCat, Inc., United States</i>	

TU4.O-3.3: A MACHINE LEARNING APPROACH TO FLOOD DEPTH AND EXTENT DETECTION USING SENTINEL 1A/B SYNTHETIC APERTURE RADAR	558
<i>Kristy Tiampo, Clay Woods, Lingcao Huang, University of Colorado Boulder, United States; Prativa Sharma, ZhiQiang Chen, University of Missouri, United States; Bandana Kar, Oak Ridge National Laboratory, United States; Douglas Bausch, Pacific Disaster Center, United States; Conor Simmons, Rigo Estrada, Michael Willis, University of Colorado Boulder, United States; Margaret Glasscoe, NASA Jet Propulsion Laboratory, California Institute of Technology, United States</i>	
TU4.O-3.4: DEEP METRIC LEARNING FOR DAMAGE DETECTION USING BITEMPORAL SATELLITE IMAGES	562
<i>Molan Zhang, ZhiQiang Chen, University of Missouri Kansas City, United States</i>	
TU4.O-3.5: SPATIOTEMPORAL TRACKING OF WIDE AREA POWER OUTAGE FROM NIGHT-TIME LIGHT IMAGERY	566
<i>Bandana Kar, Jessica Bobeck, Oak Ridge National Laboratory, United States; Tamar Moss, Brandeis University, United States; David Hughes, Oak Ridge National Laboratory, United States</i>	
TU4.O-3.6: IMPLICATIONS OF A NEW NORMAL URBAN AIR QUALITY	570
<i>Shobha Kondragunta, National Oceanic and Atmospheric Administration (NOAA), United States; Hai Zhang, Zigang Wei, IM Systems Group, United States</i>	
TU4.O-4: INTEGRATION OF PHOTOGRAMMETRY AND DEEP LEARNING IN EARTH OBSERVATION APPLICATIONS	
TU4.O-4.1: INTEGRATION OF PHOTOGRAMMETRY AND DEEP LEARNING IN EARTH OBSERVATION APPLICATIONS	574
<i>José Marcato Junior, Pedro Zamboni, UFMS - Federal University of Mato Grosso do Sul., Brazil; Mariana Campos, FGI, Finland; Ana Ramos, Lucas Osco, Unoeste, Brazil; Jonathan Silva, UFMS - Federal University of Mato Grosso do Sul., Brazil; Wesley Gonçalves, Federal University of Mato Grosso do Sul, Brazil; Jonathan Li, University of Waterloo, Canada</i>	
TU4.O-4.3: A PROPOSAL TO INTEGRATE ORB-SLAM FISHEYE AND CONVOLUTIONAL NEURAL NETWORKS FOR OUTDOOR TERRESTRIAL MOBILE MAPPING	578
<i>Thaisa Aline Correia Garcia, São Paulo State University, Brazil; Mariana Batista Campos, Finnish Geospatial Research Institute, Finland; Letícia Ferrari Castanheiro, Antonio Maria Garcia Tommaselli, São Paulo State University, Brazil</i>	
TU4.O-4.4: SEMANTIC SEGMENTATION OF UAV LIDAR POINT CLOUDS OF A STACK INTERCHANGE WITH DEEP NEURAL NETWORKS	582
<i>Weikai Tan, Dedong Zhang, University of Waterloo, Canada; Lingfei Ma, Central University of Finance and Economics, China; Lanying Wang, University of Waterloo, Canada; Nannan Qin, Key Laboratory of Planetary Sciences, Purple Mountain Observatory, Chinese Academy of Sciences, China; Yiping Chen, Xiamen University, China; Jonathan Li, University of Waterloo, Canada</i>	
TU4.O-4.5: RETINANET DEEP LEARNING-BASED APPROACH TO DETECT TERMITE MOUNDS IN EUCALYPTUS FORESTS	586
<i>Juan Sales, José Marcato Junior, Henrique Siqueira, Mauricio Souza, Edson Matsubara, Wesley Gonçalves, Federal University of Mato Grosso do Sul, Brazil</i>	
TU4.O-4.6: ASSESSMENT OF CNN-BASED METHODS FOR SINGLE TREE DETECTION ON HIGH-RESOLUTION RGB IMAGES IN URBAN AREAS	590
<i>Pedro Zamboni, José Marcato Junior, Federal University of Mato Grosso do Sul, Brazil; Gabriela Miyoshi, São Paulo State University, Brazil; Jonathan Silva, José Martins, Wesley Gonçalves, Federal University of Mato Grosso do Sul, Brazil</i>	

TU4.O-5: INTERNATIONAL INITIATIVES LINKING NEWSPACE DOMAINS TO SCIENTIFIC AND APPLICATIONS OBJECTIVES AND REQUIREMENTS

TU4.O-5.1: NEWSPACE CAL/VAL MATURITY ASSESSMENT INITIATIVES AT ESA AND NASA..... 594

Clément Albinet, ESA - European Space Research Institute, Italy; Alfreda A. Hall, NASA Goddard Space Flight Center, United States; Henri Laur, ESA - European Space Research Institute, Italy; Kevin J. Murphy, NASA, United States; Valentina Boccia, Giuseppe Ottavianelli, ESA - European Space Research Institute, Italy; Jaime Nickeson, Will McCarty, NASA Goddard Space Flight Center, United States; Philippe Goryl, ESA - European Space Research Institute, Italy

TU4.O-5.3: EARTHNET DATA ASSESSMENT PILOT FRAMEWORK 596

Rubinder Mannan, Fay Done, Telespazio UK, United Kingdom; Davide Giudici, Aresys s.r.l., Italy; Alessandro Piro, SERCO, Italy; Clément Albinet, ESA - European Space Research Institute, Italy; Samuel Hunt, National Physical Laboratory, United Kingdom

TU4.O-5.4: COMMERCIAL SMALLSAT DATA ACQUISITION: PROGRAM UPDATE 600

Manil Maskey, NASA, United States; Alfreda A. Hall, NASA Goddard Space Flight Center, United States; Kevin J. Murphy, Compton Tucker, Will McCarty, Aaron Kaulfus, NASA, United States

TU4.O-5.5: SCIENCE UTILIZING DATA FROM SPIRE GLOBAL AS PART OF THE NASA 604 COMMERCIAL SMALLSAT DATA ACQUISITION PROGRAM

Will McCarty, NASA Goddard Space Flight Center, United States; Obi Patrick, Megan R. Damon, Science Systems and Applications, Inc., United States; Alfreda A. Hall, NASA Goddard Space Flight Center, United States

TU4.O-5.6: A QUALITY ASSURANCE FRAMEWORK FOR SATELLITE EARTH OBSERVATION 608 MISSIONS

Samuel Hunt, National Physical Laboratory, United Kingdom; Clément Albinet, ESA - European Space Research Institute, Italy; Jaime Nickeson, NASA, United States; Alfreda A. Hall, NASA Goddard Space Flight Center, United States; Nigel Fox, National Physical Laboratory, United Kingdom; Valentina Boccia, Philippe Goryl, European Space Agency (ESA), Italy

TU4.O-6: MICROWAVE REMOTE SENSING OF SEASONAL SNOW MASS

TU4.O-6.1: ESTIMATION OF HEMISPHERIC SNOW MASS EVOLUTION BASED ON 612 MICROWAVE RADIOMETRY

Jouni Pulliainen, Kari Luojus, Juha Lemmetyinen, Matias Takala, Finnish Meteorological Institute, Finland; Chris Derksen, Lawrence Mudryk, Environment and Climate Change Canada, Canada

TU4.O-6.3: DEVELOPMENT OF THE TERRESTRIAL SNOW MASS MISSION 614

Chris Derksen, Joshua King, Stephane Belair, Camille Garnaud, Vincent Vionnet, Vincent Fortin, Environment and Climate Change Canada, Canada; Juha Lemmetyinen, Finnish Meteorological Institute, Finland; Yves Crevier, Patrick Plourde, Brian Lawrence, Helena van Mierlo, Canadian Space Agency, Canada; Geoff Burbidge, Airbus, United Kingdom; Paul Siqueira, University of Massachusetts, United States

TU4.O-6.4: OBSERVING SNOW DEPTH AT SUB-KILOMETER RESOLUTION OVER THE 618 EUROPEAN ALPS FROM SENTINEL-1

Hans Lievens, Isis Brangers, KU Leuven, Belgium; Hans-Peter Marshall, Boise State University, United States; Tobias Jonas, WSL Institute for Snow and Avalanche Research SLF, Switzerland; Marc Olefs, ZAMG - Zentralanstalt für Meteorologie und Geodynamik, Austria; Gabriëlle De Lannoy, KU Leuven, Belgium

TU4.O-6.5: REMOTE SENSING OF DEEP SNOW WITH C BAND RADAR DATA: VOLUME 622 AND SURFACE SCATTERING

Jiyue Zhu, Leung Tsang, University of Michigan, United States; Tien-Hao Liao, California Institute of Technology, United States

TU4.O-6.6: L-BAND INSAR DEPTH CHANGE RETRIEVAL DURING THE NASA SNOWEX 2020 CAMPAIGN: GRAND MESA, COLORADO	625
<i>Hans-Peter Marshall, Boise State University, United States; Elias Deeb, Rick Forster, University of Utah, United States; Carrie Vuyovich, NASA Goddard Space Flight Center, United States; Kelly Elder, Chris Hiemstra, U.S. Forest Service, United States; Jewell Lund, University of Utah, United States</i>	
 TU4.O-7: NEW UAV/MOBILE-MAPPING SAR SYSTEMS AND APPLICATIONS	
TU4.O-7.1: MEASUREMENT OF SURFACE DISPLACEMENTS WITH A UAV-BORNE/CAR-BORNE L-BAND DINSAR SYSTEM: SYSTEM PERFORMANCE AND USE CASES	628
<i>Othmar Frey, Gamma Remote Sensing / ETH Zurich, Switzerland; Charles Werner, Andrea Manconi, Gamma Remote Sensing, Switzerland; Roberto Coscione, ETH Zurich, Switzerland</i>	
TU4.O-7.3: SUGARCANE PRECISION MONITORING BY DRONE-BORNE P/L/C-BAND DINSAR	632
<i>Hugo E. Hernandez-Figueroa, Bárbara Teruel, Luciano P. Oliveira, Gian Oré, Marlon S. Alcântara, University of Campinas - UNICAMP, Brazil; Rodrigo Cintra, São Martinho SA, Brazil; Jhonnatan Yepes, Juliana A. Góes, University of Campinas - UNICAMP, Brazil; Dieter Luebeck, Radaz Indústria e Comércio de Produtos Eletrônicos Ltda., Brazil; Valquíria Castro, Felício Castro, University of Campinas - UNICAMP, Brazil; Laila F. Moreira, Radaz Indústria e Comércio de Produtos Eletrônicos Ltda., Brazil; Leonardo S. Bins, National Institute for Space Research (INPE), Brazil; Lucas H. Gabrielli, University of Campinas - UNICAMP, Brazil</i>	
TU4.O-7.5: PROTOTYPE OF A SMALL, AGILE, DRONE-BASED SAR SYSTEM AND PRELIMINARY FOCUSING RESULTS	639
<i>Peter Brotzer, Elias Méndez Dominguez, Daniel Henke, University of Zurich, Switzerland</i>	
TU4.O-7.6: EXPERIMENTS WITH SMALL UAS TO SUPPORT SAR TOMOGRAPHIC MISSION FORMULATION	643
<i>Brian Hawkins, NASA Jet Propulsion Laboratory, United States; Matthew Anderson, California Institute of Technology, United States; Sam Prager, University of Southern California, United States; Soon-Jo Chung, California Institute of Technology, United States; Marco Lavallo, NASA Jet Propulsion Laboratory, United States</i>	
 TU4.O-8: PROSPECTS FOR ORBITAL RADAR SOUNDING OF EARTH'S ICE SHEETS	
TU4.O-8.1: GLACIOLOGICAL CONSTRAINTS ON LINK BUDGETS FOR ORBITAL RADAR SOUNDING OF EARTH'S ICE SHEETS	647
<i>Dustin Schroeder, Nicole Bienert, Riley Culberg, Emma MacKie, Thomas Teisberg, Stanford University, United States; Winnie Chu, Georgia Institute of Technology, United States; Duncan Young, University of Texas Institute for Geophysics, United States</i>	
TU4.O-8.3: DEBRIS: DISTRIBUTED ELEMENT BEAMFORMER RADAR FOR ICE AND SUBSURFACE SOUNDING	651
<i>Mark S. Haynes, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Robert M. Beauchamp, NASA Jet Propulsion Laboratory, United States; Ala Khazendar, Rayan Mazouz, Marco B. Quadrelli, Paolo Focardi, Richard E. Hodges, William Bertiger, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Nicole Bienert, Jet Propulsion Laboratory, Stanford University, United States</i>	
TU4.O-8.4: EXPLORING DESERTS RESPONSE TO CLIMATE CHANGE FROM THE ORBITING ARID SUBSURFACE AND ICE SHEET SOUNDER (OASIS)	655
<i>Essam Heggy, University of Southern California, United States</i>	

**TU4.O-8.5: UWB MIMO RADARS FOR SOUNDING AND IMAGING OF ICE ON THE EARTH 657
AND OTHER CELESTIAL BODIES**

Prasad Gogineni, Stephen Yan, University of Alabama, United States; Paul Song, University of Massachusetts Lowell, United States; John Volakis, Florida International University, United States; Manohar Deshpande, NASA Goddard Space Flight Center, United States; Ivan Galkin, University of Massachusetts Lowell, United States; Jason Soderblom, Massachusetts Institute of Technology, United States; Alex Hayes, Cornell University, United States; Bodo Reinisch, Robert Giles, University of Massachusetts Lowell, United States; Rohan Sood, University of Alabama, United States; Hua-Liang Zhang, University of Massachusetts Lowell, United States; David Braaten, U of Kansas, United States; Lorenzo Bruzzone, University of Trento, Italy; Satheesh Bojja Venkatakrishnan, Florida International University, United States; Drew Taylor, University of Alabama, United States

**TU4.O-8.6: STRATUS: A NEW MISSION CONCEPT FOR MONITORING THE SUBSURFACE 661
OF POLAR AND ARID REGIONS**

Lorenzo Bruzzone, University of Trento, Italy; Francesca Bovolo, Fondazione Bruno Kessler, Italy; Leonardo Carrer, University of Trento, Italy; Elena Donini, Fondazione Bruno Kessler, Italy; Sanchari Thakur, University of Trento, Italy

TU4.O-9: QUANTIFYING TROPICAL FOREST FUNCTIONAL VARIABLES OVER LARGE AREAS

**TU4.O-9.1: MULTI-DECADAL ANNUAL LAND COVER DYNAMICS AND FOREST 665
DISTURBANCE IN THE BRAZILIAN AMAZON BIOME**

Carlos Jr Souza, Instituto do Homem e Meio Ambiente da Amazônia (Imazon), Brazil; Luis Jr. Oliveira, Antônio V. Fonseca, Instituto do Homem e Meio Ambiente da Amazônia, Brazil

**TU4.O-9.3: TROPICAL FOREST CANOPY STRUCTURE AND CHANGE ASSESSMENT USING 666
LANDSAT, GEDI, AND AIRBORNE LIDAR DATA**

Peter Potapov, Xinyuan Li, Andres Hernandez-Serna, Svetlana Turubanova, Alexandra Tyukavina, Matthew Hansen, Hao Tang, University of Maryland, United States; Quyen Hanh Nguyen, SERVIR-Mekong, Thailand

**TU4.O-9.4: FOREST ABOVEGROUND BIOMASS ESTIMATION WITH GEDI AND ICESAT-2 IN 670
BOREAL FORESTS**

Laura Duncanson, University of Maryland College Park, United States; Amy Neuenschwander, University of Texas at Austin, United States; Carlos Alberto Silva, University of Maryland College Park, United States; Paul Montesano, SSAI / NASA GSFC, United States; Eric Guenther, University of Texas at Austin, United States; Nathan Thomas, ESSIC, University of Maryland / NASA Goddard Space Flight Center, United States; Steven Hancock, University of Edinburgh, United Kingdom; David Minor, University of Maryland College Park, United Kingdom; Joanne White, Mike Wulder, Canadian Forest Service, Natural Resources Canada, Canada; John Armston, University of Maryland College Park, United States

**TU4.O-9.5: CHARACTERIZING THE CONGO BASIN FORESTS BY A DETAILED FOREST 673
TYPOLOGY ENRICHED WITH FOREST BIOPHYSICAL VARIABLES**

Juliette Dalimier, Martin Claverie, Benjamin Goffart, Université Catholique de Louvain, Belgium; Quentin Jungers, Observatoire des Forêts d'Afrique Centrale, Belgium; Céline Lamarche, Thomas De Maet, Pierre Defourny, Université Catholique de Louvain, Belgium

**TU4.O-9.6: USING EXPERIMENTAL SITES IN TROPICAL FORESTS TO TEST THE ABILITY 677
OF OPTICAL REMOTE SENSING TO DETECT FOREST DEGRADATION AT 0.3 – 30 M
RESOLUTIONS**

Chiara Aquino, Edward Mitchard, Iain McNicol, Harry Carstairs, University of Edinburgh, United Kingdom; Andrew Burt, University College London, United Kingdom; Beisit Luz Puma Vilca, Universidad Nacional de San Antonio Abad del Cusco, Peru; Mathias Disney, University College London, United Kingdom

TU4.O-10: REMOTE SENSING IN THE ENERGY INDUSTRY: A VALUABLE TOOL FOR RENEWABLE ENERGY AND MONITORING ENVIRONMENTAL FOOTPRINTS

TU4.O-10.1: PRELIMINARY ASSESSMENT OF PROBABLE IMPACTS CAUSED BY THE LARGEST OIL SPILL IN BRAZIL HISTORY ON SELECTED MANGROVE STANDS USING SATELLITE IMAGING 681

Guillaume Lassalle, UNICAMP, Brazil; Dominique Dubucq, TOTAL S.A., France

TU4.O-10.3: MACHINE LEARNING COMBINATION OF LEO AND GEO SATELLITES FOR DESIGN AND MONITORING OF OCEAN WIND ENERGY 685

Christophe Messenger, Extreme Weather Expertsises, France; Tran-Vu La, Extreme Weather Expertsises (EXWEXs), France; Rémi Sahl, Extreme Weather Expertsises, France

TU4.O-10.4: THE IMPORTANCE OF MATCHING NEEDS TO SATELLITE SYSTEM CAPABILITY WHEN MONITORING METHANE EMISSIONS FROM SPACE 687

Jean-Francois Gauthier, GHGSat Incorporated, Canada

TU4.O-10.5: SAR SURFACE WIND ESTIMATION AND EXTRAPOLATION AT TURBINE HUB HEIGHT WITH MACHINE LEARNING FOR OFFSHORE WIND FARM SITING 691

Louis de Montera, Henrick Berger, Romain Husson, CLS, France; Pascal Appelghem, Atmosky, France; Laurent Guerlou, Mauricio Fragoso, CLS, France

TU4.O-11: SATELLITE CAPABILITIES BRINGING COUNTRIES TOGETHER TO RESPOND TO NATURAL DISASTERS

TU4.O-11.1: APPLICATIONS OF JOINT POLAR SATELLITE SYSTEM DATA AND PRODUCTS FOR SEVERE WEATHER EVENTS AND CLIMATE MONITORING 695

Satya Kalluri, JPSS/NOAA/NESDIS, United States; Cheng-Zhi Zou, Lawrence Flynn, STAR/NOAA/NESDIS, United States

TU4.O-11.3: SATELLITE FIRE PRODUCTS: MORE VALUABLE NOW THAN EVER WITH LONGER FIRE SEASONS 699

William C Straka III, University of Wisconsin, United States; Ivan Csiszar, Shobha Kondragunta, NOAA/NESDIS/STAR, United States; Curtis Seaman, CIRA, United States; Ravan Ahmadov, CIRES, NOAA/ESRL, United States; Amy Huff, I.M. Systems Group (IMSG), United States; Mark Rosenberg, William Brewer, California Department of Forestry and Fire Protection (CAL FIRE), United States

TU4.O-11.4: MONITORING TRACE GASES USING NOAA UNIQUE COMBINED ATMOSPHERIC PROCESSING SYSTEM (NUCAPS) PRODUCTS 703

Murty Divakarla, IM Systems Group, Inc., United States; Ken Pryor, Satya Kalluri, Juying Warner, Center for Satellite Applications and Research, United States; Nick Nalli, IM Systems Group, Inc., United States; Chris Barnett, STC, Inc., United States; Changyi Tan, Mike Wilson, Tong Zhu, Tianyuan Wang, IM Systems Group, Inc., United States; Walter Wolf, Lihang Zhou, Center for Satellite Applications and Research, United States

TU4.O-11.5: ASSESSING FLOOD INUNDATION AND EXPOSURE ESTIMATES FROM THE GLOBAL FLOOD AWARENESS SYSTEM (GLOFAS) WITH DATA FROM THE VIIRS SATELLITE FOR THE ASIAN MONSOON IN 2020 707

Calum Baugh, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; William C Straka III, University of Wisconsin, United States; Eleanor Hansford, Christel Prudhomme, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom

TU4.O-11.6: USING COPERNICUS SENTINEL MEASUREMENTS TO MONITOR COVID-19 IMPACT ON THE ENVIRONMENT 711

Claus Zehner, European Space Agency (ESA), Italy

TU4.O-12: RESOLUTION ENHANCEMENT OF HYPERSPECTRAL DATA

TU4.O-12.1: MULTI-SUPERVISED RECURSIVE-CNN FOR HYPERSPECTRAL AND MULTISPECTRAL IMAGE FUSION 2440

Yuda Lu, Jingxiang Yang, Liang Xiao, Nanjing University of Science and Technology, China

TU4.O-12.2: A VARIATIONAL APPROACH WITH NONLOCAL SELF-SIMILARITY AND JOINT-SPARSITY FOR HYPERSPECTRAL IMAGE SUPER-RESOLUTION 2444

Ting Xu, Ting-Zhu Huang, Yong Chen, Jie Huang, Liang-Jian Deng, University of Electronic Science and Technology of China, China

TU4.O-12.3: ENHANCED RESIDUAL DENSE NETWORK JOINT WITH GRUS FOR MULTISPECTRAL AND HYPERSPECTRAL IMAGE FUSION 2448

Jiajun Xiao, Qiangqiang Yuan, Jie Li, Huanfeng Shen, Wuhan University, School of Geodesy and Geomatics, China

TU4.O-12.4: ENHANCED 3D CONVOLUTION FOR HYPERSPECTRAL IMAGE SUPER-RESOLUTION 2452

Denghong Liu, Jie Li, Qiangqiang Yuan, Wuhan University, China

TU4.O-12.5: ROBUST COUPLED NON-NEGATIVE MATRIX FACTORIZATION FOR HYPERSPECTRAL AND MULTISPECTRAL DATA FUSION 2456

Touseef Ahmad, Rosly B Lyngdoh, Anand S Sahadevan, Praveen K Gupta, Arundhati Misra, Indian Space Research Organisation, India; Soumyendu Raha, Indian Institute of Science Bangalore, India

TU4.O-12.6: AN IMPROVED HYPERSPECTRAL IMAGE SUPER RESOLUTION RESTORATION ALGORITHM BASED ON POCS 2460

Yulei Wang, Xinxin He, Yao Shi, Qingyu Zhu, Haoyang Yu, Dalian Maritime University, China

TU4.O-13: UAV FOR MAPPING AND MONITORING OF FOREST ECOSYSTEMS

TU4.O-13.1: FUSION OF LIDAR AND HYPERSPECTRAL DATA FROM DRONES FOR ECOLOGICAL QUESTIONS: THE GATOREYE ATLANTIC FOREST RESTORATION CASE STUDY 714

Danilo Almeida, Eben Broadbent, Angelica Zambrano, University of Florida, United States; Matheus Ferreira, Military Institute of Engineering, Brazil; Pedro Brancalion, University of São Paulo, Brazil

TU4.O-13.3: SENSING TROPICAL FOREST PHENOLOGY AND PRODUCTIVITY FROM THE FIELD TO THE SATELLITE 716

Nicolas Barbier, UMR AMAP, Université de Montpellier, IRD, CNRS, CIRAD, INRAE, France; James Ball, Cambridge University, United Kingdom; Ilona Clocher, UMR AMAP, Université de Montpellier, IRD, CNRS, CIRAD, INRAE, France; Hervé Poilvé, Airbus Defence and Space, France; Philippe Verley, Grégoire Vincent, UMR AMAP, Université de Montpellier, IRD, CNRS, CIRAD, INRAE, France

TU4.O-13.5: A SHORTEST PATH BASED TREE ISOLATION METHOD FOR UAV LIDAR DATA 724

Pasi Raumonon, Tampere University, Finland; Benjamin Brede, Alvaro Lau, Harm Bartholomeus, Wageningen University and Research, Netherlands

TU4.O-13.6: A NEW DRONE LASER SCANNING BENCHMARK DATASET FOR CHARACTERIZATION OF SINGLE-TREE AND FOREST BIOPHYSICAL PROPERTIES 728

Stefano Puliti, Norwegian Institute of Bioeconomy Research, Norway; Grant D. Pearce, Michael S. Watt, SCION, New Zealand; Edward Mitchard, Ian McNicol, University of Edinburgh, United Kingdom; Magnus Bremer, Martin Rutzinger, University of Innsbruck, Austria; Peter Surovy, Czech University of Life Sciences, Czech Republic; Luke Wallace, University of Tasmania, Australia; Markus Hollaus, TU Wien, Austria; Rasmus Astrup, Norwegian Institute of Bioeconomy Research, Norway

TU4.O-14: BIODIVERSITY AND VULNERABLE ECOSYSTEMS

TU4.O-14.1: AN OPERATIONAL SERVICE FOR MONITORING GRASSLAND DOMINATED 731 NATURA2000 SITES WITH COPERNICUS DATA

Geoffrey Smith, Specto Natura Ltd., United Kingdom; Stefan Kleeschulte, space4environment, Luxembourg; Tomas Soukup, GISAT, Czech Republic; Raul Garcia, Bilbomatica, Spain; Gebhard Banko, Environment Agency Austria, Austria; Bruno Combal, DG Environment, Belgium

TU4.O-14.3: FINNISH ECOSYSTEM OBSERVATORY (FEO) - OPERATIONALIZING REMOTE 735 SENSING ANALYSES FOR THREATENED HABITATS AND BIODIVERSITY MONITORING

Petteri Vihervaara, Saku Anttila, Peter Kullberg, Pekka Härmä, Markus Törmä, Tytti Jussila, Kaisu Aapala, Risto Heikkinen, Janne Mäyrä, Mikko Kervinen, Martin Forsius, Finnish Environment Institute (SYKE), Finland

TU4.O-14.4: HOTSPOT VEGETATION STRUCTURE AND TERRAIN MONITORING OF 739 DUTCH COASTAL DUNES WITH LIDAR AND OPTICAL CAMERA'S MOUNTED ON DRONES

Henk Kramer, Sander Mücher, Wageningen University and Research, Netherlands; Harrie van der Hagen, Dunea duin & water, Netherlands

TU4.O-14.5: PERFORMANCE ASSESSMENT OF THE SEN4CAP MOWING DETECTION 743 ALGORITHM ON A LARGE REFERENCE DATA SET OF MANAGED GRASSLANDS.

Mathilde De Vroey, Julien Radoux, Université Catholique de Louvain, Belgium; Massimo Zavagli, Laura De Vendictis, e-GEOS, Italy; Diane Heymans, Sophie Bontemps, Pierre Defourny, Université Catholique de Louvain, Belgium

TU4.O-14.6: RELATIONSHIPS BETWEEN LAND DEGRADATION AND CLIMATE CHANGE 747 VULNERABILITY OF AGRICULTURAL WATER RESOURCES

Nataliia Kussul, Leonid Shumilo, Space Research Institute NASU-SSAU, Ukraine; Loukas Garanis, University of Geneva, Ukraine

TU4.O-15: AEOLUS AND AEOLUS FOLLOW-ON

TU4.O-15.1: FUTURE SPACE-BASED DOPPLER WIND LIDAR WINDS..... 751

Ad Stoffelen, Gert-Jan Marseille, Koninklijk Nederlands Meteorologische Instituut (KNMI), Netherlands; Tommaso Parrinello, European Space Agency (ESA), Italy; Oliver Reitebuch, German Aerospace Center (DLR), Germany; Michael Rennie, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; Anne-Grete Straume-Lindner, European Space Agency (ESA), Netherlands

TU4.O-15.3: ESA'S WIND MISSION AEOLUS - OVERVIEW, STATUS AND OUTLOOK 755

Anne-Grete Straume-Lindner, Tommaso Parrinello, Jonas von Bismarck, Sebastian Bley, Peggy Fischer, Marta De Laurentis, Denny Wernham, Thomas Kanitz, Emilio Alvarez, Thorsten Fehr, Frithjof Ehlers, Viet Duc Tran, European Space Agency (ESA), Netherlands; Isabell Krisch, Oliver Reitebuch, German Aerospace Center (DLR), Germany; Michael Rennie, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom

TU4.O-15.4: THE AEOLUS DATA INNOVATION AND SCIENCE CLUSTER 759

Isabell Krisch, Oliver Reitebuch, German Aerospace Center (DLR), Germany; Jonas von Bismarck, Tommaso Parrinello, European Space Agency (ESA), Italy; Michael Rennie, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; Fabian Weiler, German Aerospace Center (DLR), Germany; Dorit Huber, DoRIT, Germany; Jos de Kloe, Royal Netherlands Meteorological Institute (KNMI), Netherlands; Alain Dabas, CNRM, Université de Toulouse, Météo-France, CNRS, France; Anne-Grete Straume-Lindner, European Space Agency (ESA), Netherlands; Saleh Abdalla, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; Stefano Aprile, Sebastian Bley, European Space Agency (ESA), Italy; Fabio Bracci, German Aerospace Center (DLR), Germany; Simone Bucci, Massimo Cardaci, Serco Italia, Italy; Werner Damman, S[&]T, Netherlands; David Donovan, Royal Netherlands Meteorological Institute (KNMI), Netherlands; Frithjof Ehlers, European Space Agency (ESA), Netherlands; Frederic Fabre, Les Myriades, France; Peggy Fischer, European Space Agency (ESA), Italy; Thomas Flament, CNRM, Université de Toulouse, Météo-France, CNRS, France; Giacomo Gostinicchi, Serco Italia, Italy; Lars Isaksen, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; Sebastian Jupin-Langlois, ABB, Canada; Thomas Kanitz, European Space Agency (ESA), Netherlands; Adrien Lacour, CNRM, Université de Toulouse, Météo-France, CNRS, France; Marta De Laurentis, European Space Agency (ESA), Italy; Christian Lemmerz, Oliver Lux, Uwe Marksteiner, German Aerospace Center (DLR), Germany; Gert-Jan Marseille, Royal Netherlands Meteorological Institute (KNMI), Netherlands; Nafiseh Masoumzadeh, Markus Meringer, German Aerospace Center (DLR), Germany; Sander Niemeijer, S[&]T, Netherlands; Ines Nikolaus, Physics Solutions, Germany; Gaetan Perron, ABB, Canada; Bas Pijnacker-Hordijk, S[&]T, Netherlands; Katja Reissig, IB Reissig, Germany; Matic Savli, CNRM, Université de Toulouse, Météo-France, CNRS, France; Karsten Schmidt, German Aerospace Center (DLR), Germany; Ad Stoffelen, Royal Netherlands Meteorological Institute (KNMI), Netherlands; Dimitri Trajon, CNRM, Université de Toulouse, Météo-France, CNRS, France; Michael Vaughan, Optical & Lidar Associates, United Kingdom; Marcella Veneziani, S[&]T, Netherlands; Cristiano De Vincenti, Serco Italia, Italy; Benjamin Witschas, German Aerospace Center (DLR), Germany

TU4.O-15.5: DEMONSTRATED AEOLUS BENEFITS IN ATMOSPHERIC SCIENCES 763

Michael Rennie, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; Ad Stoffelen, Koninklijk Nederlands Meteorologische Instituut (KNMI), Netherlands; Sergey Khaykin, LATMOS/IPSL, France; Scott Osprey, University of Oxford, United Kingdom; Corwin Wright, Tim Banyard, University of Bath, United Kingdom; Anne-Grete Straume-Lindner, European Space Agency (ESA), Netherlands; Oliver Reitebuch, Isabell Krisch, German Aerospace Center (DLR), Germany; Tommaso Parrinello, Jonas Von Bismarck, ESA / ESRIN, Italy; Denny Wernham, ESA / ESTEC, Netherlands

TU4.O-15.6: AEOLUS-2 MISSION PRE-DEVELOPMENT STATUS..... 767

Denny Wernham, Arnaud Heliere, Graeme Mason, Anne-Grete Straume-Lindner, European Space Agency (ESA), Netherlands

TU4.O-16: ESA'S BIOMASS MISSION: LATEST DEVELOPMENTS

**TU4.O-16.1: THE ROLE OF THE BIOMASS MISSION IN CARBON CYCLE SCIENCE AND 771
POLITICS**

Shaun Quegan, University of Sheffield and National Centre for Earth Observation, United Kingdom; Thuy Le Toan, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Jerome Chave, Université Toulouse III Paul Sabatier, France; Markus Reichstein, Max Planck Institute for Biogeochemistry, France; Sassan Saatchi, NASA Jet Propulsion Laboratory, California Institute of Technology, France; Hank Shugart, University of Virginia, France; Mathew Williams, University of Edinburgh, France

TU4.O-16.3: THE BIOMASS SYSTEM – OVERVIEW AND DEVELOPMENT STATUS..... 775

Adriano Carbone, Rhea System B.V. for ESA / European Space Agency, Netherlands; Gabriella Costa, Michael Fehringer, Florence Heliere, European Space Agency, ESA, Italy; Antonio Leanza, SERCO B.V. for ESA / European Space Agency, Netherlands; Elia Maestroni, Nuno Miranda, Janice Patterson, European Space Agency, ESA, Germany; Björn Rommen, European Space Agency (ESA), Netherlands; Tristan Simon, Philip Willemsen, European Space Agency, ESA, Netherlands

TU4.O-16.4: BIOMASS LEVEL-2 PRODUCTS - PART I: RATIONALE AND APPLICATIONS..... 779
Lars M.H. Ulander, Chalmers University of Technology, Sweden; Mauro Mariotti d'Alessandro, Politecnico di Milano, Italy; Francesco Banda, Davide Giudici, Aresys s.r.l., Italy; Maciej Soja, MJ Soja Consulting, Australia; Shaun Quegan, University of Sheffield, United Kingdom; Konstantinos P. Papathanassiou, German Aerospace Center (DLR), Germany; Stefano Tebaldini, Politecnico di Milano, Italy; Thuy Le Toan, Ludovic Villard, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Björn Rommen, Klaus Scipal, European Space Agency (ESA), Netherlands

TU4.O-16.5: BIOMASS LEVEL-2 PRODUCTS - PART II: PROCESSING SCHEMES AND AGB ESTIMATION RESULTS FROM CAMPAIGN DATA 783
Stefano Tebaldini, Mauro Mariotti d'Alessandro, Politecnico di Milano, Italy; Francesco Banda, Davide Giudici, Aresys s.r.l., Italy; Lars M.H. Ulander, Chalmers University of Technology, Sweden; Maciej Soja, MJ Soja Consulting, Italy; Shaun Quegan, University of Sheffield, Italy; Konstantinos P. Papathanassiou, German Aerospace Center (DLR), Germany; Thuy Le Toan, Ludovic Villard, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Björn Rommen, Klaus Scipal, European Space Agency (ESA), France

TU4.O-16.6: BIOMASS GROUND SEGMENT ARCHITECTURE, MULTI-MISSION ALGORITHM AND ANALYSIS PLATFORM (MAAP) AND RELATED OPEN-SOURCE DEVELOPMENTS 787
Clément Albinet, Stefanie Lumnitz, Bjorn Frommknecht, Nuno Miranda, Klaus Scipal, Gabriella Costa, Henri Laur, ESA - European Space Research Institute, Italy

TU4.O-17: CROP MAPPING AND MONITORING USING SAR I

TU4.O-17.1: MULTI-FREQUENCY SAR TO MONITOR AGRICULTURE IN THE AMERICAS 5914
Heather McNairn, Laura Dingle Robertson, Dole Tsan, Xianfeng Jiao, Andrew Davidson, Agriculture and Agri-Food Canada, Canada

TU4.O-17.2: POTENTIAL OF SENTINEL-1 TIME SERIES DATA FOR THE ESTIMATION OF SEASON LENGTH IN WINTER WHEAT PHENOLOGY 5917
Michael Schlund, Faculty of Geo-information Science and Earth Observation (ITC), Netherlands; Felix Lobert, Stefan Erasmij, Thünen-Institute of Farm Economics, Germany

TU4.O-17.3: MONITORING WHEAT CROP GROWTH USING A NEW VEGETATION INDEX FROM SENTINEL-1 GRD SAR DATA 5921
Narayanarao Bhogapurapu, Subhadip Dey, Dipankar Mandal, Avik Bhattacharya, Rao Y. S., Indian Institute of Technology Bombay, India

TU4.O-17.4: CROP CLASSIFICATION BASED ON IMAGE SEGMENTATION AND PHENOLOGICAL SIMILARITY USING SAR IMAGERY 5925
Lin Chen, Gangqiang An, Minfeng Xin, Gengke Lai, University of Electronic Science and Technology of China, China

TU4.O-17.5: ENSEMBLE LEARNING FOR CROP MONITORING FROM MULTITEMPORAL OPTICAL AND SYNTHETIC APERTURE RADAR EARTH OBSERVATIONS 5929
Hazhir Bahrami, University of Tehran, Iran; Saeid Homayouni, Centre Eau Terre Environnement, Institut National de la Recherche Scientifique, Canada; Masoud Mahdianpari, C-CORE and Memorial University of Newfoundland, Canada; Abdolreza Safari, University of Tehran, Iran

TU4.O-17.6: CROP CLASSIFICATION AND BIOMASS ESTIMATE USING COSMO-SKYMED AND SENTINEL-1 DATA IN AN AGRICULTURAL TEST AREA IN CENTRAL ITALY 5933
Alessandro Lapini, Giacomo Fontanelli, Fabrizio Baroni, Simonetta Paloscia, Simone Pettinato, Simone Pilia, Giuliano Ramat, Emanuele Santi, Leonardo Santurri, CNR-IFAC, Italy; Francesca Cigna, Deodato Tapete, Italian Space Agency (ASI), Italy

WE1.O-1: TANDEM-X: MISSION STATUS AND SCIENCE PERSPECTIVE

WE1.O-1.1: TANDEM-X: MISSION AND SCIENCE..... 789
Irena Hajnsek, German Aerospace Center (DLR) / ETH Zürich, Germany; Alberto Moreira, Manfred Zink, Stefan Buckreuss, Thomas Kraus, Markus Bachmann, Thomas Busche, German Aerospace Center (DLR), Germany

WE1.O-1.3: JOINT PAZ AND TANDEM-X MISSIONS INTERFEROMETRIC PERFORMANCE	792
<i>Alberto Alonso-Gonzalez, Irena Hajnsek, Christo Grigorov, Achim Roth, Ursula Marschalk, German Aerospace Center (DLR), Germany; Nuria Gimeno Martinez, Patricia Cifuentes Revenga, María José González Bonilla, Nuria Casal Vazquez, Juan M Cuerda Muñoz, Marcos Garcia Rodriguez, Instituto Nacional de Tecnica Aeroespacial (INTA), Spain</i>	
WE1.O-1.4: TANDEM-X AND GEDI DATA FUSION FOR A CONTINUOUS FOREST HEIGHT MAPPING AT LARGE SCALES	796
<i>Victor Cazcarra-Bes, Matteo Pardini, Changhyun Choi, Roman Guliaev, Konstantinos P. Papathanassiou, German Aerospace Center (DLR), Germany</i>	
WE1.O-1.5: AREA AND VOLUME QUANTIFICATION OF ARCTIC THAW SLUMPS USING TIME-SERIES OF DIGITAL ELEVATION MODELS	800
<i>Philipp Bernhard, ETH Zürich, Switzerland; Simon Zwieback, University of Alaska Fairbanks, United States; Irena Hajnsek, German Aerospace Center (DLR), Germany</i>	
WE1.O-1.6: GERMAN X-BAND SPACEBORNE SAR HERITAGE AND THE FUTURE HRWS MISSION	804
<i>Michael Bartusch, Adriana Elizabeth Nuncio Quiroz, Samuel Stettner, Alberto Moreira, Manfred Zink, German Aerospace Center (DLR), Germany</i>	
 WE1.O-2: SIGNAL DENOISING, RECONSTRUCTION AND COMPLETION	
WE1.O-2.1: WHEN IS THE RIGHT TIME TO APPLY DENOISING?	2464
<i>Kasra Rafiezadeh Shahi, Behnood Rasti, Pedram Ghamisi, Helmholtz-Zentrum Dresden-Rossendorf, Helmholtz Institute Freiberg for Resource Technology, Germany; Paul Scheunders, University of Antwerp, Belgium; Richard Gloaguen, Helmholtz-Zentrum Dresden-Rossendorf, Helmholtz Institute Freiberg for Resource Technology, Germany</i>	
WE1.O-2.2: AN EVALUATION OF ROBUST REMOTE REFERENCE AND PARAMETRIC MAGNETOTELLURIC TRANSFER FUNCTION ESTIMATION	2468
<i>Xinyi Xu, Mark Butala, Zhejiang University, China</i>	
WE1.O-2.3: STRIPE NOISE REMOVAL FOR INFRARED IMAGE BY REGULARIZED SPECTRAL SEPARATION	2472
<i>Yue Hu, Xinyu Zhou, Ye Zhang, Shaoqi Shi, Disi Lin, Harbin Institute of Technology, China</i>	
WE1.O-2.4: SPECTRAL RECONSTRUCTION USING RESIDUAL CHANNEL AFFINITY PROPAGATION NETWORK WITH STRUCTURAL SIMILARITY CONSTRAINT	2476
<i>Chaoxiong Wu, Jiaojiao Li, Rui Song, Yunsong Li, Xidian University, China</i>	
WE1.O-2.5: DEEP HYPERSPECTRAL TENSOR COMPLETION JUST USING SMALL DATA	2480
<i>Chia-Hsiang Lin, Yen-Cheng Lin, Po-Wei Tang, Man-Chun Chu, National Cheng Kung University, Taiwan</i>	
WE1.O-2.6: WAVELET-BASED BLOCK LOW-RANK REPRESENTATIONS FOR HYPERSPECTRAL DENOISING	2484
<i>Bin Zhao, Jóhannes Rúnar Sveinsson, Magnus O. Ulfarsson, University of Iceland, Iceland; Jocelyn Chanussot, Université Grenoble Alpes; University of Iceland, Iceland</i>	
 WE1.O-3: ADVANCED SEGMENTATION AND LAND COVER METHODS FOR OPTICAL DATA	
WE1.O-3.1: CONTEXTUAL LAND-COVER MAP TRANSLATION WITH SEMANTIC SEGMENTATION	2488
<i>Luc Baudoux, Institut national de l'information géographique et forestière, France; Jordi Inglada, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Clément Mallet, Institut national de l'information géographique et forestière, France</i>	

WE1.O-3.2: SEMI-SUPERVISED LAND-USE CLASSIFICATION USING WEAKLY LABELED REMOTE SENSING DATA	2492
<i>Rui Wang, Man-On Pun, Chinese University of Hong Kong, Shenzhen, China; Huiliang Yu, Shanghai CAS-NOVA Satellite Technology Company Limited, China</i>	
WE1.O-3.3: LAND COVER CLASSIFICATION FROM A MAPPING PERSPECTIVE: PIXELWISE SUPERVISION IN THE DEEP LEARNING ERA	2496
<i>Thorsten Wilhelm, Dominik Koßmann, TU Dortmund University, Germany</i>	
WE1.O-3.4: A MULTI-TASK DEEP LEARNING FRAMEWORK FOR BUILDING FOOTPRINT SEGMENTATION	2500
<i>Burak Ekim, Elif Sertel, Istanbul Technical University, Turkey</i>	
WE1.O-3.5: HRLINKNET: LINKNET WITH HIGH-RESOLUTION REPRESENTATION FOR HIGH-RESOLUTION SATELLITE IMAGERY	2504
<i>Muyu Wu, Zhen Shu, Jinming Zhang, Xiangyun Hu, Wuhan University, China</i>	
WE1.O-3.6: END-TO-END SEMANTIC SEGMENTATION AND BOUNDARY REGULARIZATION OF BUILDINGS FROM SATELLITE IMAGERY	2508
<i>Qingyu Li, Technical University of Munich (TUM) / German Aerospace Center (DLR), Germany; Stefano Zorzi, Graz University of Technology, Austria; Yilei Shi, Technical University of Munich, Germany; Friedrich Fraundorfer, Graz University of Technology, German Aerospace Center, Austria; Xiao Xiang Zhu, Technical University of Munich (TUM) / German Aerospace Center (DLR), Germany</i>	
 WE1.O-4: ADVANCED TARGET DETECTION METHOD IN HYPERSPECTRAL/LIDAR/RADAR	
WE1.O-4.1: ANOMALY DETECTION IN HYPERSPECTRAL IMAGE USING 3D-CONVOLUTIONAL VARIATIONAL AUTOENCODER	2512
<i>Jingfa Zhang, Yang Xu, Nanjing University of Science and Technology, China; Tianming Zhan, Nanjing Audit University, China; Zebin Wu, Zhihui Wei, Nanjing University of Science and Technology, China</i>	
WE1.O-4.2: IMBALANCED MULTI-CLASS CLASSIFICATION OF HYPERSPECTRAL IMAGE BASED ON SMOTE AND DEEP ROTATION FOREST	2516
<i>Xian Zhong, Yinghui Quan, Wei Feng, Xidian University, China; Qiang Li, Northwestern Polytechnical University, China; Gabriel Dauphin, University Paris XIII, France; Mengdao Xing, Xidian University, China</i>	
WE1.O-4.3: AUTOMATIC DETECTION AND MAPPING OF HIGHWAY GUARDRAILS FROM MOBILE LIDAR POINT CLOUDS	2520
<i>Yuanwen Yue, ETH Zurich, Switzerland; Maged Gouda, Karim El-Basyouny, University of Alberta, Canada</i>	
WE1.O-4.4: SELF-SUPERVISED SPECTRAL MATCHING NETWORK FOR HYPERSPECTRAL TARGET DETECTION	2524
<i>Can Yao, Yuan Yuan, Zhiyu Jiang, Northwestern Polytechnical University, China</i>	
WE1.O-4.5: SAR TARGET DETECTION NETWORK BASED ON SALIENCY-COMBINED SINGLE SHOT MULTI BOX DETECTOR	2528
<i>Lu Li, Lan Du, Yuang Du, Xidian University, China</i>	
WE1.O-4.6: WGAN-GP-BASED SYNTHETIC RADAR SPECTROGRAM AUGMENTATION IN HUMAN ACTIVITY RECOGNITION	2532
<i>Lele Qu, Yutong Wang, Tianhong Yang, Lili Zhang, Yanpeng Sun, Shenyang Aerospace University, China</i>	
 WE1.O-5: DEEP LEARNING FOR SEMANTIC SEGMENTATION AND IMAGE CLASSIFICATION I	
WE1.O-5.1: BAYESIAN DEEP LEARNING WITH MONTE CARLO DROPOUT FOR QUALIFICATION OF SEMANTIC SEGMENTATION	2536
<i>Clément Dechesne, Pierre Lassalle, CNES, France; Sébastien Lefèvre, Université Bretagne Sud / IRISA, France</i>	

WE1.O-5.2: ADAPTING KERNELS FOR HYPERSPECTRAL IMAGE CLASSIFICATION	2540
<i>Juan M. Haut, Spanish University for Distance Education, UNED, Spain; Mercedes E. Paoletti, University of Malaga, Spain; Rafael Pastor-Vargas, Llanos Tobarra, Antonio Robles-Gomez, Roberto Hernández, Spanish University for Distance Education, UNED, Spain; Eligious M.T. Hendrix, University of Malaga, Spain; Jun Li, Sun Yat-Sen University, China</i>	
WE1.O-5.3: HYPERSPECTRAL CLASSIFICATION BASED ON SPECTRAL INDICES LEARNED THROUGH SOFT ATTENTION UNITS	2544
<i>Romain Thoreau, ONERA / Magellium, France; Véronique Achard, Xavier Briottet, ONERA, France</i>	
WE1.O-5.4: MULTIPLE INCREMENTAL KERNEL CONVOLUTION FOR LAND COVER CLASSIFICATION OF REMOTELY SENSED IMAGES	2548
<i>Xuanwen Tao, Lirong Han, Mercedes E. Paoletti, University of Extremadura, Spain; S. K. Roy, Jalpaiguri Govt. Engineering College, India; Javier Plaza, University of Extremadura, Spain; Juan M. Haut, National Distance Education University, UNED, Spain; Antonio Plaza, University of Extremadura, Spain</i>	
WE1.O-5.5: ROBUST DEEP METRIC LEARNING FOR REMOTE SENSING IMAGES WITH NOISY ANNOTATIONS	2552
<i>Jian Kang, School of Electronic and Information Engineering, Soochow University, China; Ruben Fernandez-Beltran, Institute of New Imaging Technologies, University Jaume I, China; Puhong Duan, Xudong Kang, College of Electrical and Information Engineering, Hunan University, China; Antonio Plaza, Hyperspectral Computing Laboratory, University of Extremadura, China</i>	
WE1.O-5.6: MONITORING THREATENED IRISH HABITATS USING MULTI-TEMPORAL MULTI-SPECTRAL AERIAL IMAGERY AND CONVOLUTIONAL NEURAL NETWORKS	2556
<i>Sara Perez-Carabaza, Oisín Boydell, University College Dublin, Ireland; Jerome O’Connell, ProvEye, Ireland</i>	
WE1.O-6: SPATIO-TEMPORAL ANALYSIS	
WE1.O-6.1: A NEW SPATIO-TEMPORAL FUSION METHOD FOR BLENDING LANDSAT AND MODIS DATA IN HETEROGENEOUS AREA	2560
<i>Bo Ping, Tianjin University, China; Yunshan Meng, National Marine Data and Information Service, China</i>	
WE1.O-6.2: A NEW SPATIOTEMPORAL DATA FUSION METHOD TO RECONSTRUCT HIGH-QUALITY LANDSAT NDVI TIME-SERIES DATA	2564
<i>Xiaofang Ling, Ruyin Cao, University of Electronic Science and Technology of China, China</i>	
WE1.O-6.3: FAST UNSUPERVISED SPATIOTEMPORAL SUPER-RESOLUTION FOR MULTISPECTRAL SATELLITE IMAGING USING PLUG-AND-PLAY MACHINERY STRATEGY	2568
<i>Chia-Hsiang Lin, Cheng-Yu Sie, Pang-Yu Lin, Jhao-Ting Lin, Nationl Cheng Kung University, Taiwan</i>	
WE1.O-6.4: ADAPTIVE CHANNEL ATTENTION AND FEATURE SUPER-RESOLUTION FOR REMOTE SENSING IMAGES SPATIOTEMPORAL FUSION	2572
<i>Shuai Fang, Siyuan Meng, Hefei University of Technology, China; Yang Cao, University of Science and Technology of China, China; Jing Zhang, Hefei University of Technology, China; Weikai Shi, Macau University of Science and Technology, China</i>	
WE1.O-6.5: DATA-DRIVEN SPATIO-TEMPORAL INTERPOLATION OF SEA SURFACE SEDIMENT CONCENTRATION FROM SATELLITE-DERIVED DATA: AN OSSE CASE-STUDY IN THE BAY OF BISCAY	2576
<i>Jean-Marie Vient, UBO- Université de Bretagne Occidentale, France; Frédéric Jourdin, Service Hydrographique et Océanographique de la Marine, France; Ronan Fablet, Institut des Mines-Telecom Atlantique, France; Baptiste Mengual, SAS Benoit Waeles–Consultant Génie Côtier, France; Ludivine Lafosse, Service Hydrographique et Océanographique de la Marine, France; Christophe Delacourt, UBO-Université de Bretagne Occidentale, France</i>	
WE1.O-6.6: DINSAR AND PS METHODS FUSION FOR DISPLACEMENT ESTIMATION BEFORE AND AFTER EARTHQUAKES AT THE SOUTHERN TIP OF THE BAIKAL LAKE, RUSSIA	2580
<i>Valeriy Bondur, Institute of aerospace monitoring AEROCOSMOS, Russia; Tumen Chimitdorzhiev, Aleksey Dmitriev, Pavel Dagurov, Institute of Physical Materials Science, SB RAS, Russia</i>	

WE1.O-7: ANALYZING FOREST USING PASSIVE AND ACTIVE RS METHODS

WE1.O-7.1: AN ALGORITHM TO ESTIMATE TREE HEIGHT WITH INSAR TECHNIQUE AND 5937 DUAL-POL ALOS/PALSAR DATASETS

Yao Chen, University of Electronic Science and Technology of China, China; Yong Wang, East Carolina University, United States; Yan Yan, University of Electronic Science and Technology of China, China

WE1.O-7.2: ESTIMATING CANOPY HEIGHT AND WOOD VOLUME OF EUCALYPTUS 5941 PLANTATIONS IN BRAZIL USING GEDI LIDAR DATA

Ibrahim Fayad, Nicolas Baghdadi, INRAE, France; Clayton Alcarde, Suzano, Brazil; Jose Luiz Stape, Unesp, Faculdade de Ciências Agrônômicas, Brazil; Jean Stéphane Bailly, AgroParisTech, France; Henrique Scolforo, Suzano, Brazil; Mehrez Zribi, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Gueric Le Maire, CIRAD, France

WE1.O-7.3: BRAZILIAN SAVANNA HEIGHT ESTIMATION USING UAV PHOTOGRAMMETRY 5945

Andeise Cerqueira Dutra, National Institute for Space Research, Brazil; Fábio Marcelo Breunig, Federal University of Santa Maria, Brazil; Henrique Luis Godinho Cassol, Marcell Terra De Oliveira, Tânia Beatriz Hoffmann, Egidio Arai, Valdete Duarte, Yosio Edemir Shimabukuro, National Institute for Space Research, Brazil

WE1.O-7.4: RETRIEVAL OF FOREST WATER POTENTIAL FROM L-BAND VEGETATION 5949 OPTICAL DEPTH

Thomas Jagdhuber, Anke Fluhrer, Anne-Sophie Schmidt, German Aerospace Center (DLR), Germany; François Jonard, Université catholique de Louvain, Belgium; David Chaparro, Universitat Politècnica de Catalunya, Spain; Thomas Meyer, Université catholique de Louvain, Belgium; Natan Holtzman, Alexandra G. Konings, Stanford University, United States; Andrew Feldman, Massachusetts Institute of Technology, United States; Martin J. Baur, University of Cambridge, United Kingdom; Maria Piles, University of Valencia, Spain; Dara Entekhabi, Massachusetts Institute of Technology, United States

WE1.O-7.5: A DUAL-POLARIMETRIC APPROACH TO OBSERVE WILDFIRES USING C-BAND 5953 POLSAR MEASUREMENTS

Ferdinando Nunziata, Emanuele Ferrentino, Andrea Buono, Università degli studi di Napoli Parthenope, Italy; Maurizio Sarti, National Research Council (CNR), Italy; Maurizio Migliaccio, Università degli studi di Napoli Parthenope, Italy

WE1.O-7.6: DEFORESTATION MONITORING USING SENTINEL-1 SAR IMAGES IN HUMID 5957 TROPICAL AREAS

Bertrand Ygorra, VisioTerra, France; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Jean-Pierre Wigneron, Christophe Moisy, Institut National de Recherche pour l'Agriculture, l'alimentation et l'Environnement, France; Thibault Catry, Institut de Recherche pour le Développement, France; Frédéric Baup, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Eliakim Hamunyela, University of Namibia, Namibia; Serge Riazanoff, VisioTerra, France

WE1.O-8: CROP MAPPING AND MONITORING USING MULTIMODAL DATA

WE1.O-8.1: DEEP ONE-CLASS CROP EXTRACTION FRAMEWORK FOR MULTI-MODAL 5961 REMOTE SENSING IMAGERY

Lei Lei, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, China; Xinyu Wang, School of Remote Sensing and Information Engineering, Wuhan University, China; Hengwei Zhao, Xin Hu, Chang Luo, Yanfei Zhong, State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing (LIESMARS), Wuhan University, China

WE1.O-8.2: BIOPHYSICAL PARAMETER ESTIMATION USING EARTH OBSERVATION DATA 5965 IN A MULTI-SENSOR DATA FUSION APPROACH: CYCLEGAN

Natalia Efremova, University of Oxford, United Kingdom; Esra Erten, Istanbul Technical University, Turkey

WE1.O-8.3: COLLABORATIVE MAPPING RICE PLANTING AREAS USING MULTISOURCE 5969 REMOTE SENSING DATA

Pengfei Zhai, Shihua Li, Ze He, Yuchuan Deng, Yueming Hu, University of Electronic Science and Technology of China, China

WE1.O-8.4: FLOODED RICE PADDY DETECTION AND ITS ACCURACY ASSESSMENT USING SENTINEL-1 AND PLANETSCOPE DATA: A CASE STUDY OF 2018 SPRING FLOOD IN WEST JAVA INDONESIA	5973
<i>Hiroyuki Wakabayashi, Nihon University, Japan; Chiharu Hongo, Chiba University, Japan; Yoshihiro Asaoka, Nihon University, Japan; Boedi Tjahjono, IPB University, Indonesia; Intan Permata, Office of Food Crops and Horticulture of West Java Province, Indonesia</i>	
WE1.O-8.5: SENTINEL-1 AND SENTINEL-2 BASED CROP CLASSIFICATION OVER AGRICULTURAL REGIONS OF NAVARRE (SPAIN)	5977
<i>Maria Gonzalez-Audicana, Sandra Lopez-Saenz, María Arias, Ion Sola, Jesus Alvarez-Mozos, Public University of Navarre, Spain</i>	
WE1.O-8.6: AUTOMATED CROP HARVEST DETECTION ALGORITHM BASED ON SYNERGISTIC USE OF OPTICAL AND RADAR SATELLITE IMAGERY	5981
<i>Kasper Bonte, Mehrdad Moshtaghi, Kristof Van Tricht, Laurent Tits, Vlaamse Instelling voor Technologisch Onderzoek, Belgium</i>	
WE1.O-9: REMOTE SENSING OF OCEAN CURRENTS	
WE1.O-9.1: CALCULATION OF BISTATIC REFLECTION WITH RIVER CURRENTS	7338
<i>Yuriy Titchenko, Vladimir Karaev, Mariya Ryabkova, Kirill Ponur, Institute of Applied Physics, Russian Academy of Sciences, Russia</i>	
WE1.O-9.2: SYNERGISTIC OBSERVATIONS OF SURFACE WINDS AND CURRENTS IN TROPICAL CYCLON	7342
<i>Shengren Fan, Nanjing University of Information Science and Technology, China; Xu Yang, Shiyu Xue, Xi'an Institute of Space Radio Technology, China Academy of Space Technology, China; Biao Zhang, Nanjing University of Information Science and Technology, China</i>	
WE1.O-9.3: A DEEP LEARNING MODEL FOR SUBSURFACE MESOSCALE EDDY DETECTION BASED ON REMOTE SENSING IMAGES	7346
<i>Yingjie Liu, Xiaofeng Li, Institute of Oceanology, Chinese Academy of Sciences, China</i>	
WE1.O-9.4: MICROWAVE DOPPLER RADAR EXPERIMENT ON A RIVER	7350
<i>Vladimir Karaev, Mariya Ryabkova, Mariya Panfilova, Yury Titchenko, Eugeny Meshkov, Emma Zuikova, Institute of Applied Physics, Russian Academy of Sciences, Russia</i>	
WE1.O-9.5: COMPARISON OF THE SEA SURFACE VELOCITY DERIVED FROM SENTINEL-1 AND TANDEM-X	7354
<i>Anis Elyouncha, Leif E. B. Eriksson, Chalmers University of Technology, Sweden; Harald Johnsen, Norwegian Research Center, Norway</i>	
WE1.O-9.6: OCEANIC CIRCULATION IN THE STRAIT OF GIBRALTAR REVEALED BY AIS DATA INFORMATION	7358
<i>Clément Le Goff, Alexey Mironov, Brahim Boussidi, e-odyn, France; Lucie Bordoïs, Franck Dumas, SHOM, France; Bertrand Chapron, Ifremer, France</i>	
WE1.O-10: LIDAR SCIENCE AND TECHNOLOGY	
WE1.O-10.1: INTEGRATED PHOTONICS TECHNOLOGY FOR EARTH SCIENCE REMOTE-SENSING LIDAR	7708
<i>Fengqiao Sang, Joseph Fridlander, Victoria Rosborough, Simone Tommaso Šuran Brunelli, University of California, Santa Barbara, United States; Jeffrey Chen, Kenji Numata, NASA, United States; S. Randy Kawa, NASA Goddard Space Flight Center, United States; Mark Stephen, NASA, United States; Larry Coldren, Jonathan Klamkin, University of California, Santa Barbara, United States</i>	

WE1.O-10.2: INTENSITY CORRECTION OF MULTISPECTRAL AIRBORNE LASER SCANNING DATA	7712
<i>Wai Yeung Yan, Hong Kong Polytechnic University, China</i>	
WE1.O-10.3: FLOATING DOPPLER WIND LIDAR MOTION SIMULATOR FOR HORIZONTAL WIND SPEED MEASUREMENT ERROR ASSESSMENT	7716
<i>Andreu Salcedo-Bosch, Joan Farré-Guarné, Josep Sala-Álvarez, Javier Villares-Piera, Francesc Rocadenbosch, Universitat Politècnica de Catalunya, Spain; Robin Tanamachi, Purdue University, United States</i>	
WE1.O-10.4: UAS LIDAR CROP LAI ESTIMATIONS FROM CANOPY DENSITY	7720
<i>Jordan Bates, Carsten Montzka, Marius Schmidt, François Jonard, Forschungszentrum Jülich, Germany</i>	
WE1.O-10.5: FULL-WAVEFORM TERRESTRIAL LIDAR DATA CLASSIFICATION USING RAW SAMPLES OF DIGITIZED WAVEFORM	7724
<i>Mohammad Pashaei, Michael Starek, Philippe Tissot, Jacob Berryhill, Texas A&M University - Corpus Christi, United States</i>	
WE1.O-10.6: A LOCAL TOPOLOGICAL INFORMATION AWARE BASED DEEP LEARNING METHOD FOR GROUND FILTERING FROM AIRBORNE LIDAR DATA	7728
<i>Zhipeng Luo, Xiamen University, China; Ziyue Zhang, University of Nottingham Ningbo China, China; Wen Li, Haojia Lin, Yiping Chen, Cheng Wang, Xiamen University, China; Jonathan Li, University of Waterloo, Canada</i>	
 WE1.O-11: ICE SHEETS AND GLACIERS I	
WE1.O-11.1: MEASURING GLACIER VELOCITY BY AUTOFOCUSING TEMPORALLY MULTILOOKED SAR TIME SERIES	5493
<i>Silvan Leinss, Shiyi Li, Othmar Frey, ETH Zurich, Switzerland</i>	
WE1.O-11.2: FUSION OF GLACIER DISPLACEMENT OBSERVATIONS WITH DIFFERENT TEMPORAL BASELINES	5497
<i>Laurane Charrier, Université Savoie Mont Blanc and Office National d'Etudes et de Recherches Aérospatiales (ONERA), France; Yajing Yan, Université Savoie Mont Blanc, France; Elise Colin Koeniguer, Office National d'Etudes et de Recherches Aérospatiales (ONERA), France; Emmanuel Trouvé, Université Savoie Mont Blanc, France</i>	
WE1.O-11.3: AUTOMATED EXTRACTION FOR SUPRAGLACIAL LAKE IN GREENLAND USING SENTINEL-1 SAR IMAGERY	5501
<i>Di Jiang, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Xinwu Li, Key Laboratory of Digital Earth Science, Aerospace Information Research Institute, China; Qian Xiang, Beihang University, China; Mengyue Ma, China University of Geosciences, China; Wen Hong, Key Laboratory of Technology in Geo-spatial Information Processing and Application System, China; Yirong Wu, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
WE1.O-11.4: VISIBILITY ANALYSIS OF GLACIERS ON STEEP SLOPES IN THE EUROPEAN ALPS USING TERRASAR-X/PAZ DATA	5505
<i>Suvrat Kaushik, EDYTEM(CNRS)/LISTIC, Université Savoie Mont Blanc, Le Bourget du lac/Annecy, France; Yajing Yan, LISTIC, Université Savoie Mont Blanc, France; Ludovic Ravanel, Florence Magnin, EDYTEM(CNRS), Université Savoie Mont Blanc, Le Bourget du lac, France; Emmanuel Trouvé, LISTIC, Université Savoie Mont Blanc, France</i>	
WE1.O-11.5: YEAR-AROUND C- AND L- BAND OBSERVATION AROUND THE MOSAIC ICE FLOE WITH HIGH SPATIAL AND TEMPORAL RESOLUTION	5509
<i>Suman Singha, German Aerospace Center (DLR), Germany; Malin Johansson, UiT The Arctic University of Norway, Norway; Gunnar Spreen, University of Bremen, Germany; Stephen Howell, Environment and Climate Change Canada, Canada; Shin-ichi Sobue, Japan Aerospace Exploration Agency (JAXA), Japan; Malcolm Davidson, European Space Agency (ESA), Netherlands</i>	
WE1.O-11.6: ANALYSIS OF MEGADUNE FIELDS IN ANTARCTICA	5513
<i>Giacomo Traversa, Università degli Studi di Siena, Italy; Davide Fugazza, Università degli Studi di Milano, Italy; Massimo Frezzotti, Università degli Studi Roma 3, Italy</i>	

WE1.O-12: NOVEL PROCESSING AND SERVICES FOR LAND USE APPLICATIONS

WE1.O-12.1: LULC IMAGE CLASSIFICATION WITH CONVOLUTIONAL NEURAL NETWORK 5985

Anas Tukur Balarabe, Ivan Jordanov, University of Portsmouth, United Kingdom

WE1.O-12.2: A LIGHTWEIGHT AND MULTI-SCALE CNN MODEL FOR LAND-COVER 5989 CLASSIFICATION WITH HIGH-RESOLUTION REMOTE SENSING IMAGES

Wang Xin, China University of Petroleum (East China), China; Zhao Yunhua, Qingdao Surveying & Mapping Institute, China; Liu Dongsheng, Chang'an University, China; Sun Genyun, Zhang Aizhu, China University of Petroleum (East China), China; Li Jing, Chinese Academy of Sciences, China

WE1.O-12.3: EDGE GUIDED STRUCTURE EXTRACTION FOR HYPERSPECTRAL IMAGE 5993 CLASSIFICATION

Ying Zhang, Puhong Duan, Xudong Kang, Jianxu Mao, Hunan University, China

WE1.O-12.4: MULTI-MODAL FUSION ARCHITECTURE SEARCH FOR LAND COVER 5997 CLASSIFICATION USING HETEROGENEOUS REMOTE SENSING IMAGES

Xiao Li, Lin Lei, Gangyao Kuang, National University of Defence Technology, China

WE1.O-12.5: COPERNICUS LAND SERVICE, GLOBAL COMPONENT PORTFOLIO..... 6001

Michel Massart, Michael Cherlet, European Commission, Belgium

WE1.O-12.6: SPATIAL AND TEMPORAL CHANGES IN ECOSYSTEM SERVICE VALUE IN 6004 KARST AREAS OF SOUTHWESTERN CHINA BASED ON LAND-USE CHANGES

Wei Chen, Xuepeng Zhang, Zhe Wang, China University of Mining and Technology, China

WE1.O-13: FORESTS AND BIOMASS FROM SPACE I

WE1.O-13.1: IMPROVED FOREST BIOMASS ESTIMATION BY ADDING TIME-SERIES 6008 CHARACTERISTICS OF LANDSAT REFLECTANCE

Xia Liu, Zhanmang Liao, University of Electronic Science and Technology of China, China; Albert van Dijk, Australian National University, Australia; Binbin He, Yue Shi, University of Electronic Science and Technology of China, China

WE1.O-13.2: MONITORING FOREST ABOVE-GROUND BIOMASS FROM 6012 MULTIFREQUENCY VEGETATION OPTICAL DEPTH:A PRELIMINARY STUDY

Claudia Olivares-Cabello, David Chaparro, Mercè Vall-Llossera, Adriano Camps, Universitat Politècnica de Catalunya, Spain

WE1.O-13.3: INTERANNUAL VARIABILITY OF BIOMASS (SMOS VEGETATION OPTICAL 6016 DEPTH) OVER THE CONTIGUOUS UNITED STATES

Amen Al-Yaari, Sorbonne University - Laboratoire METIS, France; Jean-Pierre Wigneron, INRA, France; Agnes Ducharne, Sorbonne University - Laboratoire METIS, France; Frédéric Frappart, Laboratoire d'Études en Géophysique et Océanographie Spatiales (LEGOS), France; Xiaojun Li, Xiangzhuo Liu, Mengjia Wang, INRAe, France; Lei Fan, Nanjing University of Information Science and Technology, China; Hongliang Ma, INRAe, France; Zanping Xing, Nanjing University of Information Science and Technology, China; Roberto Fernandez-Moran, University of Valencia, Image Processing Lab (IPL), Spain; Christophe Moisy, INRAe, China

WE1.O-13.4: THE POTENTIAL OF SENTINEL-1 DATA FOR CONIFEROUS FOREST FUEL 6020 LOADS ESTIMATION IN SOUTHWEST OF SICHUAN, CHINA

He Binbin, Li Yanxi, University of Electronic Science and Technology of China, China

WE1.O-13.5: ON THE USE OF GNSS REFLECTOMETRY FOR DETECTING FIRE 6024 DISTURBANCES IN FORESTS: A CASE STUDY IN ANGOLA

Emanuele Santi, Institute of Applied Physics, National Research Council (IFAC-CNR), Italy; Maria Paola Clarizia, Deimos Space, United Kingdom; Davide Comite, La Sapienza University of Rome, Italy; Laura Dente, Leila Guerriero, Tor Vergata University of Rome, Italy; Mauro Pierdicca, La Sapienza University of Rome, Italy

WE1.O-13.6: GLOBAL SCALE IB AMSR2 VEGETATION OPTICAL DEPTH AT X-BAND 6028
Mengjia Wang, Beijing Normal University / INRAE, China; Jean-Pierre Wigneron, INRAE, France; Philippe Ciais, Université Paris-Saclay, France; Rui Sun, Beijing Normal University, France; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Lei Fan, Chongqing Jinpo Mountain Karst Ecosystem National Observation and Research Station; School of Geographical Sciences, Southwest University, France; Xiaojun Li, Xiangzhuo Liu, INRAE, France; Amen Al-Yaari, Sorbonne Université, France; Roberto Fernandez-Moran, University of Valencia, Spain; Hongliang Ma, Wuhan University, France; Zanpin Xing, Chongqing Jinpo Mountain Karst Ecosystem National Observation and Research Station; School of Geographical Sciences, Southwest University, France; Christophe Moisy, INRAE, France

WE1.O-14: REMOTE SENSING APPLICATIONS IN INLAND WATERS I

WE1.O-14.1: WIDE-SCALE WATER BODIES MAPPING USING MULTI-TEMPORAL SENTINEL-1 SAR DATA 6032
David Marzi, Paolo Gamba, University of Pavia, Italy

WE1.O-14.2: MITIGATION OF LAND SUBSIDENCE DUE TO GROUNDWATER EXTRACTION IN QUERETARO, MEXICO 6036
Pascal Castellazzi, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia; Jaime Garfias, Centro Interamericano de Recursos del Agua, Mexico; Richard Martel, Institut National de la Recherche Scientifique, Canada

WE1.O-14.3: DAILY ESTIMATION OF INLAND WATER STORAGE IN THE MADEIRA BASIN DURING THE LAST TWENTY YEARS (1998-2018) 6040
Jeremy Guilhen, Collecte Localisation Satellites / Laboratoire Ecologie Fonctionnelle et Environnement, France; Marie Parrens, E.I Purpan, France; Franck Mercier, Collecte Localisation Satellites, France; Ahmad Al Bitar, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; José Miguel Sanchez Pérez, Laboratoire Ecologie Fonctionnelle et Environnement, France; William Santini, Institut de Recherche pour le Développement, Laboratoire GET, France; Sabine Sauvage, Laboratoire Ecologie Fonctionnelle et Environnement, France

WE1.O-14.4: INSAR COHERENCE OVER REGIONAL AUSTRALIA: IMPLICATIONS FOR MAPPING GROUNDWATER-RELATED GROUND DEFORMATION 6044
Pascal Castellazzi, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

WE1.O-14.5: LEARNING DEEP MODELS FROM WEAK LABELS FOR WATER SURFACE SEGMENTATION IN SAR IMAGES 6048
Francesco Asaro, Gianluca Murdaca, Claudio Maria Prati, Politecnico di Milano, Italy

WE1.O-14.6: AUTOMATIC DETECTION OF INLAND WATER BODIES ALONG ALTIMETRY TRACKS USING RADAR BACKSCATTERING 6052
Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Pierre Zeiger, LEGOS, France; Julie Betbeder, Valéry Gond, Régis Bellot, CIRAD, France; Nicolas Baghdadi, INRAE, France; Fabien Blarel, LEGOS, France; José Darrozes, Luc Bourrel, GET, France; Frédérique Seyler, ESPACE-DEV, France

WE1.O-15: DEEP INSIGHT SAR II

WE1.O-15.1: BAG-OF-WORDS FOR TRANSFER LEARNING 808
Iulia Calota, Daniela Faur, University Politehnica of Bucharest, Romania; Mihai Datcu, University Politehnica of Bucharest / German Aerospace Center (DLR), Romania

WE1.O-15.3: A STUDY OF RECOVERING POLSAR INFORMATION FROM SINGLE-POLARIZED DATA USING DNN 812
Junrong Qu, Xiaolan Qiu, Chibiao Ding, Aerospace Information Research Institute, Chinese Academy of Sciences, China

WE1.O-15.4: A NOISE-AWARE DEEP LEARNING MODEL FOR SEA ICE CLASSIFICATION BASED ON SENTINEL-1 SAR IMAGERY	816
<i>Habib Ullah, Salman Khaleghian, Thomas Kræmer, Torbjørn Eltoft, Andrea Marinoni, UiT The Arctic University of Norway, Norway</i>	
WE1.O-15.5: COMSAR: A NEW ALGORITHM FOR PROCESSING BIG DATA SAR INTERFEROMETRY	820
<i>Dinh Ho Tong Minh, INRAE, France; Yen-Nhi Ngo, Independent researcher, France</i>	
WE1.O-15.6: AN IMPROVED IMAGING METHOD FOR MOVING TARGET BASED ON GENERALIZED RADON-FOURIER TRANSFORM	824
<i>Yongpeng Gao, Zegang Ding, Beijing Institute of Technology, China; Shouye Lv, Yingying Li, Beijing Institute of Remote Sensing Information, China; Tianyi Zhang, Beijing Institute of Technology, China</i>	
WE1.O-16: ATMOSPHERIC SOUNDING: TECHNOLOGY, METHODS AND APPLICATIONS I	
WE1.O-16.1: TOWARDS AN OPTIMAL POLARIMETRIC RADAR RAINFALL METHODOLOGY: DEMONSTRATION DURING A WATER-LOGGING DISASTER IN EASTERN CHINA	7087
<i>Yabin Gou, Hong Zhu, Hangzhou Meteorological Bureau, China; Ming Yang, Zhejiang Meteorological Information Network Center, China; Haonan Chen, Colorado State University, United States; Jieying He, National Space Science Center, CAS, China</i>	
WE1.O-16.2: ASSIMILATION OF DOPPLER WEATHER RADAR DATA WITH A REGIONAL WRF-3DVAR SYSTEM: INFLUENCE OF DATA ASSIMILATION VOLUME ON PRECIPITATION FORECAST	7091
<i>Yuchen Liu, Jia Liu, Chuanzhe Li, Fuliang Yu, Wei Wang, China Institute of Water Resources and Hydropower Research, China</i>	
WE1.O-16.3: RETRIEVAL OF ATMOSPHERIC TEMPERATURE PROFILES FROM HYPERSPECTRAL MICROWAVE RADIATIVE DATA BASED ON THE NEURAL NETWORK	7095
<i>Danlei Wang, Ling Tong, Xun Gong, Xin Guan, Peicheng Wang, Bo Gao, University of Electronic Science and Technology of China, China</i>	
WE1.O-16.4: SYSTEM DESIGN OF GROUND BASED SOUNDER FOR NOWCASTING	7099
<i>Mahendra Bhadoria, Latheef Shaik, Anamiya Bhattacharya, Shrija Bhattacharyya, Ranajit Dey, Madhav Das, Satyendra Kushwaha, Ankit Sharma, Samyak Jain, Prantik Chakraborty, Rajeev Jyoti, Indian Space Research Organisation, India</i>	
WE1.O-16.5: RADIO-ZENITH INTERFEROMETRY-BASED RECONSTRUCTION OF REFRACTIVITY PROFILE USING SIGNALS FROM LEO CONSTELLATION	7103
<i>Blossom Treesa Bastian, Meena Vasudevan, Divya S. Vidyadharan, Ajay Ragh, Nithin Philip Joseph, Aaron Xavier, Naveen Francis Chittilapilly, Augsense Lab, India</i>	
WE1.O-16.6: A SATELLITE-BASED METHOD FOR FORECASTING SOLAR RADIATION PART I: CLOUD MOTION AND TRAJECTORY MODELING	7107
<i>Santo V. Salinas, Tianli Lee, Tan Li, National University of Singapore, Singapore</i>	
WE1.O-17: MONITORING THE COASTAL ENVIRONMENT	
WE1.O-17.1: OBJECT-BASED MANGROVE MAPPING USING SUBMETER SUPERSPECTRAL WORLDVIEW-3 IMAGERY AND DEEP CONVOLUTIONAL NEURAL NETWORK	7362
<i>Antoine Collin, Associate Professor, France; Mathilde Letard, PSL Université Paris, France; Mark Andel, Digitaglobe Foundation, United States; Sahadev Sharma, Institute of Ocean and Earth Sciences, University of Malaya, Malaysia</i>	
WE1.O-17.2: CLASSIFICATION OF MULTI-CHANNEL SAR DATA BASED ON MB-U2-ACNET MODEL FOR SHANGHAI NANHUI DONGTAN INTERTIDAL ZONE ENVIRONMENT MONITORING	7366
<i>Guangyang Liu, Bin Liu, Shanghai Ocean University, China; Xiaofeng Li, Institute of Oceanography, Chinese Academy of Sciences, China; Gang Zheng, Second Institute of Oceanography, Ministry of Natural Resources, China</i>	

**WE1.O-17.4: SHALLOW WATER BATHYMETRY EXTRACTION IN SMALL ISLAND OF 7374
WAKATOBI, INDONESIA**

Ratna Sari Dewi, Nadya Oktaviani, Badan Informasi Geospasial, Indonesia

**WE1.O-17.5: MONITORING STORM-SURGE EVENTS IN COASTAL ZONES USING 7378
SATELLITE DATA**

Olga Lavrova, Space Research Institute of Russian Academy of Sciences, Russia; Andrey Kostianoy, Shirshov Institute of Oceanology of Russian Academy of Sciences, Russia; Tatiana Bocharova, Space Research Institute of Russian Academy of Sciences, Russia

**WE1.O-17.6: OIL SLICKS FROM NATURAL HYDROCARBON SEEPS IN THE CASPIAN SEA AS 7382
VIEWED VIA SATELLITE REMOTE SENSING**

Marina Mityagina, Olga Lavrova, Space Research Institute of Russian Academy of Sciences, Russia

WE1.O-18: SATELLITE MISSIONS STATUS

**WE1.O-18.1: COPERNICUS SENTINEL-6 MICHAEL FREILICH SATELLITE MISSION: 7732
OVERVIEW AND PRELIMINARY IN ORBIT RESULTS**

Craig Donlon, Robert Cullen, Luisella Giulicchi, Marco Fornari, Pierrick Vuilleumier, European Space Agency (ESA), Netherlands

**WE1.O-18.2: OVERVIEW AND CURRENT STATUS OF ADVANCED LAND OBSERVING 7736
SATELLITE-3 (ALOS-3)**

Kei Shimomura, Hidenori Watarai, Japan Aerospace Exploration Agency (JAXA), Japan

**WE1.O-18.3: ORBIT, PERFORMANCE AND OBSERVATION SCENARIOS FOR ESA'S EARTH 7740
EXPLORER MISSION PROPOSAL HYDROTERRA**

Vinicius Queiroz de Almeida, Jalal Matar, Marc Rodriguez-Cassola, Alberto Moreira, German Aerospace Center (DLR), Germany; Roger Haagmans, Paolo Bensi, Daniele Petrolati, European Space Agency (ESA), Netherlands

WE1.O-18.4: SMOS INSTRUMENT PERFORMANCE AFTER MORE THAN 11 YEARS IN ORBIT 7744

Manuel Martin-Neira, European Space Agency (ESA), Netherlands; Roger Oliva, Raúl Onrubia, Zenithal Blue Technologies, Spain; Ignasi Corbella, Nuria Duffo, Roselena Rubino, Polytechnic University of Catalonia, Spain; Juha Kainulainen, Harp Technologies, Finland; Josep Closa, Albert Zurita, Javier del Castillo, Airbus Defence and Space, Spain; François Cabot, Ali Khazaal, Eric Anterrieu, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Jose Barbosa, Research and Development in Aerospace GmbH, Switzerland; Gonçalo Lópes, Daniel Barros, Deimos Engenharia, Portugal; Joe Tenerelli, OceanDataLab, France; Raúl Díez-García, Verena Rodríguez, Telespazio UK Ltd, Spain; Jorge Fauste, European Space Agency (ESA), Spain; José María Castro Cerón, ISDEFE, Spain; Antonio Turiel, Verónica González-Gambau, SMOS Barcelona Expert Centre, Spain; Raffaele Crapolicchio, European Space Agency (ESA), Italy; Lorenzo Di Ciolo, Serco Italia S.p.A., Spain; Giovanni Macelloni, Marco Brogioni, Francesco Montomoli, Institute of Applied Physics, Italy; Pierre Vogel, Berta Hoyos Ortega, Elena Checa Cortés, Martin Suess, European Space Agency (ESA), Netherlands

**WE1.O-18.5: UPDATES TO THE SPECIAL SENSOR MICROWAVE IMAGER/SOUNDER 7748
(SSMIS) CALIBRATION FOR THE GPM V07 DATA RELEASE**

Rachael Kroodsmas, ESSIC, University of Maryland / NASA Goddard Space Flight Center, United States; Wesley Berg, Colorado State University, United States; Thomas Wilheit, ESSIC, University of Maryland, United States

WE1.O-18.6: THE HARMONY MISSION: END OF PHASE-0 SCIENCE OVERVIEW 7752

Paco Lopez Dekker, TU Delft, Netherlands; Juliet Biggs, University of Bristol, United Kingdom; Bertrand Chapron, Ifremer, France; Andy Hooper, University of Leeds, United Kingdom; Andreas Kaab, University of Oslo, Norway; Simona Masina, Euro-Mediterranean Center on Climate Change, Norway; Jeremie Mougnot, CNRS Institut des Geosciences de l'Environnement, France; Bruno Buongiorno Nardelli, ISMAR-CNR, Italy; Claudia Pasquero, University of Milan, Italy; Pau Prats-Iraola, German Aerospace Center (DLR), Germany; Pierre Rampal, CNRS Institut des Geosciences de l'Environnement, France; Julienne Stroeve, University College London, United Kingdom; Björn Rommen, European Space Agency (ESA), Netherlands

WE1.O-19: PASSIVE OPTICAL AND HYPERSPECTRAL SENSORS AND CALIBRATION

WE1.O-19.1: AUTOMATIC RADIOMETRIC CALIBRATION OF GAOFEN-1/WFV CAMERAS AND 7756 CROSS VALIDATION WITH SENTINEL-2/MSI

Yaokai Liu, Lingling Ma, Renfei Wang, Wan Li, Yongguang Zhao, Ning Wang, Yonggang Qian, Caixia Gao, Shi Qiu, Aerospace Information Research Institute, Chinese Academy of Sciences, China

WE1.O-19.2: ASSESSMENT OF COPERNICUS SENTINEL-2 CONSTELLATION AFTER FIVE 7759 YEARS IN-ORBIT: LEVEL-1C USER-PRODUCTS

Bahjat Alhammoud, ARGANS Ltd., United Kingdom; Carine Quang, CS Group, France; Valentina Boccia, European Space Agency (ESA), Italy; Rosario Quirino Iannone, RHEA SpA/ESRIN, Italy

WE1.O-19.3: RADIOMETRIC CROSS CALIBRATION OF CHINA HJ-1B AND MODIS THERMAL 7763 INFRARED CHANNELS USING AN SNO METHOD BASED ON OBSERVATION ELEMENTS MATCHING

Kun Li, Yonggang Qian, Ning Wang, Xinhong Wang, Lingling Ma, Wan Li, Chuanrong Li, Lingli Tang, Key Laboratory of Quantitative Remote Sensing Information Technology, Aerospace Information Research Institute, Chinese Academy of Sciences, China

WE1.O-19.4: TEMPORAL VICARIOUS RADIOMETRIC CALIBRATION OF ZY-3 MUX SENSOR 7767 USING AUTOMATIC GROUND MEASUREMENT OF BAOTOU SANDY SITE IN CHINA

Wan Li, Lingling Ma, Yongguang Zhao, Yaokai Liu, Ning Wang, Yonggang Qian, Kun Li, Chuanrong Li, Lingli Tang, Aerospace Information Research Institute, Chinese Academy of Sciences, China

WE1.O-19.5: INTER-BAND CALIBRATION FOR HYPERSPECTRAL WATER REMOTE 7771 SENSING: DEMONSTRATION FOR CHRIS-PROBA

H loise Lavigne, Kevin Ruddick, Royal Belgium Institute of Natural Sciences, Belgium

WE1.O-19.6: LUNAR CALIBRATION AND ITS VALIDATION FOR A MULTISPECTRAL SENSOR 7775 ONBOARD RISESAT MICROSATELLITE

Masataka Imai, Kyoto Sangyo University, Japan; Junichi Kurihara, Hokkaido University, Japan; Toru Kouyama, National Institute of Advanced Industrial Science and Technology, Japan; Toshinori Kuwahara, Shinya Fujita, Yuji Sakamoto, Tohoku University, Japan; Sei-Ichi Saitoh, Takafumi Hirata, Hokkaido University, Japan; Hirokazu Yamamoto, National Institute of Advanced Industrial Science and Technology, Japan; Yuji Sato, Tohoku University, Japan; Yukihiko Takahashi, Hokkaido University, Japan

WE1.O-20: UAV AND CLOSE SENSING APPLICATIONS II

WE1.O-20.1: REAL-TIME EMBEDDED HPC BASED EARTHQUAKE DAMAGE MAPPING USING 8241 3D LIDAR POINT CLOUDS

Pratyush Talreja, Indian Institute of Technology Bombay, India; Surya Durbha, Indian University of Technology Bombay, India; Rajat Shinde, Abhishek Potnis, Indian Institute of Technology Bombay, India

WE1.O-20.2: DESIGN AND EXPERIMENT OF A HOLLOW STRUCTURE MICROWAVE 8245 HUMIDITY SENSOR

Kun Zhang, Bo Gao, Jiangwu Wen, Xun Gong, Peicheng Wang, Ling Tong, University of Electronic Science and Technology of China, China

WE1.O-20.3: HYPERSPECTRAL IMAGE BASED VEGETATION INDEX (HSVI): A NEW 8249 VEGETATION INDEX FOR URBAN ECOLOGICAL RESEARCH

Zhijun Jiao, Aizhu Zhang, Genyun Sun, Hang Fu, China University of Petroleum (East China), China; Yanjuan Yao, Ministry of Environmental protection of China, China

WE1.O-20.4: SEAM-CUTTING BASED UNMANNED AERIAL VEHICLE HYPERSPECTRAL 8253 IMAGE STITCHING

Yan Mo, Xiaohui Wei, Xudong Kang, Shuo Zhang, Shutao Li, Hunan University, China

WE1.O-20.5: OPTIMIZATION OF AERIAL IMAGE EXPOSURE CENTER WITH BASELINE CONSTRAINT CONDITION MODEL	8257
<i>Wanying Chen, Guoqing Zhou, Tao Yue, Man Yuan, Guilin University of Technology, China</i>	
WE1.O-20.6: ENERGY-EFFICIENT PASSIVE UAV SAR: SYSTEM CONCEPT AND PERFORMANCE ANALYSIS	8261
<i>Zhichao Sun, University of Electronic Science and Technology of China, China; Ying He, Southwest China Research Institute of Electronic Equipment, China; Tianfu Chen, Hongyang An, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
WE2.MM-1: INTERFEROMETRIC SAR METHODS AND APPLICATIONS	
WE2.MM-1.1: A STUDY ON ALGORITHMS AND PARAMETER SETTINGS FOR DS PREPROCESSING	3975
<i>Markus Even, Karlsruhe Institute of Technology, Germany</i>	
WE2.MM-1.2: FILTERING OF THE ATMOSPHERIC PHASE SCREEN IN INSAR DATA USING THE NONEQUISPACED FAST FOURIER TRANSFORM	3979
<i>Riccardo Palamà, Michele Crosetto, Oriol Monserrat, Anna Barra, Maria Cuevas, Centre Tecnologic de Telecomunicacions de Catalunya, Spain; Bruno Crippa, University of Milan, Italy; Jacek Rapinski, Marek Mróz, University of Warmia and Mazury in Olsztyn, Poland</i>	
WE2.MM-1.3: PHASE UNWRAPPING METHODS FOR D-INSAR	3983
<i>Chen Xie, University of Electronic Science and Technology of China, China; Mingcang Zhu, Department of Natural Resources of Sichuan Province, China; Yong He, Zhanyong He, Sichuan Research Institute for Eco-System Restoration & Geo-Hazard Prevention, China; Fangrong Zhou, Yunnan Power Grid Company Ltd, China; Juan Ren, Hongqiong Tang, Sichuan Research Institute for Eco-System Restoration & Geo-Hazard Prevention, China; Liutong Li, Zezhong Zheng, Tianming Shao, University of Electronic Science and Technology of China, China; Zhongnian Li, Central China Normal University, China; Zhiyong Wang, Mingqi Li, Ling Jiang, University of Electronic Science and Technology of China, China</i>	
WE2.MM-1.4: EMULATION OF A SAR INTERFEROGRAM FROM THE PAST SATELLITES FOR THE PRESENT EVENTS	3987
<i>Ryo Natsuaki, University of Tokyo, Japan; Ryu Sugimoto, Chiaki Tsutsumi, Ryosuke Nakamura, National Institute of Advanced Industrial Science and Technology, Japan</i>	
WE2.MM-1.5: SNAPPING FOR SENTINEL-1 MISSION ON GEOHAZARDS EXPLOITATION PLATFORM: AN ONLINE MEDIUM RESOLUTION SURFACE MOTION MAPPING SERVICE	3991
<i>Michael Foumelis, Aristotle University Of Thessaloniki, Greece; Jose Manuel Delgado Blasco, Universidad de Jaén, Spain; Fabrice Brito, Fabrizio Pacini, Panteha Pishehvar, Terradue s.r.l., Italy</i>	
WE2.MM-1.8: TOWARDS THE INTEGRATED PROCESSING OF GEODETIC DATA	3995
<i>Freek J. van Leijen, Hans van der Marel, Ramon F. Hanssen, Delft University of Technology, Netherlands</i>	
WE2.MM-1.9: ESTIMATION OF EARTH DEFORMATION CAUSED BY THE NUCLEAR TEST PERFORMED IN NORTH KOREA	3999
<i>Nicomino Fiscante, University of Study ROMA TRE, Italy; Filippo Biondi, University of L'Aquila, Italy; Pia Addabbo, University of Study GIUSTINO FORTUNATO, Italy; Carmine Clemente, University of Strathclyde, United Kingdom; Giunta Gaetano, University of Study ROMA TRE, Italy; Danilo Orlando, University of Study NICCOLO' CUSANO, Italy</i>	
WE2.MM-2: FEATURE EXTRACTION & UNMIXING	
WE2.MM-2.1: FEATURE SELECTION USING SELF ORGANIZING MAP ORIENTED EVOLUTIONARY APPROACH	4003
<i>Oguzhan Ceylan, Kadir Has University, Turkey; Gulsen Taskin, Istanbul Technical University, Turkey</i>	

WE2.MM-2.2: UNSUPERVISED BAND SELECTION FOR HYPERSPECTRAL DATASETS BY DOUBLE GRAPH LAPLACIAN DIAGONALIZATION	4007
<i>Eduard Khachatryan, Saloua Chlaily, Torbjørn Eltoft, Arctic University of Norway, Norway; Paolo Gamba, University of Pavia, Italy; Andrea Marinoni, Arctic University of Norway, Norway</i>	
WE2.MM-2.3: HIERARCHICAL PROBABILISTIC EMBEDDINGS FOR MULTI-VIEW IMAGE CLASSIFICATION	4011
<i>Benjamin Brodie, Subash Khanal, Muhammad Usman Rafique, Connor Greenwell, Nathan Jacobs, University of Kentucky, United States</i>	
WE2.MM-2.4: ND-SPACE: NORMALIZED DIFFERENCE SPECTRAL MAPPING, WITH SOIL AND VEGETATION EXAMPLES	4015
<i>William Philpot, Cornell University, United States</i>	
WE2.MM-2.5: ON THE USE OF SPAN IMAGE IN POLSAR SPECKLE FILTERING	4019
<i>Mohamed Yahia, Tarig Ali, GIS and Mapping Laboratory, American University of Sharjah, United Arab Emirates; Md Maruf Mortula, Civil Engineering department, American University of Sharjah, United Arab Emirates; Riadh Abdelfattah, Universitéy of Carthage: COSIM Lab, Higher School of Communications of Tunis, Tunisia; Samy Elmahdi, GIS and Mapping Laboratory, American University of Sharjah, United Arab Emirates</i>	
WE2.MM-2.6: A NOVEL COLLABORATIVE REPRESENTATION BASED SEISMIC FAULT DETECTION FRAMEWORK	4023
<i>Ratul Kishore Saha, Tiash Ghosh, Indian Institute of Technology Kharagpur, India; Sanjai Kumar Singh, Oil and Natural Gas Corporation, India; Aurobinda Routray, Indian Institute of Technology Kharagpur, India</i>	
WE2.MM-2.7: FUSION DETECTION OF CLOSED WATER IN MEDIUM-LOW RESOLUTION REMOTE SENSING IMAGERY	4027
<i>Yuanyong Ning, Yanan You, Jingyi Cao, Fang Liu, Beijing University of Posts and Telecommunications, China; Qing Yan, School of Artificial Intelligence, Beijing University of Posts and Telecommunications, China</i>	
WE2.MM-2.8: BIDIRECTIONAL PATHWAY FEATURE PYRAMID NETWORKS AND REVERSE SCALE- TRANSFER LAYER FOR DETECTING MULT-SCALE SHIPS	4031
<i>Guanhua Jiang, Yanan You, School of Artificial Intelligence, Beijing University of Posts and Telecommunications, China; Gang Meng, Beijing Institute of Remote Sensing Information, China; BoHao Ran, Beijing University of Posts and Telecommunications, China; Fang Liu, School of Artificial Intelligence, Beijing University of Posts and Telecommunications, China</i>	
WE2.MM-2.9: ITERATIVE SPECTRAL DISTANCING: A NOVEL APPROACH FOR EXTRACTING ENDMEMBERS IN COMPLEX URBAN IMAGE SCENES	4035
<i>Frederik Priem, Vrije Universiteit Brussel, Belgium; Ben Somers, KU Leuven, Belgium; Frank Canters, Vrije Universiteit Brussel, Belgium</i>	
WE2.MM-3: ADVANCED SEGMENTATION FOR LANDCOVER/DATA FUSION	
WE2.MM-3.1: A DEEP INTERACTIVE FRAMEWORK FOR BUILDING EXTRACTION IN REMOTELY SENSED IMAGES VIA A COARSE-TO-FINE STRATEGY	4039
<i>Kun Li, Xiangyun Hu, Wuhan University, China</i>	
WE2.MM-3.2: CORNER-GUIDED BUILDING POLYGON CONSTRUCTION FROM AERIAL IMAGES USING DEEP MULTITASK LEARNING	4043
<i>Ziming Li, Qinchuan Xin, Sun Yat-Sen University, China</i>	
WE2.MM-3.3: ATTENTION RESIDUAL U-NET FOR BUILDING SEGMENTATION IN AERIAL IMAGES	4047
<i>Chaohui Li, Yingjian Liu, Haoyu Yin, Yue Li, Qingxiang Guo, Limin Zhang, Pengting Du, Ocean University of China, China</i>	

WE2.MM-3.4: CASCADED DEEP NEURAL NETWORKS FOR PREDICTING BIASES BETWEEN BUILDING POLYGONS IN VECTOR MAPS AND NEW REMOTE SENSING IMAGES	4051
<i>Mingyang Hu, Wuhan University, China; Meng Lu, Utrecht University, China; Shunping Ji, Wuhan University, China</i>	
WE2.MM-3.5: DEEP LEARNING BASED WATER SEGMENTATION USING KOMPSAT-5 SAR IMAGES	4055
<i>Myeong Un Kim, Han Oh, Seung-Jae Lee, Yeonju Choi, Sanghyuck Han, Korea Aerospace Research Institute, Korea (South)</i>	
WE2.MM-3.6: A NOVEL DEEP TRANSFER LEARNING METHOD FOR SAR AND OPTICAL FUSION IMAGERY SEMANTIC SEGMENTATION	4059
<i>Yanjuan Liu, Yingying Kong, Nanjing University of Aeronautics and Astronautics, China</i>	
WE2.MM-3.7: SEA-LAND SEGMENTATION OF REMOTE SENSING IMAGE BASED ON SPATIAL CONSTRAINT MODEL SUPERPIXEL METHOD	4063
<i>JiaLe Zha, Huai-Xin Chen, University of Electronic Science and Technology of China, China; ChengWu Bai, Sichuan Provincial Administration of Production Safety, China; ChengJie Ren, University of Electronic Science and Technology of China, China</i>	
WE2.MM-3.8: SEGMENTATION OF SENTINEL-1 SAR IMAGES OVER THE OCEAN, PRELIMINARY METHODS AND ASSESSMENTS	4067
<i>Aurélien Colin, Charles Peureux, Romain Husson, Collecte Localisation Satellites, France; Nicolas Longépé, Φ-lab Explore Office, Italy; Régis Rauzy, Collecte Localisation Satellites, France; Ronan Fablet, Pierre Tando, Samir Saoudi, Lab-STICC, UMR CNRS 6285, France; Alexis Mouche, Laboratoire d'Océanographie Physique et Spatiale, France; Gérald Dibarbouré, Centre National d'Études Spatiales, France</i>	
WE2.MM-3.9: RESIDUAL ATTENTION MECHANISM FOR CONSTRUCTION DISTURBANCE DETECTION FROM SATELLITE IMAGE	4071
<i>Ning Lv, Hao Yuan, Chen Chen, Jiakuan Deng, Tao Su, Xidian University, China; Yang Zhou, Ministry of Water Resources of China, China; Hua Yang, Northwest University, China</i>	
WE2.MM-3.10: CADNET: TOP-DOWN CONTEXTUAL SALIENCY DETECTION NETWORK FOR HIGH SPATIAL RESOLUTION REMOTE SENSING IMAGE SHADOW DETECTION	4075
<i>Yang Yang, Mingqiang Guo, Qiqi Zhu, China University of Geosciences, China</i>	
 WE2.MM-4: MULTI-APPLICATIONS OF IMAGE SEGMENTATION I	
WE2.MM-4.1: RESEARCH ON FRACTURE RECOGNITION IN WELL LOGGING IMAGES:ADVERSARIAL LEARNING WITH ATTENTION	4079
<i>Wei Zhang, Tong Wu, Zhipeng Li, Yanjun Li, Yibing Shi, University of Electronic Science and Technology of China, China</i>	
WE2.MM-4.2: VECNET: A SPECTRAL AND MULTI-SCALE SPATIAL FUSION DEEP NETWORK FOR PIXEL-LEVEL CLOUD TYPE CLASSIFICATION IN HIMAWARI-8 IMAGERY	4083
<i>Zhaoqing Wang, Xiangyu Kong, Zhanbei Cui, Ming Wu, Chuang Zhang, Beijing University of Posts and Telecommunications, China; MingMing Gong, University of Melbourne, Australia; Tongliang Liu, University of Sydney, Australia</i>	
WE2.MM-4.3: SOIL TYPE CLASSIFICATION FROM HIGH RESOLUTION SATELLITE IMAGES WITH DEEP CNN	4087
<i>Abhinav Pandey, Devesh Kumar, Debarati B. Chakraborty, Indian Institute of Technology Jodhpur, India</i>	
WE2.MM-4.4: LANDSLIDE DETECTION OF HIGH-RESOLUTION SATELLITE IMAGES USING ASYMMETRIC DUAL-CHANNEL NETWORK	4091
<i>Yaohui Liu, Wenzhuo Zhang, Xiaoxian Chen, Mingyang Yu, Yingjun Sun, Fei Meng, Shandong Jianzhu University, China; Xiwei Fan, China Earthquake Administration, China</i>	

WE2.MM-4.5: FIRE DETECTION USING DEEPLABV3 + WITH MOBILENETV2.....	4095
<i>Houda Harkat, José Nascimento, Instituto de Telecomunicações, Instituto Superior, Portugal; Alexandre Bernardino, Instituto de Sistemas e Robótica, Portugal</i>	
WE2.MM-4.6: TOWARDS ROBUST CLOUD DETECTION IN SATELLITE IMAGES USING U-NETS	4099
<i>Bartosz Grabowski, Maciej Ziaja, KP Labs, Poland; Michal Kawulok, Jakub Nalepa, KP Labs / Silesian University of Technology, Poland</i>	
WE2.MM-4.7: MEGH SANSUCHAK: A CLOUD MASK ALGORITHM FOR HIGH RESOLUTION PANCHROMATIC SATELLITE IMAGERY	4103
<i>Shailendra Kumar Joshi, Ichchhit Baranwal, Vaibhav Malhotra, Shilpa Prakash, B. Kartikeyan, Space Applications Centre, Indian Space Research Organisation, India</i>	
WE2.MM-4.8: THE REPROCESSING FOR HIMAWARI-8 BASED ON DEEP LEARNING	4107
<i>Haoyu Zhang, Zezhong Zheng, University of Electronic Science and Technology of China, China; Mingcang Zhu, Department of Natural Resources of Sichuan Province, China; Fangrong Zhou, Yunnan Power Grid Co., Ltd., China; Yong He, Sichuan Research Institute for Eco-system Restoration & Geo-hazard Prevention, China; Zhongnian Li, Central China Normal University, China; Guoqing Zhou, Guilin University of Technology, China; Zhiyong Wang, Mingqi Li, Ling Jiang, Qiang Liu, University of Electronic Science and Technology of China, China; Xuemei Li, Chengdu University of Technology, China</i>	
WE2.MM-4.9: CONVERTIBLE SPARSE CONVOLUTION FOR POINT CLOUD INSTACE SEGMENTATION	4111
<i>Jing Du, Guorong Cai, Zongyue Wang, Jinhe Su, Yundong Wu, JiMei University, China</i>	
WE2.MM-4.10: OBJECT BASED IMAGE ANALYSIS FOR DELINEATION OF SLOPE UNITS.....	4115
<i>Naeem Shahzad, Xiaoli Ding, Sawaid Abbas, Hong Kong Polytechnic University, China; Syed Muhammad Iretza, University of the Punjab, Pakistan</i>	
WE2.MM-5: ADVANCES IN IMAGE DENOISING AND RESTORATION	
WE2.MM-5.1: HYPERSPECTRAL DENOISING VIA GLOBAL TENSOR RING DECOMPOSITION AND LOCAL UNSUPERVISED DEEP IMAGE PRIOR	4119
<i>Jian-Li Wang, Ting-Zhu Huang, Xi-Le Zhao, School of Mathematical Sciences, University of Electronic Science and Technology of China, China; Teng-Yu Ji, School of Mathematics and Statistics, Northwestern Polytechnical University, China; Tai-Xiang Jiang, School of Economic Information Engineering, Southwestern University of Finance and Economics, China</i>	
WE2.MM-5.2: A NEW DEEP HIERARCHY FOR UNDERWATER IMAGE RECONSTRUCTION.....	4123
<i>Yafei Song, Ganggang Dong, Xidian University, China</i>	
WE2.MM-5.3: CLOUD REMOVAL FOR SINGLE VISIBLE IMAGE BASED ON MODIFIED DARK CHANNEL PRIOR WITH MULTIPLE SCALE	4127
<i>Shaoqi Shi, Ye Zhang, Xinyu Zhou, Jin Cheng, Harbin Institute of Technology, China</i>	
WE2.MM-5.4: LEARNING A MODEL-BASED DEEP HYPERSPECTRAL DENOISER FROM A SINGLE NOISY HYPERSPECTRAL IMAGE	4131
<i>Guanyiman Fu, Fengchao Xiong, Shuyin Tao, Jianfeng Lu, Nanjing University of Science and Technology, China; Jun Zhou, Griffith University, Australia; Yuntao Qian, Zhejiang University, China</i>	
WE2.MM-5.5: HYPERSPECTRAL IMAGE SUPER-RESOLUTION VIA MULTI-DOMAIN FEATURE LEARNING	4135
<i>Qiang Li, Qi Wang, Xuelong Li, Northwestern Polytechnical University, China</i>	
WE2.MM-5.6: HYPERSPECTRAL IMAGE DENOISING WITH COLLABORATIVE TOTAL VARIATION AND LOW RANK REGULARIZATION	4139
<i>Lu Yang, Jinhuan Xu, Liang Xiao, Nanjing University of Science and Technology, China</i>	

WE2.MM-5.7: A PROPOSED FULLY CONSTRAINED LEAST SQUARES FOR SOLVING SPARSE ENDMEMBER FRACTIONS WITH LINEAR SPECTRAL MIXTURE MODEL	4143
<i>Cuicui Ji, Chongqing Jiaotong University, China; Xiaosong Li, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Jinying Wang, Piesat Information Technology Co., Ltd., China; Maolin Chen, Jianping Pan, Chongqing Jiaotong University, China</i>	
WE2.MM-5.8: NON-LOCAL MEANS LOW-RANK APPROXIMATION FOR HYPERSPECTRAL DENOISING	4147
<i>Bin Zhao, Jóhannes Rúnar Sveinsson, Magnus O. Ulfarsson, University of Iceland, Iceland; Jocelyn Chanussot, Université Grenoble Alpes; University of Iceland, Iceland</i>	
WE2.MM-6: DETECTION AND ENHANCEMENT METHODS FOR ACTIVE AND PASSIVE RS DATA	
WE2.MM-6.1: MITIGATING FALSE POSITIVE CLASSIFICATION IN AERIAL LIDAR SEMANTIC SEGMENTATION	4151
<i>Kendrick Cancio, MIT Lincoln Laboratory, United States</i>	
WE2.MM-6.2: MOVING TARGET SHADOW DETECTION BASED ON DEEP LEARNING IN VIDEO SAR	4155
<i>Hao Zhang, Zhe Liu, University of Electronic Science and Technology of China, China</i>	
WE2.MM-6.3: REFOCUSING MOVING VESSEL SIGNATURES BASED ON SENTINEL-1 SLC IMAGERY	4159
<i>Ramona Pelich, Marco Chini, Renaud Hostache, Patrick Matgen, Luxembourg Institute of Science and Technology, Luxembourg</i>	
WE2.MM-6.4: IMPROVED SIAMRPN++ WITH CLUSTERING-BASED FRAME DIFFERENCING FOR OBJECT TRACKING OF REMOTE SENSING VIDEOS	4163
<i>Jie Feng, Bingyu Hui, Yuping Liang, Quanhe Yao, Xiangrong Zhang, Xidian University, China</i>	
WE2.MM-6.5: RESEARCH ON THE EXTRACTION OF WIND TURBINE ALL OVER THE CHINA BASED ON DOMESTIC SATELLITE REMOTE SENSING DATA	4167
<i>Wei Zhang, Guanghui Wang, Jianwei Qi, Geng Wang, Tao Zhang, Land Satellite Remote Sensing Application Center, China</i>	
WE2.MM-6.6: REMOTE SENSING IMAGE ENHANCEMENT BY ROLLING GUIDANCE AND HAZY IMAGE MODEL	4171
<i>Nur Huseyin Kaplan, Erzurum Technical University, Turkey; Isin Erer, Istanbul Technical University, Turkey</i>	
WE2.MM-6.7: HYPERSPECTRAL ANOMALY DETECTION BASED ON ADAPTIVE WEIGHTED SPARSE DICTIONARY LEARNING	4176
<i>Xin Li, Yuan Yuan, Northwestern Polytechnical University, China</i>	
WE2.MM-7: TARGET DETECTION AND RECOGNITION IN REMOTE SENSING DATA	
WE2.MM-7.1: ROTATED HYBRID TASK CASCADE NETWORK FOR REMOTE SENSING AIRCRAFT TARGET RECOGNITION	4180
<i>Xu Cao, Huanxin Zou, Fei Cheng, Runlin Li, Shitian He, Li Sun, National University of Defence Technology, China</i>	
WE2.MM-7.2: SCSF-NET: SINGLE CLASS SCALE FIXED NETWORK FOR OBJECT DETECTION IN OPTICAL REMOTE SENSING IMAGES ON LIMITED HARDWARE	4184
<i>Minghui Wang, Beihang University, China; Qingpeng Li, Hunan University, China; Junjun Pan, Yunchao Gu, Beihang University, China</i>	
WE2.MM-7.3: AIRPLANE DETECTION AND RECOGNITION INCORPORATING TARGET COMPONENT DETECTION	4188
<i>Hecheng Jia, Qian Guo, Ruoyi Zhou, Feng Xu, Fudan University, China</i>	

WE2.MM-7.4: MULTI-SCALE CASCADE GUIDED OBJECT DETECTION IN AERIAL IMAGES	4192
<i>Jiajia Liao, Jimei University, China; Yingchao Piao, Chinese Academy of Sciences, China; Guorong Cai, Yundong Wu, Jinhe Su, Jimei University, China</i>	
WE2.MM-7.5: DAFF-NET: DUAL ATTENTION FEATURE FUSION NETWORK FOR AIRCRAFT	4196
DETECTION IN REMOTE SENSING IMAGES	
<i>Min Liu, Qian Hu, Cong Wang, Tian Tian, Weitao Chen, China University of Geosciences, China</i>	
WE2.MM-7.6: RECOGNITION OF WARHEAD BY RANGE-PROFILE MATCHING.....	4200
<i>Donglin Tan, Junfeng Wang, Shanghai Jiao Tong University, China</i>	
WE2.MM-7.7: AUTOMATICALLY DETECTING TEXTUAL CONTENT IN HIGH-RESOLUTION	4204
IMAGES	
<i>Dayara Basso, Marilaine Colnago, São Paulo State University (UNESP), Brazil; Samara Azevedo, Federal University of Itajuba (UNIFEI), Brazil; Rogério Negri, Wallace Casaca, São Paulo State University (UNESP), Brazil</i>	
WE2.MM-7.8: MULTI-SCALE STRUCTURE-CONDITIONED FEATURE TRANSFORM	4208
NETWORK FOR OBJECT DETECTION IN REMOTE SENSING IMAGERY	
<i>Huanqing Zhang, Jiaojiao Li, Rui Song, Yunsong Li, Xidian University, China</i>	
WE2.MM-7.9: VEHICLE DETECTION IN SATELLITE IMAGES WITH DEEP NEURAL	4212
NETWORKS AND VEHICLE SHAPE FEATURES	
<i>Kaiji He, Long Zhang, University of Manchester, United Kingdom</i>	
 WE2.MM-8: CLASSIFICATION AND CLUSTERING OF SATELLITE IMAGE TIME SERIES	
WE2.MM-8.1: USING THE GAF TRANSFORM AND MODIS TIME-SERIES TO PERFORM	4216
LANDCOVER CLASSIFICATION AND CHANGE DETECTION	
<i>Trienko Grobler, Stellenbosch University, South Africa; Waldo Kleynhans, University of Pretoria, South Africa; Brian Salmon, University of Tasmania, South Africa</i>	
WE2.MM-8.2: A PARSIMONIOUS NEURAL NETWORK FOR THE CLASSIFICATION OF	4220
MODIS TIME-SERIES	
<i>Trienko Grobler, Stellenbosch University, South Africa; Waldo Kleynhans, University of Pretoria, South Africa; Brian Salmon, University of Tasmania, South Africa</i>	
WE2.MM-8.3: DEEP NEURAL NETWORKS FOR MAPPING INTEGRATED	4224
CROP-LIVESTOCK SYSTEMS USING PLANETSCOPE TIME SERIES	
<i>Henrique S. L. Almeida, Aliny A. Dos Reis, João P. S. Werner, University of Campinas – UNICAMP, Brazil; João F. G. Antunes, Embrapa Agricultural Informatics, Brazil; Liheng Zhong, Ant Group, China; Gleyce K. D. A. Figueiredo, University of Campinas – UNICAMP, Brazil; Júlio C. D. M. Esquerdo, Alexandre C. Coutinho, Embrapa Agricultural Informatics, Brazil; Rubens A. C. Lamparelli, Paulo S. G. Magalhães, University of Campinas – UNICAMP, Brazil</i>	
WE2.MM-8.4: FOREST TYPE MAPPING AT A REGIONAL SCALE BASED USING	4228
MULTITEMPORAL SENTINEL-2 IMAGERY	
<i>Jin Li, Leiguang Wang, Panfei Fang, Weiheng Xu, Qinling Dai, Southwest Forestry University, China</i>	
WE2.MM-8.5: INFLUENCE OF SAMPLE SIZE IN LAND COVER CLASSIFICATION ACCURACY	4232
USING RANDOM FOREST AND SENTINEL-2 DATA IN PORTUGAL	
<i>Daniel Moraes, Pedro Benevides, Hugo Costa, Francisco D. Moreira, Mário Caetano, Direção-Geral do Território, Portugal</i>	
WE2.MM-8.6: GOOGLE EARTH ENGINE FOR LANDSAT IMAGE PROCESSING AND	4236
MONITORING LAND USE/ LAND COVER CHANGES IN THE JOHOR RIVER BASIN, MALAYSIA	
<i>Chuen Siang Kang, Kasturi Devi Kanniah, Nazarin Ezzaty Mohd Najib, Universiti Teknologi Malaysia, Malaysia</i>	

WE2.MM-8.7: EVALUATION OF UNSUPERVISED DEEP CLUSTERING METHODS FOR CROP CLASSIFICATION USING SAR IMAGE SEQUENCES	4240
<i>Daliana Lobo Torres, Laura Elena Cué La Rosa, Pontifical Catholic University of Rio de Janeiro, Brazil; Dário Augusto Borges Oliveira, IBM Research, Brazil, Brazil; Raul Queiroz Feitosa, Pontifical Catholic University of Rio de Janeiro, Brazil</i>	
WE2.MM-8.8: EVALUATION OF TIME SERIES GAP-FILLING OF VENμS SATELLITE FOR LAND USE CLASSIFICATION	4244
<i>Daniel H. Shibuya, Gisela M. S. Pereira, Gleyce K. D. A. Figueiredo, University of Campinas – UNICAMP, Brazil; Ana C. dos S. Luciano, College of Agriculture “Luiz de Queiroz” -ESALQ, University of Sao Paulo -USP, Brazil; Rubens A. C. Lamparelli, University of Campinas – UNICAMP, Brazil; Guerric le Maire, University of Montpellier, France</i>	
WE2.MM-8.9: SPATIAL AND TEMPORAL DOMAIN ADAPTATION BY OPTIMAL TRANSPORT FOR MAPPING POPLAR PLANTATIONS OVER LARGE AREAS	4248
<i>Yousra Hamrouni, David Sheeren, INRAE, France</i>	
WE2.MM-9: SAR AND POLSAR IMAGE CLASSIFICATION	
WE2.MM-9.1: DEEP GRAPH CLUSTER BASED UNSUPERVISED REPRESENTATION LEARNING FOR POLSAR IMAGE CLASSIFICATION	4252
<i>Rui Tang, Xin Xu, Rui Yang, Rong Gui, Wuhan University, China</i>	
WE2.MM-9.2: TRIPLET ATTENTION FEATURE FUSION NETWORK FOR SAR AND OPTICAL IMAGE LAND COVER CLASSIFICATION	4256
<i>Zhe Xu, Northwestern Polytechnical University, China; Jinbiao Zhu, Chinese Academy of Sciences, China; Jie Geng, Xinyang Deng, Wen Jiang, Northwestern Polytechnical University, China</i>	
WE2.MM-9.3: MULTI-CATEGORY SAR IMAGES GENERATION BASED ON IMPROVED GENERATIVE ADVERSARIAL NETWORK	4260
<i>Shaoyan Du, Jun Hong, Yu Wang, Kaichu Xing, Tian Qiu, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
WE2.MM-9.4: FROM PIXEL TO SUPERPIXEL: A MULTI-SCALE STRATEGY FOR POLARIMETRIC SAR IMAGE CLASSIFICATION	4264
<i>Xianyuan Wang, Mengsi Yang, Liying Wang, Zongjie Cao, Yiming Pi, University of Electronic Science and Technology of China, China</i>	
WE2.MM-9.5: MACHINE LEARNING-BASED PARADIGM FOR BOOSTING THE SEMANTIC ANNOTATION OF EO IMAGES	4268
<i>Corneliu Octavian Dumitru, Gottfried Schwarz, Chandrabali Karmakar, Mihai Datcu, German Aerospace Center (DLR), Germany</i>	
WE2.MM-9.6: SYNERGETIC USE OF DESCENDING AND ASCENDING SAR WITH OPTICAL DATA FOR IMPERVIOUS SURFACE MAPPING	4272
<i>Ji Cheng, Genyun Sun, Aizhu Zhang, Hang Fu, Zhijun Jiao, China University of Petroleum (East china), China; Yanjuan Yao, State Environmental Protection Key Laboratory of Satellite Remote Sensing, China</i>	
WE2.MM-9.7: DETECTION OF THE LEADS IN THE ARCTIC DRIFTING SEA ICE ON SAR IMAGES	4276
<i>Natalia Zakhvatkina, Vladimir Smirnov, Irina Bychkova, Valeriy Stepanov, Arctic and Antarctic Research Institute, Russia</i>	
WE2.MM-9.8: CV-MOTIONNET: COMPLEX-VALUED CONVOLUTIONAL NEURAL NETWORK FOR SAR MOVING SHIP TARGETS CLASSIFICATION	4280
<i>Yun Zhang, Qinglong Hua, Yicheng Jiang, Hongbo Li, Dan Xu, Harbin Institute of Technology, China</i>	
WE2.MM-9.9: MULTI-SCALE SAR SHIP CLASSIFICATION WITH CONVOLUTIONAL NEURAL NETWORK	4284
<i>Xiaowo Xu, Xiaoling Zhang, Tianwen Zhang, University of Electronic Science and Technology of China, China</i>	

WE2.MM-10: PARAMETER RETRIEVAL WITH SAR, LIDAR AND NEW SYSTEMS

WE2.MM-10.1: CHOOSING THE DEPENDENT VARIABLE IN SAR BACKSCATTER - FOREST BIOMASS MODELS 4288

Mark Ducey, University of New Hampshire, United States; Xiaodong Huang, Beth Ziniti, Nathan Torbick, Applied GeoSolutions, LLC, United States

WE2.MM-10.2: RELATIONSHIP BETWEEN ERRORS OF SAR-BASED DIGITAL ELEVATION MODELS AND INFLUENCING FACTORS: WATER VAPOR CONTENTS AND SURFACE DEFORMATION 4292

Yen-Yi Wu, Hsuan Ren, National Central University, Taiwan

WE2.MM-10.3: AN IMPROVED INSAR BASELINE ESTIMATION BASED ON INTERFEROMETRIC FRINGE FREQUENCY 4296

Yuan Wang, Huaping Xu, School of Electronic and Information Engineering, Beihang University, China; Shuang Li, Beijing Institute of Radio Measurement, China; Guobing Zeng, School of Electronic and Information Engineering, Beihang University, China

WE2.MM-10.4: LAND SURFACE TEMPERATURE RETRIEVAL FROM NIGHTTIME MID-INFRARED MODIS DATA USING A SPLIT-WINDOW ALGORITHM 4300

Lingyu Fang, Shandong University of Science and Technology, China; Hua Li, Institute of Remote Sensing and Digital Earth, China; Lin Sun, Ruibo Li, Shandong University of Science and Technology, China

WE2.MM-10.5: ESTIMATING LOCAL-SCALE GROUNDWATER WITHDRAWALS USING INTEGRATED REMOTE SENSING PRODUCTS AND DEEP LEARNING 4304

Sayantana Majumdar, Ryan Smith, Missouri University of Science and Technology, United States; Brian D. Conway, Arizona Department of Water Resources, United States; James J. Butler Jr., Kansas Geological Survey, University of Kansas, United States; Venkataraman Lakshmi, University of Virginia, United States; Cihan H. Dagli, Missouri University of Science and Technology, United States

WE2.MM-10.6: INVESTIGATED THE CAUSE OF SNOW ALBEDO REDUCTION IN THE HIMALAYAN MOUNTAINS BY USING REMOTELY SENSED PRODUCTS 4308

Junzhe Zhang, Xu Xie, Bo Zhou, University of California, Los Angeles, United States

WE2.MM-10.7: MULTI-YEAR SORGHUM BIOMASS PREDICTION WITH UAV-BASED REMOTE SENSING DATA 4312

Taojun Wang, Melba Crawford, Purdue University, United States

WE2.MM-10.8: INVESTIGATION AND VALIDATION OF THE CHINESE FENGYUN-4A LAND SURFACE TEMPERATURE PRODUCTS IN THE HEIHE RIVER BASIN 4316

Yizhen Meng, University of Electronic Science and Technology of China; Hebei University of Engineering, China; Ji Zhou, Jin Ma, University of Electronic Science and Technology of China, China; Zhiyong Long, National University of Defence Technology, China

WE2.MM-10.9: EFFECTS OF DIRECTIONAL ANISOTROPY OF THERMAL INFRARED TEMPERATURE ON LAND SURFACE EVAPOTRANSPIRATION ESTIMATION 4320

Yazhen Jiang, Ronglin Tang, State Key Laboratory of Resources and Environment Information System, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China; Xiaoguang Jiang, University of Chinese Academy of Sciences, China

WE2.MM-10.10: INTENSITY HARMONIZATION FOR AIRBORNE LIDAR 4324

David Jones, Nathan Jacobs, University of Kentucky, United States

WE2.MM-11: CHANGE DETECTION TECHNIQUES FOR MULTI- AND HYPER-SPECTRAL DATA

WE2.MM-11.1: A PATCH TENSOR-BASED CHANGE DETECTION METHOD FOR HYPERSPECTRAL IMAGES 4328

Zengfu Hou, Wei Li, Beijing Institute of Technology, China; Qian Du, Mississippi State University, United States

WE2.MM-11.2: A NOVEL HYPERSPECTRAL IMAGE CHANGE DETECTION FRAMEWORK BASED ON 3D-WAVELET DOMAIN ACTIVE CONVOLUTIONAL NEURAL NETWORK	4332
<i>Xianghai Wang, Chengdi Xing, Yining Feng, Ruoxi Song, Zhenhua Mu, Liaoning Normal University, China</i>	
WE2.MM-11.3: AN UNSUPERVISED CHANGE DETECTION APPROACH FOR DENSE SATELLITE IMAGE TIME SERIES USING 3D CNN	4336
<i>Khatereh Meshkini, Francesca Bovolo, Fondazione Bruno Kessler, Italy; Lorenzo Bruzzone, University of Trento, Italy</i>	
WE2.MM-11.4: HIGH-RESOLUTION REMOTE SENSING IMAGES CHANGE DETECTION WITH SIAMESE HOLISTICALLY-GUIDED FCN	4340
<i>Huayu Zhang, Xu Tang, Xidian University, China; Xiao Han, Geovis Spatial Technology Co.,Ltd, China; Jingjing Ma, Xiangrong Zhang, Licheng Jiao, Xidian University, China</i>	
WE2.MM-11.5: A SPATIAL-TEMPORAL-CHANNEL ATTENTION UNET + + FOR HIGH RESOLUTION REMOTE SENSING IMAGE CHANGE DETECTION	4344
<i>Mingliang Liu, Jinjie Huang, Harbin University of Science and Technology, China; Lei Ma, Ling Wan, Institute of Automation, Chinese Academy of Sciences, China; Jialong Guo, Beijing University of Technology, China; Dongpan Yao, University of Chinese Academy of Sciences, China</i>	
WE2.MM-11.6: A SIAMESE GLOBAL LEARNING FRAMEWORK FOR MULTI-CLASS CHANGE DETECTION	4348
<i>Xi Guo, Qiqi Zhu, Weihuan Deng, Qingfeng Guan, China University Of Geosciences, China</i>	
WE2.MM-11.7: REMOTE SENSING IMAGE CHANGE DETECTION BASED ON FULLY CONVOLUTIONAL NETWORK WITH PYRAMID ATTENTION	4352
<i>Shujun Li, Lianzhi Huo, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
WE2.MM-11.8: END-TO-END CHANGE DETECTION IN SATELLITE REMOTE SENSING IMAGERY	4356
<i>Meziane Iftene, Agence Spatiale Algérienne, Algeria; Mohammed El Amin Larabi, Algerian Space Agency, Algeria; Moussa Sofiane Karoui, Centre des Techniques Spatiales, Algeria</i>	
WE2.MM-11.9: CHANGE ANALYSIS IN REGISTERED SATELLITE IMAGE TIME SERIES	4360
<i>Tristan Dagobert, Rafael Grompone von Gioi, Université Paris-Saclay, France; Charles Hessel, Université Paris-Saclay & Kayros, France; Jean-Michel Morel, Université Paris-Saclay, France; Carlo de Franchis, Université Paris-Saclay & Kayros, France</i>	
WE2.MM-11.10: MULTI-OBJECTS CHANGE DETECTION BASED ON RES-UNET	4364
<i>Lang Yuan, Yuxia Li, Yu Si, Junmei Ren, Yizhuo Yang, Yushu Gong, Yongqiang Xia, Zhonggui Tong, Ling Tong, University of Electronic Science and Technology of China, China</i>	
WE2.MM-12: MULTI-TEMPORAL THEMATIC MAPPING AND CLASSIFICATION	
WE2.MM-12.1: LANDUSE LANDCOVER CHANGE DETECTION IN THE MEDITERRANEAN REGION USING A SIAMESE NEURAL NETWORK AND IMAGE PROCESSING	4368
<i>Sachi Perera, Mohamed Allali, Erik Linstead, Hesham El-Askary, Chapman University, United States</i>	
WE2.MM-12.2: CONVOLUTIONAL AUTOENCODER-BASED IMAGE RECONSTRUCTION FOR UNSUPERVISED MULTIMODAL CHANGE DETECTION	4372
<i>Anamaria Radoi, University Politehnica of Bucharest, Romania</i>	
WE2.MM-12.3: CHANGE DETECTION TYPES OF BUILDINGS IN ALEPPO CITADEL URBAN AREA DURING SYRIAN CRISIS USING SELF-ORGANIZING MAPS NEURAL NETWORKS AND VHR QUICKBIRD & WORLDVIEW-2 SATELLITE IMAGES	4376
<i>Bashar Sabouh, University of Aleppo, Syria; Ahed Alboody, UNIVERSITE DU LITTORAL CÔTE D'OPALE, France; Mohamad Najib Salah, Aleppo University, Syria; Ghadir Hmeidan, Researcher - University of Damascus, Syria</i>	

WE2.MM-12.4: IMPROVED UNET COMBINING DROPOUT AND ACNET FOR REMOTE SENSING IMAGE CHANGE DETECTION	4380
<i>Junmei Ren, Ling Tong, Yuxia Li, Lang Yuan, Yu Si, University of Electronic Science and Technology of China, China</i>	
WE2.MM-12.5: AUTOMATIC STOCKPILE VOLUME MONITORING USING MULTI-VIEW STEREO FROM SKYSAT IMAGERY	4384
<i>Roger Marí, Université Paris-Saclay, France; Carlo de Franchis, Université Paris-Saclay & Kayrros, France; Enric Meinhardt-Llopis, Gabriele Facciolo, Université Paris-Saclay, France</i>	
WE2.MM-12.6: LARGE-SCALE MONITORING OF NEW BUILT-UP AREAS FROM JOINT USE OF SENTINEL-1/2 IMAGES	4388
<i>Andrea Garzelli, Claudia Zoppetti, University of Siena, Italy</i>	
WE2.MM-12.7: COMPARING DEEP RECURRENT LEARNING AND CONVOLUTIONAL LEARNING FOR MULTI-TEMPORAL VEGETATION CLASSIFICATION	4392
<i>Khadidja Bakhti, Mohammed El Amin Larabi, Algerian Space Agency, Algeria</i>	
WE2.MM-12.8: AN ATTENTION-BASED SYSTEM FOR DAMAGE ASSESSMENT USING SATELLITE IMAGERY	4396
<i>Hanxiang Hao, Sriram Baireddy, Emily Bartusiak, Purdue University, United States; Latisha Konz, Kevin LaTourette, Michael Gibbons, Moses Chan, Lockheed Martin Space, United States; Mary Comer, Edward Delp, Purdue University, United States</i>	
WE2.MM-12.9: MULTI-TEMPORAL PREDICTION OF CONTAMINATING MINERAL ABUNDANCE USING HYPERSPECTRAL SPECTROSCOPY	4400
<i>Belgacem Dkhala, Faculty of Science of Tunis, University of Tunis El Manar, Tunisia; Nouha Mezned, Faculty of Science of Tunis, University of Tunis El Manar; Higher Institute of Preparatory Studies in Biology and Geology of Soukra, Institution of Agricultural Research and Higher Education, University of Carthage, Tunisia; Saadi Abdeljaouad, Faculty of Science of Tunis, University of Tunis El Manar, Tunisia</i>	
WE2.MM-13: HYPERSPECTRAL TARGET DETECTION	
WE2.MM-13.1: HYPERSPECTRAL TARGET DETECTION WITH HIERARCHICAL DENOISING AUTOENCODER AND SUBSPACE PROJECTION	4404
<i>Yanzi Shi, Keyan Wang, Jiaojiao Li, Yunsong Li, Xidian University, China</i>	
WE2.MM-13.2: HYPERSPECTRAL ANOMALY DETECTION USING BILATERAL-FILTERED GENERATIVE ADVERSARIAL NETWORKS	4408
<i>Chunhui Zhao, Chuang Li, Shou Feng, Nan Su, Harbin Engineering University, China</i>	
WE2.MM-13.3: EDLAD: AN ENCODER-DECODER LONG SHORT-TERM MEMORY NETWORK-BASED ANOMALY DETECTOR FOR HYPERSPECTRAL IMAGES	4412
<i>Dehui Zhu, Bo Du, Liangpei Zhang, Wuhan University, China</i>	
WE2.MM-13.4: USING HYPERSPECTRAL IMAGING AND DEEP NEURAL NETWORK TO DETECT FUSARIUM WILT ON PHALAEOPSIS	4416
<i>Yung Hsu, Yen-Chieh Ouyang, Jun-Yi Lu, National Chung Hsing University, Taiwan; Mang Ou-Yang, National Chiao Tung University, Taiwan; Horng-Yuh Guo, Tsang-Sen Liu, Taiwan Agriculture Research Institute, Taiwan; Hsian-Min Chen, Taichung Veterans General Hospital, Taiwan; Chao-Cheng Wu, National Taipei University of Technology, Taiwan; Chia-Hsien Wen, Providence University, Taiwan; Min-Shao Shih, National Chung Hsing University, Taiwan; Chein-I Chang, University of Maryland Baltimore County, United States</i>	
WE2.MM-13.5: DEEP NEURAL NETWORK TRAINING USING SYNTHETIC SIGNATURES FOR RARE TARGET DETECTION IN SWIR HYPERSPECTRAL IMAGERY	4420
<i>Ludovic Girard, Vincent Roy, Defence Research and Development Canada, Canada; Philippe Giguère, Thierry Eude, Université Laval, Canada</i>	

WE2.MM-13.6: LOW-RANK REPRESENTATION INCORPORATING LOCAL SPATIAL CONSTRAINT FOR HYPERSPECTRAL ANOMALY DETECTION	4424
<i>Hao Li, Ruyi Feng, Lizhe Wang, China University of Geosciences, China; Yanfei Zhong, Liangpei Zhang, Wuhan University, China; Lifei Wei, Hubei University, China</i>	
WE2.MM-13.7: PTGAN: A PROPOSAL-WEIGHTED TWO-STAGE GAN WITH ATTENTION FOR HYPERSPECTRAL TARGET DETECTION	4428
<i>Haonan Qin, Weiyang Xie, Yunsong Li, Kai Jiang, Jie Lei, Xidian University, China; Qian Du, Mississippi State University, United States</i>	
WE2.MM-13.8: HYPERSPECTRAL ANOMALY DETECTION VIA LOCAL GRADIENT GUIDANCE	4432
<i>Jing Hu, Yujing Zhang, Minghua Zhao, Jiawei Ning, Min Zhang, Xi'an University of Technology, China; Yunsong Li, Joint Laboratory of High Speed Multi-source Image Coding and Processing, China</i>	
WE2.MM-13.9: UNMIXING-BASED UNDERWATER TARGET DETECTION FOR HYPERSPECTRAL IMAGERY	4436
<i>Jiahao Qi, Wei Xue, Aihuan Yao, Ping Zhong, National University of Defence Technology, China</i>	
WE2.MM-13.10: HYPERSPECTRAL MEASUREMENTS FOR SHIP DETECTION USING AIRBORNE IMAGE DATA	4440
<i>Jae-Jin Park, Kyung-Ae Park, Seoul National University, Korea (South); Tae-Sung Kim, Sangwoo Oh, Moonjin Lee, Korea Research Institute of Ships & Ocean Engineering, Korea (South)</i>	
 WE2.MM-14: IMAGE FUSION	
WE2.MM-14.1: FUSING SENTINEL-2 SATELLITE IMAGES AND AERIAL RGB IMAGES	4444
<i>Jakob Sigurdsson, Magnús Örn Ulfarsson, Jóhannes Rúnar Sveinsson, University of Iceland, Iceland</i>	
WE2.MM-14.2: HNU-HMIF: A UAV-BORNE DATASET FOR HYPERSPECTRAL AND MULTISPECTRAL IMAGE FUSION	4448
<i>Congyu Li, Xinxin Liu, Xudong Kang, Shutao Li, Hunan University, China</i>	
WE2.MM-14.3: A EXTREMELY FAST SPATIO-TEMPORAL FUSION METHOD FOR REMOTELY SENSED IMAGES	4452
<i>Yunfei Li, Jun Li, Sun Yat-Sen University, China; Shaoquan Zhang, Nanchang Institute of Technology, China</i>	
WE2.MM-14.4: PANSHARPENING OF HYPERSPECTRAL IMAGES WITH DETAIL GUIDED FEATURE MODULATION	4456
<i>Yuxuan Zheng, Jiaojiao Li, Yunsong Li, Kailang Cao, Keyan Wang, Xidian University, China</i>	
WE2.MM-14.5: LEARNING IMAGE DOWNSCALING FOR PANSHARPENING USING AN IMPROVED UNET	4460
<i>Mohammed El Amin Larabi, Algerian Space Agency, Algeria; Meziane Iftene, Agence Spatiale Algérienne, Centre des Techniques Spatiales, Algeria; Mohammed Ilyes Tchenar, State Key Laboratory of Virtual Reality Technology and Systems, Beihang University, China; Khadidja Bakhti, Agence Spatiale Algérienne, Centre des Techniques Spatiales, Algeria</i>	
WE2.MM-14.6: PROGRESSIVE BAND-SEPARATED CONVOLUTIONAL NEURAL NETWORK FOR MULTISPECTRAL PANSHARPENING	4464
<i>Shi-Shi Xiao, Cheng Jin, Tian-Jing Zhang, Ran Ran, Liang-Jian Deng, University of Electronic Science and Technology of China, China</i>	
WE2.MM-14.7: FUSION OF SPACEBORNE AND AIRBORNE SAR IMAGES USING SALIENCY AND FUZZY LOGIC FOR VESSEL DETECTION	4468
<i>Dong Zhu, Huazhong University of Science and Technology, China; Xueqian Wang, Gang Li, Tsinghua University, China; Xiao-Ping Zhang, Ryerson University, Canada</i>	

WE2.MM-14.8: HYPERSHARPENING BY A MULTIPLICATIVE JOINT-CRITERION NMF METHOD ADDRESSING SPECTRAL VARIABILITY	4472
<i>Moussa Sofiane Karoui, Fatima Zohra Benhalouche, Agence Spatiale Algérienne, Centre des Techniques Spatiales, Algeria; Salah Eddine Brezini, Yannick Deville, Institut de Recherche en Astrophysique et Planétologie, France; Yasmine Kheira Benkouider, Agence Spatiale Algérienne, Centre des Techniques Spatiales, Algeria</i>	
WE2.MM-14.9: A SURVEY OF HYPERSPECTRAL IMAGE SUPER-RESOLUTION TECHNOLOGY	4476
<i>Meilin Zhang, China University of Geosciences, China; Xiongli Sun, Wuhan University, China; Qiqi Zhu, Guizhou Zheng, China University of Geosciences, China</i>	
WE2.MM-14.10: BAND INDEPENDENT RESIDUAL NETWORKS FOR OPTICAL REMOTE SENSING IMAGES FUSION	4480
<i>Mohammed El Amin Larabi, Algerian Space Agency, Algeria; Meziane Iftene, Agence Spatiale Algérienne, Algeria; Mohammed Ilyas Tchenar, State Key Laboratory of Virtual Reality Technology and Systems, Beihang University, China; Khadija Bakhti, Kamel Hasni, Agence Spatiale Algérienne, Algeria</i>	
WE2.MM-15: ADVANCED APPLICATIONS OF GEOSPATIAL DATA ANALYSIS	
WE2.MM-15.1: REMOTE SENSING OF NIGHTTIME LIGHT: PROGRESS, PROSPECTS AND POSSIBILITIES IN AFRICA (2013-2021)	4484
<i>Oladapo Olusola, Samuel Adewale Adelabu, University of the Free State, South Africa</i>	
WE2.MM-15.2: STUDY ON THE DYNAMIC CHANGE OF WATERBIRD DIVERSITY AND DISTRIBUTION IN XIANGHAI	4488
<i>Ping Zhang, Yunfei Li, Weimei Tian, Jilin University, China; Lianshan Li, Jilin Xianghai National Nature Reserve Administration Bureau, China</i>	
WE2.MM-15.3: EVALUATION OF BRDF INFORMATION FROM HIMAWARI-8 AHI TIME-SERIES MULTI-ANGLE OBSERVATIONS	4492
<i>Xiaoning Zhang, Ziti Jiao, Changsen Zhao, Sijie Li, Zidong Zhu, Yidong Tong, Jing Guo, Rui Xie, Siyang Yin, Lei Cui, Beijing Normal University, China; Yadong Dong, Institute of Remote Sensing and Digital Earth of Chinese Academy of Sciences, China; Hu Zhang, Tianjin Normal University, China</i>	
WE2.MM-15.4: RESEARCH OF SEARCH AND RESCUE CAPABILITY EVALUATING MODEL BASED ON GIS	4496
<i>Ruirui Wang, Beijing Forestry University, China; Wei Shi, Huiping Jiang, Chinese Academy of Sciences, China</i>	
WE2.MM-15.5: SPATIAL-TEMPORAL DISTRIBUTION OF AIR QUALITY AND THE INFLUENCING FACTORS IN COMPLEX MOUNTAINOUS CITIES	4500
<i>Mengyao Li, Hongxia Luo, College of Geographical Sciences, Southwest University, China; Rui Zhang, Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of China, China</i>	
WE2.MM-15.6: TAXI REFUELING BEHAVIOR ANALYSIS BY USING TRAJECTORY DATA BASED ON MACHINE LEARNING	4504
<i>Shiyao Zhao, Chengqi Cheng, Peking University, China; Huihui Liu, Wuhan University, China</i>	
WE2.MM-15.7: RELATIONSHIP BETWEEN DEFECTS OF CAPACITIVE EQUIPMENT AND GEOMORPHOLOGY	4508
<i>Chen Xie, University of Electronic Science and Technology of China, China; Qingjun Peng, Yunnan Power Grid Company Ltd., China; Zezhong Zheng, University of Electronic Science and Technology of China, China; Zhongnian Li, Central China Normal University, China; Zhiyong Wang, Mingqi Li, Ling Jiang, Qiang Liu, University of Electronic Science and Technology of China, China; Xuemei Li, Chengdu University of Technology, China</i>	
WE2.MM-15.8: STUDY ON THE LIVABILITY OF URBAN ENVIRONMENT: A CASE STUDY OF BUILT-UP AREA IN QINGDAO, CHINA	4512
<i>Hailun Dai, Land Satellite Remote Sensing Application Center, China; Shengyue Jin, University College London, China; Haoran Zhai, Shulei Zheng, Land Satellite Remote Sensing Application Center, China; Weibing Li, Geological Exploration Technology Institute of Jiangsu Province, China</i>	

WE2.MM-15.9: AN IMPROVEMENT OF OFFSET TRACKING FOR CROSS HAIR (CH) AND PATCH LIKE (PL) ELIMINATION AND RELIABILITY ESTIMATION FOR LARGE DEFORMATION MONITORING WITH SAR DATA	4516
<i>Sen Du, Universitat Politècnica de Catalunya, Spain; Jordi J. Mallorqui Franquet, Polytechnic University of Catalonia, Spain</i>	
 WE2.MM-16: ICE SHEETS AND GLACIERS II	
WE2.MM-16.1: CRACK PROPAGATION AND CALVING FRONT MONITORING USING SATO FILTER	5599
<i>Quentin Glaude, Université libre De Bruxelles, Belgium; Stéphane Lizin, Université de Liège, Belgium; Frank Pattyn, Université libre De Bruxelles, Belgium; Christian Barbier, Anne Orban, Université de Liège, Belgium</i>	
WE2.MM-16.2: VALIDATION FOR ICE FLOW VELOCITY OF SHIRASE GLACIER DERIVED FROM PALSAR-2 IMAGE CORRELATION	5603
<i>Kazuki Nakamura, Nihon University, Japan; Shigeru Aoki, Hokkaido University, Japan; Tsutomu Yamanokuchi, Remote Sensing Technology Center of Japan, Japan; Takeshi Tamura, Koichiro Doi, National Institute of Polar Research, Japan</i>	
WE2.MM-16.3: POTENTIAL OF THE GLOBAL PRECIPITATION MEASUREMENT CONSTELLATION FOR CHARACTERIZING THE POLAR FIRN	5607
<i>Rahul Kar, Mustafa Aksoy, Jerusha Devadason, Pranjal Atrey, University at Albany, State University of New York, United States</i>	
WE2.MM-16.4: DETERMINATION OF GLACIER SURFACE AND VOLUME VARIATION IN THE ALTA DE OLIVARES AND ACONCAGUA BASINS (CHILE), 2000-2019	5611
<i>Francisco Belmar, Guido Staub, Rodrigo Abarca del Rio, University of Concepción, Chile</i>	
WE2.MM-16.5: A COMPREHENSIVE EMISSION MODEL FOR LAYERED INHOMOGENEOUS MEDIUM WITH APPLICATION TO PASSIVE REMOTE SENSING OF SNOW AND ICE LAYERS	5615
<i>Dongjin Bai, Xiaolong Dong, National Space Science Center, Chinese Academy of Sciences, China; Saibun Tjuatja, University of Texas at Arlington, United States; Di Zhu, National Space Science Center, Chinese Academy of Sciences, China</i>	
WE2.MM-16.6: GLACIER FACIES DETECTION USING FULLY POLARIMETRIC SAR DATA WITH SIX COMPONENT SCATTERING MODEL BASED DECOMPOSITION METHOD	5619
<i>Ruby Panwar, Gulab Singh, IIT Bombay, India</i>	
WE2.MM-16.7: SHADOW CAST TRACKING FOR DEDUCTION OF ELEVATION DATA THROUGH AFFINE MATCHING METHODS ON OPTICAL SATELLITE IMAGERY	5623
<i>Bas Altena, Utrecht University, Netherlands; Bert Wouters, Delft University of Technology, Netherlands</i>	
 WE2.MM-17: DATA PROCESSING, MANAGEMENT AND VISUALIZATION II	
WE2.MM-17.1: IMPLEMENTATION OF A FEDERATED LARGE-SCALE REMOTE SENSING DATA SHARING PLATFORM	5771
<i>Xuan Ma, Zhibao Wang, Northeast Petroleum University, China; Lu Bai, Ulster University, United Kingdom; Bingbing Xu, Well Testing & Perforating Services Sub-company of Daqing Oilfield Co., Ltd, China; Juntao Gao, Bilong Wen, Northeast Petroleum University, China; Jinhua Tao, University of Chinese Academy of Sciences, China</i>	
WE2.MM-17.2: GOLDEN AI DATA ACQUISITION AND PROCESSING PLATFORM FOR SAFE, SUSTAINABLE AND COST-EFFICIENT MINING OPERATIONS	5775
<i>Jari Havisto, VTT Technical Research Centre of Finland, Finland; Taras Matselyukh, OPT/NET B.V, Netherlands; Marko Paavola, Sanna Uusitalo, Marko Savolainen, VTT Technical Research Centre of Finland, Finland; Alfonso González Sobrecueva, Sitemark, Belgium; Andreas Knobloch, Beak Consultants GmbH, Germany; Kamen Bogdanov, Sofia university, Bulgaria</i>	

WE2.MM-17.4: TOWARDS VISUAL EXPLORATION OF SEMANTICALLY ENRICHED REMOTE SENSING SCENE KNOWLEDGE GRAPHS (RSS-KGS)	5783
<i>Abhishek Potnis, Surya Durbha, Rajat Shinde, Pratyush Talreja, Indian Institute of Technology Bombay, India</i>	
WE2.MM-17.5: HYDROLOGICAL BIG DATA PREDICTION BASED ON SHARED WEIGHT LONG SHORT-TERM MEMORY	5787
<i>Rui Wang, Dingsheng Wan, Ke Li, Hohai University, China</i>	
WE2.MM-17.6: A NEW CATEGORIES IDENTIFICATION METHOD BASED ON RELIABILITY TEST IN RADAR SIGNAL RECOGNITION SYSTEM	5791
<i>Haoyuan Wang, Weibo Huo, Jifang Pei, Yin Zhang, Yulin Huang, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
WE2.MM-17.7: INVESTIGATING DEVELOPMENT OF COUNTRIES THROUGH NIGHTLIGHTS	5795
<i>Xinyi (Hope) Fu, Massachusetts Institute of Technology, United States; Chiara Zarro, University of Sannio, Italy; Davide De Pasquale, Intelligentia, Italy; Silvia Liberata Ullo, University of Sannio, Italy</i>	
WE2.MM-17.8: A FLY-OVER THE LAND SERVICE AND ITS GLOBAL ACTIVITIES	5799
<i>Michael Cherlet, Michel Massart, European Commission, Belgium</i>	
 WE2.MM-19: SAR APPLICATIONS	
WE2.MM-19.1: DETECTING CLEARCUT DEFORESTATION EMPLOYING DEEP LEARNING METHODS AND SAR TIME SERIES	4520
<i>Evandro Taquary, Leila Fonseca, INPE, Brazil; Raian Maretto, University of Twente, Netherlands; Hugo Bendini, Bruno Matosak, Sidnei Sant'Anna, José Mura, INPE, Brazil</i>	
WE2.MM-19.2: SALT TOLERANCE VEGETATION INDEX - AN INTEGRATED APPROACH OF DUAL POLARIZED SAR MODELS	4524
<i>Kokila Priya Ravi, Shoba Periasamy, SRM Institute of Science & Technology, India</i>	
WE2.MM-19.3: ANALYSIS OF SAR IMAGES OBTAINED IN HURRICANE CONDITIONS FOR ESTIMATES OF CO₂ ATMOSPHERE-OCEAN FLUX	4528
<i>Daniil Sergeev, Galina Balandina, Yuliya Troitskaya, Institute of Applied Physics, Russian Academy of Sciences, Russia</i>	
WE2.MM-19.4: CONDITIONAL GIS-AWARE NETWORK FOR INDIVIDUAL BUILDING SEGMENTATION IN A VHR SAR IMAGE	4532
<i>Yao Sun, Yuansheng Hua, Lichao Mou, Xiaoxiang Zhu, German Aerospace Center (DLR), Germany</i>	
WE2.MM-19.5: EFFECTS OF IONOSPHERE ON LOWER-FREQUENCY SPACEBORNE SAR IMAGING	4536
<i>Kuan Wang, Bingxu Chen, Ning Li, Zhengwei Guo, Zewen Fu, Henan University, China</i>	
WE2.MM-19.6: FOREST BIOMASS INVERSION BASED ON KNN-FIFS WITH DIFFERENT ALOS DATA	4540
<i>Yongjie Ji, Peng Zeng, Wangfei Zhang, Southwest Forestry University, China; Lei Zhao, Chinese Academy of Forestry, China</i>	
WE2.MM-19.7: ESTIMATION OIL-WATER MIXTURE RATIO USING HYBRID-POLARIZED SYNTHETIC APERTURE RADAR	4544
<i>Haiyan Li, University of Chinese Academy of Sciences, China; William Perrie, Bedford Institute of Oceanography, Canada; Jin Wu, Institute of Geographic Sciences and Natural Resources Research, China</i>	
WE2.MM-19.8: SYNTHETIC GLACIER SAR IMAGE GENERATION FROM ARBITRARY MASKS USING PIX2PIX ALGORITHM	4548
<i>Rosanna Dietrich-Sussner, Amirabbas Davari, Thorsten Seehaus, Matthias Braun, Vincent Christlein, Andreas Maier, Christian Riess, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany</i>	

WE2.MM-19.9: ARBITRARY-ORIENTED SAR SHIP DETECTION VIA FREQUENCY LEARNING..... 4552
Yue Zhou, Xue Jiang, Shanghai Jiao Tong University, China; Zhou Li, Beijing Institute of Remote Sensing Information, China; Xingzhao Liu, Shanghai Jiao Tong University, China

WE2.MM-20: SAR TARGET DETECTION AND IMAGING

WE2.MM-20.1: ISAR IMAGING OF MANEUVERING TARGETS BASED ON PARAMETER ESTIMATION 4556
Zhenyuan Ji, Ting Yu, Yun Zhang, Guangzhi Chen, Harbin Institute of Technology, China

WE2.MM-20.2: GROUND MOVING TARGET DETECTION AND IMAGING FOR ONE-STATIONARY LOW FREQUENCY ULTRA-WIDEBAND BISTATIC SAR BASED ON MULTI-CHANNEL 4560
Kang Liang, Hongtu Xie, Guoqian Wang, Sun Yat-Sen University, China

WE2.MM-20.3: SAR IMAGE RECONSTRUCTION AND TARGET EXTRACTION WITH UNDER-SAMPLED DATA VIA LOW-RANK AND SPARSITY MATRIX DECOMPOSITION 4564
Min Li, Weibo Huo, Zhongyu Li, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, China

WE2.MM-20.4: MOVING TARGET DETECTION METHOD BASED ON NLCS AND STFT FOR BISTATIC FORWARD-LOOKING SAR WITH SINGLE-CHANNEL 4568
Junao Li, University of Electronic Science and Technology of China, China

WE2.MM-20.5: LVD-BASED 3-D ROTATIONAL VECTOR ESTIMATION OF NON-COOPERATIVE TARGETS FOR INISAR SYSTEM 4572
Rui Gong, Ling Wang, Daiyin Zhu, Nanjing University of Aeronautics and Astronautics, China

WE2.MM-20.6: TARGET-ORIENTED SAR FORMATION VIA SPARSE DICTIONARY LEARNING..... 4576
Min Li, Siyuan Zhang, Zhongyu Li, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, China

WE2.MM-20.7: TARGET-ORIENTED COGNITIVE SAR WAVEFORM DESIGN VIA JOINT OPTIMIZATION 4580
Youshan Tan, Min Li, Mingyue Lou, Zhongyu Li, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, China

WE2.MM-20.8: VIDEO SAR GROUND MOVING TARGET INDICATION BASED ON MULTI-TARGET TRACKING NEURAL NETWORK 4584
Wei Wang, Yao Hu, Zongyou Zou, Yuanyuan Zhou, Chen Wang, Jun Shi, Xiaoling Zhang, University of Electronic Science and Technology of China, China

WE2.MM-20.9: SHIP IMAGING BASED ON AZIMUTH AMBIGUITY RESOLVING FOR HIGH-SPEED MANEUVERING PLATFORMS SAR WITH SMALL-APERTURE 4588
Ning Li, Mengdao Xing, Guang-Cai Sun, Xidian University, China; Vito Pascazio, University of Napoli Parthenope, Italy

WE2.MM-20.10: A METHOD OF MOVING SHIP IMAGING AND VELOCITY ESTIMATION WITH AIRBORNE SAR 4592
Jin Wei, Yun Zhang, Yicheng Jiang, Xin Zhu, Harbin Institute of Technology, China

WE2.MM-21: NOVEL PROCESSING METHODS FOR URBAN AND LAND USE APPLICATIONS

WE2.MM-21.1: NEW DATA, INTEGRATED METHODS AND MULTIPLE APPLICATIONS: A REVIEW OF URBAN STUDIES BASED ON STREET VIEW IMAGES 6532
Feng Xu, Annan Jin, Xiliang Chen, Gang Li, Northwest University, China

WE2.MM-21.2: DEVELOPING SUPPORT FOR MONITORING AND REPORTING OF GHG EMISSIONS AND REMOVALS FROM LAND USE, LAND CHANGE AND FORESTRY 6536

Ali Nadir Arslan, Finnish Meteorological Institute, Finland; Katarzyna Dąbrowska-Zielińska, Institute of Geodesy and Cartography, Poland; Vesselin Vassilev, Cluster Aerospace Technologies, Research and Applications, Bulgaria; Jose M. Álvarez-Martínez, Environmental Hydraulics Institute of the University of Cantabria, Spain; Kameliya Radeva, Space Research and Technology Institute at the Bulgarian Academy of Sciences, Bulgaria; Stanisław Lewiński, Space Research Centre of the Polish Academy of Sciences, Poland; Iida Autio, Finnish Environment Institute, Finland; Hannakaisa Lindqvist, Maria Tenkanen, Tuula Aalto, Finnish Meteorological Institute, Finland; Markus Törmä, Finnish Environment Institute, Finland; Lachezar Filchev, Space Research and Technology Institute at the Bulgarian Academy of Sciences, Bulgaria; Michał Krupiński, Space Research Centre of the Polish Academy of Sciences, Poland; Stephen Barry, Maynooth University, Ireland; Tarja Tuomainen, Natural Resources Institute Finland, Finland; Premysl Stych, Charles University, Czech Republic; Abad Chabbi, National Institute for Agricultural Research, Food and Environment, France

WE2.MM-21.3: URBAN RESIDENTIAL LAND PRICE ASSESSMENT BASED ON TRANSFER LEARNING 6540

Weishi Jin, University of Electronic Science and Technology of China, China; Mingcang Zhu, Department of Natural Resources of Sichuan Province, China; Yong He, Sichuan Research Institute for Eco-System Restoration & Geo-Hazard Prevention, China; Jie Li, Chengdu Land Planning and Cadastre Center, China; Zezhong Zheng, University of Electronic Science and Technology of China, China; Mingkun Feng, Chengdu Land Planning and Cadastre Center, China; Zhongnian Li, Central China Normal University, China; Zhiyong Wang, Mingqi Li, Ling Jiang, Qiang Liu, Ankai Hou, Biao Zhang, University of Electronic Science and Technology of China, China; Xuemei Li, Chengdu University of Technology, China

WE2.MM-21.4: GIS-BASED ANALYSIS OF TOURISM POTENTIAL CASE STUDY: RURAL REGIONS EL MORRO AND POSORJA, GUAYAS, ECUADOR 6544

Viviana Herrera-Matamoros, Andrés Velastegui-Montoya, Escuela Superior Politécnica del Litoral, Ecuador

WE2.MM-21.5: EFFECTS OF TOPOGRAPHIC ATTRIBUTES AND WATER TABLE DEPTHS ON THE SOIL SALINITY ACCUMULATION IN ARID LAND 6548

Abderrazak Bannari, Space-Pix Map, Canada; Zahra M. Al-ali, Ghadeer Mohammed Kadhem, Arabian Gulf University, Bahrain

WE2.MM-21.6: INFLUENCE OF IRRIGATION ON THE BIAS BETWEEN ORCHIDEE AND FLUXCOM EVAPOTRANSPIRATION PRODUCTS 6552

Amen Al-Yaari, Agnes Ducharne, Salma Tafasca, Sorbonne University - Laboratoire METIS, France; Hiroki Mizuoti, National Institute of Advanced Industrial Science and Technology, Japan; Frederique Cheruy, LMD (Laboratoire de Météorologie Dynamique), Sorbonne Université, France

WE2.MM-21.7: CHANGE DETECTION ON GRASSLAND IN A CONTROLLED ACCESS AREA USING L-BAND FULL POLARIMETRIC SAR DATA 6556

Chinatsu Yonezawa, Tohoku Univ., Japan

WE2.MM-21.8: FUSION OF SENTINEL-1 AND SENTINEL-2 IMAGERY FOR LAND SALINITY MAPPING: A CASE STUDY IN DA'AN, JILIN PROVINCE 6560

Qianqian Zhang, Li Li, Chao Zhang, Ruizhi Sun, China Agricultural University, China

WE2.MM-22: CROP ASSESSMENT, YIELD ESTIMATION AND MODELING AT VARIOUS SPATIAL SCALES

WE2.MM-22.1: CROP GROWTH MONITORING AND YIELD PREDICTION SYSTEM APPLYING COPERNICUS DATA FOR POLAND & SOUTH AFRICA 6564

Radosław Gurdak, Katarzyna Dąbrowska-Zielińska, Zbigniew Bochenek, Marcin Kluczek, Maciej Bartold, Institute of Geodesy and Cartography, Poland; Solomon W. Newete, George J. Chirima, Agricultural Research Council, South Africa

**WE2.MM-22.2: ASSIMILATION OF SMAP BASED DISAGGREGATED SOIL MOISTURE FOR 6568
IMPROVING SOIL EVAPORATION ESTIMATES BY FAO-2KC MODEL**

Abdelhakim Amazirh, Mohammed VI Polytechnic University (UM6P), Center for Remote Sensing Application (CRSA), Morocco; Abdelghani Chehbouni, Mohammed VI Polytechnic University (UM6P), Center for Remote Sensing Application (CRSA); Université de Toulouse, CNES, CNRS, IRD, UPS, Centre d'Etudes Spatiales de la Biosphère (CESBIO), Morocco; Olivier Merlin, Université de Toulouse, CNES, CNRS, IRD, UPS, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Elhoussaine Bouras, Centre d'Etudes Spatiales de la Biosphère (CESBIO), Université de Toulouse, CNES, CNRS, IRD, UPS and ProcEDE, Département de Physique Appliquée, Faculté des Sciences et Techniques, Université Cadi Ayyad, Morocco; Salah Er-Raki, Mohammed VI Polytechnic University (UM6P), Center for Remote Sensing Application (CRSA); ProcEDE, Département de Physique Appliquée, Faculté des Sciences et Techniques, Université Cadi Ayyad, Morocco

**WE2.MM-22.3: A REGIONAL VERSION OF THE AQUACROP MODEL EVALUATED WITH 6572
SATELLITE RETRIEVALS AND BACKSCATTER DATA**

Shannon de Roos, Gabriëlle De Lannoy, Dirk Raes, KU Leuven, Belgium

**WE2.MM-22.4: ASSESSMENT OF CROP WATER PRODUCTIVITY OF ROHRI CANAL 6575
COMMAND AREA IN PAKISTAN USING REMOTE SENSING**

Zenobia Talpur, Arjumand Zaidi, US Pakistan Centers for Advanced Studies in Water, Mehran University of Engineering and Technology, Pakistan; Sumaira Zafar, Asian Institute of Technology, Thailand; Suhail Ahmed, US Pakistan Centers for Advanced Studies in Water, Mehran University of Engineering and Technology, Pakistan

**WE2.MM-22.5: REVISITING THE SPATIAL SCALE EFFECTS ON REMOTELY SENSED 6579
EVAPORATION**

Bruno Aragon, Matteo G. Ziliani, Matthew F. McCabe, King Abdullah University of Science and Technology, Saudi Arabia

**WE2.MM-22.6: GENERATING WINTER WHEAT GLOBAL CROP CALENDARS IN THE 6583
FRAMEWORK OF WORLDCEREAL**

Juanma Cintas Rodríguez, Belén Franch, University of Valencia, Spain; Inbal Becker-Reshef, Sergii Skakun, University of Maryland, United States; José Antonio Sobrino, Universitat de Valencia, Spain; Kristof Van Tricht, Jeroen Degerickx, Sven Gilliams, VITO, Belgium

**WE2.MM-22.7: ASSESSING UTILITY OF COPERNICUS-BASED EVAPOTRANSPIRATION MAPS 6587
FOR NATIONAL MONITORING OF FIELD-SCALE WATER USE**

Radoslaw Guzinski, DHI GRAS, Denmark; Hector Nieto, COMPLUTIG, Spain; Gilles Boulet, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Dalendah Boujnah, Institut de l'Olivier, Tunisia; Benjamin Koetz, European Space Agency (ESA), Italy

**WE2.MM-22.8: DROUGHT ASSESSMENT APPLYING JOINED METEOROLOGICAL AND 6591
SATELLITE DATA**

Katarzyna Dąbrowska-Zielińska, Zbigniew Bochenek, Alicja Malinska, Maciej Bartold, Radosław Gurdak, Magdalena Lagiewska, Karol Paradowski, Institute of Geodesy and Cartography, Poland

**WE2.MM-23: GEOMORPHOLOGY, GEOLOGY, LANDSLIDES, DEFORMATION AND
ALTERATION ZONES**

**WE2.MM-23.1: DETECTION AND DEFORMATION CHARACTERIZATION OF THE 2020 6595
ANIANGZHAI LANDSLIDE USING TIME-SERIES INSAR AND OPTICAL DATASETS**

Jianming Kuang, Linlin Ge, University of New South Wales, Australia; Alex Hay-Man Ng, Guangdong University of Technology, China; Qi Zhang, University of New South Wales, Australia

**WE2.MM-23.2: EVALUATING A SPECIAL LUNAR TIR COLD ANOMALY USING CE-2 CELMS 6599
DATA**

Liansheng Mei, Cai Liu, Zhiguo Meng, Xigang Wang, Jilin University, China; Zhanchuan Cai, Macau University of Science and Technology, China; Jinsong Ping, National Astronomical Observatory, CAS, China

WE2.MM-23.3: NEW INSIGHTS INTO A ROCK-RELATED TIR ANOMALY ON THE MOON	6603
FROM CE-2 CELMS SATELLITE DATA	
<i>Zhiguo Meng, Hengxi Liu, Wenqing Chang, Jilin University, China; Zhanchuan Cai, Macau University of Science and Technology, Macau SAR China; Tianqi Tang, Yanxiang Shi, Jilin University, China; Yongchun Zheng, National Astronomical Observatory, CAS, China</i>	
WE2.MM-23.4: MORPHOLOGY OF MOUNT THORBJORN, ICELAND, STUDIED WITH UAS	6607
PHOTOGRAMMETRY	
<i>Alina Shevchenko, Thomas Walter, GFZ German Research Centre for Geosciences, Germany; Viktor Dvigalo, Institute of Volcanology and Seismology FEB RAS, Russia</i>	
WE2.MM-23.5: VERTICAL AND HORIZONTAL DISPLACEMENTS ANALYSIS FOR MINING	6610
DEFORMATION MODELING	
<i>Wojciech T. Witkowski, Ryszard Hejmanowski, AGH University of Science and Technology, Poland</i>	
WE2.MM-23.6: INTEGRATION OF THE LEVELING OBSERVATIONS AND PSINSAR	6614
RESULTS FOR MONITORING DEFORMATIONS CAUSED BY UNDERGROUND MINING	
<i>Wojciech T. Witkowski, Dawid Mrocheń, Paweł Sopata, Tomasz Stoch, AGH University of Science and Technology, Poland</i>	
WE2.MM-23.7: QUANTITATIVE VALIDATION OF FORMATION MECHANISM OF LUNAR	6618
FLOOR FRACTURED CRATERS	
<i>Suchit Purohit, Savita Gandhi, Gujarat University, India; Nidhi Dubey, N/A, India; Prakash Chauhan, Indian Space Research Organisation, India</i>	
WE2.MM-23.8: VALIDATION OF REMOTE SENSING TECHNIQUES IN GREENFIELD	6622
EXPLORATION AREAS FOR LITHIUM (LI) IN CENTRAL PORTUGAL: A STUDY CASE	
<i>Joana Cardoso-Fernandes, Faculty of Sciences, University of Porto; Institute of Earth Sciences, Portugal; Douglas Santos, Faculty of Sciences, University of Porto, Portugal; Alexandre Lima, Ana Cláudia Teodoro, Faculty of Sciences, University of Porto; Institute of Earth Sciences, Portugal; Mônica Perrotta, Geological Survey of Brazil (GPRM), Brazil; Encarnación Roda-Robles, Universidad del País Vasco, Spain</i>	
 WE2.MM-24: SATELLITE MISSIONS, SENSORS AND CALIBRATION I	
WE2.MM-24.1: GEOMETRIC ACCURACY EVALUATION OF GF-7 IMAGE	8015
<i>Guoming Li, University of Electronic Science and Technology of China / Sichuan Third Surveying and Mapping Engineering Institute, China; Guoqing Li, Tianqing Wang, Ludong University, China</i>	
WE2.MM-24.2: UTILIZING SPARSE PULSE REPETITION INTERVAL AND KR PRODUCT	8019
BEFORE AZIMUTH COMPRESSION FOR SAR PROCESSING	
<i>Daichi Hirahara, Japan Aerospace Exploration Agency (JAXA), Japan</i>	
WE2.MM-24.3: THE TANDEM-X CHANGE DEM: STATUS OF THE CHANGE RAW DEMS	8022
PRODUCTION	
<i>Marie Lachaise, Markus Bachmann, Barbara Schweisshelm, Thomas Fritz, German Aerospace Center (DLR), Germany</i>	
WE2.MM-24.4: IMPROVED TROPOMI HCHO COLUMN VALIDATION USING DUAL-SCAN	8026
MAX-DOAS RETRIEVALS	
<i>Ermioni Dimitropoulou, Francois Hendrick, Martina M. Friedrich, Frederik Tack, Gaia Pinaridi, Alexis Merlaud, Caroline Fayt, Christian Hermans, Michel Van Roozendael, Royal Belgian Institute for Space Aeronomy, Belgium</i>	
WE2.MM-24.5: STORE AND FORWARD MISSION DESIGN IN BIRDS-4 SATELLITES	8030
<i>Yasir Abbas, Marloun Sejera, Izrael Bautista, Mengu Cho, Kenichi Asami, Kyushu Institute of Technology, Japan</i>	
WE2.MM-24.6: COMPARISONS OF OBSERVATIONAL ANGLES BETWEEN MOON-BASED	8034
PLATFORM AND ARTIFICIAL SATELLITES	
<i>Yu Deng, Peking University, China; Huadong Guo, Guang Liu, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Hanlin Ye, China Academy of Space Technology, China; Jing Huang, Runbo Dong, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	

**WE2.MM-24.7: A STUDY OF SPECTRA BANDWIDTH INDEX SETTING OF INFRARED 8038
IMAGER BASED ON SPECTRUM SIMULATION**

Dandan Wei, Yao Liu, Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of China, China

WE2.MM-25: LIDAR DATA PROCESSING AND APPLICATIONS

**WE2.MM-25.1: A PARTICLE FILTERING MODEL USING INSTANTANEOUS RANGE FOR 8041
VIBRATION AND NONLINEARITY COMPENSATION OF TRIANGULAR FMCW LADAR SIGNAL**

Rongrong Wang, University of Chinese Academy of Sciences, China; Maosheng Xiang, Bingnan Wang, Chinese Academy of Sciences, China; Chuang Li, Xi'an Jiaotong University, China; Weidi Xu, University of Chinese Academy of Sciences, China

**WE2.MM-25.2: VARIANCE PROCESSING FOR STABLE BOUNDARY-LAYER HEIGHT 8045
ESTIMATION USING BACKSCATTER LIDAR DATA: A DISCUSSION**

Constantino Muñoz-Porcar, Marcos Paulo Araujo da Silva, Universitat Politècnica de Catalunya, Spain; Umar Saed, Aalto University, Finland; Francesc Rey, Universitat Politècnica de Catalunya, Spain; Maria Teresa Pay, Barcelona Supercomputing Center, Spain; Francesc Rocadenbosch, Universitat Politècnica de Catalunya, Spain

**WE2.MM-25.3: MULTI-FEATURE AIRBORNE LIDAR STRIP ADJUSTMENT METHOD 8049
COMBINED WITH TENSOR VOTING ALGORITHM**

Bo Song, College of Earth Sciences, Guilin University of Technology, China; Guoqing Zhou, Feng Wang, Guilin University of Technology, China

**WE2.MM-25.4: IMPROVED GAUSS INFLECTION POINT MATCHING METHOD FOR LIDAR 8053
ECHO SIGNAL DECOMPOSITION**

Ronghua Deng, Guoqing Zhou, Guilin University of Technology, China; Shuhua Long, College of Geomatics and Geoinformation, China; Xianxing Li, Weihao Li, Guangxi Key Laboratory for Spatial Information and Geomatics, China; Gangchao Lin, Guilin University of Technology, China

**WE2.MM-25.5: DEPENDENCE OF AEROSOL EXTINCTION MEASUREMENTS USING A 8057
CAMERA BASED LIDAR ON VARIOUS AEROSOL PHASE FUNCTIONS**

Amin Kabir, University of The Bahamas, Bahamas, The; Nimmi Sharma, Central Connecticut State University, United States; John Barnes, National Oceanic and Atmospheric Administration (NOAA), United States; Alicja Urbanczyk, Justin Fagnoni, Seth Gagnon, Marcus Silva, Central Connecticut State University, United States; Edward Knowles, University of The Bahamas, Bahamas, The

**WE2.MM-25.6: ESTIMATION OF SAMPLING INTERVAL IN TERRESTRIAL LASER SCANNING 8061
DATA WITH NEIGHBORING ANALYSIS**

Maolin Chen, Xinyi Zhang, Xiangjiang Liu, Cuicui Ji, Lidu Zhao, Chongqing Jiaotong University, China

**WE2.MM-25.7: COMPARISON OF TREE ATTRIBUTE ESTIMATES FROM AIRBORNE AND 8065
TERRESTRIAL LASER SCANNING AND FIELD DATA**

Olga Brovkina, Jan Novotný, Barbora Navratilova, Global Change Research Institute CAS, Czech Republic; Jan Albert, Emil Cienciala, IFER - Institute of Forest Ecosystem Research, Czech Republic

**WE2.MM-25.8: TOWARDS 3D MAPPING OF SEAGRASS MEADOWS WITH 8069
TOPO-BATHYMETRIC LIDAR FULL WAVEFORM PROCESSING**

Mathilde Letard, Antoine Collin, Ecole Pratique des Hautes Etudes, Université Paris Sciences Lettres, CNRS UMR 6554 LETG, France; Dimitri Lague, Université de Rennes, CNRS, Géosciences Rennes - UMR 6118, France; Thomas Corpetti, CNRS UMR 6554 Littoral Environnement Télé-détection Géomatique, France; Yves Pastol, Service Hydrographique et Océanographique de la Marine, France; Anders Ekelund, Airborne Hydrography AB, Leica Geosystems, Hexagon, Sweden; Gérard Pergent, Fédération de Recherche Environnement et Société 3041 – UMR 6134, University of Corsica, France; Stéphane Costa, Université Caen-Normandie, CNRS UMR 6554 LETG, France

**WE2.MM-25.9: WAVEFORM DECOMPOSITION AND FEATURE EXTRACTION OF AIRBORNE 8073
LIDAR BATHYMETRY**

Jiaoyang Liu, Dianpeng Su, Chao Qi, Anxiu Yang, Xiankun Wang, Fanlin Yang, Shandong University of Science and Technology, China

WE2.MM-26: UAV AND CLOSE SENSING APPLICATIONS III

WE2.MM-26.1: RESEARCH ON UAV INDOOR PATH PLANNING ALGORITHM BASED ON 8503 GLOBAL SUBDIVISION GRIDS

Bing Han, Qingmei Li, Chengqi Cheng, Peking University, China

WE2.MM-26.2: TIME SERIES PHOTOGRAMMETRIC PROCESSING WORKFLOW FOR 8507 WAVE-WASHED AREAS

Rafael Kenji Horota, Leonardo Bachi, Alysson Soares Aires, Vizlab - X-Reality and GeoInformatics Lab, UNISINOS - Sao Leopoldo, Brazil; Graciela Racolte, Universidade do Vale do Rio dos Sinos - UNISINOS, Brazil; Natália Procksch, Laboratorio de Ecologia de Mamiferos (LEM), Universidade do Vale do Rio dos Sinos - UNISINOS, Brazil; Daniel Danilewicz, Natalia Bragiola Berchieri, Paulo Henrique Ott, Grupo de Estudos de Mamiferos Aquaticos do RS (GEMARS), Brazil; Andre Spigolon, Petrobras Research and Development Center (GENPES), Brazil; Larissa Rosa de Oliveira, Luiz Gonzaga, Jr., Maurício Veronez, Universidade do Vale do Rio dos Sinos - UNISINOS, Brazil

WE2.MM-26.3: SURVEYING MIGRATORY WATERFOWL USING UAV RGB IMAGERY 8511

Armand LaRocque, Brigitte Leblon, University of New Brunswick, Canada; Mélanie-Louise Leblanc, McGill University, Canada; Angela Douglas, Southern Gulf of St. Lawrence Coalition on Sustainability, Canada

WE2.MM-26.4: AIRCRAFT AND HIGH ALTITUDE PLATFORM SYSTEM ONBOARD 8515 CIRCULARLY POLARIZED SYNTHETIC APERTURE RADAR (CP-SAR)

Josaphat Tetuko Sri Sumantyo, C. M. Yam, C. E. Santosa, A. Takahashi, K. Ito, Chiba University, Japan

WE2.MM-26.5: OFF-NADIR PHOTOGRAMMETRY FOR AIRBORNE SAR MOTION 8519 COMPENSATION: A FIRST STEP

Usman Iqbal Ahmed, Bernhard Rabus, Mike Kubanski, Simon Fraser University, Canada

WE2.MM-26.6: UAV PANORAMIC IMAGE MOSAIC METHOD BASED ON IMPROVED 8523 OPTIMAL SEAM

Jun Chen, Zixian Li, Linbo Luo, Xiaoqiang Chen, Yue Gu, China University of Geosciences, China

WE2.MM-26.7: DRONE SERVICES FOR PLANT WATER-STATUS MAPPING 8527

Margherita Bruscolini, Ben Suttor, Laura Giustarini, Moh Zare, Ben Gaffinet, Guy Schumann, RSS-Hydro, Luxembourg

WE2.MM-26.8: MINIATURE FLASH LIDAR FOR BATHYMETRY: AN EXPERIMENTAL 8531 PROOF-OF-CONCEPT

Christophe Pache, Christophe Meier, Serge Droz, David Nguyen, Centre Suisse d'Electronique et de Microtechnique, Switzerland; Jean-Christophe Roulet, CSEM SA, Switzerland; Alexandre Pollini, Centre Suisse d'Electronique et de Microtechnique, Switzerland; Torbjørn Houge, Maritime Robotics, Norway; Fabien Droz, Centre Suisse d'Electronique et de Microtechnique, Switzerland

WE2.MM-26.9: UAS-SFM AND AIRBORNE LIDAR TO MEASURE HURRICANE IMPACTS AND 8534 SHORT-TERM RECOVERY ALONG LITTLE ST. GEORGE ISLAND, FL, USA

Kelsi Schwind, Michael Starek, Texas A&M University - Corpus Christi, United States; Megan Lamb, Apalachicola National Estuarine Research Reserve, United States

WE3.O-1: REMOTE SENSING OF OCEAN WAVES

WE3.O-1.1: EVOLUTIONS AND IMPROVEMENTS IN CFOSAT SWIM PRODUCTS 7386

Cédric Tourain, CNES, France; Danièle Hauser, Centre National de la Recherche Scientifique, Université de Versailles Saint Quentin, France; Dunya Alraddawi, CNRS/LATMOS, France; Laura Hermozo, Raquel Rodriguez Suquet, CNES, France; Patricia Schippers, ACRI-ST, France; Lotfi Aouf, Daphinet Alice, Météo France, France; Christophe Dufour, CNRS/LATMOS, France; Jean-Michel Lachiver, Céline Tison, CNES, France

WE3.O-1.2: DIRECTIONAL AND FREQUENCY SPREAD OF SURFACE OCEAN WAVES FROM CFOSAT/SWIM MEASUREMENTS 7390

Eva Le Merle, Danièle Hauser, Centre National de la Recherche Scientifique, Université de Versailles Saint Quentin, France; Charles Peureux, Collecte Localisation Satellites, France; Lotfi Aouf, Météo-France, France; Patricia Schippers, ACRI-ST, France; Christophe Dufour, Centre National de la Recherche Scientifique, Université de Versailles Saint Quentin, France

WE3.O-1.3: KA-BAND RADAR BACKSCATTERING FROM BREAKING WIND WAVES 7394

Yury Yurovsky, Vladimir Kudryavtsev, Russian State Hydrometeorological University, Russia; Semyon Grodsky, University of Maryland, United States; Bertrand Chapron, IFREMER, France

WE3.O-1.4: BACKSCATTERING CROSS-SECTION INCIDENT DEPENDENCE BY REFLECTED PULSE SHAPE USING A FIXED ANTENNA WITH THE WIDE ANTENNA PATTERN 7398

Yuriy Titchenko, Vladimir Karaev, Mariya Ryabkova, Kirill Ponur, Eugeny Meshkov, Roman Belyaev, Institute of Applied Physics, Russian Academy of Sciences, Russia

WE3.O-1.5: SATELLITE-DATA-DRIVEN PROPAGATION SPEED MODEL FOR INTERNAL SOLITARY WAVES IN THE SHALLOW AND DEEP OCEANS 7402

Xudong Zhang, Institute of Oceanography, Chinese Academy of Sciences, China; Tao Zhang, Shandong University of Science and Technology; Institute of Oceanology Chinese Academy of Sciences, China; Xiaofeng Li, Institute of Oceanography, Chinese Academy of Sciences, China

WE3.O-1.6: INTERNAL SOLITARY WAVE AMPLITUDE AND VELOCITY RETRIEVAL FROM SYNTHETIC APERTURE RADAR IMAGES OF THE CALIFORNIA INNER SHELF REGION 7406

Samantha Furtney, Roland Romeiser, Hans Graber, University of Miami - Rosenstiel School of Marine and Atmospheric Science, United States

WE3.O-2: SATELLITE MISSIONS OPERATION CONSIDERATIONS

WE3.O-2.1: GLOBAL L-BAND OBSERVATORY FOR WATER CYCLE STUDIES (GLOWS)..... 7779

David Long, Brigham Young University, United States; Rajat Bindlish, Jeffrey Piepmeier, Giovanni De Amici, NASA, United States; Mark Bailey, MMA, United States

WE3.O-2.2: STATION-KEEPING MANOEUVRE DETECTION FOR AUTONOMOUS PRECISE INTERFEROMETRIC TRACKING OF GEOSYNCHRONOUS SATELLITES 7783

Jorge Nicolas-Álvarez, Xavier Carreño-Megias, Oriol Fusté, Estel Ferrer, Miquel Albert, Anas Amlou, Alberto Aguasca, Antoni Broquetas, Universitat Politècnica de Catalunya, Spain

WE3.O-2.3: ULID: A DEMONSTRATION MISSION FOR DISTRIBUTED L-BAND INTERFEROMETRY EARTH OBSERVATION 7787

François Cabot, Eric Anterrieu, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Louise Yu, Thierry Amiot, CNES, France; Yann Kerr, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France

WE3.O-2.4: VERY LOW LATENCY ARCHITECTURE FOR EARTH OBSERVATION SATELLITE ONBOARD DATA HANDLING, COMPRESSION, AND ENCRYPTION 7791

Michele Caon, Paolo Motto Ros, Maurizio Martina, Tiziano Bianchi, Enrico Magli, Politecnico di Torino, Italy; Francisco Membibre, Alexis Ramos, Antonio Latorre, Murray Kerr, Deimos Space S.L.U, Spain; Stefan Wiehle, Helko Breit, Dominik Günzel, Srikanth Mandapati, Ulrich Bals, Björn Tings, German Aerospace Center (DLR), Germany

WE3.O-2.5: COVERAGE STANDARDS AS A MATURE INTEROPERABILITY-ENABLING IMPLEMENTATION PLATFORM 7795

Peter Baumann, Jacobs University, Germany

WE3.O-2.6: HETEROGENEOUS CONSTELLATION DESIGN FOR A SMART SOIL MOISTURE RADAR MISSION 7799

Benjamin Gorr, Alan Aguilar, Daniel Selva, Texas A&M University, United States; Vinay Ravindra, NASA Ames Research Center, United States; Mahta Moghaddam, University of Southern California, United States; Sreeja Nag, NASA Ames Research Center, United States

WE3.O-3: RECENT ADVANCES IN GNSS-R II

WE3.O-3.1: EVALUATION OF GNSS-R RETRIEVED SEA ICE SURFACE HEIGHT USING ICESAT-2 ICE FREEBOARD MEASUREMENTS 7803

Yang Wang, Jade Morton, University of Colorado Boulder, United States

WE3.O-3.2: FREEZE/THAW RETRIEVAL OVER HIGH ALTITUDE AREAS WITH CYGNSS 7807

Hugo Carreno-Luengo, Chris Ruf, University of Michigan, United States

WE3.O-3.4: GENERATION OF A NEW HIGH RESOLUTION DDM DATA PRODUCT FROM CYGNSS RAW IF MEASUREMENTS 7815

Hugo Carreno-Luengo, Chris Ruf, University of Michigan, United States; Scott Gleason, University Corporation for Atmospheric Research (UCAR), United States; Anthony Russel, Timothy Butler, University of Michigan, United States

WE3.O-3.5: THE IMPACT OF BAROMETRIC VARIATIONS ON THE SEA LEVEL IN COASTAL AREAS USING GNSS REFLECTOMETRY 7819

Théo Gravalon, Lucia Seoane, José Darrozes, Géosciences Environnement Toulouse (GET) - Université Paul Sabatier (UPS), France; Guillaume Ramillien, Géosciences Environnement Toulouse (GET) - Centre National de la Recherche Scientifique (CNRS), France

WE3.O-3.6: SEA ICE CONCENTRATION AND SEA ICE EXTENT MAPPING WITH THE FSSCAT MISSION: A NEURAL NETWORK APPROACH 7823

David Llavería, Juan Muñoz, Christoph Herbert, Universitat Politècnica de Catalunya, Spain; Miriam Pablos, Consejo Superior de Investigaciones Científicas (CSIC), Spain; Adriano Camps, Hyuk Park, Universitat Politècnica de Catalunya, Spain

WE3.O-4: GLOBAL PRECIPITATION MISSION WITH EMPHASIS ON HAZARD MITIGATION

WE3.O-4.1: A NEW HAIL PRODUCT FOR GPM DPR..... 828

Minda Le, V. Chandrasekar, Colorado State University, United States

WE3.O-4.3: IMPROVEMENT OF THE GSMAP PRECIPITATION RETRIEVAL ALGORITHM FOR MICROWAVE SOUNDERS OVER COAST 832

Tomoko Tashima, Takuji Kubota, Japan Aerospace Exploration Agency (JAXA), Japan; Tomoaki Mega, Osaka University, Japan; Shoichi Shige, Kyoto University, Japan

WE3.O-4.5: IMPROVEMENT OF THE CLUTTER REMOVAL METHOD FOR THE SPACEBORNE PRECIPITATION RADARS 840

Kaya Kanemaru, Hiroshi Hanado, Katsuhiko Nakagawa, NICT, Japan

WE3.O-4.6: A FLEXIBLE AND STABLE METHOD FOR ESTIMATING THE VERTICAL PROFILE OF DSD PARAMETERS FOR GPM/DPR 844

Shinta Seto, Nagasaki University, Japan; Toshio Iguchi, University of Maryland, United States; Nobuhiro Takahashi, Nagoya University, Japan

WE3.O-5: GROUND-BASED MICROWAVE TECHNIQUES FOR SNOWPACK MONITORING I

WE3.O-5.1: NUMERICAL INVESTIGATION ON THE EFFECT OF THE SNOWPACK SURFACE ROUGHNESS ON THE RADAR ECHO 848

Marco Pasian, Martina Lodigiani, Università degli Studi di Pavia, Italy; Carlo Marin, Valentina Premier, Claudia Notarnicola, Eurac Research, Italy

WE3.O-5.3: COMMUNITY DEVELOPMENT OF THE SNOW MICROWAVE RADIATIVE TRANSFER MODEL FOR PASSIVE, ACTIVE AND ALTIMETRY OBSERVATIONS OF THE CRYOSPHERE	852
<i>Melody Sandells, Northumbria University, United Kingdom; Ghislain Picard, Université Grenoble Alpes, France; Henning Löwe, WSL Institute for Snow and Avalanche Research SLF, Switzerland; Nina Maaß, Universität Hamburg, Germany; Mai Winstrup, Technical University of Denmark, Denmark; Ludo Brucker, NASA Goddard Space Flight Center, United States; Marion Leduc-Leballeur, Institute of Applied Physics, Italy; Fanny Larue, Université Grenoble Alpes, France; Jérémie Aublanc, Pierre Thibaut, Collecte Localisation Satellites, France; Justin Murfitt, University of Waterloo, Canada</i>	
WE3.O-5.4: CROSS CHARACTERIZATION OF ALPINE SNOW PACKS USING A PORTABLE 3-D HR IMAGING SYSTEM, C-BAND SPACEBORNE SAR OBSERVATIONS, IN-SITU MEASUREMENTS AND A PHYSICALLY BASED SNOW EVOLUTION MODEL	856
<i>Laurent Ferro-Famil, IETR, University of Rennes 1, France; Fatima Karbou, Université Grenoble Alpes, Université de Toulouse, Météo-France, CNRS, CNRM, CEN, France; Lehmissi Harkati, IETR, University of Rennes 1, France; Philippe Lapalus, Université Grenoble Alpes, Université de Toulouse, Météo-France, CNRS, CNRM, CEN, France; Stéphane Avrillon, Frédéric Boutet, IETR, University of Rennes 1, France; Yannick Deliot, Hugo Mersizen, Isabelle Goutevin, Université Grenoble Alpes, Université de Toulouse, Météo-France, CNRS, CNRM, CEN, France; Pascal Salze, Franck Delbart, Université Grenoble Alpes, Station Alpine Joseph Fourier (UMS 3370 CNRS), France; Anne Karas, Romain Besombes, Erwan Le Gac, Université Grenoble Alpes, Université de Toulouse, Météo-France, CNRS, CNRM, CEN, France; Hervé Bellot, Xavier Ravanat, Université Grenoble Alpes, INRAE, France</i>	
WE3.O-5.5: ANALYSIS OF SNOW COHERENCE CONSERVATION FOR SWE RETRIEVAL AT L-, S-, C- AND X-BANDS	860
<i>Jorge Jorge Ruiz, Finnish Meteorological Institute, Finland; Risto Vehmas, Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR, Germany; Juha Lemmetyinen, Finnish Meteorological Institute, Finland; Anna Kontu, Riku Tarvainen, Jouni Pulliainen, Finnish Meteorological Institute, Finland; Jaan Praks, Aalto University, Finland</i>	
WE3.O-5.6: IMPACT OF FOREST CANOPY PARAMETERIZATION ON SPACE-BORNE SNOW ON GROUND DETECTION	864
<i>Helga Weber, Kathrin Naegeli, Stefan Wunderle, University of Bern, Switzerland</i>	
WE3.O-6: COPERNICUS SAR MISSIONS IN C- AND L- BAND: STATUS, EVOLUTION AND CONTRIBUTION TO ADVANCED MONITORING AND ASSESSMENT OF NATURAL DISASTERS I	
WE3.O-6.1: COPERNICUS SAR MISSIONS (C AND L-BAND)	868
<i>Ramon Torres, Malcolm Davidson, Dirk Geudtner, Robert Furnell, European Space Agency (ESA), Netherlands</i>	
WE3.O-6.3: ROSE-L: COPERNICUS L-BAND SAR MISSION	872
<i>Malcolm Davidson, Robert Furnell, European Space Agency (ESA), Netherlands</i>	
WE3.O-6.4: COPERNICUS SENTINEL-1 NEXT GENERATION MISSION	874
<i>Dirk Geudtner, Michel Tossaint, Malcolm Davidson, Ramon Torres, European Space Agency (ESA), Netherlands</i>	
WE3.O-6.5: SYNERGISTIC USE OF L- AND C-BAND SAR SATELLITES FOR SEA ICE MONITORING	877
<i>Wolfgang Dierking, Alfred-Wegener-Institute Helmholtz Center for Polar and Marine Research (AWI), Germany</i>	
WE3.O-6.6: IMAGING COMPLEX FAULT SLIP OF LARGE EARTHQUAKES WITH SENTINEL-1 AND ALOS-2 SAR ANALYSIS AND OTHER GEODETIC AND SEISMIC DATA	881
<i>Eric J. Fielding, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Cunren Liang, Seismological Laboratory, California Institute of Technology, United States; Mong-Han Huang, Zhen Liu, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Théa Ragon, Seismological Laboratory, California Institute of Technology, United States; David Bekaert, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Mark Simons, Seismological Laboratory, California Institute of Technology, United States</i>	

WE3.O-7: ADVANCED FLOOD MONITORING AND PREDICTION FOR DISASTER RISK REDUCTION AND RESILIENT INFRASTRUCTURE

WE3.O-7.1: SAR-BASED FLOOD MAPPING, WHERE WE ARE AND FUTURE CHALLENGES 884
Marco Chini, Ramona Pelich, Yu Li, Renaud Hostache, Jie Zhao, Concetta Di Mauro, Patrick Matgen, Luxembourg Institute of Science and Technology, Luxembourg

WE3.O-7.2: AUTOMATIC FLOOD EXTENT AND DEPTH ESTIMATION USING ALOS-2 AND FLOOD SIMULATION DATA 887
Masato Ohki, Kosuke Yamamoto, Takeo Tadono, Japan Aerospace Exploration Agency (JAXA), Japan

WE3.O-7.3: HOW CAN OBJECTS MAKE A DIFFERENCE FOR SAR-BASED FLOOD MAPPING AND MONITORING? 889
Frieke Van Coillie, Lisa Landuyt, Bos Debusscher, Ghent University, Belgium

WE3.O-7.4: MONITORING WEATHER-RELATED HAZARDS USING THE HYDOSAR SERVICE: APPLICATION TO THE 2020 SOUTH ASIA MONSOON SEASON 893
Franz J. Meyer, University of Alaska Fairbanks, United States; Lori Schultz, Jordan Bell, Andrew L Molthan, NASA Marshall Space Flight Center, United States; Batuhan Osmanoglu, MinJeong Jo, NASA Goddard Space Flight Center, United States; Eric Lundell, University of Alaska Fairbanks, United States; Bruce Chapman, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Brooke Kubby, University of Alaska Fairbanks, United States; Thomas Meyer, University of Alaska-Fairbanks, United States; Alexander Lewandowski, University of Alaska Fairbanks, United States

WE3.O-7.5: MULTI-PERSPECTIVE FRAMEWORK OF DIGITAL INFRASTRUCTURE UTILIZING EO DATA 897
Young-Joo Kwak, National Institute for Land and Infrastructure Management (NILIM), Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Japan

WE3.O-8: NOVEL OBJECT DETECTION METHODS FOR PASSIVE AND ACTIVE RS DATA

WE3.O-8.1: DIRECT ORIENTED SHIP LOCALIZATION REGRESSION IN REMOTE SENSING IMAGERY WITH CURRICULUM LEARNING 2584
Weiwei Guo, Tongji University, China; Huiyuan Chen, Zenghui Zhang, Shanghai Jiao Tong University, China; YanHua Zhang, Tianjin University of Science and Technology, China; Wenxian Yu, Shanghai Jiao Tong University, China

WE3.O-8.2: MULTI-SCALE FEEDBACK CONVOLUTIONAL SPARSE CODING NETWORK FOR SALIENCY DETECTION IN REMOTE SENSING IMAGES 2588
Zhou Huang, Huai-Xin Chen, University of Electronic Science and Technology of China, China; Cheng-Wu Bai, Li-Li Yan, Sichuan Provincial Administration of Production Safety, China

WE3.O-8.3: MULTI-SCALE BIDIRECTIONAL FEATURE FUSION FOR ONE-STAGE ORIENTED OBJECT DETECTION IN AERIAL IMAGES 2592
Lei Pei, Gong Cheng, Xuxiang Sun, Qingyang Li, Meili Zhang, Shicheng Miao, Northwestern Polytechnical University, China

WE3.O-8.4: SEMI-SUPERVISED OBJECT DETECTION FRAMEWORK WITH OBJECT FIRST MIXUP FOR REMOTE SENSING IMAGES 2596
Ziyu Zhang, Zhixi Feng, Shuyuan Yang, Xidian University, China

WE3.O-8.6: YOLORS-LITE: A LIGHTWEIGHT CNN FOR REAL-TIME OBJECT DETECTION IN REMOTE-SENSING 2604
Manish Sharma, Panos Markopoulos, Eli Saber, Rochester Institute of Technology, United States

WE3.O-9: REMOTE SENSING IMAGE CLASSIFICATION USING MACHINE LEARNING II

WE3.O-9.1: QUANTUM SUPPORT VECTOR MACHINE ALGORITHMS FOR REMOTE SENSING DATA CLASSIFICATION 2608

Amer Delilbasic, University of Trento, Italy; Gabriele Cavallaro, Madita Willsch, Forschungszentrum Jülich, Germany; Farid Melgani, University of Trento, Italy; Morris Riedel, University of Iceland, Iceland; Kristel Michielsen, Forschungszentrum Jülich, Germany

WE3.O-9.3: GENETIC ALGORITHM FOR IMPROVED TRANSFER LEARNING THROUGH BAGGING COLOR-ADJUSTED MODELS 2612

Gabriel Dax, Moritz Laass, Martin Werner, Technical University of Munich, Germany

WE3.O-9.4: GENERATION OF ATTRIBUTES FOR HIGHLY IMBALANCED LAND COVER DATA 2616

Dominik Koßmann, Thorsten Wilhelm, Gernot A. Fink, TU Dortmund University, Germany

WE3.O-9.5: EARTH OBSERVATION IMAGE SEMANTICS: LATENT DIRICHLET ALLOCATION BASED INFORMATION DISCOVERY 2620

Reza Mohammadi Asiyabi, Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB), Romania; Mihai Datcu, Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB) and Earth Observation Center (EOC), German Aerospace Center (DLR), Romania

WE3.O-9.6: AUTOMATING SEA ICE CHARACTERISATION FROM X-BAND SAR WITH CO-LOCATED AIRBORNE LASER SCANNER DATA OBTAINED DURING THE MOSAIC EXPEDITION 2624

Karl Kortum, University of Bremen / German Aerospace Center (DLR), Germany; Suman Singha, German Aerospace Center (DLR), Germany; Gunnar Spreen, University of Bremen, Germany; Stefan Hendricks, Alfred-Wegener-Institute Helmholtz Center for Polar and Marine Research (AWI), Germany

WE3.O-10: ADVANCES IN MONITORING AND ASSESSMENT OF WILDFIRES USING REMOTE SENSING AND MODELING

WE3.O-10.1: CURRENT STATE OF THE ART IN SEASONAL WILDFIRE FORECASTING 899

Antonello Provenzale, National Research Council (CNR), Italy; Marco Turco, University of Murcia, Spain

WE3.O-10.4: COMMUNITY CHALLENGES AND PROSPECTS IN THE OPERATIONAL FORECASTING OF EXTREME BIOMASS BURNING SMOKE 903

Jeffrey Reid, US Naval Research Laboratory, United States; Angela Benedetti, European Centre for Medium-Range Weather Forecasts (ECMWF), United States; Peter Colarco, NASA Goddard Space Flight Center, United States; Thomas Eck, USRA, NASA Goddard Space Flight Center, United States; Amanda Gumber, University of Wisconsin, United States; Brent Holben, NASA Goddard Space Flight Center, United States; Robert Holz, University of Wisconsin, United States; Edward Hyer, US Naval Research Laboratory, United States; Willem Marais, University of Wisconsin, United States; Jeff Mcqueen, National Oceanic and Atmospheric Administration (NOAA), United States; Steven Miller, Colorado State University, United States; Min Oo, University of Wisconsin, United States; Juli Rubin, US Naval Research Laboratory, United States; Taichu Tanaka, Japanese Meteorological Agency, Japan; Jun Wang, University of Iowa, United States; Peng Xian, US Naval Research Laboratory, United States; Jianglong Zhang, University of North Dakota, United States

WE3.O-10.5: AN OVERVIEW OF THE UNB RESEARCH ON FUEL MOISTURE ESTIMATION USING OPTICAL, THERMAL INFRARED, AND RADAR IMAGERY OVER BOREAL FORESTS 907

Brigitte Leblon, University of New Brunswick, Canada

WE3.O-11: ADVANCES OF SATELLITE EARTH OBSERVATION TECHNOLOGIES FOR DISASTER RISK MANAGEMENT

WE3.O-11.1: KNOWLEDGE GENERATION USING EARTH OBSERVATIONS TO SUPPORT SUSTAINABLE DEVELOPMENT 915

Argyro Kavvada, National Aeronautics and Space Administration (NASA), United States

WE3.O-11.3: INSAR APPLIED TO VOLCANO HAZARDS 918

Paul Lundgren, M. Grace Bato, NASA Jet Propulsion Laboratory, California Institute of Technology, United States

WE3.O-11.4: SATELLITE-BASED DETECTION OF VOLCANIC PLUMES: SINERGY BETWEEN THERMAL INFRARED AND MILLIMETER WAVE RADIOMETRIC DATA DURING THE 2014 KELUD EVENT 922

Frank S. Marzano, Sapienza Università di Roma, Italy; Luigi Mereu, Sapienza University of Rome, Italy; Simona Scollo, Luca Merucci, Stefano Corradini, INGV (Istituto Naz. Geofisica e Vulcanologia), Italy

WE3.O-11.5: GROUND DISPLACEMENT EVALUATION OF THE ISCHIA ISLAND (PHLEGRAEAN VOLCANIC DISTRICT, ITALY) APPLYING ADVANCED SATELLITE SAR INTERFEROMETRY TECHNIQUES 926

Lisa Beccaro, Cristiano Tolomei, Claudia Spinetti, Marina Bisson, Laura Colini, Riccardo De Ritis, Roberto Gianardi, Istituto Nazionale di Geofisica e Vulcanologia, Italy

WE3.O-11.6: EMISSIVITY BASED INDICES FOR DROUGHT AND FOREST FIRE 930

Guido Masiello, Carmine Serio, Sara Venafrà, Angela Cersosimo, Pietro Mastro, Francesco Falabella, Pamela Pasquariello, University of Basilicata, Italy

WE3.O-12: PANSHARPENING AND IMAGE ENHANCEMENT

WE3.O-12.1: LEARN TO HAVE COLOR AND DETAIL: AN END-TO-END PANCHROMATIC IMAGE ENHANCEMENT 2628

Minjian Zhou, Queensland University of Technology, Australia; Yuxuan Wang, Guangming Wu, Ryosuke Shibasaki, University of Tokyo, Japan

WE3.O-12.2: WEIGHTED SHALLOW-DEEP FEATURE FUSION NETWORK FOR PANSHARPENING 2632

Zi-Rong Jin, Tian-Jing Zhang, Cheng Jin, Liang-Jian Deng, University of Electronic Science and Technology of China, China

WE3.O-12.3: JOINT IMAGE REGISTRATION AND BLUR KERNEL LEARNING FOR PANSHARPENING 2636

Anjing Guo, Yue Wu, Shutao Li, Hunan University, China

WE3.O-12.4: A GRAPH-BASED TEXTURAL SUPERPIXEL SEGMENTATION METHOD FOR PANSHARPENING APPLICATION. 2640

Hind Hallabia, LIS, GMOD, Aix Marseille Université, France; Habib Hamam, Faculty of Engineering, Université de Moncton, Canada

WE3.O-12.5: CROSS RESIDUAL FUSION FOR PANSHARPENING 2644

Meziane Iftene, Agence Spatiale Algérienne, Algeria; Mohammed El Amin Larabi, Algerian Space Agency, Algeria; Mohammed Ilyas Tchenar, Beihang University, China; Khadidja Bakhti, Centre des Techniques Spatiales, Algeria

WE3.O-12.6: FUSION OF PANCHROMATIC AND HYPERSPECTRAL IMAGES IN THE REFLECTIVE DOMAIN BY A COMBINATORIAL APPROACH AND APPLICATION TO URBAN LANDSCAPE 2648

Yohann Constans, Sophie Fabre, ONERA, France; Hervé Carfantan, IRAP, France; Michael Seymour, Vincent Crombez, Airbus Defence and Space, France; Xavier Briottet, ONERA, France; Yannick Deville, IRAP, France

WE3.O-13: ASSESSING RISKS AND UNDERSTANDING IMPACTS OF HYDRO-METEOROLOGICAL HAZARDS: THE BENEFIT OF MULTI-SOURCE REMOTE SENSING

WE3.O-13.1: DOCUMENTING IMPACTS OF HYDRO-METEOROLOGICAL EVENTS USING 934 EARTH OBSERVATION

Silvia Maria Alfieri, Fatemeh Foroughnia, Adriaan van Natijne, Ali Mousivand, Roderik Lindenbergh, Delft University of Technology, Netherlands; Federico Porcu, Alma Mater Studiorum, Università di Bologna, Italy; Thomas Zieher, Oesterreichische Akademie Der Wissenschaften, Austria; Beatrice Pulvirulenti, Alma Mater Studiorum, Università di Bologna, Italy; Jingxin Yang, School of Geography and Remote Sensing, China; Massimo Menenti, Delft University of Technology, Netherlands

WE3.O-13.3: URBAN HEATWAVES AND THERMAL REMOTE SENSING..... 938 *James Voogt, University of Western Ontario, Canada*

WE3.O-13.4: INTEGRATED MONITORING OF A SLOWLY MOVING LANDSLIDE BASED ON 942 TOTAL STATION MEASUREMENTS, MULTI-TEMPORAL TERRESTRIAL LASER SCANNING AND SPACE-BORNE INTERFEROMETRIC SYNTHETIC APERTURE RADAR

Thomas Zieher, Jan Pfeiffer, Austrian Academy of Sciences, Austria; Adriaan van Natijne, Roderik Lindenbergh, Delft University of Technology, Netherlands

WE3.O-13.5: BENEFIT OF MULTISOURCE REMOTE SENSING FOR FLOOD 946 MONITORING: ACTUAL STATUS AND PERSPECTIVES

Hervé Yesou, Nadine Tholey, Université de Strasbourg, France; Jean-François Crétaux, CNES, France; Stephen Clandillon, Université de Strasbourg, France

WE3.O-14: ICE SHEETS AND GLACIERS III

WE3.O-14.1: ULTRAWIDEBAND PROPAGATION EXPERIMENT THROUGH THE ANTARTICA 5517 FIRN AT THE CONCORDIA STATION IN THE 0.4 - 2 GHZ FREQUENCY RANGE

Alberto Toccafondi, Federico Puggelli, Matteo Albani, University of Siena, Italy; Ghislain Picard, Institut des Géosciences de l'Environnement IGE (CNRS), France; Francesco Montomoli, Marco Brogioni, Giovanni Macelloni, IFAC-CNR, Italy

WE3.O-14.2: RECENT SURGE OF THE SOUTH RIMO GLACIER, KARAKORAM: DYNAMICS 5520 CHARACTERIZATION USING SAR DATA

Shiyi Li, Silvan Leinss, Philipp Bernhard, Irena Hajnsek, Swiss Federal Institute of Technology in Zurich, Switzerland

WE3.O-14.3: CONSTRAINING ICE SHEET BASAL SLIDING AND HORIZONTAL VELOCITY 5524 PROFILES USING A STATIONARY PHASE SENSITIVE RADAR SOUNDER

Paul T Summers, Dustin Schroeder, Stanford University, United States; Matthew R Siegfried, Colorado School of Mines, United States

WE3.O-14.4: ANTARCTICA ICE SHEET MELT DETECTION USING A MACHINE LEARNING 5528 ALGORITHM BASED ON SMAP MICROWAVE RADIOMETRY

Seyed Mohammad Mousavi, Andreas Colliander, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Julie Miller, Earth Science and Observation Center, University of Colorado, Boulder, United States; John Kimball, Numerical Terradynamic Simulation Group, University of Montana, Missoula, United States

WE3.O-14.5: LIMITS ON ANTARCTIC ICE SHEET TEMPERATURE ESTIMATION USING 0.5-2 5532 GHZ ULTRA-WIDEBAND RADIOMETRY

Caglar Yardim, Mark Andrews, Joel Johnson, Kenneth Jezek, Ohio State University, United States; Marion Leduc-Leballeur, Giovanni Macelloni, Marco Brogioni, CNR, United States

WE3.O-14.6: A NEW GEOPHYSICAL MODEL BASED ALGORITHM TO DETECT MELT 5536 EVENTS OVER THE ANTRACTIC ICE SHEET USING SMAP MICROWAVE RADIOMETRY

Seyed Mohammad Mousavi, Andreas Colliander, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Julie Miller, Earth Science and Observation Center, University of Colorado, Boulder, United States; John Kimball, Numerical Terradynamic Simulation Group, University of Montana, Missoula, United States

WE3.O-15: REMOTE SENSING FOR ENVIRONMENTAL POLICY AND SUPPORT II

WE3.O-15.1: BLINDED BY THE LIGHT: MONITORING LOCAL ECONOMIC DEVELOPMENT OVER TIME WITH NIGHTLIGHT EMISSIONS 5708

Lukas Kondmann, German Aerospace Center & Technical University of Munich, Germany; Hannes Taubenböck, German Aerospace Center & University of Würzburg, Germany; Xiao Xiang Zhu, German Aerospace Center & Technical University of Munich, Germany

WE3.O-15.2: MONITORING PELAGIC FISHING ACTIVITY IN THE NORTHEAST ATLANTIC 5712

Patrícia Gaspar, Victor Henriques, Paulo Fonseca, Portuguese Institute for Sea and Atmosphere, Portugal; Helena Loś, Deimos Engenharia, Portugal; Marc Cloarec, Deimos Space, Spain; Nuno Grosso, Raquel Silva, Antonio Jorge Silva, Deimos Engenharia, Portugal; Aida Campos, Portuguese Institute for Sea and Atmosphere, Portugal

WE3.O-15.3: ASSESSMENT OF URBAN LAND-COVER CLASSIFICATION : COMPARISON BETWEEN PIXEL AND OBJECT SCALES 5716

Alexia Cornic, Kenji Ose, Dino Ienco, Eric Barbe, Remi Cresson, INRAE, UMR TETIS, Univ. Montpellier, France

WE3.O-15.4: AN ACTIVE LEARNING TOOL FOR THE GENERATION OF EARTH OBSERVATION IMAGE BENCHMARKS 5720

Wei Yao, Octavian Dumitru, Mihai Datcu, German Aerospace Center (DLR), Germany

WE3.O-15.5: VALUING RADIOMETRIC QUALITY OF REMOTE SENSING DATA FOR DECISIONS 5724

Afreen Siddiqi, Sheila Baber, Olivier de Weck, Massachusetts Institute of Technology, United States

WE3.O-15.6: REMOTE SENSING AND DEEP LEARNING FOR ENVIRONMENTAL POLICY SUPPORT: FROM THEORY TO PRACTICE 5728

Stien Heremans, Katholic University Leuven/Research Institute Nature and Forest, Belgium; Francis Turkelboom, Research Institute Nature and Forest, Belgium; Margot Verhulst, Matthew Blaschko, Ben Somers, Katholic University Leuven, Belgium

WE3.O-16: NOVEL MAPPING SCHEMES OF FORESTS

WE3.O-16.1: SLU FOREST MAP - MAPPING SWEDISH FORESTS SINCE YEAR 2000 6056

Jörgen Wallerman, Swedish University of Agricultural Sciences, Sweden; Peder Axensten, Mikael Egberth, Swedish University of Agricultural Sciences, Sweden; Jonas Jonzén, Emma Sandström, Johan E S Fransson, Mats Nilsson, Swedish University of Agricultural Sciences, Sweden

WE3.O-16.2: A BAND GROUPING BASED APPROACH FOR PHENOTYPE-CLASS MAPPING OF TREE GENOTYPES USING SPECTRO-TEMPORAL INFORMATION IN HYPERSPECTRAL TIME-SERIES UAV DATA. 6060

Aravind Harikumar, Siyu Wang, Ingo Ensminger, University of Toronto Mississauga, Canada

WE3.O-16.3: COMPARISON OF COINCIDENT FOREST CANOPY MEASUREMENTS FROM AIRBORNE LIDAR AND ULTRA-WIDEBAND MICROWAVE RADAR 6064

Jilu Li, University of Kansas, United States; Chris Larsen, University of Alaska Fairbanks, United States; Fernando Rodriguez-Morales, Emily Arnold, Carl Leuschen, John Paden, Jianguang Shang, Daniel Gomez-Garcia, University of Kansas, United States

WE3.O-16.4: NON-INTRUSIVE IN-SITU PERMITTIVITY MEASUREMENTS DEDICATED TO THE DEVELOPMENT OF A P AND L BAND DIELECTRIC MODEL OF WOOD 6068

Francois Demontoux, Mehdi Gati, Mohamed El Boudali, Bordeaux University - IMS Laboratory, France; Ludovic Villard, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Jean-Pierre Wigneron, INRAE, UMR 1391 ISPA, France; Thierry Koleck, Arnaud Mialon, Le Toan Thuy, Kerr Yann, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France

WE3.O-16.5: MANGROVE SPECIES MAPPING AND ABOVE-GROUND BIOMASS ESTIMATION 6072 IN SURINAME BASED ON FUSED SENTINEL-1 AND SENTINEL-2 IMAGERY AND NATIONAL FOREST INVENTORY DATA	6072
<i>Jasper Feyen, University of Ghent, Belgium; Gianni Wip, Sarah Crabbe, Foundation for Forest Management and Production Control, Suriname; Verginia Wortel, Centre for Agricultural Research in Suriname (CELOS), Suriname; Suci Puspita Sari, Frieke Van Coillie, University of Ghent, Belgium</i>	
WE3.O-16.6: UGV-BASED MAPPING OF FOREST TRANSMISSIVITY USING GPS 6076 MEASUREMENTS	6076
<i>Mehmet Kurum, Md Mehedi Farhad, Mississippi State University, United States</i>	
 WE3.O-17: CROP MAPPING AND MONITORING USING SAR II	
WE3.O-17.1: CROP YIELD FORECAST AT FIELD SCALE USING DEEP NEURAL NETWORK 6080 ALGORITHM	6080
<i>Mehdi Hosseini, Inbal Becker-Reshef, Ritvik Sahajpal, University of Maryland College Park, United States; Lucas Fontana, Pedro Lafluf, Guillermo Leale, SIMA, Argentina; Estefania Puricelli, Sergii Skakun, University of Maryland College Park, United States; Mauricio Varela, SIMA, Argentina</i>	
WE3.O-17.2: THE IMPORTANCE OF OVERPASS TIME IN AGRICULTURAL APPLICATIONS OF 6084 RADAR	6084
<i>Saeed Khabbazan, Paul C. Vermunt, Susan C. Steele-Dunne, Delft University of Technology, Netherlands; Jasmeet Judge, University of Florida, United States</i>	
WE3.O-17.3: IRRIGATION WATER RETRIEVAL THROUGH DATA ASSIMILATION OF SURFACE 6088 SOIL MOISTURE INTO THE FAO-56 APPROACH IN THE SOUTH MEDITERRANEAN REGION	6088
<i>Nadia Ouaadi, Cadi Ayyad University, Morocco; Lionel Jarlan, University of Toulouse, France; Saïd Khabba, Jamal Ezzahar, Cadi Ayyad University, Morocco; Olivier Merlin, University of Toulouse, France</i>	
WE3.O-17.4: SARSENSE: ANALYZING AIR- AND SPACE-BORNE C- AND L-BAND SAR 6092 BACKSCATTERING SIGNALS TO CHANGES IN SOIL AND PLANT PARAMETERS OF CROPS	6092
<i>David Mengen, Carsten Montzka, Forschungszentrum Jülich, Germany; Thomas Jagdhuber, Anke Fluhrer, German Aerospace Center (DLR), Germany; Cosimo Brogi, Stephani Baum, Forschungszentrum Jülich, Germany; Dirk Schüttemeyer, European Space Agency (ESA), Netherlands; Bagher Bayat, Heye Bogena, Forschungszentrum Jülich, Germany; Alex Coccia, Gerard Masalias, Metasensing BV, Netherlands; Verena Trinkel, Jannis Jakobi, François Jonard, Yueling Ma, Forschungszentrum Jülich, Germany; Francesco Mattia, Davide Palmisano, Consiglio Nazionale delle Ricerche (CNR), Italy; Uwe Rascher, Forschungszentrum Jülich, Germany; Giuseppe Satalino, Consiglio Nazionale delle Ricerche (CNR), Italy; Maike Schumacher, Aalborg University, Denmark; Christian Koyama, Tokyo Denki University, Japan; Marius Schmidt, Harry Vereecken, Forschungszentrum Jülich, Germany</i>	
WE3.O-17.5: PRINCIPAL COMPONENT ANALYSIS BASED POLYNOMIAL CHAOS EXPANSION 6096 REGRESSION OF LEAF AREA INDEX FROM POLSAR IMAGERY	6096
<i>Mehmet Furkan Celik, Esra Erten, Istanbul Technical University, Turkey</i>	
 WE3.O-18: EVALUATION OF SATELLITE SOIL MOISTURE PRODUCTS	
WE3.O-18.1: HINDCAST OF SOIL MOISTURE USING SMAP, LAND SURFACE MODEL 6100 OUTPUT DATA, AND REGRESSION METHODS	6100
<i>Maciel Zortea, Miguel Paredes, Leonardo S. A. Martins, IBM Research, Brazil</i>	
WE3.O-18.2: IMPLEMENTATION AND ANALYSIS OF THE DUAL-CHANNEL ALGORITHM FOR 6104 THE RETRIEVAL OF SOIL MOISTURE AND VEGETATION OPTICAL DEPTH FOR SMAP	6104
<i>Julian Chaubell, Simon Yueh, Steven Chan, Scott Dunbar, Andreas Colliander, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Dara Entekhabi, Massachusetts Institute of Technology, United States; Fan Chen, USDA Agricultural Research Service, United States; Rajat Bindlish, Peggy O'Neill, NASA Goddard Space Flight Center, United States</i>	

**WE3.O-18.3: GLOBAL LONG-TERM BRIGHTNESS TEMPERATURE RECORD FROM 6108
L-BAND SMOS AND SMAP OBSERVATIONS**

Xiaojun Li, Jean-Pierre Wigneron, ISPA/INRAE, France; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Lei Fan, Chongqing Jinpo Mountain Karst Ecosystem National Observation and Research Station, School of Geographical Sciences, Southwest University, France; Gabriëlle De Lannoy, KU Leuven, France; Alexandra G. Konings, Stanford University, France; Xiangzhuo Liu, Mengjia Wang, ISAP/INRAE, France; Roberto Fernandez-Moran, University of Valencia, Spain; Amen Al-Yaari, Sorbonne Université, UMR 7619 METIS, France; Hongliang Ma, State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing, Wuhan University, China; Zanning Xing, Chongqing Jinpo Mountain Karst Ecosystem National Observation and Research Station, School of Geographical Sciences, Southwest University, China; Christophe Moisy, ISPA/INRAE, France

**WE3.O-18.5: ANALYZING THE RADIO FREQUENCY INTERFERENCE ENVIRONMENT AT 6116
CAL/VAL SITE LOCATIONS FOR THE SOIL MOISTURE ACTIVE/PASSIVE (SMAP) MISSION**

Alexandra Bringer, The Ohio State University, United States; Andreas Colliander, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Joel Johnson, The Ohio State University, United States; Simon Yueh, Sidharth Misra, NASA Jet Propulsion Laboratory, California Institute of Technology, United States

WE3.O-19: REMOTE SENSING APPLICATIONS IN INLAND WATERS II

**WE3.O-19.1: MAPPING SURFACE WATER EXTENT IN MAINLAND ALASKA USING VIIRS 6120
SURFACE REFLECTANCE**

Wenlong Feng, Huiran Jin, New Jersey Institute of Technology, United States

**WE3.O-19.2: MAPPING FLUVIAL INUNDATION EXTENTS WITH GRAPH SIGNAL FILTERING 6124
OF RIVER DEPTHS DETERMINED FROM UNSUPERVISED CLUSTERING OF SYNTHETIC
APERTURE RADAR IMAGERY**

Fernando Aristizabal, Lynker Technologies, United States; Jasmeet Judge, University of Florida, United States

**WE3.O-19.3: ESTIMATION OF LAKE HEIGHTS FROM SENTINEL-3 SAR MODE THROUGH 6128
NUMERICAL SIMULATIONS**

François Boy, CNES, France; Jean-François Crétaux, CNES - LEGOS/OMP, France; Malik Boussaroque, Céline Tison, CNES, France

**WE3.O-19.4: CHARACTERIZATION OF NEAR-NADIR KA-BAND SCATTERING FROM WET 6132
SURFACES**

Jessica Fayne, University of California, Los Angeles, United States; Laurence Smith, Brown University, United States

**WE3.O-19.5: AN INNOVATIVE MAPPING OF HYDROCLIMATIC TIME SERIES OF THE 6136
NIGER WATERSHED BY INVERTING GRACE KBR RANGES ON A BASIS OF SURFACE SLEPIAN
FUNCTIONS**

Guillaume Ramillien, Centre National de la Recherche Scientifique (CNRS), France; José Darrozes, Lucia Seoane, Université Paul Sabatier Toulouse (UPS), France

**WE4.O-1: ADVANCES IN GNSS-R FOR RETRIEVAL OF INLAND WATER EXTENT AND
WETLAND CHARACTERIZATION**

WE4.O-1.1: STATE OF THE ART IN GNSS-R CAPABILITIES OVER INLAND WATERS 950

Cinzia Zuffada, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Brandi Downs, ElectroScience Laboratory, The Ohio State University, United States; Iliara Mara Russo, University of Sannio, Italy; Eric Loria, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Andrew O'Brien, ElectroScience Laboratory, The Ohio State University, United States; Carmela Galdi, Maurizio di Bisceglie, University of Sannio, Italy; Valery Zavorotny, CIRES/The University of Colorado Boulder (Ret.), United States; Marco Lavalle, Mary Morris, NASA Jet Propulsion Laboratory, California Institute of Technology, United States

WE4.O-1.3: RESOLVING INLAND WATERWAYS WITH CYGNSS	954
<i>Christopher Ruf, University of Michigan, United States; Clara Chew, University Corporation for Atmospheric Research, United States; Cynthia Gerlein-Safdi, Lawrence Berkeley National Laboratory, United States; April Warnock, SRI International, United States</i>	
WE4.O-1.4: SCATTERING MODELS FOR GNSS-R IN INLAND WATERS	958
<i>Valery Zavorotny, University of Colorado Boulder, United States; Eric Loria, California Institute of Technology, United States</i>	
WE4.O-1.5: OVERCOMING THE CURRENT LIMITATIONS OF GNSS-R OBSERVATION OF WETLANDS AND SURFACE WATER	962
<i>Andrew O'Brien, The Ohio State University, United States; Eric Loria, NASA Jet Propulsion Laboratory, California Institute of Technology, United States</i>	
WE4.O-1.6: COMPARISON OF SAR AND CYGNSS SURFACE WATER EXTENT METRICS OVER THE YUCATAN LAKE WETLAND SITE	966
<i>Bruce Chapman, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Ilaria Mara Russo, Carmela Galdi, Università degli Studi del Sannio, Italy; Mary Morris, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Maurizio de Bisceglie, Università degli Studi del Sannio, Italy; Cinzia Zuffada, Marco Lavallo, NASA Jet Propulsion Laboratory, California Institute of Technology, United States</i>	
WE4.O-2: ADVANCES IN MONITORING ACTIVE VOLCANOES	
WE4.O-2.1: REMOTE SENSING OF VOLCANOES AT LOW AND HIGH SPATIAL RESOLUTION: A HISTORICAL PERSPECTIVE AND FUTURE OPPORTUNITIES	970
<i>Robert Wright, University of Hawaii at Manoa, United States</i>	
WE4.O-2.3: ADVANCES IN UV SATELLITE MONITORING OF VOLCANIC EMISSIONS.....	973
<i>Simon Carn, Michigan Technological University, United States; Nikolay Krotkov, NASA Goddard Space Flight Center, United States; Nicholas Theys, Royal Belgian Institute for Space Aeronomy, Belgium; Can Li, University of Maryland, United States</i>	
WE4.O-2.4: VOLCANO MONITORING WITH GEODETIC AND THERMAL REMOTE SENSING TIME SERIES	977
<i>Paul Lundgren, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Társilo Girona, University of Alaska Fairbanks, United States; M. Grace Bato, NASA Jet Propulsion Laboratory, California Institute of Technology, United States</i>	
WE4.O-2.5: OPERATIONALIZING GLOBAL VOLCANO MONITORING USING HIGH RESOLUTION ORBITAL REMOTE SENSING	980
<i>Michael Ramsey, University of Pittsburgh, United States</i>	
WE4.O-2.6: SPACE MISSIONS, DRONES AND CAMERAS IN SITU FOR THERMAL ANALYSIS AND GAS RETRIEVAL IN VOLCANIC AREAS	984
<i>Maria Fabrizia Buongiorno, Malvina Silvestri, Vito Romaniello, Enrica Marotta, Teresa Caputo, Massimo Musacchio, Federico Rabuffi, Eliana Bellucci Sessa, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Jorge Andres Diaz, GasLAB, University of Costa Rica, Costa Rica; Gala Avvisati, Pasquale Belviso, Istituto Nazionale di Geofisica e Vulcanologia, Italy</i>	
WE4.O-3: RADIOMETER TECHNOLOGY AND CALIBRATION: RECENT ADVANCES	
WE4.O-3.3: RADIOMETER CALIBRATION FOR THE NASA TROPICS CUBESAT MISSION	992
<i>R. Vincent Leslie, William J. Blackwell, Michael DiLiberto, MIT Lincoln Laboratory, United States</i>	
WE4.O-3.4: ACCURACY: A NOVEL APPROACH TO CALIBRATE CUBESAT RADIOMETER CONSTELLATIONS	996
<i>John Bradburn, Henry Ashley, Mustafa Aksoy, University at Albany, State University of New York, United States</i>	

WE4.O-3.5: ARRAY-FED MICROWAVE RADIOMETER	1000
<i>Jeffrey Piepmeier, Thomas Holmes, Rafael Rincon, NASA Goddard Space Flight Center, United States; Ali Mahnad, Science Systems and Applications, Inc., United States; Jinzheng Peng, University Space Research Associates, United States; Paul Racette, Giovanni DeAmici, NASA Goddard Space Flight Center, United States; Jared Jordan, Will Stacey, Cubic Nuvotronics, United States</i>	
WE4.O-3.6: LESSONS LEARNED FROM SMAP RADIOMETER PRE-/POST-LAUNCH CALIBRATION	1003
<i>Jinzheng Peng, NASA Goddard Space Flight Center / Universities Space Research Association, United States; Jeffrey Piepmeier, NASA Goddard Space Flight Center, United States; Sidharth Misra, NASA Jet Propulsion Laboratory, United States; Derek Hudson, NASA Goddard Space Flight Center, United States; Priscilla Mohammed, NASA Goddard Space Flight Center / Morgan State University, United States; Giovanni De Amici, NASA Goddard Space Flight Center, United States; Emmanuel Dinnat, NASA Goddard Space Flight Center / Chapman University, United States; David Le Vine, NASA Goddard Space Flight Center, United States; Simon Yueh, NASA Jet Propulsion Laboratory, United States; Thomas Meissner, Remote Sensing Systems, United States</i>	
WE4.O-4: RESEARCH CHALLENGES AND RECENT ADVANCES FOR TROPICAL FOREST MONITORING	
WE4.O-4.1: RESEARCH AND DEVELOPMENT NEEDS FOR REDD+ AND FOREST MONITORING	1007
<i>Sarah Carter, Martin Herold, Jennifer Murrins Misiukas, Wageningen University, Netherlands</i>	
WE4.O-4.3: PERFORMANCE ASSESSMENT OF RECENT TROPICAL FOREST MONITORING PRODUCTS FOR REDD+ OPERATIONAL SERVICES	1011
<i>Baudouin Desclee, Joint Research Center, European Commission, Italy; Peter Navratil, GAF AG, Germany; Mathieu Decuyper, Wageningen University, Netherlands; Hugh Eva, Frederic Achard, Joint Research Center, European Commission, Italy</i>	
WE4.O-4.4: ASSESSING THE CAUSES OF TROPICAL FOREST DEGRADATION USING LANDSAT TIME SERIES: A CASE STUDY IN THE BRAZILIAN AMAZON	1015
<i>Julie Betbeder, CIRAD, France; Damien Arvor, CNRS, France; Lilian Blanc, Guillaume Cornu, Clément Bourgoïn, Renan Le Roux, Audrey Mercier, Plinio Sist, CIRAD, France; Lucas Mazzei, Embrapa Amazônia Oriental, Brazil; Christian Brenez, Tropical Agricultural Research and Higher Education Center (CATIE), Costa Rica; H��l��ne Dessard, Isabelle Tritsch, Val��ry Gond, CIRAD, France</i>	
WE4.O-4.5: FOREST DEGRADATION DERIVED BY A NEWLY DEVELOPED SENTINEL-1 CHANGE DETECTION APPROACH	1019
<i>Andreas Langner, Silvia Carboni, European Commission, Joint Research Centre, Italy</i>	
WE4.O-5: GROUND-BASED MICROWAVE TECHNIQUES FOR SNOWPACK MONITORING II	
WE4.O-5.1: RETRIEVAL OF DIELECTRIC PROPERTIES OF SOFT MATERIALS USING A LOW COST FMCW 24 GHZ RADAR: INVESTIGATING ITS USE AS SNOWPACK DENSITY PROFILER	1027
<i>Pedro F. Esp��n-L��pez, Guido Luzi, Riccardo Palam��, CTTC, Spain</i>	
WE4.O-5.3: SNOWPACK REMOTE SENSING USING WIDEBAND LONG-WAVELENGTH MICROWAVE RADIOMETRY	1031
<i>Maryam Salim, Roger De Roo, University of Michigan, United States; Mark Andrews, Joel Johnson, Alexandra Bringer, The Ohio State University, United States; Kamal Sarabandi, University of Michigan, United States</i>	
WE4.O-5.4: SNOW WATER EQUIVALENT EVOLUTION DURING THE 2019/2020 WINTER PERIOD IN AEMET-FORMIGAL TEST SITE USING A SFCW RADAR	1035
<i>Rafael Alonso, Jos�� Mar��a Garc��a del Pozo, University of Zaragoza, Spain; Samuel T. Buis��n, Agencia Estatal de Meteorolog��a (AEMet), Spain; Jos�� Adolfo ��lvarez, Confederaci��n Hidrogr��fica del Ebro, Spain</i>	

WE4.O-5.5: SHIELDING OF TRI-PATCH ANTENNA USING 3D PRINTED COMPOSITE	1039
CARBON/PLA ABSORBER FOR ULTRA WIDEBAND SNOW RADAR SYSTEMS	
<i>Kristian Gjertsen Kjelgård, Tor Sverre Lande, University of Oslo, Norway</i>	
WE4.O-5.6: IDENTIFICATION OF BEDROCK TOPOGRAPHY-RELATED ICE FRACTURES IN	1043
THE PLANPINCIEUX GLACIER USING HELICOPTER-BORNE GPR AND DTM ANALYSIS	
<i>Niccolò Dematteis, Research Institute for Hydro-geological Protection, Italian National Research Council, Italy;</i>	
<i>Fabrizio Troilo, Safe Mountain Foundation, Italy; Melchior Grab, Hansruedi Maurer, ETH Zurich, Switzerland;</i>	
<i>Daniele Giordan, Research Institute for Hydro-geological Protection, Italian National Research Council, Italy</i>	
WE4.O-6: COPERNICUS SAR MISSIONS IN C- AND L- BAND: STATUS, EVOLUTION AND	
CONTRIBUTION TO ADVANCED MONITORING AND ASSESSMENT OF NATURAL DISASTERS	
II	
WE4.O-6.1: STATUS AND EVOLUTION OF SENTINEL-1 MISSION	1047
<i>Pierre Potin, European Space Agency (ESA), Italy</i>	
WE4.O-6.3: SENTINEL-1 MISSION PERFORMANCE AND EVOLUTION OF DATA PRODUCTS	1051
<i>Nuno Miranda, European Space Agency (ESA), Italy; Riccardo Piantanida, Andrea Recchia, Niccolò Franceschi,</i>	
<i>Aresys s.r.l., Italy; Kersten Schmidt, German Aerospace Center (DLR), Germany; Guillaume Hajduch, Pauline Vincent,</i>	
<i>CLS, France</i>	
WE4.O-6.4: THE NEW, SYSTEMATIC GLOBAL FLOOD MONITORING PRODUCT OF THE	1053
COPERNICUS EMERGENCY MANAGEMENT SERVICE	
<i>Peter Salamon, Niall McCormick, European Commission, Joint Research Centre, Italy; Christopher Reimer, Tom</i>	
<i>Clarke, EODC Earth Observation Data Centre for Water Resources Monitoring GmbH, Austria; Bernhard Bauer-</i>	
<i>Marschallinger, Wolfgang Wagner, Technische Universität Wien, Austria; Sandro Martinis, Candace Chow,</i>	
<i>Christian Böhnke, German Aerospace Center (DLR), Germany; Patrick Matgen, Marco Chini, Renaud Hostache,</i>	
<i>Luxembourg Institute of Science and Technology, Luxembourg; Luca Molini, Elisabetta Fiori, Centro Internazionale</i>	
<i>in Monitoraggio Ambientale – Fondazione CIMA, Italy; Andreas Walli, GeoVille Information Systems and Data</i>	
<i>Processing GmbH, Austria</i>	
WE4.O-6.5: CYCLONE MONITORING WITH SENTINEL-1: SERVICE DEMONSTRATION	1057
<i>Romain Husson, Collecte Localisation Satellites, France; Alexis Mouche, IFREMER, France; Nicolas Longépé,</i>	
<i>European Space Agency (ESA), Italy; Olivier Archer, IFREMER, France; Gaël Goimard, Collecte Localisation Satellites,</i>	
<i>France; Emina Mamaca, IFREMER, France; Henrick Berger, François Soulat, Collecte Localisation Satellites, France;</i>	
<i>Marie-Hélène Rio, Luca Martino, Pierre Potin, European Space Agency (ESA), Italy</i>	
WE4.O-6.6: CONTINUOUS MONITORING OF ICE MOTION AND DISCHARGE OF	1061
ANTARCTIC AND GREENLAND ICE SHEETS AND OUTLET GLACIERS BY SENTINEL-1 A & B	
<i>Thomas Nagler, Jan Wuite, Ludivine Libert, Markus Hetzenecker, Lars Keuris, Helmut Rott, ENVEO IT GmbH, Austria</i>	
WE4.O-7: SENTINEL-1/2 MULTI-TEMPORAL ANALYSIS AND CHANGE DETECTION	
WE4.O-7.1: URBAN SITES CHANGE DETECTION BY MEANS OF SENTINEL-1 AND	1065
SENTINEL-2 TIME SERIES	
<i>Mattia Stasolla, Royal Military Academy, Belgium; Sophie Petit, Coraline Wyard, Gérard Swinnen, Institut</i>	
<i>Scientifique de Service Public, Belgium; Xavier Neyt, Royal Military Academy, Belgium; Eric Hallot, Institut</i>	
<i>Scientifique de Service Public, Belgium</i>	
WE4.O-7.3: ASSIMILATION OF SENTINEL-1 CHANGE DETECTION IN THE AQUACROP	1069
MODEL: CASE OF SUGARCANE	
<i>Joost Wellens, University of Liège, Belgium; Mattia Stasolla, Royal Military Academy, Belgium; Mor Talla Sall,</i>	
<i>Compagnie Sucrière Sénégalaise, Senegal; Bernard Tychon, University of Liège, Belgium; Xavier Neyt, Royal Military</i>	
<i>Academy, Belgium</i>	

WE4.O-7.4: IDENTIFICATION OF RICE FIELDS IN THE LOMBARDY REGION OF ITALY BASED ON TIME SERIES OF SENTINEL-1 DATA	1073
<i>David Marzi, Cristian Garau, Fabio Dell'Acqua, University of Pavia, Italy</i>	
WE4.O-7.5: CHANNEL-BASED ATTENTION FOR LAND COVER CLASSIFICATION USING SENTINEL-2 TIME SERIES	1077
<i>Hermann Courteille, Alexandre Benoit, Nicolas Méger, Université Savoie Mont Blanc, France; Dino Ienco, Université Montpellier INRAE, France; Abdourrahmane Atto, Université Savoie Mont Blanc, France</i>	
WE4.O-7.6: EXPLOITING MULTI-TEMPORAL INFORMATION FOR IMPROVED SPECKLE REDUCTION OF SENTINEL-1 SAR IMAGES BY DEEP LEARNING	1081
<i>Emanuele Dalsasso, Inès Meraoumia, Télécom Paris, France; Loïc Denis, Université de Lyon, Université Jean-Monnet Saint-Etienne, France; Florence Tupin, Télécom Paris, France</i>	
WE4.O-8: TECHNOLOGY AND SCIENCE ADVANCES OF SMALLSAT DISTRIBUTED SAR SYSTEMS	
WE4.O-8.1: MULTISTATIC SAR CONSTELLATIONS: AN OPPORTUNITY FOR SCALABLE SYSTEMS WITH SINGLE-PASS INTERFEROMETRIC CAPABILITIES	1085
<i>Marc Rodriguez-Cassola, Nida Sakar, Eduardo Rodrigues-Silva, Jalal Matar, Phuong Mai Nguyen Thi, Luca Dell'Amore, Mariantonietta Zonno, Pau Prats-Iraola, Gerhard Krieger, Alberto Moreira, Nico Gebert, German Aerospace Center (DLR), Germany</i>	
WE4.O-8.3: A MIMO MULTI-STATIC SAR SATELLITE FORMATION FOR HIGH RESOLUTION 3D IMAGING AT LONGER WAVELENGTHS	1086
<i>Stefano Tebaldini, Luca Flora, Fabio Rocca, Politecnico di Milano, Italy</i>	
WE4.O-8.4: DISTRIBUTED APERTURE RADAR TOMOGRAPHIC SENSORS (DARTS) TO MAP SURFACE TOPOGRAPHY AND VEGETATION STRUCTURE	1090
<i>Marco Lavalley, Ilgin Seker, NASA Jet Propulsion Laboratory, United States; James Ragan, California Institute of Technology, United States; Eric Loria, Razi Ahmed, Brian Hawkins, Samuel Prager, Duane Clark, Robert M. Beauchamp, Mark S. Haynes, Paolo Focardi, Nacer Chahat, NASA Jet Propulsion Laboratory, United States; Matthew Anderson, Kai Matsuka, Vincenzo Capuano, Soon-Jo Chung, California Institute of Technology, United States</i>	
WE4.O-8.5: FORMATION OF MIMO SAR MINI-SATELLITES: PERFORMANCE PREDICTION	1094
<i>Davide Giudici, Aresys s.r.l., Italy; Andrea Virgilio Monti-Guarnieri, Politecnico di Milano, Italy; Pietro Guccione, Daniele Mapelli, Adriano Persico, Aresys s.r.l., Italy</i>	
WE4.O-8.6: DIMENSION-ADAPTIVE IMAGING WITH A SWARMSAR OF LIGHTWEIGHT S-BAND NODES	1098
<i>Lorenzo Iannini, Ozan Dogan, Peter Hoogeboom, Paco López-Dekker, Delft University of Technology, Netherlands</i>	
WE4.O-9: PS/DS INSAR MONITORING TECHNIQUES	
WE4.O-9.1: MAXIMUM TEMPORAL BASELINE FOR INSAR TIME SERIES	2652
<i>Howard Zebker, Karissa Pepin, Stanford University, United States</i>	
WE4.O-9.2: ANALYSIS OF HETEROGENEOUS PS-INSAR DERIVED SUBSIDENCE RATES USING CATEGORIZED GIS OBJECTS - A CASE STUDY IN THE MEKONG DELTA	2655
<i>Nils Dörr, Andreas Schenk, Stefan Hinz, Karlsruhe Institute of Technology, Germany</i>	
WE4.O-9.3: TOWARDS AUTOMATIC FUNCTIONAL MODEL SPECIFICATION FOR DISTRIBUTED SCATTERERS USING T-SNE	2659
<i>Philip Conroy, Ramon F. Hanssen, Delft University of Technology, Netherlands</i>	
WE4.O-9.4: ALIASING IN INSAR AND SBAS TIME SERIES	2663
<i>Karissa Pepin, Howard Zebker, Stanford University, United States</i>	

WE4.O-9.5: AUTOMATIC DETECTION OF INSAR DEFORMATION SIGNALS USING A REALISTIC TROPOSPHERIC TURBULENCE NOISE MODEL	2667
<i>Scott Staniewicz, Jingyi Chen, University of Texas at Austin, United States</i>	
WE4.O-9.6: IMPROVEMENTS IN THE LICSAR GENERATOR OF SENTINEL-1 INTERFEROGRAMS	2671
<i>Milan Lazecky, Yasser Maghsoudi, University of Leeds, United Kingdom; Fabien Albino, University of Bristol, United Kingdom; Andy Hooper, Tim Wright, University of Leeds, United Kingdom</i>	
 WE4.O-10: SMOS TO SUPPORT SCIENCE AND SERVICES FOR THE NEXT DECADE	
WE4.O-10.1: THE FUTURE OF SMOS L-BAND RADIOMETRY IN SUPPORT OF SCIENCE AND OPERATIONAL SERVICES	1102
<i>Yann Kerr, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France</i>	
WE4.O-10.3: SMOS LEVEL 3 SALINITY MAPS AT CATDS: WHAT DO WE LEARN WITH RECENT REPROCESSINGS?	1106
<i>Jacqueline Boutin, LOCEAN/CNRS, France; Jean-Luc Vergely, ACRI-st, France; Dimitry Khvorostyanov, LOCEAN/CNRS, France; Stéphane Tarot, IFREMER, France; Sébastien Guimard, OceanScope, France; Xavier Perrot, LOCEAN/CNRS, France; Nicolas Reul, IFREMER, France; Olivier Vandermarcq, CNES, France</i>	
WE4.O-10.4: SMOS SEA ICE THICKNESS DATA PRODUCT QUALITY CONTROL BY COMPARISON WITH THE REGIONAL SEA ICE EXTENT	1110
<i>Lars Kaleschke, Xiangshan Tian-Kunze, Alfred-Wegener-Institute Helmholtz Center for Polar and Marine Research (AWI), Germany</i>	
WE4.O-10.5: ESA'S CLIMATE CHANGE INITIATIVE: HOW SMOS CONTRIBUTES	1114
<i>Susanne Mecklenburg, Clément Albergel, Paolo Cipollini, Roberto Sabia, Frank Martin Seifert, Anna Maria Trofaier, European Space Agency (ESA), United Kingdom</i>	
WE4.O-10.6: L-BAND DATA FOR NUMERICAL WEATHER PREDICTION AND EMERGENCY SERVICES AT ECMWF	1116
<i>Patricia de Rosnay, Peter Weston, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; Nemesio Rodríguez-Fernández, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Calum Baugh, David Fairbairn, Francesca Di Giuseppe, Joaquín Muñoz-Sabater, Stephen English, Christel Prudhomme, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; Matthias Drusch, ESA / ESTEC, Netherlands</i>	
 WE4.O-11: REMOTE SENSING APPROACHES TO DETECT AND CHARACTERIZE MARINE PLASTIC LITTER	
WE4.O-11.1: QUANTIFYING FLOATING PLASTIC DEBRIS AT SEA USING VESSEL-BASED OPTICAL DATA AND ARTIFICIAL INTELLIGENCE	1118
<i>Robin de Vries, Matthias Egger, Thomas Mani, Laurent Lebreton, The Ocean Cleanup, Netherlands</i>	
WE4.O-11.3: MONITORING SURFACTANTS POLLUTION POTENTIALLY RELATED TO PLASTICS IN THE WORLD GYRES USING RADAR REMOTE SENSING	1122
<i>Morgan Simpson, Armando Marino, University of Stirling, United Kingdom; Peter De Maagt, Erio Gandini, European Space Agency (ESA), Netherlands; Peter Hunter, Evangelos Spyrakos, Andrew Tyler, University of Stirling, United Kingdom; Nicolas Ackermann, Swiss Federal Railways, Switzerland; Irena Hajsek, ETH Zurich / The German Aerospace Center, Switzerland; Ferdinando Nunziata, The Parthenope University of Naples, Italy; Trevor Telfer, University of Stirling, United Kingdom</i>	

WE4.O-11.4: ADVANCES ON REMOTE SENSING OF WINDROWS AS PROXIES FOR MARINE LITTER BASED ON SENTINEL-2/MSI DATASETS	1126
<i>Manuel Arias, ARGANS Ltd., United Kingdom; Romain Sumerot, ACRI-ST, France; James Delaney, ARGANS Ltd., United Kingdom; Fatimatou Coulibaly, ARGANS France, France; Andres Cozar, University of Cadiz, Spain; Stefano Aliani, Giuseppe Suaria, ISMAR-CNR, Italy; Theodora Papadopoulou, ARGANS France, France; Paolo Corradi, ESA / ESTEC, Netherlands</i>	
WE4.O-11.5: COMBINING SPECTRAL APPROACHES AND AI FOR MARINE LITTER DETECTION AND IDENTIFICATION	1130
<i>Mehrdad Moshtaghi, Els Knaeps, VITO, Belgium</i>	
WE4.O-12: IMAGE RESTORATION	
WE4.O-12.1: THICK CLOUD REMOVAL FOR SENTINEL-2 TIME-SERIES IMAGES VIA COMBINING DEEP PRIOR AND LOW-RANK TENSOR COMPLETION	2675
<i>Qiang Zhang, Wuhan University, China; Fujun Sun, Beijing Electro-mechanical Engineering Institute, China; Qiangqiang Yuan, Liangpei Zhang, Wuhan University, China</i>	
WE4.O-12.2: PARALLAX ESTIMATION FOR PUSH-FRAME SATELLITE IMAGERY: APPLICATION TO SUPER-RESOLUTION AND 3D SURFACE MODELING FROM SKYSAT PRODUCTS	2679
<i>Jérémy Anger, Kayrros, France; Thibaud Ehret, Gabriele Facciolo, Université Paris-Saclay, France</i>	
WE4.O-12.3: REMOTE SENSING IMAGE JITTER RESTORATION BASED ON DEEP GENERATIVE ADVERSARIAL NETWORK	2683
<i>Zhaoxiang Zhang, Qing Zhou, Yuelei Xu, Linhua Ma, Akira Iwasaki, Northwestern Polytechnical University, China</i>	
WE4.O-12.4: THICK CLOUD REMOVAL FROM REMOTE SENSING IMAGES USING DOUBLE SHIFT NETWORKS	2687
<i>Chaojun Long, Wuhan University, China; Jing Yang, CCCC Second Highway Consultants Co., Ltd, China; Xiaobin Guan, Xinghua Li, Wuhan University, China</i>	
WE4.O-12.5: INTERNAL LEARNING FOR SEQUENCE-TO-SEQUENCE CLOUD REMOVAL VIA SYNTHETIC APERTURE RADAR PRIOR INFORMATION	2691
<i>Patrick Ebel, TU Munich, Germany; Michael Schmitt, Hochschule München, DLR, Germany; Xiaoxiang Zhu, TU Munich, DLR, Germany</i>	
WE4.O-12.6: HYBRID GAN AND SPECTRAL ANGULAR DISTANCE FOR CLOUD REMOVAL	2695
<i>Omid Ghozatlou, Research Center for Spatial Information (CEOSpaceTech), Romania; Mihai Datcu, German Aerospace Center (DLR), Romania</i>	
WE4.O-13: TOPOGRAPHY AND GGEOLGY OF EARTH, MOON AND MARS	
WE4.O-13.1: THE NEW VERSION 3 ASTER GLOBAL DEM AND THE ASTER WATER BODY DATASET	6140
<i>Michael Abrams, NASA Jet Propulsion Laboratory, United States; Yasushi Yamaguchi, Robert Crippen, None, Japan</i>	
WE4.O-13.2: DESCRIBING THE QUALITY ASSESSMENT WORKFLOW DESIGNED FOR DEM PRODUCTS DISTRIBUTED VIA THE COPERNICUS PROGRAMME. CASE STUDY: THE ABSOLUTE VERTICAL ACCURACY OF THE COPERNICUS DEM DATASET IN SPAIN	6143
<i>Luca Cenci, Marco Galli, Giovanna Palumbo, Luca Sapia, Carla Santella, Serco Italia SpA, Italy; Clément Albinet, ESA - European Space Research Institute, Italy</i>	
WE4.O-13.3: MAPPING MICROWAVE PENETRATION DEPTHS OVER ARID AREAS	6147
<i>Samuel Favrichon, Catherine Prigent, Observatoire de Paris, PSL University, Sorbonne Université, CNRS, France; Carlos Jimenez, Estellus, France</i>	

WE4.O-13.4: DISCONTINUITY PLANE EXTRACTION FROM A ROCK MASS POINT CLOUD USING UNSUPERVISED MACHINE LEARNING	6151
<i>Hamid Daghigh, Dwayne D. Tannant, University of British Columbia, Canada; Majid Jaberipour, Sunnybrook Research Institute, Canada</i>	
WE4.O-13.5: EXPLORING THE TRANSMISSION OF VNIR LIGHT THROUGH MARTIAN REGOLITH	6155
<i>Gladimir Baranoski, Mark Iwanchyshyn, Bradley Kimmel, Petri Varsa, Spencer Van Leeuwen, University of Waterloo, Canada</i>	
WE4.O-14: REMOTE SENSING OF AEROSOLS AND ATMOSPHERIC CORRECTION II	
WE4.O-14.1: PM2.5 CLASSIFICATION THROUGH CONVOLUTIONAL RECURRENT NEURAL NETWORKS APPLIED TO MODIS AOD AND TOA REFLECTANCE IMAGES	7111
<i>Yuwei Zhou, John Kerekes, Rochester Institute of Technology, United States</i>	
WE4.O-14.2: ANALYSIS OF AERONET EXTENDED WAVELENGTH RETRIEVALS OF AEROSOL ABSORPTION PARAMETERS INCLUDING 380 NM AND 500 NM FOR DETECTION OF BROWN CARBON IN BIOMASS BURNING AND IRON OXIDES IN DESERT DUST	7115
<i>Thomas Eck, USRA, NASA Goddard Space Flight Center, United States; Brent Holben, NASA Goddard Space Flight Center, United States; Alexander Sinyuk, David Giles, SSAI/GSFC, United States; Antti Arola, Finnish Meteorological Institute, Finland; Jeffrey Reid, NRL, United States; Ilya Slutsker, Joel Schafer, Mikhail Sorokin, Alexander Smirnov, Anthony LaRosa, SSAI/GSFC, United States; Jason Kraft, FiberTek/GSFC, United States</i>	
WE4.O-14.3: DEEP NEURAL NETWORK ARCHITECTURE SEARCH FOR EMULATING PHYSICAL PARAMETERIZATION OF PLANETARY BOUNDARY LAYER HEIGHT	7119
<i>Phuong Nguyen, Rahul Gite, Zhifeng Yang, Milton Halem, University Of Maryland Baltimore County, United States</i>	
WE4.O-14.4: ESTIMATION OF AN AEROSOL PLUME MASS BALANCE FROM PLUME PROPERTY RETRIEVALS COMPUTED BY THE COMBINATION OF THE SENTINEL-2 DATA WITH HYPERSPECTRAL DATA COUPLED WITH AN OPTIMAL ESTIMATION METHOD.	7123
<i>Gabriel Calassou, Pierre-Yves Foucher, ONERA, France; Jean-François Léon, Laboratoire d'Aérodologie, France</i>	
WE4.O-14.6: MAPPING OF STRATOSPHERIC INTRUSION AND POLAR VORTEX BREAKUP USING OZONE FROM CRIS SFOV RETRIEVALS AND COMPARISON WITH MODEL	7130
<i>Xiaozhen Xiong, Xu Liu, NASA Langley Research Center, United States; Wan Wu, Qiguang Yang, Science Systems and Applications, Inc., United States; Jason Welsh, Universities and Space Research Association (USRA), United States; Daniel K. Zhou, NASA Langley Research Center, United States</i>	
WE4.O-15: OCEAN ALTIMETRY	
WE4.O-15.3: END-TO-END KALMAN FILTER FOR THE RECONSTRUCTION OF SEA SURFACE DYNAMICS FROM SATELLITE DATA	7414
<i>Said Ouala, Ronan Fablet, Lucas Drumetz, Imt-Atlantique, France; Bertrand Chapron, Ananda Pascual, Ifremer, France; Fabrice Collard, Lucile Gaultier, Ocean Data Lab, France</i>	
WE4.O-15.4: END-TO-END LEARNING OF VARIATIONAL INTERPOLATION SCHEMES FOR SATELLITE-DERIVED SSH DATA	7418
<i>Maxime Beauchamp, Mohamed Mahmoud Amar, Quentin Febvre, Ronan Fablet, IMT Atlantique, France</i>	
WE4.O-15.5: BENEFITS OF THE “ADAPTIVE RETRACKING SOLUTION” FOR THE JASON-3 GDR-F REPROCESSING CAMPAIGN	7422
<i>Pierre Thibaut, Fanny Piras, Hélène Roinard, Adrien Guerou, Collecte Localisation Satellites, France; François Boy, Claire Maraldi, François Bignalet-Cazalet, Gérald Dibarboure, Nicolas Picot, Centre National d'Etudes Spatiales, France</i>	

**WE4.O-15.6: NEAR-REAL-TIME SIGNIFICANT WAVE HEIGHTS IN HURRICANES FROM A 7426
NEW AIRBORNE KA-BAND INTERFEROMETRIC ALTIMETER**

*Joe Sapp, Zorana Jelenak, Paul S. Chang, National Oceanic and Atmospheric Administration (NOAA), United States;
Jim Carswell, Brian Pollard, Alex Theg, Remote Sensing Solutions, United States*

WE4.O-16: BISTATIC AND DIGITAL BEAMFORMING SAR

**WE4.O-16.1: SPACEBORNE-AIRBORNE BISTATIC SAR EXPERIMENT USING GF-3 2699
ILLUMINATOR: DESCRIPTION, PROCESSING AND RESULTS**

Zhichao Sun, Junjie Wu, University of Electronic Science and Technology of China, China; Zheng Lv, Institute of Remote Sensing Satellite, China Academy of Space Technology, China; Dongtao Li, Xi'an Branch, China Academy of Space Technology, China; Yuxuan Miao, Tianfu Chen, University of Electronic Science and Technology of China, China; Weihua Zuo, Caipin Li, Xi'an Branch, China Academy of Space Technology, China; Yu Hai, Hongyang An, Jianyu Yang, University of Electronic Science and Technology of China, China; Liangbo Zhao, Qingjun Zhang, Institute of Remote Sensing Satellite, China Academy of Space Technology, China; Chaoran Zhuang, China Center for Resources Satellite Data and Application, China

**WE4.O-16.2: ASSESSING THE POTENTIAL OF FULLY-POLARIMETRIC SIMULTANEOUS 2703
MONO- AND BISTATIC AIRBORNE SAR ACQUISITIONS IN L-BAND FOR APPLICATIONS IN
AGRICULTURE AND HYDROLOGY**

Jean Bouchat, Université catholique de Louvain, Belgium; Emma Tronquo, Ghent University, Belgium; Hans Lievens, Katholieke Universiteit Leuven, Belgium; Niko Verhoest, Ghent University, Belgium; Pierre Defourny, Université catholique de Louvain, Belgium

**WE4.O-16.3: PERFORMANCE OF CORRELATION-BASED IMAGING WITH A BISTATIC 2707
CONFIGURATION TOWARD RESILIENT MULTISTATIC IMAGING OF SPACE DEBRIS**

Stacey Huang, Howard Zebker, Annie Nguyen, George Papanicolaou, Stanford University, United States; Arlen Schmidt, Visor Corporation, United States

**WE4.O-16.4: FORMATION-FLYING SAR RECEIVERS IN FAR-FROM-TRANSMITTER 2711
GEOMETRY: SIGNAL MODEL AND PROCESSING SCHEME**

Gerardo Di Martino, Alessio Di Simone, Michele Grassi, Marco Grasso, Maria Daniela Graziano, Antonio Iodice, Antonio Moccia, Alfredo Renga, Daniele Riccio, Giuseppe Ruello, University of Naples Federico II, Italy

**WE4.O-16.5: DECONVOLUTION METHOD FOR ELIMINATING REFERENCE SIGNAL 2715
COUPLING/REFLECTIONS IN BISTATIC SAR**

Filip Rosu, Andrei Anghel, Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB), Romania; Remus Cacoveanu, EOS Electronic Systems, Romania, and Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB), Romania; Silviu Ciochina, University of Politehnica Bucharest, Romania; Mihai Datcu, Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB) and Earth Observation Center (EOC), German Aerospace Center (DLR), Romania

**WE4.O-16.6: FREQUENCY DIVERSE ARRAY DESIGN FOR DECEPTIVE JAMMING 2719
SUPPRESSION USING PARTICLE SWARM OPTIMIZATION**

Yi Liao, Guanghui Zeng, Chunlin Wu, Wen-qin Wang, Zhi Zheng, University of Electronic Science and Technology of China, China

**WE4.O-16.7: FORMATION-FLYING SAR RECEIVERS IN FAR-FROM-TRANSMITTER 2723
GEOMETRY: X-BAND SAR ANTENNA DESIGN**

Gerardo Di Martino, Alessio Di Simone, Michele Grassi, Marco Grasso, Maria Daniela Graziano, Antonio Iodice, Antonio Moccia, Alfredo Renga, Daniele Riccio, Giuseppe Ruello, University of Naples Federico II, Italy

WE4.O-17: ANALYSIS OF LAND COVER DYNAMICS

**WE4.O-17.1: DSAMNET: A DEEPLY SUPERVISED ATTENTION METRIC BASED NETWORK 6159
FOR CHANGE DETECTION OF HIGH-RESOLUTION IMAGES**

Mengxi Liu, Qian Shi, Sun Yat-Sen University, China

WE4.O-17.2: MULTITEMPORAL CHANGE TYPE IDENTIFICATION IN COASTAL ZONE BASED ON SFANET AND LSTM	6163
<i>Tianzhu Liu, Harbin Institute of Technology, China; Min Yang, North China Sea Marine Technical Support Center, China; Meiling Zhang, Shenzhen Samsung Communication Technology Research Ltd. Company, China</i>	
WE4.O-17.3: ESTIMATING THE EFFECT OF INFRASTRUCTURE ON VEGETATION DEGRADATION IN EASTERN MONGOLIA STEPPE USING MACHINE LEARNING AND REMOTE SENSING	6167
<i>Batnyambuu Dashpurev, Thanh Noi Phan, LMU Munich, Germany; Jörg Bendix, Philipps-Universität Marburg, Germany; Lukas Lehnert, LMU Munich, Germany</i>	
WE4.O-17.4: THIRTY YEARS OF LAND COVER AND FRACTION COVER CHANGES OVER THE SUDANO-SAHEL USING LANDSAT TIME SERIES	6170
<i>Niels Souverijns, Marcel Buchhorn, VITO, Belgium; Stéphanie Horion, Rasmus Fensholt, University of Copenhagen, Denmark; Hans Verbeeck, UGent, Belgium; Jan Verbesselt, Martin Herold, Nandin-Erdene Tsendbazar, Wageningen University & Research, Netherlands; Paulo N. Bernardino, Ben Somers, KU Leuven, Belgium; Ruben Van De Kerchove, VITO, Belgium</i>	
WE4.O-17.5: TOWARDS FREQUENT FLOOD MAPPING WITH THE CAPELLA SAR SYSTEM. THE 2021 EASTERN AUSTRALIA FLOODS CASE	6174
<i>Nestor Yague-Martinez, Nicholas R. Leach, Antara Dasgupta, Elizabeth Tellman, Cloud to Street, United States; Jason S. Brown, Capella Space, United States</i>	
WE4.O-17.6: CHARACTERIZING THE ICE-FREE AREA OF CIERVA POINT (ANTARCTIC PENINSULA) USING REFLECTANCE SPECTROSCOPY	6178
<i>Thomas Schmid, Ana Nieto, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas, Spain; Jerónimo López-Martínez, Universidad Autónoma de Madrid, Spain; Stéphane Guillaso, German Research Center for Geosciences, Germany; Magaly Koch, Boston University, United States; Belén Oliva-Urcía, Universidad Autónoma de Madrid, Spain; Luis Javier Lambán, Instituto Geológico y Minero de España, Spain</i>	
 WE4.O-18: PRECIPITATION MODELLING	
WE4.O-18.1: CONVECTIVE PRECIPITATION NOWCASTING USING U-NET MODEL	7134
<i>He Liang, Ocean University of China, China; Haonan Chen, Colorado State University, United States; Wei Zhang, Yurong Ge, Lei Han, Ocean University of China, China</i>	
WE4.O-18.2: SOME IMPROVEMENTS IN THE GSMAP_GAUGE ALGORITHM	7138
<i>Tomoaki Mega, Tomoo Ushio, Osaka University, Japan; Takuji Kubota, Tomoko Tashima, Japan Aerospace Exploration Agency (JAXA) / EORC, Japan</i>	
WE4.O-18.3: GLOBAL WATER BUDGET OF EXASCALE EARTH SYSTEM MODEL (E3SM) IN CMIP6 AND ERA5	7141
<i>Mohamed Eltahan, University of Cologne, Germany; Nour Daoud, Ain Shams University, Egypt; Sabah Alahmadi, King Abdulaziz City for Science and Technology, Saudi Arabia</i>	
WE4.O-18.4: RAIN-F: A FUSION DATASET FOR RAINFALL PREDICTION USING CONVOLUTIONAL NEURAL NETWORK	7145
<i>Yeji Choi, Keumgang Cha, Minyoung Back, Hyunguk Choi, Taegyun Jeon, SI-Analytics, South Korea</i>	
WE4.O-18.5: USING EDBF ALGORITHM IN THE PREDICTION AND DOWNSCALING OF HIGH-RESOLUTION ANNUAL PRECIPITATION THROUGH MULTITEMPORAL GPM VARIABLES	7149
<i>Sana Ullah, Zhengkang Zuo, Lei Yan, Peking University, China</i>	
WE4.O-18.6: A SCIENCE-FOCUSED, SCALABLE, FLEXIBLE OBSERVING SYSTEM SIMULATION EXPERIMENT (OSSE) TOOLKIT	7153
<i>Derek Posselt, Brian Wilson, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Rachel Storer, University of California, Los Angeles, United States; Derek Tropf, George Duffy, Matt Lebsock, Vishal Lall, Noppasin Niamsuwan, Simone Tanelli, NASA Jet Propulsion Laboratory, California Institute of Technology, United States</i>	

TH1.O-1: FEATURE EXTRACTION AND REDUCTION IN HYPERSPECTRAL IMAGES

TH1.O-1.1: ATTENTION BASED CONVOLUTION AUTOENCODER FOR DIMENSIONALITY REDUCTION IN HYPERSPECTRAL IMAGES 2727

Shivam Pande, Biplab Banerjee, Indian Institute of Technology Bombay, India

TH1.O-1.2: BIDIRECTIONAL GRU BASED AUTOENCODER FOR DIMENSIONALITY REDUCTION IN HYPERSPECTRAL IMAGES 2731

Shivam Pande, Biplab Banerjee, Indian Institute of Technology Bombay, India

TH1.O-1.3: LOCAL STRUCTURE GRAPH DISCRIMINANT EMBEDDING FOR HYPERSPECTRAL IMAGE CLASSIFICATION 2735

Zehua Zou, Chongqing University, China; Fulin Luo, Wuhan University, China; Jiamin Liu, Chongqing University, China; Guangyao Shi, Chongqing University of Posts and Telecommunications, China; Yufei Liu, Chongqing University, China

TH1.O-1.4: LOCAL BROWNIAN DESCRIPTOR BASED FEATURE EXTRACTION METHOD FOR HYPERSPECTRAL IMAGE CLASSIFICATION 2739

Shuzhen Zhang, Shutao Li, Ting Lu, Hunan University, China

TH1.O-1.5: HYPERSPECTRAL IMAGE CLASSIFICATION BY FRACTIONAL DISCRETE COSINE TRANSFORM BASED FEATURE EXTRACTION 2743

Helgi Omarsson, Qian Du, Mississippi State University, Iceland

TH1.O-2: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING METHODS FOR BIG EARTH DATA

TH1.O-2.1: AUGMENTING DATA SYSTEMS WITH PREDICTION BASED EMBEDDINGS 1138

Rahul Ramachandran, National Aeronautics and Space Administration (NASA), United States; Muthukumaran Ramasubramanian, Iksha Gurung, University of Alabama in Huntsville, United States; Carson Davis, Manufacturing Technical Solutions, United States; Derek Koehl, University of Alabama in Huntsville, United States; Manil Maskey, Tsengdar Lee, National Aeronautics and Space Administration (NASA), United States

TH1.O-2.4: THE CASE FOR OPEN-ACCESS ML-READY GEOSPATIAL TRAINING DATA 1146

Hamed Alemohammad, Radiant Earth Foundation, United States

TH1.O-2.5: APPLYING MACHINE LEARNING TO CROPLAND DATA LAYER FOR AGRO-GEOINFORMATION DISCOVERY 1149

Chen Zhang, George Mason University, United States; Zhengwei Yang, US Department of Agriculture, United States; Liping Di, Li Lin, Pengyu Hao, Liying Guo, George Mason University, United States

TH1.O-2.6: PRELIMINARY REPORT ON DEEP LEARNING-BASED DAYTIME CLEAR-SKY RADIANCE FOR VIIRS 1153

Xingming Liang, University of Maryland, United States; Quanhua Liu, NOAA NESDIS, United States

TH1.O-3: SEMANTIC SEGMENTATION IN OPTICAL DATA I

TH1.O-3.1: UNSUPERVISED DOMAIN ADAPTATION FOR SEMANTIC SEGMENTATION VIA SELF-SUPERVISION 2747

Weifa Shen, Qixiong Wang, Hongxiang Jiang, Sen Li, Jihao Yin, Beihang University, China

TH1.O-3.2: TRIPLE ATTENTION NETWORK FOR MULTI-CLASS SEMANTIC SEGMENTATION IN AERIAL IMAGES 2751

Yu Si, Yuxia Li, University of Electronic Science and Technology of China, China; Huanping Wu, China Meteorological Administration, China; Lang Yuan, University of Electronic Science and Technology of China, China; Yuzhen Li, ChengDu Software Industry Development Center, China; Lei He, Chengdu University of Information Technology, China

TH1.O-3.3: DUAL LIGHTWEIGHT NETWORK WITH ATTENTION AND FEATURE FUSION 2755
FOR SEMANTIC SEGMENTATION OF HIGH-RESOLUTION REMOTE SENSING IMAGES
Yijie Zhang, Yulan Chen, Qijun Ma, University of Electronic Science and Technology of China, China; Changtao He, Sichuan Jiuzhou Electric Group Co., Ltd, China; Jian Cheng, University of Electronic Science and Technology of China, China

TH1.O-3.4: EFFICIENT SEMANTIC SEGMENTATION METHOD WITH STRIP POOLING 2759
FOR VHR REMOTE SENSING IMAGES
Yifan Sheng, Junli Yang, Youguang Lin, Yu Lei, Beijing University of Posts and Telecommunications, China

TH1.O-3.5: REAL-TIME SEMANTIC SEGMENTATION OF AERIAL VIDEOS BASED ON 2763
BILATERAL SEGMENTATION NETWORK
Yihao Zuo, Junli Yang, Zihao Zhu, Ruizhe Li, Yuhan Zhou, Yutong Zheng, Beijing University of Posts and Telecommunications, China

TH1.O-3.6: UCWATER: UNSUPERVISED CONTENT-ADAPTIVE WATER-BODY EXTRACTION 2767
FRAMEWORK FOR HIGH-RESOLUTION SATELLITE IMAGERY
Jiahui Yang, Qiqi Zhu, Jianjun Lv, Qingfeng Guan, China University of Geosciences, China

TH1.O-4: OPTICAL I - INFRASTRUCTURE DETECTION

TH1.O-4.1: PROTOCOL DESIGN ISSUES FOR OBJECT DENSITY ESTIMATION AND 2771
COUNTING IN REMOTE SENSING
Roland Perko, Joannem Research, Austria; Alexander Almer, Joanneum Research, Austria; Mario Theuermann, Manfred Klopschitz, Thomas Schnabel, Joannem Research, Austria; Peter M. Roth, Technical University of Munich, Germany

TH1.O-4.2: A NOVAL GLOBAL-LOCAL ADVERSARIAL NETWORK FOR UNSUPERVISED 2775
CROSS-DOMAIN ROAD DETECTION
Xiaoyan Lu, Yanfei Zhong, Wuhan University, China

TH1.O-4.3: MULTI-SCALE BUILDING INSTANCE EXTRACTION FRAMEWORK IN HIGH 2779
RESOLUTION REMOTE SENSING IMAGERY BASED ON FEATURE PYRAMID OBJECT-AWARE
CONVOLUTION NEURAL NETWORK
Yong Cai, Jiangsu Province Surveying and Mapping Research Institute, China; Dingyuan Chen, Yuanzhe Tang, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, China; Jian Zhang, Ya Gao, Jiangsu Province Surveying and Mapping Research Institute, China

TH1.O-4.4: END-TO-END ROOFLINE EXTRACTION FROM VERY-HIGH-RESOLUTION 2783
REMOTE SENSING IMAGES
Wufan Zhao, Claudio Persello, Alfred Stein, University of Twente, Netherlands

TH1.O-4.5: WEAKLY SUPERVISED SOLAR PANEL MAPPING USING RESIDUAL 2787
AGGREGATED NETWORK FOR AERIAL IMAGES
Jue Zhang, Xiuping Jia, Jiankun Hu, University of New South Wales Canberra, Australia

TH1.O-4.6: SCRIBBLE-SUPERVISED ROI EXTRACTION USING RESIDUAL DENSE 2791
DILATED NETWORK FOR REMOTE SENSING IMAGES
Jie Ma, Beijing Foreign Studies University, China

TH1.O-5: REMOTE SENSING IMAGE CLASSIFICATION USING MACHINE LEARNING I

TH1.O-5.1: REMOTE SENSING IMAGERY SCENE CLASSIFICATION BASED ON SPIKING 2795
NEURAL NETWORK
Saifei Wu, Jie Li, Xidian University, China; Lin Qi, Ocean University of China, China; Ziming Liu, Xidian University, China; Xinbo Gao, Chongqing University of Posts and Telecommunications, China

TH1.O-5.2: APPLICATION OF COMPOSITIONAL NEURAL NETWORKS FOR ROBUST CLASSIFICATION OF INFRARED IMAGERY	2799
<i>Gregory P. Spell, Leslie M. Collins, Jordan M. Malof, Duke University, United States</i>	
TH1.O-5.3: CROSS-SOURCE IMAGE RETRIEVAL BASED ON ENSEMBLE LEARNING AND KNOWLEDGE DISTILLATION FOR REMOTE SENSING IMAGES	2803
<i>Jingjing Ma, Duanpeng Shi, Xu Tang, Xiangrong Zhang, Xidian University, China; Xiao Han, Geovis Spatial Technology Co.,Ltd, China; Licheng Jiao, Xidian University, China</i>	
TH1.O-5.4: IMAGE CLASSIFICATION UNIT: A U-NET CONVOLUTIONAL NEURAL NETWORK FOR ON- ORBIT CLOUD DETECTION ABOARD CUBESATS	2807
<i>Timothy Leong, Yasir Abbas, Mark Angelo Purio, Hoda Elmegharbel, Kyushu Institute of Technology, Japan</i>	
TH1.O-5.5: FRUGAL LEARNING FOR INTERACTIVE SATELLITE IMAGE CHANGE DETECTION	2811
<i>Hichem Sahbi, CNRS Sorbonne University, France; Sebastien Deschamps, Sorbonne University and Thales, France; Andrei Stoian, Thales, France</i>	
TH1.O-5.6: DEEP VISION TRANSFORMERS FOR REMOTE SENSING SCENE CLASSIFICATION	2815
<i>Laila Bashmal, Yakoub Bazi, Mohamad Al Rahhal, King Saud University, Saudi Arabia</i>	
 TH1.O-6: REMOTELY SENSED SOIL MOISTURE RETRIEVALS	
TH1.O-6.1: CORRELATED TRIPLE COLLOCATION TO ESTIMATE SMOS, SMAP AND ERA5-LAND SOIL MOISTURE ERRORS	6182
<i>Miriam Pablos, Antonio Turiel, Institut de Ciències del Mar (ICM-CSIC) and Barcelona Expert Center (BEC) on Remote Sensing, Spain; Mercè Vall-llossera, Adriano Camps, Universitat Politècnica de Catalunya (UPC) and Barcelona Expert Center (BEC) on Remote Sensing, Spain; Marcos Portabella, Institut de Ciències del Mar (ICM-CSIC) and Barcelona Expert Center (BEC) on Remote Sensing, Spain</i>	
TH1.O-6.2: INCIDENCE ANGLE DIVERSITY ON L-BAND MICROWAVE RADIOMETRY AND ITS IMPACT ON CONSISTENT SOIL MOISTURE RETRIEVALS	6186
<i>Gerard Portal, Mercè Vall-llossera, Polytechnic University of Catalonia and IEEC-UPC & Barcelona Expert Center, Spain; Thomas Jagdhuber, German Aerospace Center & University of Augsburg, Germany; Adriano Camps, Polytechnic University of Catalonia and IEEC-UPC & Barcelona Expert Center, Spain; Miriam Pablos, Barcelona Expert Center & Institute of Marine Sciences, Spanish National Research Council, Spain; Maria Piles, Universitat de València, Spain</i>	
TH1.O-6.3: RETRIEVAL OF LAND SURFACE TEMPERATURE AND SOIL MOISTURE FROM PASSIVE MICROWAVE OBSERVATIONS	6190
<i>Xiao-Jing Han, Huajun Tang, Zhao-Liang Li, Si-Bo Duan, Pei Leng, Yongchang Wu, Xueyuan Chen, Chinese Academy of Agricultural Sciences, China</i>	
TH1.O-6.4: TOWARDS THE REMOVAL OF MODEL BIAS FROM ESA CCI SM BY USING AN L-BAND SCALING REFERENCE	6194
<i>Rémi Madelon, Nemesio Rodríguez-Fernández, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Robin van der Schalie, VanderSat, Netherlands; Yann Kerr, Ahmad Albitar, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Tracy Scanlon, TU Wien, Austria; Richard De Jeu, VanderSat, Netherlands; Wouter Dorigo, TU Wien, Austria</i>	
TH1.O-6.5: A LOW COST DIELECTRIC SPECTROSCOPY INSTRUMENT DEDICATED TO IN-SITU SOIL PERMITTIVITY PROFILE MAPPING	6198
<i>Francois Demontoux, Bordeaux University - IMS Laboratory, France; Jean-Pierre Wigneron, INRAE, UMR 1391 ISPA, France; Arnaud Mialon, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Alex Mavrovic, Alexandre Roy, Université du Québec à Trois-Rivières, Trois-Rivières, Canada; Yann Kerr, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France</i>	

TH1.O-7: NOVEL FOREST AND VEGETATION ANALYSIS AND MODELLING TECHNIQUES

TH1.O-7.2: ALTERNATE INRAE-BORDEAUX VOD INDICES FROM SMOS, AMSR2 AND ASCAT: 6210 OVERVIEW OF RECENT DEVELOPMENTS

Jean-Pierre Wigneron, Xiaojun Li, Xiangzhuo Liu, Menjia Wang, INRAE Bordeaux, France; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Lei Fan, Nanjing IST, China; Amen Al-Yaari, Sorbonne, France; Roberto Fernandez-Moran, University of Valencia, Spain; Hongliang Ma, Ygoraa Bertrand, INRAE, France; Zanping Xing, Nanjing, France; Erwan Le Masson, Christophe Moisy, INRAE, France; Hui Yang, LSCE, France; Nicolas Baghdadi, INRAE MTD, France; Philippe Ciais, LSCE, France

TH1.O-7.4: IMPROVING LAND SURFACE TEMPERATURE SIMULATION OF NOAH-MP ON 6217 THE TIBETAN PLATEAU

Qing He, Hui Lu, Kun Yang, Long Zhao, Tsinghua University, China; Mijun Zou, Tsinghuaan University, China

TH1.O-7.5: TOWARDS A BETTER UNDERSTANDING OF EFFECTIVE TEMPERATURE 6221 MODELLING IN THE SMOS-IC RETRIEVAL ALGORITHM

Roberto Fernandez-Moran, Maria Piles, University of Valencia, Spain; Gustau Camps-Valls, Universitat de València, Spain; Wigneron Jean-Pierre, Li Xiaojun, Wang Mengjia, INRAE, France; Lei Fan, Nanjing University of Information Science and Technology, China; Amen Al-Yaari, Sorbonne Université, France; Luis Gómez-Chova, University of Valencia, Spain

TH1.O-7.6: RECENT TRENDS OF DROUGHT USING REMOTELY SENSED AND IN-SITU 6225 INDICES: TOWARDS AN INTEGRATED DROUGHT MONITORING SYSTEM FOR SOUTH AFRICA

Mahlatse Kganyago, South African National Space Agency, South Africa; Mxolisi Mukhawana, Department of Water and Sanitation, South Africa; Morwapula Mashalane, South African National Space Agency, South Africa; Aphelele Mgabisa, Simon Moloele, Department of Water and Sanitation, South Africa

TH1.O-8: MONITORING AND MODELING THE URBAN AND BUILT ENVIRONMENT

TH1.O-8.1: MAKING GREEN TRANSPORT A REALITY: A CLASSIFICATION BASED DATA 6229 ANALYSIS METHOD TO IDENTIFY PROPERTIES SUITABLE FOR ELECTRIC VEHICLE CHARGING POINT INSTALLATION

James Flynn, Eleanor Brealy, Cinzia Giannetti, Swansea University, United Kingdom

TH1.O-8.2: INSAR MONITORING OF REGIONAL INFRASTRUCTURE NETWORKS 6233

Valentina Macchiarulo, University of Bath, United Kingdom; Pietro Milillo, University of California, United States; Chris Blenkinsopp, Cormac Reale, University of Bath, United Kingdom; Giorgia Giardina, Delft University of Technology, Netherlands

TH1.O-8.3: GROUND MOTION PATTERNS ANALYSIS FROM THE NATIONAL PERSISTENT 6237 SCATTERER DEFORMATION MAP OF ROMANIA

Stefan-Adrian Toma, Military Technical Academy, Romania; Delia Teleaga, Valentin Poncos, Terrasigna, Romania; Cristian Grozea, Fraunhofer Institute for Open Communication Systems FOKUS, Germany

TH1.O-8.4: REVIEW OF THE CONTRIBUTION OF REMOTE SENSING TO THE 6240 INVESTIGATION OF THE EFFECTS OF UV-B ON MECHANISMS OF ECOLOGY, BIODIVERSITY, AND CONSERVATION

Costas Varotsos, National and Kapodistrian University of Athens, Greece; Yuri Mazei, Lomonosov Moscow State University, Russia; Yong Xue, China University of Mining and Technology, China

TH1.O-8.5: ATMOSPHERIC ENVIRONMENTAL CAPACITY CALCULATION USING 6244 MULTISOURCE REMOTE SENSING DATA

Shuhui Wu, Yong Xue, Xiran Zhou, Kai Qin, Yuxin Sun, Chunlin Jin, China University of Mining and Technology, China

**TH1.O-8.6: RETRIEVAL OF HIGH RESOLUTION AEROSOL OPTICAL DEPTH BY 6248
SYNERGETIC USE OF GF-1 WFV AND AQUA MODIS DATA OVER LAND**

Rui Bai, Yong Xue, Chunlin Jin, Xingxing Jiang, Na Li, Xiaopeng Zhang, China University of Mining and Technology, China

**TH1.O-9: ARTIFICIAL INTELLIGENCE FOR EARTH OBSERVATION: REASONING,
UNCERTAINTY AND ETHICS**

TH1.O-9.1: WHAT'S NEXT IN AI4EO?..... 1157

Xiao Xiang Zhu, German Aerospace Center & Technical University of Munich, Germany

TH1.O-9.3: RAPIDAI4EO: A CORPUS FOR HIGHER SPATIAL AND TEMPORAL REASONING..... 1161

Giovanni Marchisio, Planet Labs Inc., United States; Patrick Helber, Benjamin Bischke, Vision Impulse and DFKI, Germany; Timothy Davis, Caglar Senaras, Planet Labs GmbH, Germany; Daniele Zanaga, Ruben Van De Kerchove, VITO NV, Belgium; Annett Wania, Planet Labs GmbH, Germany

**TH1.O-9.4: OUTLINE OF A NOVEL APPROACH FOR IDENTIFYING ETHICAL ISSUES IN 1165
EARLY STAGES OF AI4EO RESEARCH**

Mrinalini Kochupillai, Technical University of Munich, Germany

**TH1.O-9.5: REGION OF INTEREST EXTRACTION BASED ON UNSUPERVISED 1169
CROSS-DOMAIN ADAPTATION FOR REMOTE SENSING IMAGES**

Sijia Ma, Wanning Zhu, Libao Zhang, Beijing Normal University, China

**TH1.O-10: CEOS VIRTUAL CONSTELLATION OF OCEAN SURFACE VECTOR WIND: STATUS
AND RECENT PROGRESSES**

**TH1.O-10.1: OVERVIEW OF THE STANDARDS AND METRICS OF OCEAN SURFACE 1173
VECTOR WIND BY SPACEBORNE MICROWAVE REMOTE SENSING**

Xiaolong Dong, Key Laboratory of Microwave Remote Sensing, National Space Science Center, China; Paul S. Chang, National Oceanic and Atmospheric Administration (NOAA), United States; Ad Stoffelen, Royal Netherlands Meteorological Institute [KNMI], Netherlands; Marcos Portabella, Institute of Marine Sciences (ICM-CSIC), Spain; Raj Kumar, Indian Space Research Organisation, India; Stefanie Linow, European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), Germany; Juhong Zou, National Satellite Oceanic Application Service (NSOAS), China; Wenming Lin, Nanjing University of Information Science and Technology, China; Xingou Xu, Key Laboratory of Microwave Remote Sensing, National Space Science Center, China

TH1.O-10.3: THE INDIAN CONTRIBUTION TO THE CEOS-VC..... 1176

Raj Kumar, Prantik Chakraborty, Devang Mankad, Suchandra A. Bhowmick, Abhisek Chakraborty, Indian Space Research Organisation, India

**TH1.O-10.4: CEOS VIRTUAL CONSTELLATION OF OCEAN SURFACE VECTOR WIND: 1180
STATUS AND RECENT PROGRESS**

Paul S. Chang, National Oceanic and Atmospheric Administration (NOAA), United States; Raj Kumar, Indian Space Research Organisation, India; Stefanie Linow, EUMETSAT, Germany

TH1.O-10.5: HURRICANE OCEAN WIND SPEEDS 1182

Ad Stoffelen, Gert-Jan Marseille, Weicheng Ni, Royal Netherlands Meteorological Institute, Netherlands; Alexis Mouche, IFREMER, France; Federica Polverari, NASA Jet Propulsion Laboratory, United States; Marcos Portabella, Consejo Superior de Investigaciones Científicas (CSIC), Spain; Wenming Lin, NUIST, China; Joe Sapp, Paul S. Chang, Zorana Jelenak, National Oceanic and Atmospheric Administration (NOAA), United States

TH1.O-11: GEO-INFORMATION AND INTEGRATION FOR URBAN RESILIENCE

TH1.O-11.3: HOW WE LIVE AND WHAT THAT MEANS - A CHARACTER STUDY WITH DATA 1190 FROM SPACE

Hannes Taubenböck, German Aerospace Center (DLR), Germany

TH1.O-11.4: URBAN RESILIENCE TO ENVIRONMENTAL STRESSORS VIA EO-BASED 1194 SMART SOLUTIONS

Evangelos Gerasopoulos, Eleni Athanasopoulou, Orestis Speyer, Jennifer Bailey, National Observatory of Athens, Greece; David Kocman, Jožef Stefan Institute, Slovenia; Matthias Karl, Helmholtz-Zentrum Geesthacht, Germany

TH1.O-11.6: MASK-HEIGHT R-CNN: AN END-TO-END NETWORK FOR 3D BUILDING 1202 RECONSTRUCTION FROM MONOCULAR REMOTE SENSING IMAGERY

Sining Chen, Technical University of Munich, Germany; Lichao Mou, Qingyu Li, Yao Sun, Xiao Xiang Zhu, German Aerospace Center (DLR); Technical University of Munich (TUM), Germany

TH1.O-12: MACHINE LEARNING DATASETS IN REMOTE SENSING

TH1.O-12.1: THERE IS NO DATA LIKE MORE DATA - CURRENT STATUS OF MACHINE 1206 LEARNING DATASETS IN REMOTE SENSING

Michael Schmitt, Munich University of Applied Sciences, Germany; Seyed Ali Ahmadi, K. N. Toosi University of Technology, Iran; Ronny Hänsch, German Aerospace Center (DLR), Germany

TH1.O-12.3: TOWARD DATASET CONSTRUCTION FOR REMOTE SENSING IMAGE 1210 INTERPRETATION

Yang Long, Gui-Song Xia, Wen Yang, Liangpei Zhang, Deren Li, Wuhan University, China

TH1.O-12.4: ARTIFIVE-POTSDAM: A BENCHMARK FOR LEARNING WITH ARTIFICIAL 1214 OBJECTS FOR IMPROVED AERIAL VEHICLE DETECTION

Immanuel Weber, Jens Bongartz, University of Applied Sciences Koblenz, Germany; Ribana Roscher, University of Bonn, Germany

TH1.O-12.5: RSVQA MEETS BIGEARTHNET: A NEW, LARGE-SCALE, VISUAL QUESTION 1218 ANSWERING DATASET FOR REMOTE SENSING

Sylvain Lobry, Université de Paris, France; Begüm Demir, Technische Universität Berlin, Germany; Devis Tuia, École Polytechnique Fédérale de Lausanne, Switzerland

TH1.O-12.6: PREDICTING 1-H DEAD FUEL MOISTURE CONTENT AT REGIONAL SCALES 1222 USING MACHINE LEARNING FROM HIMAWARI-8 DATA

Chunquan Fan, Binbin He, University of Electronic Science and Technology of China, China; Peng Kong, Hao Xu, Qiang Zhang, Institute of Spacecraft System Engineering (ISSE), China; Xingwen Quan, University of Electronic Science and Technology of China, China

TH1.O-13: MODERN SPACEBORNE HYPERSPECTRAL IMAGERS FOR AQUATIC APPLICATIONS: FIRST EXPERIENCES AND PERSPECTIVES

TH1.O-13.1: REALIZING THE POTENTIAL OF HYPERSPECTRAL REMOTE SENSING IN 1226 COASTAL AND INLAND WATERS

Heidi Dierssen, University of Connecticut, United States

TH1.O-13.3: HYPERSPECTRAL PRISMA PRODUCTS OF AQUATIC SYSTEMS 1229

Claudia Giardino, Mariano Bresciani, Alice Fabbretto, Nicola Ghirardi, Salvatore Mangano, Andrea Pellegrino, National Research Council of Italy, Italy; Diana Vaiciute, University of Klaipeda, Lithuania; Federica Braga, Vittorio Ernesto Brando, National Research Council of Italy, Italy; Marnix Laanen, Water Insight, Netherlands; Apostolos Tzimas, EMVIS Consultant Engineers S.A., Greece

TH1.O-13.4: CHINESE HYPERSPECTRAL SATELLITE MISSIONS AND PRELIMINARY APPLICATIONS OF AQUATIC ENVIRONMENT	1233
<i>Fang Shen, Haiyang Zhao, Qing Zhu, Xuerong Sun, East China Normal University, China; Yinnian Liu, Shanghai Institute of Technical Physics, China</i>	
TH1.O-13.5: EXTENSION OF ATMOSPHERIC CORRECTION POLYMER TO HYPERSPECTRAL SENSORS: APPLICATION TO HICO AND FIRST RESULTS FOR DESIS DATA	1237
<i>Astrid Bracher, Mariana A. Soppa, Alfred-Wegener-Institute Helmholtz Center for Polar and Marine Research (AWI), Germany; Peter Gege, German Aerospace Center (DLR), Germany; Svetlana N. Losa, Brenner G. Silva, Alfred-Wegener-Institute Helmholtz Center for Polar and Marine Research (AWI), Germany; Francois Steinmetz, HYGEOS, France; Iris Dröscher, Landesanstalt für Umwelt Baden-Württemberg, Germany</i>	
TH1.O-13.6: RADIOMETRIC MEASUREMENT REQUIREMENTS TO DERIVE INFORMATION ON PHYTOPLANKTON COMMUNITY COMPOSITION FROM SATELLITE	1241
<i>Peter Gege, German Aerospace Center (DLR), Germany</i>	
TH1.O-14: MULTI-RESOLUTION AND MULTIMODAL REMOTE SENSING IMAGE PROCESSING AND INTERPRETATION	
TH1.O-14.1: AN OVERVIEW OF MULTIMODAL REMOTE SENSING DATA FUSION: FROM IMAGE TO FEATURE, FROM SHALLOW TO DEEP	1245
<i>Danfeng Hong, German Aerospace Center (DLR), Germany; Jocelyn Chanussot, Université Grenoble Alpes, INRIA, CNRS, Grenoble INP, LJK, France; Xiao Xiang Zhu, German Aerospace Center (DLR); Technical University of Munich (TUM), Germany</i>	
TH1.O-14.3: A FAST AND ROBUST MATCHING SYSTEM FOR MULTIMODAL REMOTE SENSING IMAGE REGISTRATION	1249
<i>Yuanxin Ye, Bai Zhu, Liang Zhou, Bruzzone Lorenzo, Southwest Jiaotong University, China</i>	
TH1.O-14.4: A DEEP LEARNING-BASED HETEROGENEOUS SPATIO-TEMPORAL-SPECTRAL FUSION: SAR AND OPTICAL IMAGES	1252
<i>Menghui Jiang, School of Resource and Environmental Sciences, Wuhan University, China; Jie Li, School of Geodesy and Geomatics, Wuhan University, China; Huanfeng Shen, School of Remote Sensing and Information Engineering, Wuhan University, China</i>	
TH1.O-14.5: HYPERSPECTRAL AND MULTISPECTRAL IMAGE FUSION: FROM MODEL-DRIVEN TO DATA-DRIVEN	1256
<i>Yongqiang Zhao, Haofang Yan, Northwestern Polytechnical University, China; Sha Liu, Shanghai Institute of Aerospace Technology, China</i>	
TH1.O-14.6: A FULL-RESOLUTION TRAINING FRAMEWORK FOR SENTINEL-2 IMAGE FUSION	1260
<i>Matteo Ciotola, Mario Ragosta, Giovanni Poggi, Giuseppe Scarpa, University Federico II, Italy</i>	
TH1.O-15: DEEP INSIGHT SAR III	
TH1.O-15.1: PHYSICS-AWARE FEATURE LEARNING OF SAR IMAGES WITH DEEP NEURAL NETWORKS: A CASE STUDY	1264
<i>Zhongling Huang, Northwestern Polytechnical University, China; Corneliu Octavian Dumitru, German Aerospace Center (DLR), Germany; Jun Ren, Institute of Mechanical and Electrical Engineering, China</i>	
TH1.O-15.3: PROPOSAL OF COMPLEX-VALUED RESERVOIR COMPUTING FOR TOPOGRAPHIC ASPECT CLASSIFICATION	1268
<i>Bungo Konishi, Akira Hirose, Ryo Natsuaki, University of Tokyo, Japan</i>	

TH1.O-15.4: INTEGRATION OF IEM B, ISMN AND SAR SENTINEL-1 DATA FOR ACCURATE SOIL MOISTURE ESTIMATION USING NEURAL NETWORKS 1272

Leonardo De Laurentiis, University of Rome Tor Vergata, Italy; Daniele Latini, GEO-K s.r.l., Italy; Giovanni Schiavon, Fabio Del Frate, University of Rome Tor Vergata, Italy

TH1.O-15.5: THREE-DIMENSIONAL ASTEROID RECONSTRUCTION VIA MULTI-ASPECT GROUND-BASED SAR IMAGES: AN OPTIMIZATION COMPARISON 1276

Yi Liu, Zegang Ding, Yan Wang, Tao Zeng, Zehua Dong, Beijing Institute of Technology, China

TH1.O-15.6: DERIVING AN EXCLUSION MAP (EX-MAP) FROM SENTINEL-1 TIME SERIES FOR SUPPORTING FLOODWATER MAPPING 1280

Jie Zhao, Ramona Pelich, Renaud Hostache, Patrick Matgen, Luxembourg Institute of Science and Technology, Luxembourg; Senmao Cao, EODC Earth Observation Data Centre, Austria; Wolfgang Wagner, Vienna University of Technology, Austria; Marco Chini, Luxembourg Institute of Science and Technology, Luxembourg

TH1.O-16: NEW GLOBAL NAVIGATION SATELLITE SYSTEMS REFLECTOMETRY (GNSS-R) MISSIONS

TH1.O-16.1: OPERATIONAL AIRBORNE GNSS-R ABOARD AIR NEW ZEALAND DOMESTIC AIRCRAFT 1284

Delwyn Moller, University of Auckland, New Zealand; Chris Ruf, University of Michigan, United States; Ryan Linnabury, Andrew O'Brien, Ohio State University, United States; Stephen Musko, University of Michigan, United States

TH1.O-16.3: GNSS-REFLECTOMETRY ACTIVITIES ON THE DOT-1 MICROSATELLITE IN PREPARATION FOR THE HYDROGNSS MISSION 1288

Martin Unwin, Jonathan Rawlinson, Surrey Satellite Technology Ltd, United Kingdom; Lucinda King, Surrey Space Centre, United Kingdom; Giuseppe Foti, Matthew Hammond, National Oceanography Centre, United Kingdom; Thomas Burger, European Space Agency (ESA), Netherlands

TH1.O-16.4: FSSCAT MISSION DESCRIPTION AND FIRST SCIENTIFIC RESULTS OF THE FMPL-2 ONBOARD 3CAT-5/A 1291

Adriano Camps, Joan Francesc Munoz-Martin, Joan Adrià Ruiz-de-Azua, Lara Fernandez, Adrian Perez-Portero, David Llavería, Christoph Herbert, Universitat Politècnica de Catalunya, Spain; Miriam Pablos, Institut de Ciències del Mar/CSIC, Spain; Alessandro Golkar, Skolkovo Institute of Science and Technology, Russia; Antonio Gutierrez, Carlos Antonio, Jorge Bandejas, Joao Andrade, David Cordeiro, Deimos Engenharia, Portugal; Simone Briatore, Nicola Garzaniti, Golbriak Space, Estonia; Fabio Nichele, Raffaele Mozzillo, Alessio Piumatti, Margherita Cardi, Tyvak International, Italy; Marco Esposito, Cosine, Netherlands; Bernardo Carnicero Dominguez, Massimiliano Pastena, ESA / ESTEC, Netherlands; Giancarlo Filippazzo, Amanda Reagan, ESA / ESRIN, Italy

TH1.O-16.6: GNSS-R FROM THE BUFENG-1 TWIN SATELLITES FOR SEA SURFACE WINDS UNDER HURRICANE CONDITION 1299

Cheng Jing, Xinliang Niu, China Academy of Space Technology-Xi'an (CAST-XIAN), China; Feng Lu, China Meteorological Administration, China; Zhaoguang Bai, DFH Satellite Co. Ltd., China; Wei Wan, Peking University, Spain; Weiqiang Li, Institut d'Estudis Espacials de Catalunya (IEEC), Spain; Yanlei Du, Aerospace Information Research Institute, Chinese Academy of Sciences, China

TH1.O-17: PROCESSES IN CHANGING MARINE ENVIRONMENTS MONITORED BY SAR I: GENERAL ASPECTS

TH1.O-17.1: SEA SATE AND SEA SURFACE WIND MEASUREMENT BY SPACEBORNE SAR IN THE ARCTIC OCEAN 1303

Bingqing Huang, Ke Wu, Xiao-Ming Li, Aerospace Information Research Institute, Chinese Academy of Sciences, China

TH1.O-17.3: ANALYSIS OF THE EFFECT OF THE INCIDENCE ANGLE ON POLSAR SHIP SCATTERING 1307

Ferdinando Nunziata, Andrea Buono, Adil Muhammad, Università degli Studi di Napoli Parthenope, Italy; Domenico Velotto, University of Bremen, Italy; Maurizio Migliaccio, Università degli Studi di Napoli Parthenope, Italy

TH1.O-17.4: AUTOMATIZED MARINE VESSEL MONITORING FROM SENTINEL-1 DATA USING CONVOLUTION NEURAL NETWORK 1311

Surya Prakash Tiwari, King Fahd University of Petroleum and Minerals, Saudi Arabia; Sudhir Kumar Chaturvedi, University of Petroleum and Energy Studies, India; Subhrangshu Adhikary, Bidhan Chandra Roy Engineering College, India; Saikat Banerjee, Sourav Basu, CubicX, India

TH1.O-17.5: OPTIMAL INSAR CONDITIONS FOR MONITORING CREEK CHANGES IN TIDAL FLATS 1315

Duk-jin Kim, Seoul National University, Korea (South); Changhyun Choi, German Aerospace Center (DLR), Germany; Jungkyo Jung, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Ji-Hwan Hwang, Seoul National University, Korea (South)

TH1.O-17.6: BACKSCATTERING SIMULATION OF EMULSION OIL COVERED SEA SURFACE 1319

Tingyu Meng, Xiaofeng Yang, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Kun-Shan Chen, Guilin University of Technology, China

TH1.O-18: SATELLITE MISSIONS PLANNING

TH1.O-18.1: VENMS: VM1 FINAL RADIOMETRIC ASSESSMENT AND FUTURE PHASES 7827

Arthur Dick, Centre National d'Etudes Spatiales (CNES), France; Gérard Dedieu, Olivier Hagolle, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Jean-Louis Raynaud, Sophie Pelou, Centre National d'Etudes Spatiales (CNES), France; Jean-Pascal Burochin, Magellium, France; Thierry Erudel, CS Group, France

TH1.O-18.2: A FOLLOW-UP FOR THE SOIL MOISTURE AND OCEAN SALINITY MISSION 7831

Nemesio Rodríguez-Fernández, Eric Anterrieu, François Cabot, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Jaqueline Boutin, LOCEAN, France; Ghislain Picard, Thierry Pellarin, IGE, France; Olivier Merlin, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Jerome Vialard, Frederic Vivier, LOCEAN, France; Josiane Costeraste, Baptiste Palacin, Raquel Rodriguez Suquet, Louise Yu, Thierry Amiot, CNES, France; Ali Khazaal, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Thibaut Decoopman, Nicolas Jeannin, Laurent Costes, Romain Caujolle, Maria Jose Escorihuela, Airbus Defence and Space, France; Ahmad Al Bitar, Philippe Richaume, Arnaud Mialon, Christophe Suere, Yann Kerr, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France

TH1.O-18.3: HIGH-LEVEL SYNTHESIS OF A SINGLE/MULTI-BAND OPTICAL AND SAR IMAGE COMPRESSION AND ENCRYPTION HARDWARE ACCELERATOR 7835

Paolo Motto Ros, Michele Caon, Tiziano Bianchi, Maurizio Martina, Enrico Magli, Politecnico di Torino, Italy

TH1.O-18.4: RECENT DEVELOPMENTS OF THE SPACE EXPLORATION SYNTHETIC APERTURE RADAR (SESAR) FOR PLANETARY SCIENCE MISSIONS 7839

Rafael F. Rincon, NASA, United States; Lynn M. Carter, University of Arizona, United States; Roger Banting, Martin Perrine, Cornelis F. du Toit, Peter Steigner, Ken Segal, Babak Farrokh, Michael Choi, Daniel Lu, David Caruth, Iban Ibanez, Tasneem Khan, William Aberdeen, NASA, United States

TH1.O-18.5: SYNCHRONIZATION OF RADIO SIGNALS FOR THE UNCONNECTED L-BAND INTERFEROMETER DEMONSTRATOR (ULID) 7843

Eric Anterrieu, CNRS, France; François Cabot, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Yann Kerr, Thierry Amiot, David Valat, Laurent Lestarquit, CNES, France

TH1.O-18.6: VERIFICATION OF OPERATIONAL APPLICATIONS OF NEW MODES OF TERRASAR-X PAZ CONSTELLATION 7846

Parivash Lumsdon, Wolfgang Koppe, Catherine Hartley, Jürgen Janoth, Hanjo Kahabka, Airbus Defence and Space, Germany; Fernando Cerezo, Hidesat Servicios Estratégicos SA, Spain; Víctor del Estal Fernández, Hidesat Servicios Estratégicos SA, Spain; Juan Ignacio Cicuendez Pérez, Hidesat Servicios Estratégicos SA, Germany

TH1.O-19: PASSIVE OPTICAL AND HYPERSPECTRAL SENSORS TECHNOLOGY AND APPLICATIONS

TH1.O-19.2: ATMOSPHERIC CORRECTION ASSESSMENT AND NORMALIZATION 7854 PROCEDURE FOR COUPLING SENTINEL-2 AND WORLDVIEW-3 IMAGERY

Jose Luis Pancorbo, Universidad Politécnic de Madrid, Spain; Brian Lamb, City College of New York, United States; Miguel Quemada, Universidad Politécnic de Madrid, Spain; Wells Dean Hively, United States Geological Survey, United States; Ignacio González Fernandez, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas, Spain; Iñigo Molina, Universidad Politécnic de Madrid, Spain

TH1.O-19.3: ATMOSPHERIC COMPOSITION APPLICATIONS WITH IASI AND 7858 NEXT-GENERATION HYPERSPECTRAL INFRARED SOUNDERS (IASI-NG AND IRS)

Pierre Coheur, Lieven Clarisse, Martin Van Damme, Bruno Franco, Daniel Hurtmans, Université libre De Bruxelles, Belgium; Cathy Clerbaux, Sorbonne Université, UVSQ, CNRS, Belgium

TH1.O-19.4: DEVELOPMENT OF A COOLED INFRARED CAMERA FOR MEASURING 7860 VOLCANIC SO₂ GAS CONCENTRATION AND TEMPERATURE DISTRIBUTIONS

Tetsuya Jitsufuchi, National Research Institute for Earth Science and Disaster Resilience, Japan

TH1.O-19.5: SPATIAL LIGHT MODULATOR-BASED ARCHITECTURE TO IMPLEMENT A 7864 SUPER-RESOLVED COMPRESSIVE INSTRUMENT FOR EARTH OBSERVATION

Valentina Raimondi, Luigi Acampora, Gabriele Amato, Massimo Baldi, Institute of Applied Physics - National Research Council (CNR-IFAC), Italy; Dirk Berndt, Fraunhofer-Institut für Photonische Mikrosysteme (IPMS), Germany; Alberto Bianchi, LEONARDO S.p.A., Italy; Tiziano Bianchi, Politecnico di Torino – DET, Italy; Donato Borrelli, LEONARDO S.p.A., Italy; Valentina Colcelli, Institute of Applied Physics - National Research Council (CNR-IFAC), Italy; Chiara Corti, Francesco Corti, Marco Corti, SAITEC srl, Italy; Nick Cox, ACRI-ST, France; Ulrike A. Dauderstädt, Peter Dürr, Sara Francés González, Fraunhofer-Institut für Photonische Mikrosysteme (IPMS), Germany; Paolo Frosini, RESOLVO srl, Italy; Donatella Guzzi, Institute of Applied Physics - National Research Council (CNR-IFAC), Italy; Jessica Huntingford, RESOLVO srl, Italy; Detlef Kunze, Fraunhofer-Institut für Photonische Mikrosysteme (IPMS), Germany; Demetrio Labate, LEONARDO S.p.A., Italy; Nicolas Lamquin, ACRI-ST, France; Cinzia Latri, Institute of Applied Physics - National Research Council (CNR-IFAC), Italy; Enrico Magli, Politecnico di Torino – DET, Italy; Vanni Nardino, Institute of Applied Physics - National Research Council (CNR-IFAC), Italy; Christophe Pache, Centre Suisse d'Electronique et Microtechnique (CSEM), Switzerland; Lorenzo Palombi, Institute of Applied Physics - National Research Council (CNR-IFAC), Italy; Irene Pettinelli, RESOLVO srl, Italy; Giuseppe Pilato, LEONARDO S.p.A., Italy; Alexandre Pollini, Leopoldo Rossini, Centre Suisse d'Electronique et Microtechnique (CSEM), Switzerland; Enrico Suetta, LEONARDO S.p.A., Italy; Davide Taricco, Diego Valsesia, Politecnico di Torino – DET, Italy; Michael Wagner, Fraunhofer-Institut für Photonische Mikrosysteme (IPMS), Germany

TH1.O-19.6: AIRS POINT SPREAD FUNCTION RECONSTRUCTION USING AIRS AND MODIS 7868 DATA

Igor Yanovsky, Thomas Pagano, Evan Manning, Steven Broberg, Hartmut Aumann, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Luminita Vese, University of California, Los Angeles, United States

TH1.O-20: UAV AND CLOSE SENSING APPLICATIONS I

TH1.O-20.1: AUTOMATED UAS MEASUREMENTS OF REFLECTANCE AND SOLAR INDUCED 8265 FLORESCENCE (SIF) FOR ASSESSMENT OF THE DINAMICS IN PHOTOSYNTHETIC FUNCTION, APPLICATION FOR MAZE (ZEA MAYS L.) IN GREENBELT, MARYLAND, USA

Petya Campbell, University of Maryland Baltimore County, United States; Philip Townsend, University of Wisconsin, United States; Dan Mandl, James MacKinnon, NASA Goddard Space Flight Center, United States; Lawrence Ong, Science Systems and Applications, Inc., United States

TH1.O-20.2: RANDOM FOREST OUTPERFORMED CONVOLUTIONAL NEURAL NETWORKS FOR SHRUB WILLOW ABOVE GROUND BIOMASS ESTIMATION USING MULTI-SPECTRAL UAS IMAGERY	8269
<i>Haifa Tamiminia, Bahram Salehi, State University of New York, College of Environmental Science and Forestry (ESF), United States; Masoud Mahdianpari, C-CORE and Memorial University of Newfoundland, Canada; Colin M. Beier, Daniel J. Klimkowski, Timothy A. Volk, State University of New York, College of Environmental Science and Forestry (ESF), United States</i>	
TH1.O-20.4: BRDF SAMPLING FROM HYPERSPECTRAL IMAGES: A PROOF OF CONCEPT	8277
<i>Juan M. Jurado, University of Jaén, Spain; Luís Pádua, Jonas Hruska, University of Trás-os-Montes e Alto Douro, Portugal; Roberto Jiménez, Francisco R. Feito, University of Jaén, Spain; Joaquim J. Sousa, Universidade de Trás-os-Montes e Alto Douro, Portugal</i>	
TH1.O-20.5: QUANTIFYING TROPICAL FOREST STAND STRUCTURE THROUGH TERRESTRIAL AND UAV LASER SCANNING FUSION	8281
<i>Louise Terryn, Kim Calders, Ghent University, Belgium; Harm Bartholomeus, Wageningen University, Netherlands; Renée Bartolo, Australian Government, Australia; Benjamin Brede, Wageningen University, Netherlands; Barbara D’hont, Ghent University, Belgium; Mathias Disney, University College London, United Kingdom; Martin Herold, Alvaro Lau, Wageningen University, Netherlands; Alexander Shenkin, University of Oxford, United Kingdom; Timothy Whiteside, Australian Government, Australia; Phil Wilkes, University College London, United Kingdom; Hans Verbeeck, Ghent University, Belgium</i>	
TH1.O-20.6: MULTI-SCALE ANALYSIS OF DEMS DERIVED FROM UNMANNED AERIAL VEHICLE (UAV) IN PRECISION AGRICULTURE CONTEXT	8285
<i>Abderrazak Bannari, Space-Pix Map, Canada; Ahmed Selouani, Geofly Society of Geomatics, Morocco; Mohamed El-Basri, GRND, Research center CERN2D, ENS - University Mohamed-V, Morocco; Hassan Rhinane, University Hassan II, Morocco; Abderrazak El-Harti, Abderrahman El-Ghmari, University Sultan Moulay Slimane, Morocco</i>	
 TH2.MM-1: MACHINE LEARNING APPLICATIONS IN PARAMETER ESTIMATION	
TH2.MM-1.1: ATTENTION NEURAL NETWORK SEMBLANCE VELOCITY AUTO PICKING WITH REFERENCE VELOCITY CURVE DATA AUGMENTATION	4596
<i>Chenyu Qiu, Bangyu Wu, Delin Meng, Xu Zhu, Xi’an Jiaotong University, China; Meng Li, Nan Qin, Research Institute of Petroleum Exploration & Development, China</i>	
TH2.MM-1.2: TCLNET: LEARNING TO LOCATE TYPHOON CENTER USING DEEP NEURAL NETWORK	4600
<i>Chao Tan, Chongqing University of Technology, China</i>	
TH2.MM-1.3: UTILITY OF DERIVATIVE ANALYSIS AND LSTM FOR PREDICTION OF DECAY TREND OF PLEUROTUS ERYNGII IN HYPERSPECTRAL IMAGERY	4604
<i>Chia-Jui Wang, Chao-Cheng Wu, National Taipei University of Technology, Taiwan; Min-Shao Shih, Tsang-Sen Liu, Council of Agriculture, Executive Yuan, Taiwan; Yen-Chieh Ouyang, National Chung Hsing University, Taiwan</i>	
TH2.MM-1.4: MACHINE LEARNING TECHNIQUES USING ENVIRONMENTAL DATA FROM REMOTE SENSING APPLIED TO MODELING DENGUE RISK IN BRAZIL	4608
<i>Joaquim Bauxell, Mercè Vall-llossera, Universitat Politècnica de Catalunya, Spain; Hellen Gurgel, University of Brasília, Brazil</i>	
TH2.MM-1.5: AN EXTREME LEARNING MACHINE CORRECTION NETWORK FOR HIGH PRECISION SATELLITE ATTITUDE DETERMINATION	4612
<i>Kailang Cao, Jiaojiao Li, Rui Song, Yunsong Li, Weijiao Jiang, Xidian University, China</i>	
TH2.MM-1.6: FLOOD PREDICTION USING INVERSE DISTANCE WEIGHTED INTERPOLATION OF K-NEAREST NEIGHBOR POINTS	4616
<i>Satria Nusa Paradilaga, Margaretha Sulistyoningih, Universitas Atma Jaya Yogyakarta, Indonesia; Rosbintarti Kartika Lestari, Institute for Globally Distributed Open Research and Education (IGDORE), Tokyo, Japan & RONIN Institute, Japan; Agatha Padma Laksitaningtyas, Universitas Atma Jaya Yogyakarta, Indonesia</i>	

TH2.MM-1.7: TRANSFER LEARNING PERFORMANCE FOR REMOTE PASTURELAND TRAIT ESTIMATION IN REAL-TIME FARM MONITORING	4620
<i>Patricia O'Byrne, Patrick Jackman, Damon Berry, Technological University Dublin, Ireland; Hector-Hugo Franco-Peña, University College Dublin, Ireland; Michael French, Tanco Autowrap, Ireland; Robert John Ross, Technological University Dublin, Ireland</i>	
TH2.MM-1.8: GENERATING THE CLOUD MOTION WIND FIELD FROM SATELLITE CLOUD IMAGERY USING DEEP LEARNING APPROACH	4624
<i>Chao Tan, Chongqing University of Technology, China</i>	
TH2.MM-1.9: ANGULAR NORMALIZATION OF LAND SURFACE TEMPERATURE USING FEATURE-SPACE METHOD	4628
<i>Yuanjian Teng, Huazhong Ren, Xin Ye, Jinshun Zhu, Qiming Qin, Peking University, China; Yonggang Qian, Chinese Academy of Sciences, China</i>	
TH2.MM-1.10: POTENTIAL OF SPECTRAL INDICES FOR HALOPHYTE VEGETATION COVER DETECTION IN ARID AND SALT-AFFECTED LANDSCAPE	4632
<i>Zahra M. Al-ali, Arabian Gulf University, Bahrain; Abderrazak Bannari, Space-Pix Map, Canada; Ali El-Battay, International Centre of Bio-saline Agriculture, United Arab Emirates; Hameid Nadir, Arabian Gulf University, Bahrain</i>	
 TH2.MM-2: TIME SERIES DATA HARMONIZATION AND PREDICTION	
TH2.MM-2.1: ON THE CHARACTERIZATION OF SEN2LIKE SURFACE REFLECTANCE DATA HARMONIZATION AND FUSION PROCESSES	4636
<i>Sebastien Saunier, Vincent Debaecker, Jerome Louis, Kevin Garcia, Cerise Cuny, TELESPAIZO, France; Enrico Cadau, Serco SPA, Italy; Valentina Boccia, Ferran Gascon, ESA / ESRIN, Italy</i>	
TH2.MM-2.2: A TEMPORAL ANALYSIS OF THE RELATIONSHIP BETWEEN SYNOPTIC WEATHER STATION AIR TEMPERATURE MEASUREMENT AND SATELLITE-DERIVED LAND SURFACE TEMPERATURE: A CASE STUDY IN PORT AREA, MANILA CITY, PHILIPPINES	4640
<i>Mark Angelo Purio, Mengu Cho, Tetsunobu Yoshitake, Kyushu Institute of Technology, Japan</i>	
TH2.MM-2.3: SELF-ATTENTION GENERATIVE ADVERSARIAL NETWORKS FOR TIMES SERIES VHR MULTISPECTRAL IMAGE GENERATION	4644
<i>Ferdous Chaabane, Safa Réjichi, SUP'COM, Tunisia; Florence Tupin, Telecom Paris - LTCI Institut Polytechnique de Paris, France</i>	
TH2.MM-2.4: TIME-SERIES IN STRUCTURE-FROM-MOTION PHOTOGRAMMETRY: TESTING CO-REGISTRATION APPROACHES FOR TOPOGRAPHIC CHANGE ANALYSIS.	4648
<i>Louise Delhaye, Benoît Smets, Royal Museum for Central Africa, Belgium</i>	
TH2.MM-2.5: SATELLITE IMAGE FUTURE LANDSCAPE PREDICTION USING CONDITIONAL ADVERSARIAL NETWORKS	4652
<i>Hareem Feroz Ahmed, Hiba Jamal, Muhammad Farhan, Habib University, Pakistan</i>	
TH2.MM-2.6: A BLIND CLOUD/SHADOW REMOVAL STRATEGY FOR MULTI-TEMPORAL REMOTE SENSING IMAGES	4656
<i>Jie Lin, Ting-Zhu Huang, Xi-Le Zhao, Meng Ding, University of Electronic Science and Technology of China, China; Yong Chen, Jiangxi Normal University, China; Tai-Xiang Jiang, Southwestern University of Finance and Economics, China</i>	
 TH2.MM-3: OBJECT EXTRACTION IN OPTICAL IMAGES	
TH2.MM-3.1: AN IMPROVED DEEP-LEARNING MODEL FOR ROAD EXTRACTION FROM VERY-HIGH-RESOLUTION REMOTE SENSING IMAGES	4660
<i>Wangyao Shen, Yunping Chen, Yuanlei Cheng, Kangzhuo Yang, Xiang Guo, University of Electronic Science and Technology of China, China; Yuan Sun, Chinese Academy of Sciences, China; Yan Chen, University of Electronic Science and Technology of China, China</i>	

TH2.MM-3.2: RE-DLINKNET: BASED ON DLINKNET AND RENET FOR ROAD EXTRACTION FROM HIGH RESOLUTION SATELLITE IMAGERY	4664
<i>Yuchuan Wang, Ling Tong, Jiang Wen, Fanghong Xiao, Yaqi Gao, Liubei He, University of Electronic Science and Technology of China, China; Dingmao Li, Shanxi Luneng Hequ Electric Coal Development Co. Ltd, China</i>	
TH2.MM-3.3: A CNN WITH MULTISCALE CONVOLUTION FOR HYPERSPECTRAL IMAGE CLASSIFICATION USING TARGET-PIXEL-ORIENTATION SCHEME	4668
<i>Jayasree Saha, Yuvraj Khanna, Jayanta Mukhopadhyay, Indian Institute of Technology Kharagpur, India</i>	
TH2.MM-3.4: IMPROVING MORE INSTANCE SEGMENTATION AND BETTER OBJECT DETECTION IN REMOTE SENSING IMAGERY BASED ON CASCADE MASK R-CNN	4672
<i>Durga Kumar, Xiaoling Zhang, University of Electronic Science and Technology of China, China</i>	
TH2.MM-3.5: V2RNET: AN UNSUPERVISED SEMANTIC SEGMENTATION ALGORITHM FOR REMOTE SENSING IMAGES VIA CROSS-DOMAIN TRANSFER LEARNING	4676
<i>Danpei Zhao, Jiayi Li, Bo Yuan, Zhenwei Shi, Image Processing Center, School of Astronautics, Beihang University, China</i>	
TH2.MM-3.6: U-NET MODEL FOR LOGGING DETECTION BASED ON THE SENTINEL-1 AND SENTINEL-2 DATA	4680
<i>Leonid Shumilo, Nataliia Kussul, Mykola Lavreniuk, Space Research Institute NASU-SSAU, Ukraine</i>	
TH2.MM-3.7: DAMAGED ROAD EXTRACTION BASED ON SIMULATED POST-DISASTER REMOTE SENSING IMAGES	4684
<i>Yansong Huang, Haocai Wei, Junli Yang, Ming Wu, Beijing University of Posts and Telecommunications, China</i>	
 TH2.MM-4: MULTI-APPLICATIONS OF IMAGE SEGMENTATION II	
TH2.MM-4.1: MULTISCALE CLUSTERING OF HYPERSPECTRAL IMAGES THROUGH SPECTRAL-SPATIAL DIFFUSION GEOMETRY	4688
<i>Sam Polk, James Murphy, Tufts University, United States</i>	
TH2.MM-4.2: DEEP LEARNING APPLICATION FOR FRACTURE SEGMENTATION OVER OUTCROP IMAGES FROM UAV-BASED DIGITAL PHOTOGRAMMETRY	4692
<i>Ademir Marques Jr., Graciela Racolte, Unisinos University, Brazil; Eniuce de Souza, State University of Maringa, Brazil; Hiduino Domingos, Rafael Kenji Horota, João Gabriel Motta, Daniel Zanotta, Unisinos University, Brazil; Caroline Cazarin, Cenpes, Brazil; Luiz Gonzaga Jr, Mauricio Veronez, Unisinos University, Brazil</i>	
TH2.MM-4.3: DEEP LEARNING AND GOOGLE EARTH ENGINE APPLIED TO MAPPING EUCALYPTUS	4696
<i>João Otavio Nascimento Firigato, José Marcato Junior, Universidade Federal de Mato Grosso do Sul, Brazil; Wesley Gonçalves, Federal University of Mato Grosso do Sul, Brazil; Vitor Matheus Bacani, Universidade Federal de Mato Grosso do Sul, Brazil</i>	
TH2.MM-4.4: SEMANTIC SEGMENTATION OF LAND USE / LAND COVER (LU/LC) TYPES USING F-CNNs ON MULTI-SENSOR (RADAR-IR-OPTICAL) IMAGE DATA	4700
<i>Usman Iqbal Ahmed, Arturo Velasco, Bernhard Rabus, Simon Fraser University, Canada</i>	
TH2.MM-4.5: GLOBAL LAND USE / LAND COVER WITH SENTINEL 2 AND DEEP LEARNING	4704
<i>Krishna Karra, Caitlin Kontgis, Zoe Statman-Weil, Joseph Mazzariello, Mark Mathis, Steven Brumby, Impact Observatory, United States</i>	
TH2.MM-4.6: BUILDING FOOTPRINT EXTRACTION USING DEEP LEARNING SEMANTIC SEGMENTATION TECHNIQUES: EXPERIMENTS AND RESULTS	4708
<i>Philipe Borba, Felipe de Carvalho Diniz, Brazilian Army Geographic Service, Brazil; Nilton Correia da Silva, Edilson de Souza Bias, University of Brasilia, Brazil</i>	

TH2.MM-4.7: CORN CROPS IDENTIFICATION USING MULTISPECTRAL IMAGES FROM UNMANNED AIRCRAFT SYSTEMS	4712
<i>Fedra Trujillano, Pontifical Catholic University of Peru, Peru; Jessenia Gonzalez, Leipzig University, Germany; Carlos Saito, Andres Flores, Pontifical Catholic University of Peru, Peru; Daniel Racoceanu, Sorbonne University, France</i>	
TH2.MM-4.8: EVALUATING DIFFERENT DEEP LEARNING MODELS FOR AUTOMATIC WATER SEGMENTATION	4716
<i>Thales Akiyama, José Marcato Junior, UFMS - Federal University of Mato Grosso do Sul., Brazil; Wesley Gonçalves, Federal University of Mato Grosso do Sul, Brazil; Mario Carvalho, UFMS - Federal University of Mato Grosso do Sul., Brazil; Anette Eltner, Technische Universität Dresden, Germany</i>	
TH2.MM-4.9: EXPLORING THE FUSION OF SENTINEL-1 SAR AND SENTINEL-2 MSI DATA FOR BUILT-UP AREA MAPPING USING DEEP LEARNING	4720
<i>Sebastian Hafner, Yifang Ban, Andrea Nascetti, KTH Royal Institute of Technology, Sweden</i>	
TH2.MM-5: APPLICATIONS OF POLARIMETRIC, BISTATIC AND DIGITAL BEAMFORMING SAR II	
TH2.MM-5.1: THREE PROBLEMS IN FOREST HEIGHT INVERSION USING P-BAND REPEAT-PASS POLINSAR DATA	4724
<i>Zhanmang Liao, Binbin He, Yue Shi, Xia Liu, University of Electronic Science and Technology of China, China</i>	
TH2.MM-5.2: POLARIMETRIC SAR IMAGE CLASSIFICATION BASED ON EDGE-AWARE DUAL BRANCH FULLY CONVOLUTIONAL NETWORK	4728
<i>Feng Gao, Yanqiao Chen, Xinghua Chai, The 54th Research Institute of China Electronics Technology Group Corporation, China; Bin Wu, Cheng Peng, Ruoting Xing, Yangyang Li, Xidian University, China</i>	
TH2.MM-5.3: WEAK SCATTERING MECHANISM EXTRACTION METHOD BASED ON TARGET NULL THEORY	4732
<i>Dongwei Lu, Bo Pang, Shiqi Xing, Dahai Dai, Xuesong Wang, National University of Defence Technology, China</i>	
TH2.MM-5.4: THE OPTIMUM BASELINE ANALYSIS FOR POLINSAR FOREST HEIGHT MAPPING	4736
<i>Xiao Wang, Nanjing Tech University, China; Feng Xu, Ya-Qiu Jin, Fudan University, China</i>	
TH2.MM-5.5: SUPERPIXEL SEGMENTATION FOR POLSAR IMAGES BASED ON CROSS ITERATION	4739
<i>Meilin Li, Huanxin Zou, National University of Defence Technology, China; Xianxiang Qin, Air Force Engineering University, China; Zhen Dong, Juan Wei, National University of Defence Technology, China</i>	
TH2.MM-5.6: DELINEATING STATIONARY/NON-STATIONARY GROUND TARGETS WITH CORRELATION ANALYSIS OF TWO CROSS-POL COMPONENTS IN POLSAR DATA	4743
<i>Yin Zhang, University of Electronic Science and Technology of China, China; Yong Wang, East Carolina University, United States; Dingfeng Duan, University of Electronic Science and Technology of China, China; Hong Li, East Carolina University, United States</i>	
TH2.MM-5.7: GRAVITATION-BASED BILATERAL FILTERING OF ALOS-2 PALSAR-2 POLARIMETRIC DATA	4747
<i>Ken Yoong Lee, Chen Guang Hou, Soo Chin Liew, Leong Keong Kwoh, National University of Singapore, Singapore</i>	
TH2.MM-5.8: GRAPH REGULAR LOSS FOR SEMI-SUPERVISED POLSAR TERRAIN CLASSIFICATION	4751
<i>Chunlei Han, Yao Lu, Xi'an Research Institute of Navigation Technology, China; Yao Wang, Yuwei Guo, Qi Zang, Baorui Duan, Dong Zhao, Shuang Wang, Xidian University, China</i>	
TH2.MM-5.9: RANGE UNAMBIGUOUS WIDE SWATH IMAGING WITH FREQUENCY DIVERSE ARRAY SCANSAR	4755
<i>Yi Liao, Chunlin Wu, Guanghui Zeng, Zhi Zheng, University of Electronic Science and Technology of China, China</i>	

TH2.MM-5.10: DETERMINING ICEBERG SCATTERING MECHANISMS IN GREENLAND 4759
USING QUAD POL ALOS-2 SAR DATA
Johnson Bailey, Armando Marino, Vahid Akbari, University of Stirling, United Kingdom

TH2.MM-6: EARTH OBSERVATION IMAGE ANALYSIS

TH2.MM-6.1: COMPARING TARGET DETECTION PERFORMANCE BETWEEN QUAD-, 4763
COMPACT- AND DUAL-POLARIMETRIC SAR SYSTEMS
Wentao Hou, University of Chinese Academy of Science, Aerospace Information Research Institute, China; Fengjun Zhao, Xiuqing Liu, Robert Wang, Aerospace Information Research Institute, Chinese Academy of Sciences, China

TH2.MM-6.2: LIGHTWEIGHT FINE-GRAINED RECOGNITION METHOD BASED ON 4767
MULTILEVEL FEATURE WEIGHTED FUSION
Yu Pan, Linbo Tang, Baojun Zhao, Beijing Institute of Technology, China

TH2.MM-6.3: SAR IMAGE OBJECT DETECTION BASED ON IMPROVED CROSS-ENTROPY 4771
LOSS FUNCTION WITH THE ATTENTION OF HARD SAMPLES
Yangyang Li, Wenxi Shi, Guangyuan Liu, Licheng Jiao, Xidian University, China; Zhong Ma, Lu Wei, Xi'an Microelectronics Technology Institute, China

TH2.MM-6.4: IMPROVEMENT OF DETECTION ACCURACY OF AIRCRAFT IN REMOTE 4775
SENSING IMAGES BASED ON YOLOV5 MODEL
Xindi Liu, Chang'an University, China; Gucheng Tang, Zhejiang Academy of Surveying and Mapping, China; Weibao Zou, Chang'an University, China

TH2.MM-6.5: COMMON REGIONS OF INTEREST EXTRACTION BASED ON SALIENCY 4779
STATISTIC ANALYSIS FOR MULTIPLE REMOTE SENSING IMAGES
Xinran Lyu, Lan Zhang, Wanning Zhu, Libao Zhang, Beijing Normal University, China

TH2.MM-6.6: ATTENTION-DRIVEN CROSS-MODAL REMOTE SENSING IMAGE RETRIEVAL..... 4783
Ushasi Chaudhuri, Biplab Banerjee, Avik Bhattacharya, Indian Institute of Technology Bombay, India; Mihai Datcu, German Aerospace Center (DLR), Germany

TH2.MM-6.7: A NOVEL MULTI-SCAN JOINT METHOD FOR SLOW-MOVING TARGET 4787
DETECTION IN THE STRONG CLUTTER VIA RPCA
Jia Su, Guonan Cui, Tao Li, Yifei Fan, Mingliang Tao, Northwestern Polytechnical University, China; Haitao Wang, Guilin University of Electronic Technology, China; Xiang Zhang, Shanghai Institute of Satellite Engineering, China

TH2.MM-6.9: OBJECT DETECTION IN OPTICAL REMOTE SENSING IMAGES BASED ON 4790
POSITIVE SAMPLE REWEIGHTING AND FEATURE DECOUPLING
Wenqi Yu, Jiabao Wang, Gong Cheng, Northwestern Polytechnical University, China

TH2.MM-6.10: SPATIAL-TEMPORAL DISTRIBUTION ANALYSIS BASED ON MULTIYEAR HAB 4794
EXTRACTION IN THE YELLOW SEA OF CHINA
Lihua Cai, Zhipeng Cao, Mingming Xu, Hui Sheng, Jianhua Wan, China University of Petroleum, China

TH2.MM-7: TOMOGRAPHY AND 3D MAPPING

TH2.MM-7.1: PANORAMIC 3D RECONSTRUCTION METHOD FOR SAR TOMOGRAPHY 4798
BASED ON MULTI-AZIMUTH OBSERVATIONS
Dong Han, Liangjiang Zhou, Zekun Jiao, Bingnan Wang, Yachao Wang, Yirong Wu, Aerospace Information Research Institute, Chinese Academy of Sciences, China

TH2.MM-7.2: STEREO MATCHING ALGORITHM FOR HIGH-RESOLUTION REMOTE 4802
SENSING IMAGES BASED ON SPARSE CODING AND DICTIONARY LEARNING
Dongyang Liu, Junping Zhang, Youliang Guo, Harbin Institute of Technology, China

TH2.MM-7.3: A POSITION-FIRST 3D INVERSION METHOD FOR TOMOSAR.....	4806
<i>Ruizhe Shi, Zekun Jiao, Xiaolan Qiu, Chibiao Ding, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TH2.MM-7.4: SUPER-RESOLVING SAR TOMOGRAPHY USING DEEP LEARNING	4810
<i>Kun Qian, Technical University of Munich, Germany; Yuanyuan Wang, German Aerospace Center (DLR), Germany; Yilei Shi, Technical University of Munich, Germany; Xiao Xiang Zhu, German Aerospace Center (DLR), Germany</i>	
TH2.MM-7.5: ACCURATE 3D MEASUREMENT FROM TWO SAR IMAGES WITHOUT PRIOR	4814
KNOWLEDGE OF SCENE <i>Karl Insfran, Koichi Ito, Takafumi Aoki, Tohoku University, Japan</i>	
TH2.MM-7.6: A POINT CLOUDS FRAMEWORK FOR 3-D RECONSTRUCTION OF SAR	4818
IMAGES BASED ON 3-D PARAMETRIC ELECTROMAGNETIC PART MODEL <i>Zhi-Long Yang, Ruo-Yi Zhou, Feng Wang, Feng Xu, Fudan University, China</i>	
TH2.MM-7.7: P-BAND SAR TOMOGRAPHY FOR FOREST TYPE CLASSIFICATION	4822
<i>Dinh Ho Tong Minh, INRAE, France; Yen-Nhi Ngo, Independent researcher, France; Thu Trang Lê, Hanoi University of Mining and Geology, Viet Nam</i>	
TH2.MM-7.8: GROUND 3D OBJECT RECONSTRUCTION BASED ON MULTI-VIEW 3D	4826
OCCUPANCY NETWORK USING SATELLITE REMOTE SENSING IMAGE <i>Hao Chen, Wen Chen, Tong Gao, Harbin Institute of Technology, China</i>	
TH2.MM-7.9: EFFICIENT SAR TOMOGRAPHIC INVERSION VIA SPARSE BAYESIAN	4830
LEARNING <i>Yuanyuan Wang, Kun Qian, Xiaoxiang Zhu, German Aerospace Center (DLR), Germany</i>	
TH2.MM-8: SUBSURFACE SENSING / GROUND PENETRATING RADAR I	
TH2.MM-8.1: AUTOMATIC SEGMENTATION OF ICE SHELVES WITH DEEP LEARNING	4833
<i>Miguel Hoyo García, Elena Donini, Francesca Bovolo, Fondazione Bruno Kessler, Italy</i>	
TH2.MM-8.2: A TECHNIQUE TO DETECT OIL PIPELINE LEAK USING A 3-D BISTATIC	4837
IMAGING RADAR <i>Abdulrahman Aljurbua, Kamal Sarabandi, University of Michigan, United States</i>	
TH2.MM-8.3: LOCALIZATION OF SUBSURFACE PIPES IN RADAR IMAGES BY 3D	4841
CONVOLUTIONAL NEURAL NETWORK AND KIRCHHOFF MIGRATION <i>Takahiro Yamaguchi, Tsukasa Mizutani, University of Tokyo, Japan</i>	
TH2.MM-8.4: EFFECTS OF GPR WIRELESS SYNCHRONIZATION DURING COMMON	4845
DEPTH POINT HODOGRAPH PLOTTING <i>Oxana Gulevich, Liudmila Volkovskaya, Alexander Reznikov, IZMIRAN, Russia</i>	
TH2.MM-8.5: A METHOD FOR SEPARATING LINEAR SCATTERS IN NOISY CONDITION	4849
FROM HIGH ENTROPY SCATTERS <i>Yue Yu, Changchun Institute of Technology, China; Chi-Chih Chen, The Ohio State University, United States</i>	
TH2.MM-8.6: INFLUENCE OF A PRIORI UNCERTAINTY OF DIELECTRIC PERMITTIVITY	4852
AND ELECTROMAGNETIC MODEL OF SOIL STRUCTURE ON MEASUREMENT ERRORS IN GROUND PENETRATING RADAR <i>Alexander Baskakov, Aleksey Komarov, National Research University “Moscow Power Engineering Institute”, Russia; Galbaatar Tuvdendorj, Bukhtsooj Odsuren, Institute of Physics and Technology, Mongolia</i>	
TH2.MM-8.7: AN EFFICIENT RAY TRACING BASED METHOD OF GROUND PENETRATING	4856
RADAR SIMULATION FOR DISPERSIVE MEDIA <i>Junfa Zhang, Yesheng Gao, Xingzhao Liu, Zhicheng Wang, Shanghai Jiao Tong University, China; Yu Cui, Shanghai Academy of Spaceflight Technology, China</i>	

TH2.MM-8.8: APPLICATION OF FULL-POLARIMETRIC GPR TO REBAR CORROSION DETECTION	4860
<i>Hai Liu, Jingyang Zhong, Zefan Yang, Xu Meng, Feng Ding, Guangzhou University, China</i>	
TH2.MM-8.9: INTEGRATION OF A GROUND PENETRATING RADAR WITH A RADIOMETER TO INCREASE INFORMATION CONTENT AND ACCURACY IN SUBSURFACE SOUNDING	4864
<i>Alexander Baskakov, Aleksey Komarov, National Research University "Moscow Power Engineering Institute", Russia; Bukhtsoj Odsuren, Galbaatar Tuvdendorj, Institute of Physics and Technology, Mongolia</i>	
TH2.MM-8.10: CLUTTER AWARE DEEP DETECTION FOR SUBSURFACE RADAR TARGETS	4868
<i>Fatih Köprücü, Isin Erer, Istanbul Technical University, Turkey; Deniz Kumlu, Navy Research Center, Turkey</i>	
TH2.MM-9: APPLICATIONS OF REMOTE SENSING	
TH2.MM-9.1: ANALYZING THE SITUATIONAL AND EVENT-DEPENDENT MARITIME TRAFFIC VARIATIONS USING COSMO-SKYMED SAR IMAGERY IN WUHAN, CHINA, BEFORE AND DURING COVID-19 LOCKDOWN	4872
<i>Hashir Tanveer, Timo Balz, Wuhan University, China; Francesca Cigna, Deodato Tapete, Italian Space Agency (ASI), Italy</i>	
TH2.MM-9.2: URBAN BUILDING DETECTION FROM GAOFEN-2 IMAGES BASED ON IMPROVED CENTERMASK	4876
<i>Dengji Zhou, Guojin He, Guizhou Wang, Ranyu Yin, Chinese Academy of Sciences, China; Fangzhou Hong, Zhejiang University, China</i>	
TH2.MM-9.3: COUNTING STRAWBERRY FLOWERS ON DRONE IMAGERY WITH A SEQUENTIAL CONVOLUTIONAL NEURAL NETWORK	4880
<i>Rob Heylen, Petra Van Mulders, Flanders Make, Belgium; Nicole Gallace, PCFruit, Belgium</i>	
TH2.MM-9.4: A SEMI-SUPERVISED SAR SHIP DETECTION FRAMEWORK VIA LABEL PROPAGATION AND CONSISTENT AUGMENTATION	4884
<i>Chen Wang, Jun Shi, Zongyou Zou, Wei Wang, Yuanyuan Zhou, Xiaqing Yang, University of Electronic Science and Technology of China, China</i>	
TH2.MM-9.5: WIND TURBINE DETECTION ON SENTINEL-2 IMAGES	4888
<i>Nicolas Mandroux, Tristan Dagobert, Sébastien Drouyer, Rafael Grompone von Gioi, Université Paris-Saclay, France</i>	
TH2.MM-9.6: ILLEGAL MICRO-DUMPS MONITORING: POLLUTION SOURCES AND TARGETS DETECTION IN SATELLITE IMAGES WITH THE SCATTERING TRANSFORM	4892
<i>Sara Parrilli, Luca Cicala, Cesario Vincenzo Angelino, C.I.R.A., Italy; Donato Amitrano, University of Surrey, United Kingdom</i>	
TH2.MM-9.7: DETECTION OF SMALL TARGETS BASED ON DUAL-RECEIVE CHANNELS RADAR	4896
<i>Bin Wang, Jie Li, Jinzhi Liu, Kaizhi Wang, Shanghai Jiao Tong University, China</i>	
TH2.MM-9.8: A CONTRARIO OIL TANK DETECTION WITH PATCH MATCH COMPLETION	4900
<i>Antoine Tadros, Sébastien Drouyer, Rafael Grompone von Gioi, Centre Borrel - ENS Paris-Saclay, France</i>	
TH2.MM-9.9: HIMAWARI THERMAL ANOMALY SCRUTINY WITH DEEP LEARNING	4904
<i>Qurratulain Safder, Haoyu Zhang, University of Electronic Science and Technology of China, China; Mingcang Zhu, Department of Natural Resources of Sichuan Province, China; Fangrong Zhou, Electric Power Research Institute, China; Yong He, Sichuan Research Institute for Eco-System Restoration & Geo-Hazard Prevention, China; Lifeng Liu, Tianjin Chengjian University, China; Zezhong Zheng, University of Electronic Science and Technology of China, China; Zhongnian Li, Central China Normal University, China; Zhiyong Wang, Mingqi Li, Ling Jiang, Qiang Liu, University of Electronic Science and Technology of China, China; Xuemei Li, Chengdu University of Technology, China</i>	

TH2.MM-9.10: WIND TURBINE DETECTION WITH SYNTHETIC OVERHEAD IMAGERY	4908
<i>Wei Hu, Tyler Feldman, Yanchen Jessie Ou, Natalie Tarn, Baoyan Ye, Duke University, United States; Yang Xu, University of Science and Technology Beijing, China; Jordan M. Malof, Kyle Bradbury, Duke University, United States</i>	
TH2.MM-10: SCENE CLASSIFICATION AND RECOGNITION	
TH2.MM-10.1: REMOTE SCENE IMAGE SCENE CLASSIFICATION BASED ON ADAPTIVE	4912
SEGMENTATION AND DYNAMIC GRAPH CONVOLUTION	
<i>Yuqun Yang, Xu Tang, Xidian University, China; Xiao Han, Geovis Spatial Technology Co.,Ltd, China; Jingjing Ma, Xiangrong Zhang, Licheng Jiao, Xidian University, China</i>	
TH2.MM-10.2: A MULTI-SCALE FEATURE AGGREGATION NETWORK BASED ON	4916
CHANNEL-SPATIAL ATTENTION FOR REMOTE SENSING SCENE CLASSIFICATION	
<i>Ming Li, Lin Lei, Xiao Li, Yuli Sun, National University of Defence Technology, China</i>	
TH2.MM-10.3: CNN-GCN JOINT NETWORK FOR REMOTE SENSING SCENE	4920
CLASSIFICATION	
<i>Kejie Xu, Hong Huang, Peifang Deng, Chongqing University, China</i>	
TH2.MM-10.4: MEMORY USING DATA GENERATOR IN CONTINUAL LEARNING FOR	4924
REMOTE SENSING SCENE CLASSIFICATION	
<i>Nassim Ammour, King Saud University, Saudi Arabia</i>	
TH2.MM-10.5: MULTI-SCALE META-LEARNING-BASED NETWORKS FOR	4928
HIGH-RESOLUTION REMOTE SENSING SCENE CLASSIFICATION	
<i>Xu Tang, Weiquan Lin, Chao Liu, Xidian University, China; Xiao Han, Geovis Spatial Technology Co.,Ltd, China; Wenjing Wang, Science and Technology on Electro-optic Control Laboratory, China; Jingjing Ma, Licheng Jiao, Xidian University, China</i>	
TH2.MM-10.6: A SEMI-SUPERVISED SIAMESE NETWORK WITH LABEL FUSION FOR	4932
REMOTE SENSING IMAGE SCENE CLASSIFICATION	
<i>Wang Miao, Jie Geng, Xinyang Deng, Wen Jiang, Northwestern Polytechnical University, China</i>	
TH2.MM-10.7: ROBUST REMOTE SENSING SCENE CLASSIFICATION BY ADVERSARIAL	4936
SELF-SUPERVISED LEARNING	
<i>Yanjie Xu, Hao Sun, National University of Defence Technology, China; Jin Chen, Beijing Institute of Remote Sensing Information, China; Lin Lei, Gangyao Kuang, Kefeng Ji, National University of Defence Technology, China</i>	
TH2.MM-10.8: MULTI-OBJECTIVE NET ARCHITECTURE PRUNING FOR REMOTE	4940
SENSING CLASSIFICATION	
<i>Jiaqi Zhao, Chengrun Yang, Yong Zhou, Yajie Zhou, Zhujun Jiang, Ying Chen, China University of Mining and Technology, China</i>	
TH2.MM-10.9: NATURAL SCENE RECOGNITION BASED ON HRRP STATISTICAL	4944
MODELING	
<i>Shu-Qi Lei, Fudan University, China; Dong-Xiao Yue, Shanghai Maritime University, China; Feng Wang, Key Laboratory for Information Science of Electromagnetic Waves (MoE), China</i>	
TH2.MM-10.10: UNCONSTRAINED AERIAL SCENE RECOGNITION WITH DEEP NEURAL	4948
NETWORKS AND A NEW DATASET	
<i>Yuansheng Hua, Lichao Mou, German Aerospace Center & Technical University of Munich, Germany; Pu Jin, Technical University of Munich, Germany; Xiao Xiang Zhu, German Aerospace Center & Technical University of Munich, Germany</i>	

TH2.MM-11: HIGH RESOLUTION IMAGE ANALYSIS AND CLASSIFICATION

TH2.MM-11.1: PARALLEL PARTICLE SWARM OPTIMIZATION ALGORITHM FOR 4952 CLASSIFICATION OF VERY HIGH RESOLUTION IMAGES BASED ON MATHEMATICAL MORPHOLOGY

Ali Alouache, Agence Spatiale Algérienne, Algeria

TH2.MM-11.2: POINTNET: LEARNING POINT REPRESENTATION FOR 4956 HIGH-RESOLUTION REMOTE SENSING IMAGERY LAND-COVER CLASSIFICATION

Longyuan Ding, Jiangsu Provincial Research Institute of Surveying & Mapping, China; JunJue Wang, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, China; Chenyu Zheng, Wuhan University, China; Lei Lei, Ailong Ma, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, China; Yong Cai, Jian Zhang, Ya Gao, Jiangsu Provincial Research Institute of Surveying & Mapping, China

TH2.MM-11.3: A REVIEW ON CONTRASTIVE LEARNING METHODS AND APPLICATIONS TO 4960 ROOF-TYPE CLASSIFICATION ON AERIAL IMAGES

Ahmed Ben Saad, Gabriele Facciolo, Sébastien Drouyer, Centre Borelli ENS Paris Saclay, France; Bastien Hell, Sylvain Gavoille, Stephane Gaiffas, NamR, France

TH2.MM-11.4: A CNN CLOUD DETECTOR FOR PANCHROMATIC SATELLITE IMAGES 4964

Mariano Rodríguez, Université Paris-Saclay, France; Jérémy Anger, Carlo de Franchis, Charles Hessel, Université Paris-Saclay & Kayrros, France; Gabriele Facciolo, Rafael Grompone von gioi, Jean-Michel Morel, Université Paris-Saclay, France

TH2.MM-11.5: HIERARCHICAL MULTI-LABEL SHIP RECOGNITION IN REMOTE SENSING 4968 IMAGES USING LABEL RELATION GRAPHS

Jingzhou Chen, Yuntao Qian, Zhejiang University, China

TH2.MM-11.6: ATTENTION MECHANISM FOR LAND COVER MAPPING WITH 4972 IMAGE-LEVEL LABELS

Teerasit Kasetkasem, Suesarn Wilainuch, Yanatorn Chadavadh, Kulladech Pitakpornkasem, Kasetsart University, Thailand; Teera Phatrapornnant, Sanparith Marukatat, National Electronics and Computer Technology Center, Thailand

TH2.MM-11.7: INFLUENCE OF GEOGRAPHIC DISTANCE ON CNN GENERALIZATION FOR 4976 SATELLITE IMAGE CLASSIFICATION

Xiqi Fei, Konrad Wessels, Dieter Pfoser, Andreas Züfle, Olga Gkountouna, George Mason University, United States

TH2.MM-11.8: URBAN TREE SPECIES CLASSIFICATION USING AIRBORNE LIDAR AND 4980 HYPERSPETRAL IMAGERY

Dengkai Chi, Kobe Graulus, KU Leuven, Belgium; Jeroen Degerickx, Flemish Institute for Technological Research-VITO NV, Belgium; Ben Somers, KU Leuven, Belgium

TH2.MM-11.9: PROPORTION ESTIMATION OF URBAN MIXED SCENES BASED ON 4984 NONNEGATIVE MATRIX FACTORIZATION FOR HIGH SPATIAL RESOLUTION REMOTE SENSING IMAGES.

Jiale Chen, Qiqi Zhu, China University of Geosciences, China; Xiongli Sun, Wuhan University, China; Qingfeng Guan, China University of Geosciences, China

TH2.MM-11.10: CLASSIFICATION OF SURFACE NATURAL RESOURCES BASED ON HR-NET 4988 AND DEM

Mujie Li, University of Electronic Science and Technology of China, China; Mingcang Zhu, Department of Natural Resources of Sichuan Province, China; Yong He, Sichuan Research Institute for Eco-system Restoration & Geo-hazard Prevention, China; Jianying Shu, Pengshan Li, Chengdu Land Planning and Cadastre Center, China; Ankai Hou, Zezhong Zheng, University of Electronic Science and Technology of China, China; Guoqing Zhou, Guilin University of Technology, China; Zhongnian Li, Central China Normal University, China; Zhiyong Wang, Mingqi Li, Ling Jiang, Qiang Liu, University of Electronic Science and Technology of China, China; Xuemei Li, Chengdu University of Technology, China

TH2.MM-12: TARGET DETECTION IN RADAR IMAGERY

TH2.MM-12.1: A SUPERPIXEL-BASED NEIGHBORHOOD POLARIMETRIC COVARIANCE MATRIX FOR POLSAR SHIP DETECTION 4992

Tao Zhang, Tsinghua University, China; Jun Shu, Huaihua University, China; Chengtao Ji, University of Groningen, China; Yanlei Du, Tsinghua University, China; Tao Liu, Naval University of Engineering, China; Jian Yang, Tsinghua University, China

TH2.MM-12.2: CLASSIFICATION IN L-BAND OF PHYSICAL ACTIVITIES PERFORMED SIMULTANEOUSLY INTO THE FOREST BY A GROUP OF PERSONS 4996

Giovanni Manfredi, Israel Hinostraza, SONDRRA, CentraleSupélec, Université Paris Saclay, France; Michel Menelle, Stephane Saillant, Jean Philippe Ovarlez, ONERA, Université Paris-Saclay, France; Laëtitia Thirion-Lefevre, SONDRRA, CentraleSupélec, Université Paris Saclay, France

TH2.MM-12.3: PERSYMMETRIC ADAPTIVE CFAR DETECTOR IN COMPOUND GAUSSIAN SEA CLUTTER WITH INVERSE GAUSSIAN TEXTURE 5000

Zhihang Wang, Zishu He, Qin He, Xiaoying Lu, University of Electronic Science and Technology of China, China

TH2.MM-12.4: MOVING TARGET DETECTION FOR SINGLE-CHANNEL CSAR BASED ON DEEP NEURAL NETWORK 5004

Xiaobo Zhang, Di Wu, Xifeng Zhang, Qinghao Yu, Daiyin Zhu, Nanjing University of Aeronautics and Astronautics, China

TH2.MM-12.5: DESIGNING WAVEFORM WITH DESIRED AUTOCORRELATION PROPERTIES FOR COGNITIVE RADAR TARGET DETECTION 5008

Cui Zhang, Jifang Pei, Yin Zhang, Weibo Huo, Yulin Huang, Jianyu Yang, University of Electronic Science and Technology of China, China; Zhiwei Xing, Civil Aviation University of China, China

TH2.MM-12.6: ADAPTIVE NULL OPTIMIZATION METHOD BASED ON FREQUENCY DIVERSE ARRAY 5012

Siqi Li, Zhulin Zong, Libing Huang, Yun Feng, University of Electronic Science and Technology of China, China

TH2.MM-12.7: A BEAM POSITION DESIGN ALGORITHM FOR SPACE-BASED EARLY WARNING RADAR 5016

Jiangyuan Chen, Penghui Huang, Shanghai Jiao Tong University, China; Lihuan Huo, The 54th Research Institute of CETC, China; Dong Yang, Shaoqian Li, Fengwei Shao, Institute of Space Electronics and Information Technology, China; Xingzhao Liu, Shanghai Jiao Tong University, China

TH2.MM-12.8: GROUND MOVING TARGET INDICATION OF MULTI-CHANNEL SAR BASED ON JOINT CSI-RELAX METHOD 5020

Beibei Ge, Daoxiang An, Leping Chen, Dong Feng, National University of Defence Technology, China; Wu Wang, Aerodynamics Research and Development Center, China; Changjiang Liu, Unit 31697 of PLA, China; Zhimin Zhou, National University of Defence Technology, China

TH2.MM-12.9: A MAN-MADE TARGET DETECTION METHOD BASED ON MULTI-ANGULAR PHASE CHARACTERISTIC 5024

Fei Teng, University of Chinese Academy of Sciences, China; Yun Lin, North China University of Technology, China; Shanshan Feng, University of Chinese Academy of Sciences, China; Wen Hong, Chinese Academy of Sciences, China

TH2.MM-12.10: ADAPTIVE CFAR RAO AND WALD DETECTORS FOR COMPOUND GAUSSIAN SEA CLUTTER WITH INVERSE GAUSSIAN TEXTURE 5028

Zhihang Wang, Zishu He, Qin He, Yangjingzhi Zhuang, University of Electronic Science and Technology of China, China

TH2.MM-13: APPLICATIONS OF DATA FUSION

TH2.MM-13.1: MONITORING DAILY NIGHTTIME LIGHT BASED ON MODIS AND DEEP LEARNING: A BELGIUM CASE STUDY 5032

Lixian Zhang, Zhehao Ren, Runmin Dong, Bing Xu, Haohuan Fu, Tsinghua University, China

TH2.MM-13.2: INVERSION OF WATER QUALITY PARAMETER BOD5 BASED ON HYPERSPECTRAL REMOTELY SENSED DATA IN QINGHAI LAKE 5036

Lingjuan Cao, Dianjun Zhang, Quan Guo, Jie Zhan, Tianjin University, China

TH2.MM-13.3: A COOPERATIVE CLASSIFICATION METHOD FOR HYPERSPECTRAL IMAGES BASED ON ADAPTIVE CORRECTION 5040

Yue Tang, Peng Fu, Quansen Sun, Nanjing University of Science and Technology, China

TH2.MM-13.4: INFORMATION FUSION OF GF-1 AND GF-4 SATELLITE IMAGERY FOR SHIP SURVEILLANCE 5044

Yong Liu, Pengyu Guo, Lu Cao, Mingjiang Ji, National Innovation Institute of Defense Technology, Academy of Military Sciences, China; Libo Yao, Institute of Information Fusion, Naval Aviation University, China

TH2.MM-13.5: RANDOM FOREST FUSION CLASSIFICATION OF REMOTE SENSING POLSAR AND OPTICAL IMAGE BASED ON LASSO AND IM FACTOR 5048

Fang Hong, Yingying Kong, Nanjing University of Aeronautics and Astronautics, China

TH2.MM-13.6: COMPARISON OF HIGH-RESOLUTION AIRBORNE MWIR DATA WITH SAR AND AIS FOR SHIP DETECTION 5052

Maximilian Rodger, Raffaella Guida, University of Surrey, United Kingdom; Tobias Reinicke, Simon Tucker, Anthony Baker, Satellite Vu, United Kingdom

TH2.MM-13.7: APPLICATION OF CONDITIONAL GENERATIVE ADVERSARIAL NETWORKS FOR GENERATION OF MICRO-DOPPLER SIGNATURES OF DIFFERENT ASPECT ANGLES 5056

Ibrahim Alnujaim, Youngwook Kim, California State University, Fresno, United States

TH2.MM-13.8: MULTIPLE FEATURE FUSION FOR FINE CLASSIFICATION OF CROPS IN UAV HYPERSPECTRAL IMAGERY 5059

Yajing Liang, Lifei Wei, Qikai Lu, Hubei University, China

TH2.MM-13.9: LIDAR-AIDED TOTAL VARIATION REGULARIZED NONNEGATIVE TENSOR FACTORIZATION FOR HYPERSPECTRAL UNMIXING 5063

Atakan Kaya, Kubılay Ataş, Sevcan Kahraman, Istanbul Gelişim University, Turkey

TH2.MM-14: SEA ICE I

TH2.MM-14.1: REMOTE SENSING OF SEA ICE AT SMALL INCIDENCE ANGLES: VERIFICATION OF THEORETICAL MODELS 5629

Vladimir Karaev, Mariya Panfilova, Mariya Ryabkova, Yury Titchenko, Eugeny Meshkov, Institute of Applied Physics, Russian Academy of Sciences, Russia

TH2.MM-14.2: SYNERGISTIC USE OF SATELLITE SCATTEROMETER, SAR AND ALTIMETER DATA TO STUDY FIRST YEAR SEA ICE PROPERTIES 5633

Elizaveta Zabolotskikh, Ekaterina Balashova, Vladimir Kudryavtsev, Russian State Hydrometeorological University, Russia; Bertrand Chapron, Ifremer, France

TH2.MM-14.3: RETRIEVAL OF THIN ICE THICKNESS FROM FY-3D/MWRI BRIGHTNESS TEMPERATURE IN THE ARCTIC 5637

Ningning Liu, Haihua Chen, Kun Ni, Lele Li, College of Information Science and Engineering Ocean University of China, China

TH2.MM-14.4: VALIDATION OF ADVANCED METHOD FOR SEA ICE CONCENTRATION RETRIEVAL FROM THE AMSR2 MEASUREMENTS AT 89 GHZ.	5641
<i>Margarita Zhivotovskaia, Elizaveta Zabolotskikh, Ekaterina Balashova, Russian State Hydrometeorological University, Russia; Bertrand Chapron, Ifremer, France</i>	
TH2.MM-14.5: POLAR SEA ICE DETECTION WITH THE CFOSAT SCATTEROMETER	5645
<i>Liling Liu, China University of Mining and Technology, China; Xiaolong Dong, National Space Science Center, Chinese Academy of Sciences, China; Wenming Lin, Nanjing University of Information Science and Technology, China; Shuyan Lang, National Satellite Ocean Application Service, China; Liting Wang, North China Institute of Computing Technology, China</i>	
TH2.MM-14.7: ARCTIC SEA ICE THICKNESS ESTIMATION FROM ICESAT-2 USING DIFFERENT PARAMETER SCHEMES	5652
<i>Shuang Liang, Jianguyan Zeng, Zhen Li, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TH2.MM-14.8: EVALUATION OF A NEURAL NETWORK ON SEA ICE CONCENTRATION ESTIMATION IN MIZ USING PASSIVE MICROWAVE DATA	5656
<i>Armina Soleymani, K. Andrea Scott, University of Waterloo, Canada</i>	
TH2.MM-14.9: ARCTIC SEA ICE MAPPING USING SENTINEL-1 SAR SCENES WITH A CONVOLUTIONAL NEURAL NETWORK	5660
<i>Dmitrii Murashkin, University of Bremen, Germany; Anja Frost, German Aerospace Center (DLR), Germany</i>	
TH2.MM-15: ADVANCED METHODS AND SERVICES FOR LAND USE APPLICATIONS	
TH2.MM-15.1: A CRITICAL ANALYSIS OF DECOMPOSITION STRATEGIES IN PHYSICAL MODEL-BASED DECOMPOSITION TECHNIQUES	6626
<i>Amit Kumar, Indian Institute of Technology Roorkee, India; Arundhati Misra, Space Applications Centre, Indian Space Research Organisation, India; Rajib Panigrahi, Indian Institute of Technology Roorkee, India</i>	
TH2.MM-15.2: SUPER-RESOLUTION IMAGING FOR REAL APERTURE RADAR BY TWO-DIMENSIONAL DECONVOLUTION	6630
<i>Xingyu Tuo, Yu Xia, Yin Zhang, Junyu Zhu, Yongchao Zhang, Yulin Huang, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
TH2.MM-15.4: COPERNICUS GLOBAL LAND PRODUCTS: REVIEWING PROCESS FOR HIGH QUALITY SERVICES	6638
<i>Pietro Ceccato, Christophe Noel, Arnaud De Groof, SPACEBEL, Belgium; Marie Lang, Bernard Tychon, Université de Liège, Belgium; Michael Cherlet, European Commission, Italy</i>	
TH2.MM-15.5: COPERNICUS GLOBAL LAND SERVICE QUALITY ASSESSMENT – BETTER GOOD THAN SORRY!	6642
<i>Fernando Camacho, EOLAB, Spain; Roselyne Lacaze, HYGEOS, France; Else Swinnen, Dennis Clarijs, VITO, Belgium; Nicolas Taburet, CLS, France; Marco Clerici, Nadine Gobron, Joint Research Center, European Commission, Italy; Christophe Lerebourg, ACRI-ST, France; Michael Cherlet, Joint Research Center, European Commission, Italy</i>	
TH2.MM-15.6: INFLUENCE OF THE MOSAICKING ALGORITHM ON SENTINEL-1 LAND COVER CLASSIFICATION OVER ROUGH TERRAIN	6646
<i>Ignacio Borlaf-Mena, University of Alcalá, Spain; Ovidiu Badea, Institutul Național de Cercetare-Dezvoltare în Silvicultură (INCDS), Romania; Mihai Andrei Tanase, University of Alcalá, Spain</i>	
TH2.MM-15.7: IN-SAT: A NOVEL LAND COVER CLASSIFICATION DATASET FOR INDIAN SUBCONTINENT	6650
<i>Meet Shah, IIIT - Delhi, India; Subramanyam Venkata, Indraprastha Institute of Information Technology, Delhi, India; Gaurav Arora, Economics Division, Dept of Social Sciences and Humanities, IIIT-Delhi, India</i>	

TH2.MM-15.8: OBSERVING FREEZE-THAW TRANSITIONS OVER LAND USING CYGNSS MEASUREMENTS	6654
<i>Rajeswari Balasubramaniam, Mahnaz Vahdat, Christopher Ruf, University of Michigan, Ann Arbor, United States</i>	
TH2.MM-15.9: SIMULATION AND PREDICTION OF LAND-USE CHANGE IN URBAN AGGLOMERATIONS UNDER DIFFERENT SCENARIOS	6657
<i>Haoran Zhai, Jiaqi Yao, Guanghui Wang, Tao Zhang, Hailun Dai, Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of China, China</i>	
 TH2.MM-16: LAND COVER DYNAMICS II	
TH2.MM-16.1: THE DRIVING FACTORS OF GLOBAL LAND SURFACE ALBEDO: AN ANALYSIS WITH THE GLASS AND MERRA-2 DATA	6661
<i>Xijia Li, Jilin Jianzhu University, China; Ying Qu, Mingzhu Lv, Yan Song, Northeast Normal University, China; Xinwei Zhao, Jilin Jianzhu University, China</i>	
TH2.MM-16.2: MULTI-TEMPORAL LU/LC CORRELATION IN LUCKNOW CITY	6665
<i>Ravi Verma, Pradeep Kumar Garg, Indian Institute of Technology Roorkee, India</i>	
TH2.MM-16.3: A FULLY AUTOMATED APPROACH TO EXTRACT LANDCOVER FEATURES FROM LANDSAT IMAGERIES	6669
<i>Krishnaveni KS, Anilkumar PP, National Institute of Technology Calicut, India</i>	
TH2.MM-16.4: DEEP LEARNING CLASSIFICATION EXPERIMENTS ON THE TEXAS COLORADO RIVER DELTA	6673
<i>Lihong Su, James Gibeaut, Jessica Magolan, Texas A&M University - Corpus Christi, United States</i>	
TH2.MM-16.5: QUANTIFYING THE EFFECT OF THE WIND ON TREES OBSERVED BY SYNTHETIC APERTURE RADAR SYSTEMS	6677
<i>Michael Benson, Leland Pierce, Kamal Sarabandi, University of Michigan, United States</i>	
TH2.MM-16.7: HYDROSOIL, SOIL MOISTURE AND VEGETATION PARAMETERS RETRIEVAL WITH A C-BAND GB-SAR: CAMPAIGN IMPLEMENTATION AND FIRST RESULTS	6685
<i>Alberto Aguasca, Antoni Broquetas, Xavier Fabregas, Jordi J. Mallorqui, Pol Vilalvilla, Jordi Biscamps, Jordi Llop, Montserrat Gallart, Emilio Gil, Anna Gras, Universitat Politècnica de Catalunya, Spain</i>	
 TH2.MM-17: RETRIEVAL OF FOREST AND VEGETATION STRUCTURE	
TH2.MM-17.1: THREE-DIMENSIONAL RECONSTRUCTION OF LEAVES BASED ON LASER POINT CLOUD DATA	6688
<i>Zhonghua Su, Guiyun Zhou, Lihui Song, University of Electronic Science and Technology of China, China; Xukun Lu, China Academy of Electronics and Information Technology, China; Rong Zhao, Xiang Zhou, University of Electronic Science and Technology of China, China</i>	
TH2.MM-17.2: DIFFERENCING PHASES OF VOLUME AND DOUBLE SCATTERING COMPONENTS TO IMPROVE TREE HEIGHT ESTIMATE	6692
<i>Yao Chen, University of Electronic Science and Technology of China, China; Yong Wang, East Carolina University, United States; Bao Zhu, University of Electronic Science and Technology of China, China</i>	
TH2.MM-17.3: RESEARCH ON LEAF AREA INDEX EXTRACTION ALGORITHM BASED ON 3D RECONSTRUCTION	6696
<i>XueCheng Dai, YunPing Chen, Yan Chen, University of Electronic Science and Technology of China, China; Yuan Sun, Chinese Academy of Sciences, China</i>	
TH2.MM-17.4: EVALUATING THE REPRESENTATIVE CANOPY SURFACE OF ARCTICDEM IN BOREAL FORESTS	6700
<i>Tianqi Zhang, Desheng Liu, The Ohio State University, United States</i>	

TH2.MM-17.5: ESTIMATION OF LEAF AREA INDEX BASED ON HEMISPHERICAL CANOPY PHOTOGRAPHY	6704
<i>Peicheng Wang, Ling Tong, Xing Zhou, University of Electronic Science and Technology of China, China; Yuan Sun, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Xun Gong, Bo Gao, YuXia Li, University of Electronic Science and Technology of China, China</i>	
TH2.MM-17.6: RETRIEVING CANOPY CLUMPING INDEX FROM TERRESTRIAL LASER SCANNING DATA	6708
<i>Yifan Xu, University of Electronic Science and Technology of China, China; Sen Lin, Hulunbuir Discipline Inspection Committee of the Communist Party of China, China; Shihua Li, University of Electronic Science and Technology of China, China</i>	
TH2.MM-17.7: RETRIEVAL AND VALIDATION OF VERTICAL FOREST LAI PROFILE FROM AIRBORNE LIDAR DATA	6712
<i>Yao Wang, Hongliang Fang, Yinghui Zhang, Sijia Li, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China</i>	
TH2.MM-17.8: EFFECT OF ROW ORIENTATION ON MAIZE GREEN AREA INDEX RETRIEVAL FROM L-BAND SYNTHETIC APERTURE RADAR IMAGERY	6716
<i>Jean Bouchat, Pierre Defourny, Université catholique de Louvain, Belgium</i>	
TH2.MM-17.9: IMPACT OF PLOT SIZE AND EXTENDED EXTRACTION REGIONS OF TANDEM-X PHASE HEIGHT IN RELATION TO FOREST VARIABLES	6720
<i>Ivan Huuva, Henrik Persson, Jörgen Wallerman, Johan E S Fransson, Swedish University of Agricultural Sciences, Sweden</i>	
TH2.MM-17.10: MAPPING OF FOREST HEIGHT IN NORTHWEST HUNAN, CHINA USING MULTI-SOURCE SATELLITE DATA	6724
<i>Wankun Min, Wuhan University, China; Jiaqi Ding, Peking University, Wuhan University, China; Wenli Huang, Wuhan University, Chinese Academy of Sciences, China; Yingchun Liu, Academy of Inventory and Planning National Forestry and Grassland Administration, China; Yang Hu, Ningxia University, China</i>	
TH2.MM-18: REMOTE SENSING FOR FOREST AND VEGETATION GROWTH AND DYNAMICS I	
TH2.MM-18.1: SENTINEL-2 BASED SERVICE FOR IDENTIFY AND MAP WILDFIRE EVENTS	6728
<i>Alireza Taravat, Deimos Space UK, United Kingdom; Helena Łoś, Deimos Engenharia, Portugal</i>	
TH2.MM-18.2: COPERNICUS GLOBAL LAND SERVICE NDVI CONTINUITY WITH SENTINEL-3 DATA	6731
<i>Else Swinnen, Carolien Toté, Jonathan Leon Tavares, VITO, Belgium; Roselyne Lacaze, HYGEOS, France</i>	
TH2.MM-18.3: MICROTOPOGRAPHICAL CHARACTERISTICS OF FOREST DIEBACK IN A SEMI-ARID REGION RETRIEVED FROM GROUND AND SATELLITE DATA	6735
<i>Buho Hoshino, Daishi Matsukawa, Takashi Sasamura, Rakuno Gakuen University, Japan; Tserendulam Tserenochir, Uuganbayar Ganbold, Hustal National Park, Mongolia; Christopher McCarthy, Johns Hopkins University, United States; Masami Kaneko, Rakuno Gakuen University, Japan; Atsuko Sugimoto, Hokkaido University, Japan</i>	
TH2.MM-18.4: A VEGETATION PHENOLOGY MONITORING METHODOLOGY BASED ON SICHUAN PROVINCE	6739
<i>Fan Li, Yuxia Li, Yuan Cheng, University of Electronic Science and Technology of China, China; Cunjie Zhang, China Meteorological Administration, China; Lei He, Chengdu University of Information Technology, China</i>	
TH2.MM-18.5: STUDYING SPATIOTEMPORAL FRACTIONAL VEGETATION COVER VARIATIONS FROM 2000 TO 2020 IN CHANGJIANG BASIN, CHINA WITH GOOGLE EARTH ENGINE	6743
<i>Tianxiang Yang, University of Electronic Science and Technology of China, China; Yong Wang, East Carolina University, United States</i>	

TH2.MM-18.6: IMPROVING L-BAND SAR FOREST MONITORING BY BIG DATA DEEP LEARNING BASED ON ALOS-2 5 YEARS PAN-TROPICAL OBSERVATIONS	6747
<i>Christian Koyama, Japan Aerospace Exploration Agency (JAXA), Japan; Manabu Watanabe, Tokyo Denki University, Japan; Edson Sano, IBAMA, Brazil; Masato Hayashi, Izumi Nagatani, Takeo Tadono, Japan Aerospace Exploration Agency (JAXA), Japan; Masanobu Shimada, Tokyo Denki University, Japan</i>	
TH2.MM-18.7: COMBINING REMOTE SENSING, IN SITU DATA COLLECTION AND NUMERICAL FORECASTS FOR ENHANCING ENVIRONMENTAL PROTECTION IN BRAZILIAN AMAZONIAN SHELF	6751
<i>Mauricio Fragoso, CLS, France; Julio Pellegrini, PROOCEANO, Brazil; Maria Eduarda Pessoa, ENAUTA, Brazil</i>	
TH2.MM-18.8: THE INFLUENCE OF SPATIAL RESOLUTION ON THE RETRIEVAL OF CLUMPING INDEX BASED ON POLDER AND MODIS DATA	6754
<i>Siyang Yin, Ziti Jiao, Xiaoning Zhang, Lei Cui, Rui Xie, Jing Guo, Zidong Zhu, Sijie Li, Beijing Normal University, China; Yadong Dong, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Yidong Tong, Beijing Normal University, China</i>	
TH2.MM-19: SAR FOCUSING AND SUPER-RESOLUTION TECHNIQUES	
TH2.MM-19.1: ONLINE SUPER-RESOLUTION IMAGING FOR AIRBORNE SCANNING RADAR BASED ON SLIDING WINDOW RLS ALGORITHM	5067
<i>Jiawei Luo, Yongchao Zhang, Yongwei Zhang, Yin Zhang, Yulin Huang, Haiguang Yang, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
TH2.MM-19.2: A 2D SPATIAL SMOOTHING MUSIC SUPERRESOLUTION FMCW SAR IMAGING ALGORITHM	5071
<i>Yan Wang, Xuejiao Wen, Xiaolan Qiu, Chinese Academy of Sciences, Aerospace Information Research Institute, China</i>	
TH2.MM-19.3: SAR IMAGE SUPER-RESOLUTION RECONSTRUCTION BASED ON AN OPTIMIZE ITERATIVE METHOD FOR REGULARIZATION	5075
<i>Qi Zhan, Yan Chen, Yunping Chen, University of Electronic Science and Technology of China, China; Youchun Lu, Chunliang Xu, China Centre for Resources Satellite Data and Application, China</i>	
TH2.MM-19.4: A SUPER-RESOLUTION IMAGING METHOD FOR REAL-APERTURE SCANNING RADAR BASED ON MRF PRIOR MODEL	5079
<i>Ke Tan, Jianchao Yang, Xingyu Lu, Weiming Su, Hong Gu, Nanjing University of Science and Technology, China</i>	
TH2.MM-19.5: OPTIMIZATION OF ANTENNA ROTATION SPEED AND SUPER-RESOLUTION IMAGING BASED ON SPLIT BREGMAN ALGORITHM FOR CIRCULAR SCAN ISAR SYSTEMS	5083
<i>Yanli Zhu, Peng Zhou, China University of Petroleum, China; Zhenhua Zhang, Ying Wang, Beijing Research Institute of Telemetry, China; Xi Zhang, First Institute of Oceanography, Ministry of Natural Resources, China</i>	
TH2.MM-19.6: MODIFIED GENERALIZED OMEGA-K ALGORITHM FOR LOW EARTH ORBIT HIGH RESOLUTION SPOTLIGHT SPACEBORNE SAR FOCUSING	5087
<i>Yulei Qian, Huaxing Kuang, Nanjing Marine Radar Institute, China; Ying Zhang, Nanjing University of Aeronautics and Astronautics, China; Yutao Zhang, Nanjing Marine Radar Institute, China</i>	
TH2.MM-19.7: ROBUST AND EFFICIENT ISAR AUTOFOCUSING BASED ON DEEP CONVOLUTION NETWORK	5091
<i>Jiadian Liang, Shunjun Wei, Xiangfeng Zeng, Shan Liu, Jun Shi, Xiaoling Zhang, University of Electronic Science and Technology of China, China</i>	
TH2.MM-19.8: OPTRONIC FOCUSING OF MULTICHANNEL TOPS DATA PROCESSING	5095
<i>Yunlin Yang, Yesheng Gao, Zhicheng Wang, Xingzhao Liu, Shanghai Jiao Tong University, China</i>	
TH2.MM-19.9: FOCUSING AZIMUTH PERIODICALLY GAPPED SAR RAW DATA VIA COMPLEX FISTA WITH SUPPRESSED ARTIFICIAL TARGETS	5099
<i>Yulei Qian, Huaxing Kuang, Nanjing Marine Radar Institute, China; Ying Zhang, Nanjing University of Aeronautics and Astronautics, China</i>	

**TH2.MM-19.10: AUTOFOCUS METHOD FOR SPARSE APERTURE ISAR BASED ON L0 NORM 5103
AND NLTV REGULARIZATION**

Jianchao Yang, Xingyu Lu, Zheng Dai, Ke Tan, Wenchao Yu, Nanjing University of Science and Technology, China

TH2.MM-20: SPECKLE FILTERING AND PROCESSING OF SAR DATA

**TH2.MM-20.1: MULTI-OBJECTIVE NEURAL NETWORK FOR DESPECKLING WITH A 5107
GENERAL STATISTICAL MODEL**

Sergio Vitale, Università degli Studi di Napoli Parthenope, Italy; Dong-Xiao Yue, Key Lab for Information Science of Electromagnetic Waves, Fudan University, China; Giampaolo Ferraioli, Università degli Studi di Napoli Parthenope, Italy; Feng Xu, Key Lab for Information Science of Electromagnetic Waves, Fudan University, China; Vito Pascazio, Università degli Studi di Napoli Parthenope, Italy; Alejandro C. Frery, Victoria University of Wellington, New Zealand

**TH2.MM-20.2: A FAST IDENTIFICATION ALGORITHM FOR GEOMETRIC DISTORTED AREAS 5111
OF SAR IMAGES**

Shiyu Luo, Ling Tong, University of Electronic Science and Technology of China, China

**TH2.MM-20.3: COMPLEX COMPATIBLE-STRUCTURE TENSOR TOTAL VARIATION 5115
REGULARIZATION FOR HIGH RESOLUTION SAR IMAGING**

Minghui Gai, Su Zhang, Lei Yang, Weitian Sun, Civil Aviation University of China, China

**TH2.MM-20.4: A SURE-BASED UNSUPERVISED DEEP LEARNING METHOD FOR SAR 5119
DESPECKLING**

Neeraj Rajpurohit, Akshita Agarwalla, Jignesh S. Bhatt, Indian Institute of Information Technology Vadodara, India

**TH2.MM-20.5: A FILTERING ALGORITHM BASED ON POLARIZATION DECOMPOSITION 5123
FOR BETTER PRESERVING POLSAR IMAGE SCATTERING FEATURES**

Peng Zhang, Yan Chen, Yunping Chen, Youchun Lu, Chunliang Xu, University of Electronic Science and Technology of China, China

**TH2.MM-20.6: PHASE-PRESERVING AMBIGUITY REMOVAL OF STAGGERED SAR IMAGE 5127
BASED ON PIXEL-WISE REINFORCEMENT LEARNING**

Ning Wu, Zhe Liu, University of Electronic Science and Technology of China, China

TH2.MM-20.7: IMAGING OF UAV SAR IN RANDOM AZIMUTH ACCELERATION..... 5131

Di Wang, Qiwei Yang, University of Electronic Science and Technology of China, China; Zhe Liu, Qingshuihe Campus of UESTC, China

TH2.MM-20.8: A METHOD OF SUBAPERTURE DIVISION IN CSAR IMAGING 5135

Yuliang Li, Rui Min, Jin Li, Yiming Pi, University of Electronic Science and Technology of China, China; Zou Jie, Jing Gao, Second Research Institute of CAAC, China

**TH2.MM-20.9: PROCESSING OF BLURRED IMAGE DATA FROM NUMERICAL 5139
COMPUTATION FOR SYNTHETIC APERTURE RADAR**

Qianrong Lu, Jian Zhu, Qingqing Li, Ke Du, Panhu Li, Xiangzhen Yu, Shanghai Radio Equipment Research Institute, China

TH2.MM-21: CROP MAPPING AND MONITORING USING SAR AND OPTICAL DATA

**TH2.MM-21.1: POTENTIAL AND COMPLEMENTARITY OF DENSE SAR AND OPTICAL DATA 6757
FOR RAPESEED CROPS MONITORING**

Aubin Allies, Institut Europlace de Finance, France; Antoine Roumiguié, Airbus Defence and Space, France; Jean-François Dejoux, Rémy Fieuzal, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Luc Champolivier, Terres Inovia, France; Frédéric Baup, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France

TH2.MM-21.2: ASSESSING INSAR COHERENCE FOR QUANTIFICATION OF AGRICULTURE AREA AFFECTED BY RAINFALL EVENTS IN GUJRAT, INDIA	6761
<i>Ankur Pandit, Suryakant Sawant, Jayantrao Mohite, Srinivasu Pappula, Tata Consultancy Services, India</i>	
TH2.MM-21.3: RICE PADDY FIELDS IDENTIFICATION BASED ON BACKSCATTER FEATURES OF QUAD-POL RADARSAT-2 DATA AND SIMPLE DECISION TREE METHOD	6765
<i>Ze He, Shihua Li, Yuchuan Deng, Pengfei Zhai, Yueming Hu, University of Electronic Science and Technology of China, China</i>	
TH2.MM-21.4: STAPLE CROP MAPPING WITH CHINESE GAOFEN-1 AND GAOFEN -6 SATELLITE IMAGES: A CASE STUDY IN YANSHOU COUNTY, HEILONGJIANG PROVINCE, CHINA	6769
<i>Jiansong Luo, Qifeng Chu, Chang Sun, Yikai Wang, Di Sun, Heilongjiang Institute of Geomatics Engineering, China</i>	
TH2.MM-21.5: CORRELATION BETWEEN NDVI AND SENTINEL-1 DERIVED FEATURES FOR MAIZE	6773
<i>Jesus Alvarez-Mozos, Joseba Villanueva, María Arias, Maria Gonzalez-Audicana, Public University of Navarre, Spain</i>	
TH2.MM-21.6: A TIME SERIES APPROACH FOR WHEAT CROP HARVEST DETECTION USING MULTISPECTRAL DATA	6777
<i>Harsh Srivastava, Kirti Saini, Triloki Pant, Indian Institute of Information Technology Allahabad, India</i>	
TH2.MM-21.7: MAPPING SUGARCANE USING VEGETATION INDICES AND TIME SERIES OF SENTINEL-2 IMAGES	6781
<i>Humberto Cruz, María Guadalupe Sanchez, Tecnológico Nacional de México, Mexico; Juan Pablo Rivera, Universidad Autónoma de Nayarit, Mexico; Himer Avila, Universidad de Guadalajara, Mexico</i>	
TH2.MM-21.8: RADAR-CROP-MONITOR – SPATIAL MAPPING AGRICULTURAL CONDITIONS WITH SENTINEL-1 TIME SERIES – AN UPDATE	6785
<i>Linara Arslanova, Christiane Schmullius, Felix Cremer, Nesrin Salepci, Marcel Urban, University of Jena, Germany; Marcel Fölsch, Friedemann Scheibler, CLAAS E-Systems GmbH, Germany</i>	
TH2.MM-22: CLASSIFICATION FOR URBAN AREA CHARACTERIZATION	
TH2.MM-22.1: EXTENSION OF COPERNICUS URBAN ATLAS TO NON-EUROPEAN COUNTRIES	6789
<i>Andrii Shelestov, National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Ukraine; Hanna Yailymova, Bohdan Yailymov, Leonid Shumilo, Space Research Institute NASU-SSAU, Ukraine; Alla Lavreniuk, National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Ukraine</i>	
TH2.MM-22.2: DETECTION OF CHANGES IN BUILT-UP AREAS WITH A FULLY CONVOLUTIONAL NETWORK IN THE CONTEXT OF THE EUROPEAN SETTLEMENT MAP	6793
<i>Christina Corbane, European Commission, Joint Research Centre (JRC), Italy; Filip Sabo, Panagiotis Politis, Arhs Developments S.A, Luxembourg; Vasileios Syrris, European Commission, Joint Research Centre (JRC), Italy</i>	
TH2.MM-22.3: ASSESSMENT OF A RANDOM FOREST CLASSIFIER IN URBAN LOCAL CLIMATE ZONE CLASSIFICATION USING SENTINEL-2 AND PALSAR-2	6797
<i>Chaomin Chen, Hasi Bagan, Xuan Xie, Luwen Tan, Shanghai Normal University, China; Yoshiki Yamagata, National Institute for Environmental Studies, Japan</i>	
TH2.MM-22.4: COVID-19 PANDEMIC ASSESSMENT BY NIGHT-LIGHTS	6801
<i>Demetris Stathakis, Leonidas Liakos, University of Thessaly, Greece; Pavlos Baltas, National Center for Social Research, Greece</i>	
TH2.MM-22.5: BUILT-UP AREA EXTRACTION THROUGH DEEP LEARNING	6805
<i>Djamel Mansour, Sid-Ahmed Souiah, Oran2 University mohamed ben Ahmed, Algeria; Mohammed El Amin Larabi, Algerian Space Agency, Algeria</i>	

TH2.MM-22.6: MULTI-LABEL LOCAL CLIMATE ZONE MAPPING AS SCENE CLASSIFICATION	6809
USING VERY HIGH RESOLUTION IMAGERY: PRELIMINARY RESULT OF HONG KONG	
<i>Shengjie Liu, University of Hong Kong, China; Qian Shi, Sun Yat-Sen University, China</i>	
TH2.MM-22.7: IDENTIFYING URBAN GREENSPACE IN TAIWAN AND ITS VULNERABILITY	6813
TO TYPHOONS	
<i>Yuei-An Liou, Kim-Anh Nguyen, Trong Hoang Vo, National Central University, Taiwan</i>	
TH2.MM-22.8: MULTISOURCE SHADOW-BASED FUZZY SET (MSFS) APPROACH FOR	6817
IMPERVIOUS SURFACES MAPPING FROM OPTICAL AND SAR DATA	
<i>Yinyi Lin, Chinese University of Hong Kong, China; Hongsheng Zhang, University of Hong Kong, China; Peifeng Ma, Chinese University of Hong Kong, China; Yu Li, Beijing University of Technology, China</i>	
TH2.MM-22.9: ANALYZING LONG-TERM ARTIFICIAL LIGHT AT NIGHT USING VIIRS	6821
MONTHLY PRODUCT WITH LAND USE DATA: PRELIMINARY RESULT OF HONG KONG	
<i>Shengjie Liu, Chu Wing So, Chun Shing Jason Pun, University of Hong Kong, China</i>	
 TH2.MM-23: REMOTE SENSING APPLICATIONS IN INLAND WATERS AND WETLANDS I	
TH2.MM-23.1: APPROXIMATING LAKE ICE PHENOLOGY WITH SATELLITE SURFACE	6825
TEMPERATURE DATA	
<i>Sophia Skoglund, Cary Institute of Ecosystem Studies, United States; Abdou Rachid Bah, City University of New York, Graduate Center, United States; Hamidreza Norouzi, New York City College of Technology, United States; Kathleen Weathers, Cary Institute of Ecosystem Studies, United States; Holly Ewing, Bates College, United States; Bethel Steele, Cary Institute of Ecosystem Studies & Bates College, United States; Linda Bacon, Maine Department of Environmental Protection, United States</i>	
TH2.MM-23.2: OPTICAL CLOSURE OF REMOTE SENSING REFLECTANCE USING	6829
AUTOMATED HYPERSPECTRAL PROFILER DATA	
<i>Abolfazl Irani Rahaghi, Eawag, Swiss Federal Institute of Aquatic Science and Technology, Switzerland; Camille Minaudo, Physics of Aquatic Systems Laboratory, Margaretha Kamprad Chair, EPFL, Switzerland; Alexander Damm, University of Zurich, Switzerland; Daniel Odermatt, Eawag, Swiss Federal Institute of Aquatic Science and Technology, Switzerland</i>	
TH2.MM-23.3: MONITORING CHLOROPHYLL-A CONCENTRATION IN NEW JERSEY	6833
LAKES USING REMOTE SENSING AND GROUND OBSERVATIONS	
<i>Marzi Azarderakhsh, Veronica Hernandez, Jaime Mendoza, Fairleigh Dickinson University, United States</i>	
TH2.MM-23.4: RESEARCH ON SURFACE WATER MONITORING OF POYANG LAKE BASED	6836
ON REMOTE SENSING TECHNOLOGIES	
<i>Ke Liu, Yuhang Gan, Lei Du, Zhengyu Luo, Rui Zhang, Zhengbo Fu, Lina Dong, Ministry of Natural Resources of the People's Republic of China, China</i>	
TH2.MM-23.5: ANALYZING LAKES SURFACE TEMPERATURE VARIABILITY AT THE GLOBAL	6840
SCALE	
<i>Abdou Rachid Bah, City University of New York, Graduate Center, United States; Christal Jean-Soverall, Patty Arunyavikul, Ryan Chen, Hamidreza Norouzi, Reginald Blake, New York City College of Technology, United States</i>	
TH2.MM-23.6: INVERSION EFFECT OF NITROGEN AND PHOSPHORUS IN INLAND	6843
WATER UNDER DIFFERENT APPLICATION SCENARIOS	
<i>Tianqi Li, Zheng Zhao, Yongzhi Li, Jie Chen, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China</i>	
TH2.MM-23.7: MONITORING AQUATIC WEEDS IN INDIAN WETLANDS USING	6847
MULTITEMPORAL REMOTE SENSING DATA WITH MACHINE LEARNING TECHNIQUES	
<i>Vahid Akbari, Morgan Simpson, Savitri Maharaj, Armando Marino, Deepayan Bhowmik, University of Stirling, United Kingdom; Nagendra Prabhu, University of Kerala, India; Srikanth Rupavatharam, Aviraj Datta, International Crops Research Institute for the Semi-Arid Tropics, India; Adam Kleczkowski, University of Strathclyde, United Kingdom; J. Alice R. P. Sujeetha, National Institute of Plant Health Management, India</i>	

TH2.MM-23.9: FLOOD CLASSIFICATION IN A NATURAL WETLAND FOR EARLY SPRING CONDITIONS USING VARIOUS POLARIMETRIC SAR METHODS 6853

Tomasz Berezowski, Monika Gierszewska, Tomasz Bielinski, Gdansk University of Technology, Poland

TH2.MM-24: SATELLITE MISSIONS, SENSORS AND CALIBRATION II

TH2.MM-24.1: DESIGN OF DOUBLE-MODE INTEGRATED MICROWAVE REMOTE SENSOR FOR OCEAN WAVE OBSERVATION 8077

Hang Li, WenKang Liu, GuangCai Sun, MengDao Xing, National Laboratory of Radar Signal Processing, Xidian University, China; ZhenHua Zhang, Beijing Research Institute of Telemetry; Ocean Telemetry Technology Innovation Center, Ministry of Natural Resources, China; Jie Zhang, First Institute of Oceanography, Ministry of Natural Resources; Ocean Telemetry Technology Innovation Center, Ministry of Natural Resources, China

TH2.MM-24.3: CONNECTED AND UNCONNECTED SYNTHETIC APERTURE IMAGING RADIOMETRY: A PRELIMINARY DESIGN FOR SMOS-NEXT ARRAY 8081

Eric Anterrieu, CNRS, France; Nemesio Rodríguez-Fernández, François Cabot, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Ali Khazaal, CNRS, France; Yann Kerr, Thierry Amiot, Louise Yu, CNES, France

TH2.MM-24.4: THE REPROCESSED PROBA-V COLLECTION 2: PRODUCT VALIDATION 8084

Carolien Toté, Else Swinnen, Sindy Sterckx, Iskander Benhadj, Wouter Dierckx, VITO, Belgium; Luis Gómez-Chova, University of Valencia, Spain; Didier Ramon, Hygeos, France; Kerstin Stelzer, Brockmann Consult, Germany; Lieve Van den Heuvel, Dennis Clarijs, VITO, Belgium; Fabrizio Niro, European Space Agency (ESA), Italy

TH2.MM-24.5: NOAA POLAR SATELLITES: OPTIMIZING THE PRESENT AND INVESTING IN THE FUTURE 8087

Bill Sjoberg, Satya Kalluri, JPSS Program - NESDIS NOAA, United States

TH2.MM-24.6: NEWSPACE SAR CONSTELLATION FOR LOW LATENCY APPLICATIONS 8091

Bruno Correia, Sérgio Cunha, Faculty of Engineering of University of Porto, Portugal

TH2.MM-24.7: A NEW PUBLIC ALSAT-2B DATASET FOR SINGLE-IMAGE SUPER-RESOLUTION 8095

Achraf Djerida, Khelifa Djerriri, Moussa Sofiane Karoui, Mohammed El Amin Larabi, Algerian Space Agency, Algeria

TH2.MM-24.8: ASI-PRISMA HYPERSPECTRAL MISSION FOR THE ANALYSIS OF GEOPHYSICAL PHENOMENA 8099

Maria Fabrizia Buongiorno, Massimo Musacchio, Malvina Silvestri, Vito Romaniello, Claudia Spinetti, Federico Rabuffi, Istituto Nazionale di Geofisica e Vulcanologia, Italy

TH2.MM-25: SMALL SPACEBORNE SAR INSTRUMENTS AND CALIBRATION

TH2.MM-25.1: CHARACTERIZATION OF CLOCK PHASE ERRORS FOR DISTRIBUTED WIRELESS SYNCHRONIZATION PROTOCOL 8103

Samuel Prager, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Mahta Moghaddam, University of Southern California, United States; Marco Lavallo, NASA Jet Propulsion Laboratory, California Institute of Technology, United States

TH2.MM-25.2: ON-BOARD INTELLIGENT PROCESSING FOR REMOTE SENSING IMAGES BASED ON 20KG MICRO-NANO SATELLITE 8107

Yuan Yao, Yu Zhou, Chunzhu Yuan, Yingbo Li, DFH Satellite Co., Ltd, China; Haopeng Zhang, Beihang University, China

TH2.MM-25.3: SDR-BASED LORA ENABLED ON-DEMAND REMOTE ACQUISITION EXPERIMENT ON-BOARD THE ALAINSAT-1 8111

Lara Fernandez, Marco Sobrino, Albert Rodriguez, Amadeu Gongga, Carlos Molina, Laura Rayón, Marc Badia, Pau Fabregat, Adrian Perez-Portero, Juan Ramos-Castro, Joan Adrià Ruiz-de-Azua, Anna Calveras, Universitat Politècnica de Catalunya, Spain; Abdul-Halim Jallad, Zulkifli Abdul Aziz, National Space Science and Technology Center, United Arab Emirates

TH2.MM-25.4: RAINFALL ESTIMATION FROM TEMPEST-D CUBESAT OBSERVATIONS	8115
<i>Chandrasekar Radhakrishnan, Chandrasekar V, Wesley Berg, Steven C. Reising, Colorado State University, United States</i>	
TH2.MM-25.5: TECHNIQUE TO MINIMISE SAMPLE RATE AND SIMPLIFY HARDWARE	8119
REQUIREMENTS FOR FMCW NANOSATELLITE PAYLOADS	
<i>Matthew Ash, Cambridge Design Partnership, United Kingdom</i>	
TH2.MM-25.6: PROGRESS IN STANDARDIZATION OF CALIBRATION AND VALIDATION OF	8123
SAR	
<i>Fangfang Li, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Jiankun Guo, National Geomatics Center of China, China; Wen Hong, Chibiao Ding, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TH2.MM-25.7: SYNTHESIZING LOW-BANDWIDTH FAR-FIELD ANTENNA PATTERNS FROM	8126
HIGH-BANDWIDTH NEAR-FIELD MEASUREMENTS	
<i>Yogendra Sahu, Ameya Kesarkar, Vetal Akshay, Ashok Rohada, Himanshu Sharma, Partha S. Nandy, Swati Shukla, J. Rao, Pankaj K. Nath, Rakesh Bhan, C.V.N. Rao, Rajeev Jyoti, Space Applications Centre, Indian Space Research Organisation, India</i>	
TH2.MM-25.8: VICARIOUS RADIOMETRIC CALIBRATION OF SUPERVIEW-1 SENSOR	8130
USING RADCALNET TOA REFLECTANCE PRODUCT	
<i>Yongguang Zhao, Lingling Ma, Wan Li, The Aerospace Information Research Institute, Chinese Academy of Sciences, China; Huaying He, Xiaoxiang Long, China Centre for Resources Satellite Data and Application, China; Ning Wang, Zhaoyan Liu, Yonggang Qian, Shi Qiu, Yaokai Liu, Min Yang, The Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TH2.MM-25.10: CALIBRATION AND VALIDATION OF SCATTEROMETER PRODUCT OF	8138
CFOSAT AND HY-2 SERIES SATELLITES	
<i>Juhong Zou, Bo Mu, National Satellite Ocean Application Service, China; Qingliu Bao, Piesat Information Technology Co, China; Zhixiong Wang, Nanjing University of Information Science and Technology, China; Shuyan Lang, Sheng Yang, Mingsen Lin, National Satellite Ocean Application Service, China</i>	
 TH2.MM-26: PASSIVE OPTICAL AND HYPERSPECTRAL SENSORS CHARACTERIZATION AND APPLICATIONS	
TH2.MM-26.1: IMPROVING VIIRS THERMAL EMISSIVE BAND CALIBRATION DURING	8142
LUNAR INTRUSION INTO SPACE VIEW EVENTS	
<i>Wenhui Wang, University of Maryland - College Park, United States; Changyong Cao, NOAA/NESDIS/STAR, United States; Slawomir Blonski, Global Science & Technology, Inc, United States; Xi Shao, University of Maryland - College Park, United States</i>	
TH2.MM-26.2: VIGNETTING AND CHROMATIC ABERRATION CORRECTION FOR	8146
MULTIPLE SPACEBORNE CCDS	
<i>Yongkun Liu, Tengfei Long, Weili Jiao, Guojin He, Bo Chen, Peng Huang, China Remote Sensing Satellite Ground Station, Aerospace Information Research Institute, Chinese Academy of Science, China</i>	
TH2.MM-26.3: UNCERTAINTY ANALYSIS FOR SENTINEL-3 OLCI RADIANCE	8150
OBSERVATIONS	
<i>Jacob Fahy, Samuel Hunt, National Physical Laboratory, United Kingdom</i>	
TH2.MM-26.5: A NEW TECHNIQUE TO DEFINE THE SPATIAL RESOLUTION OF IMAGING	8158
SENSORS	
<i>David Conran, Emmett Ientilucci, Rochester Institute of Technology, United States; Stephen Schiller, Raytheon Space and Airborne Systems, United States; Brandon Russell, Jeff Holt, Chris Durell, Will Arnold, Labsphere, Inc., United States</i>	

TH2.MM-26.6: PRELIMINARY STUDY ON FEASIBILITY OF A SPECIALIZED GROUND LIGHT SOURCE FOR IMPROVING THE VIIRS DNB LOW LIGHT CALIBRATION	8162
<i>Shi Qiu, Yu Zhang, Key Laboratory of Quantitative Remote Sensing Information Technology, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Benyong Yang, Anhui Institute of Optics and Fine Mechanics, Hefei Institutes of Physical Science, Chinese Academy of Sciences, China; Yonggang Qian, Caixia Gao, Yaokai Liu, Xi Zhang, Key Laboratory of Quantitative Remote Sensing Information Technology, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TH2.MM-26.7: CROP TYPE MAPPING USING PRISMA HYPERSPECTRAL IMAGES AND ONE-DIMENSIONAL CONVOLUTIONAL NEURAL NETWORK	8166
<i>Dario Spiller, Italian Space Agency, Italy; Luigi Ansalone, Italian Space Agency (ASI), Italy; Federico Carotenuto, CNR, Italy; Pierre Philippe Mathieu, European Space Agency (ESA), Italy</i>	
TH2.MM-26.8: COPERNICUS SENTINEL-2 GEOMETRIC CALIBRATION STATUS	8170
<i>Sebastien Clerc, ACRI-ST, France; Marion Neveu Van Malle, Thales Alenia Space, France; Stephane Massera, IGN, France; Carine Quang, CS Group, France; Alice Chambrelan, Airbus, France; Francois Guyot, Thales Alenia Space, France; Laetitia Pessiot, CS Group, France; Rosario Quirino Iannone, Valentina Boccia, European Space Agency (ESA), Italy</i>	
TH2.MM-26.9: FIRST RESULTS OF HYPERSPECTRAL SCENE GENERATION IN PREPARATION OF THE CHIME IMAGING SPECTROMETER MISSION	8173
<i>Helena Burriel Navarro, Universidad de Valencia, Spain; Francisco Javier Albiol Colomer, Consejo Superior de Investigaciones Científicas (CSIC), Spain; Luis Alonso Chorda, Jose Moreno, Jochem Verrelst, Universidad de Valencia, Spain</i>	
TH2.MM-26.10: CHARACTERISING SPECTRORADIOMETER INSTRUMENTAL SPECTRAL PERFORMANCE AND ITS IMPACT ON RETRIEVED REFLECTANCES	8177
<i>Simon A. Trim, Andreas Hueni, Kimberley Mason, University of Zurich, Switzerland</i>	
 TH3.O-1: REMOTE SENSING OF NATURAL HAZARDS IN LATIN AMERICA I	
TH3.O-1.1: RADARSAT-2 AND SENTINEL-1 SAR TO DETECT AND MONITORING FLOODING AREAS IN TABASCO, MEXICO	1323
<i>Jesus Soria-Ruiz, Nat Institute of Research for Forestry Agricultural and Livestok, Mexico; Yolanda M. Fernandez-Ordoñez, Postgraduate College in Agricultural Sciences, Mexico; Bruce Chapman, California Institute of Technology, United States</i>	
TH3.O-1.3: MONITORING THE DYNAMICS OF INTERDUNAL PONDS IN THE LENCOIS MARANHENSES NATIONAL PARK, BRAZIL	1327
<i>Théo Le Saint, CNRS, France; André Luis Silva dos Santos, IFMA, Brazil; Ulisses Denache Vieira Souza, UFMA, Brazil; Reinaldo Paul Pérez Machado, Fernando Shinji Kawakubo, University of Sao Paulo, Brazil; Thomas Jefferson Alves Santos, UFMA, Brazil; Julie Betbeder, CIRAD, France; Damien Arvor, CNRS, France</i>	
TH3.O-1.4: DATA ASSIMILATION OF REMOTELY SENSED SOIL MOISTURE TO DETECT WATER STRESS PERIODS IN AGRICULTURAL AREAS	1331
<i>Héctor Ernesto Huerta-Bátiz, Daniel Enrique Constantino-Recillas, Alejandro Monsiváis-Huertero, Ramón Sidonio Aparicio García, Eduardo Arizmendi-Vasconcelos, José Carlos Jiménez-Escalona, Cira Francisca Zambrano Gallardo, Instituto Politécnico Nacional, Mexico; Jasmeet Judge, University of Florida, United States</i>	
TH3.O-1.5: VALIDATION OF A DROUGHT INDEX BASED ON SMOS SOIL MOISTURE PRODUCT OVER AN AGRICULTURAL AREA IN CENTRAL MEXICO	1335
<i>Enrique Zempoaltecatl-Ramirez, Alejandro Monsiváis-Huertero, Instituto Politécnico Nacional, Mexico; J. Emilio Quiroz-Ibarra, Jorge Ángel González-Ordiano, Universidad Iberoamericana, Mexico</i>	
TH3.O-1.6: CONVOLUTIONAL NEURAL NETWORK FOR FLOOD-RISK ASSESSMENT AND DETECTION WITHIN A METROPOLITAN AREA	1339
<i>Ivan E. Villalon-Turrubiates, Instituto Tecnológico y de Estudios Superiores de Occidente (ITESO), Mexico</i>	

TH3.O-2: DEEP LEARNING FOR EARTH OBSERVATION IMAGE UNDERSTANDING IN URBAN AREAS

TH3.O-2.1: THE IMPACT OF DATA VOLUME ON PERFORMANCE OF DEPP LEARNING BASED BUILDING ROOFTOP EXTRACTION USING VERY HIGH SPATIAL RESOLUTION AERIAL IMAGES 1343

Hongjie He, Ke Yang, Yuwei Cai, Zijian Jiang, Qiutong Yu, Kun Zhao, Junbo Wang, Sarah Narges Fatholahi, Yan Liu, Hasti Andon Petrosians, Bingxu Hu, Liyuan Qing, Zhehan Zhang, Hongzhang Xu, Siyu Li, Kyle Gao, Linlin Xu, Jonathan Li, University of Waterloo, Canada

TH3.O-2.3: BUILDING CHANGE DETECTION IN OFF-NADIR IMAGES USING DEEP LEARNING 1347

Morteza Esfandiari, Ghasem Abdi, Shabnam Jabari, Vasuki Sai Prabhath Lolla, University of New Brunswick, Canada

TH3.O-2.4: REPRESENTATION LEARNING OF REMOTE SENSING KNOWLEDGE GRAPH FOR ZERO-SHOT REMOTE SENSING IMAGE SCENE CLASSIFICATION 1351

Yansheng Li, Deyu Kong, Yongjun Zhang, Ruixian Chen, Wuhan University, China; Jingdong Chen, Ant Group, China

TH3.O-2.5: A NOVEL BASEBAND DOPPLER CENTROID FREQUENCY ESTIMATION METHOD IN MULTICHANNEL HRWS-SAR SYSTEM 1355

He Huang, Penghui Huang, Shanghai Jiao Tong University, China; Jialian Sheng, Shanghai Radio Equipment Research Institute, China; Yunkai Deng, Huaitao Fan, Chinese Academy of Sciences, China; Zhicheng Wang, Shanghai Radio Equipment Research Institute, China; Xingzhao Liu, Shanghai Jiao Tong University, China

TH3.O-3: INTERNATIONAL COOPERATION TO VISUALIZE COVID-19'S IMPACT FROM SPACE I

TH3.O-3.1: TRI-AGENCY COOPERATION TO IDENTIFY THE IMPACT OF COVID-19 1359

Shin-ichi Sobue, Japan Aerospace Exploration Agency (JAXA), Japan; Yves-Louis Desnos, European Space Agency (ESA), Italy; Kevin J. Murphy, NASA, United States; Anca Anghelaea, European Space Agency (ESA), Italy; Manil Maskey, Michael Falkowski, NASA, United States

TH3.O-3.3: JAXA'S EARTH OBSERVATION DATA ANALYSIS ON COVID-19 1362

Ko Hamamoto, Akihiko Kuze, Takeo Tadono, Shin-ichi Sobue, Junichiro Ishizawa, Kei Ohyoshi, Hiroshi Murakami, Kohei Kawamura, Yousuke Ikehata, Japan Aerospace Exploration Agency (JAXA), Japan

TH3.O-3.4: COVID-19 IMPACT MONITORING OF ECONOMIC ACTIVITIES 1366

Michael Falkowski, Manil Maskey, NASA, United States; Shin-ichi Sobue, Japan Aerospace Exploration Agency (JAXA), Japan; Gordon Campbell, European Space Agency (ESA), Italy; Gerald Bawden, NASA, United States; Takeo Tadono, Japan Aerospace Exploration Agency (JAXA), Japan

TH3.O-3.5: VISUALIZING, EXPLORING, AND COMMUNICATING ENVIRONMENTAL EFFECTS OF COVID-19 USING EARTH OBSERVATION DASHBOARD 1370

Manil Maskey, NASA Marshall Space Flight Center, United States; Michael Falkowski, Kevin Murphy, Olaf Veerman, NASA, United States; Ricardo Mestre, Development Seed, United States; Iksha Gurung, Muthukumaran Ramasubramanian, University of Alabama in Huntsville, United States; Lillianne Thomas, Zhuang-Fang Yi, Drew Bollinger, Development Seed, United States; Abigail Seadler, Yvonne Ivey, NASA, United States

TH3.O-3.6: RAPID ACTION ON COVID-19 AND EARTH OBSERVATION: AN INITIATIVE FOR SOCIETAL INFORMATION ENABLED BY COPERNICUS SENTINELS DATA 1374

Yves-Louis Desnos, European Space Agency (ESA), Italy; Elisabeth Hamdouch, European Commission, Belgium; Anca Anghelaea, Guenther Landgraf, Simonetta Cheli, European Space Agency (ESA), Italy; Julien Turpin, European Commission, Belgium

TH3.O-5: INTERNATIONAL SPACEBORNE IMAGING SPECTROSCOPY MISSIONS: UPDATES AND NEWS OF RUNNING MISSIONS

TH3.O-5.1: CHRIS/PROBA-1 STATUS INCLUDING RADIOMETRIC CALIBRATION..... 1377

Samantha Lavender, Telespazio Vega, United Kingdom; Giuseppe Ottavianelli, Roberto Biasutti, Peggy Fischer, European Space Agency (ESA), Italy

TH3.O-5.3: CURRENT STATUS AND FUTURE PERSPECTIVES OF THE PRISMA MISSION 1380 AT THE TURN OF ONE YEAR IN OPERATIONAL USAGE

Ettore Lopinto, Luca Fasano, Francesco Longo, Giancarlo Natale Varacalli, Patrizia Sacco, Italian Space Agency (ASI), Italy; Leandro Chiarantini, Francesco Sarti, Leonardo Spa, Italy; Luigi Agrimano, Francesca Santoro, Planetek Italia Srl, Italy; Sergio Cogliati, Roberto Colombo, University of Milano - Bicocca, Italy; Mariano Bresciani, Claudia Giardino, Federica Braga, National Research Council of Italy, Italy

TH3.O-5.4: THE STATUS OF HYPERSPECTRAL IMAGER SUITE (HISUI) : ONE YEAR AFTER 1384 LAUNCH

Tsuneo Matsunaga, National Institute for Environmental Studies, Japan; Akira Iwasaki, University of Tokyo, Japan; Tetsushi Tachikawa, Jun Tanii, Osamu Kashimura, Koichiro Mouri, Hitomi Inada, Japan Space Systems, Japan; Satoshi Tsuchida, Ryosuke Nakamura, Hirokazu Yamamoto, Koki Iwao, National Institute of Advanced Industrial Science and Technology, Japan

TH3.O-5.5: THE SPACEBORNE IMAGING SPECTROMETER DESIS: DATA ACCESS AND 1386 SCIENTIFIC APPLICATIONS

Rupert Müller, Kevin Alonso, Martin Bachmann, German Aerospace Center (DLR), Germany; Kara Burch, Innovative Imaging and Research, Corp., United States; Emiliano Carmona, Daniele Cerra, Daniele Dietrich, Peter Gege, German Aerospace Center (DLR), Germany; Lester Heath, Teledyne, United States; Uta Heiden, Stefanie Holzwarth, German Aerospace Center (DLR), Germany; Uwe Knodt, David Krutz, Innovative Imaging and Research, Corp., Germany; David Marshall, Miguel Pato, Raquel de los Reyes Lopez, Peter Reinartz, Mirco Tegler, German Aerospace Center (DLR), Germany

TH3.O-5.6: EVALUATION OF THE PRISMA HYPERSPECTRAL RADIANCE DATA: THE 1390 PRISCAV PROJECT ACTIVITIES IN THE BASILICATA REGION (SOUTHERN ITALY)

Stefano Pignatti, Aldo Amodeo, Lucia Mona, Angelo Palombo, Simone Pascucci, National Council of Research (CNR), Italy; Marco Rosoldi, National Research Council (CNR), Italy; Federico Santini, National Council of Research (CNR), Italy; Raffaele Casa, Università della Tuscia, Italy; Giovanni Laneve, University of Rome, Italy

TH3.O-6: MAPPING, MONITORING AND MODELLING SAVANNAH VEGETATION WITH EARTH OBSERVATION I

TH3.O-6.1: ABRUPT CHANGE IN DRYLAND ECOSYSTEM FUNCTIONING: RECENT 1394 ADVANCES AND LESSONS LEARNT FROM THE U-TURN PROJECT

Stéphanie Horion, University of Copenhagen, Denmark; Wim Verbruggen, Ghent University, Belgium; Paulo N. Bernardino, KU Leuven, Belgium; Niels Souverijns, VITO remote sensing, Belgium; Wanda de Keersmaecker, Wageningen University and Research, Netherlands; Rasmus Fensholt, Guy Schurgers, University of Copenhagen, Denmark; Ruben Van De Kerchove, VITO remote sensing, Belgium; Hans Verbeeck, Ghent University, Belgium; Jan Verbesselt, Wageningen University and Research, Netherlands; Ben Somers, KU Leuven, Belgium

TH3.O-6.3: MEASURING THE TIMING OF WOODY GREEN-UP IN AFRICAN SAVANNAS – 1398 WHICH MODIS DATA TO USE?

Anthony Cizek, Paul Aplin, Ian Powell, Edge Hill University, United Kingdom

TH3.O-6.4: ABOVEGROUND WOODY BIOMASS ESTIMATION OF THE BRAZILIAN CERRADO BIOME USING DATA INTEGRATION 1402

Barbara Zimbres, Environmental Research Institute for the Amazon (IPAM), Brazil; Pedro Rodríguez-Veiga, University of Leicester, United Kingdom; Julia Shimbo, Environmental Research Institute for the Amazon (IPAM), Brazil; Polyanna Bispo, Manchester University, United Kingdom; Heiko Balzter, University of Leicester, United Kingdom; Mercedes Bustamante, Iris Roitman, Universidade de Brasília, Brazil; Ricardo Haidar, Universidade Federal do Tocantins, Brazil; Sabrina Miranda, Universidade Estadual de Goiás, Brazil; Letícia Gomes, Universidade de Brasília, Brazil; Fabrício Alvim, Universidade Federal de Juiz de Fora, Brazil; Eddie Lenza, Universidade Estadual do Mato Grosso, Brazil; Leonardo Maracahipes-Santos, Environmental Research Institute for the Amazon (IPAM), Brazil; Ana Clara Abadia, Universidade do Estado de Mato Grosso, Brazil; Jamir Prado Jr., Universidade Federal de Uberlândia, Brazil; Evandro Machado, Anne Priscila Dias Gonzaga, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Brazil; Marcela de Castro Nunes Santos Terra, Jose Marcio de Mello, Jose Roberto Scolforo, Universidade Federal de Lavras, Brazil; Ane Alencar, Environmental Research Institute for the Amazon (IPAM), Brazil

TH3.O-6.5: FORWARD AND INVERSE L-BAND RADIATIVE TRANSFER MODELING OVER THE DRY CHACO, USING SMOS OBSERVATIONS, LAND SURFACE MODELING AND IN SITU DATA 1406

Frederike Vincent, Michiel Maertens, Michel Bechtold, KU Leuven, Belgium; Esteban Jobbagy, Universidad de San Luis, Argentina; Rolf Reichle, NASA Goddard Space Flight Center, United States; Veerle Vanacker, UC Louvain, Belgium; Jasper Vrugt, University of California, Irvine, United States; Jean-Pierre Wigneron, INRAE, UMR1391 ISPA, Centre Bordeaux-Aquitaine, F-33140, France; Gabriëlle De Lannoy, KU Leuven, Belgium

TH3.O-6.6: FUSION OF SENTINEL-2 DATA WITH HIGH RESOLUTION OPEN ACCESS PLANET BASEMAPS FOR GRAZING LAWN DETECTION IN SOUTHERN AFRICAN SAVANNAHS 1409

Kwame Awuah, Paul Aplin, Edge Hill University, United Kingdom

TH3.O-7: MODELING OF REMOTE SENSING OBSERVABLES

TH3.O-7.1: FULL SPECTRUM CLOUDY SCENE SIMULATION FOR REMOTE SENSING ALGORITHM DEVELOPMENT 1413

Robert Sundberg, Steven Richtsmeier, Timothy Perkins, Spectral Sciences, Inc., United States

TH3.O-7.3: MODEL COMPUTATION WITH SECOND-ORDER RADIATIVE TRANSFER EQUATION FOR SNOW MEDIUM USING COUPLED FINITE ELEMENT METHOD AND METHOD OF MOMENT AND RELAXED HIERARCHICAL EQUIVALENT SOURCE ALGORITHM 1417

Hamsalekha A. Kumaresan, Hong Tat Ewe, Gobi Vetharatnam, Universiti Tunku Abdul Rahman, Malaysia; Li Jun Jiang, University of Hong Kong, China

TH3.O-7.4: INVERSION ANALYSIS OF SEA ICE PHYSICAL PARAMETERS THROUGH RADIATIVE TRANSFER MODEL AND SIMULATED ANNEALING METHOD 1421

Yu Jen Lee, Kee Choon Yeong, Universiti Tunku Abdul Rahman (Kampar Campus), Malaysia; Hong Tat Ewe, Universiti Tunku Abdul Rahman (Sungai Long Campus), Malaysia

TH3.O-7.5: ENHANCED TARGET DETECTION UNDER POORLY ILLUMINATED CONDITIONS 1425

Sandra Wiseman, Steve Adler-Golden, Spectral Sciences, Inc, United States; Emmett Ientilucci, Rochester Institute of Technology, United States; Timothy Perkins, Spectral Sciences, Inc, United States

TH3.O-7.6: DEVELOPMENT OF SPACEBORNE SOOP REFLECTOMETRY MODEL FOR COMPLEX TERRAINS 1429

Dylan Boyd, Mehmet Kurum, Mississippi State University, United States; James L. Garrison, Benjamin Nold, Purdue University, United States; Manuel Vega, Rajat Bindlish, Jeffrey Piepmeier, NASA Goddard Space Flight Center, United States

TH3.O-8: FROM SEABED TO SPACE: A JOURNEY THROUGH ADVANCED OBJECT DETECTION AND RECOGNITION METHODS

TH3.O-8.1: AUTOMATED DETECTION OF MALE EIDERS OVER MULTISPECTRAL AERIAL PHOTOGRAPHS 2819

Ataollah Haddadi, A&L Canada Laboratories Inc., Canada; Brigitte Leblon, University of New Brunswick, Canada; Scott Gilliland, Matthew Mahoney, Environment and Climate Change Canada, Canada; Angela Douglas, Southern Gulf of St. Lawrence Coalition on Sustainability, Canada

TH3.O-8.2: IMPROVED CLASSIFICATION OF HIGH RESOLUTION REMOTE SENSING IMAGERY WITH DIFFERENTIAL MORPHOLOGICAL PROFILE NEURAL NETWORK 2823

J. Alex Hurt, Trevor Bajkowski, Grant Scott, University of Missouri, United States

TH3.O-8.3: HAZE MITIGATION IN HIGH-RESOLUTION SATELLITE IMAGERY USING ENHANCED STYLE-TRANSFER NEURAL NETWORK AND NORMALIZATION ACROSS MULTIPLE GPUS 2827

Byung Park, Oak Ridge National Laboratory, United States; Somrita Chattopadhyay, Purdue University, United States; John Burgin, Oak Ridge National Laboratory, United States

TH3.O-8.4: AUTOMATIC DETECTION AND MAPPING OF ESPELETIA PLANTS FROM UAV IMAGERY 2831

Jorge Rodriguez, Universidad Nacional de Colombia, Colombia; Ce Zhang, Lancaster University, United Kingdom; Ivan Lizarazo, Flavio Prieto, Universidad Nacional de Colombia, Colombia

TH3.O-8.5: EXPLAINABLE SYSTEMATIC ANALYSIS FOR SYNTHETIC APERTURE SONAR IMAGERY 2835

Sarah Walker, Joshua Peebles, University of Florida, United States; Jeff Dale, James Keller, University of Missouri, United States; Alina Zare, University of Florida, United States

TH3.O-8.6: AUTOMATIC MAASAILAND BOMA MAPPING WITH DEEP NEURAL NETWORKS..... 2839

Keli Cheng, University of Missouri, United States; Ilinca Popescu, Stanford University, United States; Lincoln Sheets, Grant Scott, University of Missouri, United States

TH3.O-9: DEEP LEARNING FOR REMOTE SENSING IMAGE CLASSIFICATION AND CLUSTERING

TH3.O-9.1: DDIPNET AND DDIPNET + : DISCRIMINANT DEEP IMAGE PRIOR NETWORKS FOR REMOTE SENSING IMAGE CLASSIFICATION 2843

Daniel Santos, Rafael Pires, Leandro Passos, Joao Papa, Sao Paulo State University, Brazil

TH3.O-9.2: AN END-TO-END CLUSTERING FRAMEWORK BASED ON DYNAMIC THRESHOLD FOR SAR IMAGES 2847

Mengsi Yang, Junchuan Guo, Xianyuan Wang, Zongjie Cao, Zongyong Cui, University of Electronic Science and Technology of China, China

TH3.O-9.3: SEMI-SUPERVISED GRAPH PROTOTYPICAL NETWORKS FOR HYPERSPECTRAL IMAGE CLASSIFICATION 2851

Bobo Xi, Jiaojiao Li, Yunsong Li, Xidian University, China; Qian Du, Mississippi State University, United States

TH3.O-9.4: CROSS-MODAL FEATURE FUSION RETRIEVAL FOR REMOTE SENSING IMAGE-VOICE RETRIEVAL 2855

Rui Yang, Yu Gu, Yu Liao, Huan Zhang, Yingzhi Sun, Shuang Wang, Xidian University, China; He Zhang, Northwest University, China; Biao Hou, Licheng Jiao, Xidian University, China

TH3.O-9.5: IMPROVED DEEP CLUSTERING OF MASTCAM IMAGES USING METRIC LEARNING 2859

Tejas Panambur, Mario Parente, University of Massachusetts Amherst, United States

**TH3.O-9.6: IMPROVING LAND COVER CLASSIFICATION WITH A SHIFT-INVARIANT 2863
CENTER-FOCUSING CONVOLUTIONAL NEURAL NETWORK**

Cong Luo, Technical University of Munich, Germany; Yuansheng Hua, Lichao Mou, Xiao Xiang Zhu, Technical University of Munich & German Aerospace Center, Germany

TH3.O-10: MONITORING THE ATMOSPHERE: GROUND-BASED AND SATELLITE REMOTE SENSING OBSERVATIONS

**TH3.O-10.1: THE NASA MICRO PULSE LIDAR NETWORK (MPLNET): EARLY RESULTS 1432
FROM DEVELOPMENT OF DIURNAL CLIMATOLOGIES**

Ellsworth J. Welton, NASA Goddard Space Flight Center, United States; James R. Campbell, Naval Research Laboratory, United States; Jasper R. Lewis, University of Maryland Baltimore County, United States; Simone Lolli, CNR-IMAA, Italy; Sebastian Stewart, Science Systems and Applications, Inc. / Aether Embedded, United States; Larry Belcher, Science Systems and Applications, Inc., United States; Brent Holben, NASA, United States; David Giles, Ilya Slutsker, Science Systems and Applications, Inc., United States

**TH3.O-10.4: COMPARISON BETWEEN SREM AND 6SV ATMOSPHERIC CORRECTION 1434
METHODS**

Muhammad Bilal, Zhongfeng Qiu, Yu Wang, Md. Arfan Ali, Nanjing University of Information Science and Technology, China

**TH3.O-10.5: SUN-TRACKING GROUND-BASED MICROWAVE RADIOMETRY: CHALLENGES 1437
AND APPLICATIONS**

Frank S. Marzano, Marianna Biscarini, Sapienza Università di Roma, Italy; Lorenzo Luini, Carlo Riva, Politecnico di Milano, Italy; Domenico Cimini, Sabrina Gentile, Saverio Nilo, Francesco Di Paola, Filomena Romano, National Research Council of Italy, Italy; Luca Milani, Antonio Martellucci, European Space Agency (ESA), Germany

**TH3.O-10.6: SOLVING GLOBAL CIRRUS CLOUD TOP-OF-THE-ATMOSPHERE RADIATIVE 1441
FORCING**

James R. Campbell, Naval Research Laboratory, United States; Erica K. Dolinar, American Society for Engineering Excellence, United States; Anne Garnier, Science Systems and Applications, Inc., United States; Jared W. Marquis, University of North Dakota, United States; Theodore M. McHardy, University of Arizona, United States; Ping Yang, Texas A&M University, United States; Jasper R. Lewis, University of Maryland Baltimore County, United States; Ellsworth J. Welton, NASA Goddard Space Flight Center, United States

TH3.O-11: MULTI-BAND, MULTI-SENSOR, AND POLARIMETRIC RADAR TECHNIQUES FOR PERMAFROST CHARACTERIZATION

**TH3.O-11.1: PERMAFROST DYNAMICS OBSERVATORY: RETRIEVAL OF ACTIVE LAYER 1444
THICKNESS AND SOIL MOISTURE FROM AIRBORNE INSAR AND POLSAR DATA**

Richard Chen, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Roger Michaelides, Colorado School of Mines, United States; Yuhuan Zhao, University of Southern California, United States; Lingcao Huang, University of Colorado Boulder, United States; Elizabeth Wig, Stanford University, United States; Taylor Sullivan, Andrew Parsekian, University of Wyoming, United States; Howard Zebker, Stanford University, United States; Mahta Moghaddam, University of Southern California, United States; Kevin Schaefer, University of Colorado Boulder, United States

**TH3.O-11.3: STUDYING FROZEN GROUND DYNAMICS BY USING GNSS 1448
INTERFEROMETRIC REFLECTOMETRY: ACHIEVEMENTS AND POTENTIAL SYNERGY WITH
INSAR**

Jiahua Zhang, Lin Liu, Chinese University of Hong Kong, China

**TH3.O-11.4: UTILITY OF POLARIZATIONS AVAILABLE FROM SENTINEL-1 FOR TUNDRA 1452
MAPPING**

Annett Bartsch, Georg Pointner, b.geos GmbH, Austria; Helena Bergstedt, University of Alaska Fairbanks, United States; Barbara Widhalm, ZAMG - Zentralanstalt für Meteorologie und Geodynamik, Austria; Anna Wendleder, Achim Roth, German Aerospace Center (DLR), Germany

TH3.O-11.5: POTENTIAL OF FULL-POLARIMETRIC P- AND L-BAND SAR DATA IN CHARACTERIZING POST-FIRE RECOVERY OF ARCTIC TUNDRA	1456
<i>Yonghong Yi, Richard Chen, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Mahta Moghaddam, University of Southern California, United States; John Kimball, University of Montana, United States; Benjamin Jones, University of Alaska Fairbanks, United States; Charles Miller, NASA Jet Propulsion Laboratory, California Institute of Technology, United States</i>	
TH3.O-11.6: MAPS OF ACTIVE LAYER THICKNESS ON THE NORTH SLOPE OF ALASKA BY UPSCALING P-BAND POLARIMETRIC SAR RETRIEVALS	1460
<i>Jane Whitcomb, University of Southern California, United States; Richard Chen, California Institute of Technology, United States; Daniel Clewley, Plymouth Marine Laboratory, United Kingdom; Yonghong Yi, California Institute of Technology, United States; John Kimball, University of Montana, United States; Mahta Moghaddam, University of Southern California, United States</i>	
TH3.O-12: SUPER-RESOLUTION	
TH3.O-12.1: SENTINEL-3 IMAGE SUPER-RESOLUTION USING DATA FUSION AND CONVOLUTIONAL NEURAL NETWORKS	2867
<i>Rafael Fernandez, Ruben Fernandez-Beltran, Filiberto Pla, University Jaume I, Spain</i>	
TH3.O-12.2: TUNING PARAMETER SELECTION FOR SENTINEL-2 SHARPENING USING WARD'S PROTOCOL	2871
<i>Sveinn Eirikur Armannsson, Jakob Sigurdsson, Jóhannes Rúnar Sveinsson, Magnús Örn Ulfarsson, University of Iceland, Iceland</i>	
TH3.O-12.3: SHARPENING THE 20 M BANDS OF SENTINEL-2 IMAGE USING AN UNSUPERVISED CONVOLUTIONAL NEURAL NETWORK	2875
<i>Han Van Nguyen, Magnús Örn Ulfarsson, Jóhannes Rúnar Sveinsson, University of Iceland, Iceland</i>	
TH3.O-12.4: BLIND SUPER-RESOLUTION ON REMOTE SENSING IMAGES WITH BLUR KERNEL PREDICTION	2879
<i>Runmin Dong, Lixian Zhang, Haohuan Fu, Tsinghua University, China</i>	
TH3.O-12.5: SELF-ATTENTION FUSION MODULE FOR SINGLE REMOTE SENSING IMAGE SUPER-RESOLUTION	2883
<i>Han Mei, Haopeng Zhang, Zhiguo Jiang, Beihang University, China</i>	
TH3.O-12.6: RESOLUTION ENHANCEMENT OF UNSUPERVISED CLASSIFICATION MAPS THROUGH DATA FUSION OF SPECTRAL AND VISIBLE IMAGES FROM DIFFERENT SENSING INSTRUMENTS	2887
<i>Fadi Kizel, Technion-Israel Institute of Technology, Israel</i>	
TH3.O-13: NEW OBSERVING STRATEGIES FOR NATURAL HAZARDS	
TH3.O-13.1: THE SCO-FLOODDAM PROJECT : NEW OBSERVING STRATEGIES FOR FLOOD DETECTION, ALERT AND RAPID MAPPING	1464
<i>Peter Kettig, Simon Baillarin, CNES, France; Sophie Ricci, Thanh-Huy Nguyen, CERFACS, France; Thomas Huang, Alphan Altinok, Nga T. Chung, NASA Jet Propulsion Laboratory, United States; Guillaume Valladeau, Vortex.IO, France; Romain Goeury, Airbus Defence and Space, France; Alix Roumagnac, Predict Services, France</i>	
TH3.O-13.4: NEW OBSERVING STRATEGIES TESTBED (NOS-T) ARCHITECTURE: EVALUATING DYNAMIC RESPONSE TO EMERGENT EVENTS	1470
<i>Paul Grogan, Hayden Daly, Matthew Brand, Jerry Sellers, Stevens Institute of Technology, United States</i>	

TH3.O-13.5: SOIL MOISTURE MONITORING USING AUTONOMOUS AND DISTRIBUTED SPACECRAFT (D-SHIELD) 1474

Sreeja Nag, NASA Ames Research Center/BAER Institute, United States; Mahta Moghaddam, University of Southern California, United States; Daniel Selva, Texas A&M University, United States; Jeremy Frank, NASA Ames Research Center, United States; Vinay Ravindra, NASA Ames Research Center/BAER Institute, United States; Richard Levinson, Amir Azemati, NASA Ames Research Center/KBR Wyle, United States; Benjamin Gorr, Texas A&M University, United States; Alan Li, NASA Ames Research Center/BAER Institute, United States; Ruzbeh Akbar, Massachusetts Institute of Technology, United States

TH3.O-13.6: SATELLITE OBSERVED MULTI-PARAMETER VARIATIONS ASSOCIATED WITH THE 2020 YUTIAN EARTHQUAKE, CHINA 1476

Feng Jing, Institute of Earthquake Forecasting, China Earthquake Administration, China; Ramesh Singh, Chapman University, China

TH3.O-14: SEA ICE II

TH3.O-14.1: PREDICTING DAILY ARCTIC SEA ICE CONCENTRATION IN THE MELT SEASON BASED ON A DEEP FULLY CONVOLUTION NETWORK MODEL 5540

Yibin Ren, Xiaofeng Li, Chinese Academy of Sciences, China

TH3.O-14.2: STUDIES OF THE RETRIEVAL OF SEA ICE THICKNESS AND SALINITY WITH WIDEBAND MICROWAVE RADIOMETRY 5544

Oguz Demir, Kenneth Jezek, The Ohio State University, United States; Marco Brogioni, Giovanni Macelloni, Institute of Applied Physics Nello Carrara, Italy; Lars Kaleschke, Alfred Wegener Institute, Germany; Joel Johnson, The Ohio State University, United States

TH3.O-14.3: PROBABILISTIC INFERENCE METHOD TO DISCRIMINATE CLOSED WATER FROM SEA ICE USING SENTINEL-1 SAR SIGNATURES 5546

Christoph Herbert, Adriano Camps, Mercè Vall-llossera, Universitat Politècnica de Catalunya, Spain

TH3.O-14.4: MULTIYEAR ARCTIC SEA ICE PARAMETERS DERIVED FROM ASCAT DATA USING VOLUME SCATTERING MODEL 5550

Anton I. Kostylev, Russian State Hydrometeorological University, Russia

TH3.O-14.5: ANALYSIS OF THE SYNERGIES BETWEEN PASSIVE RADIOMETER, ALTIMETER, AND SCATTEROMETER, FOR IMPROVED SEA ICE PARAMETER ESTIMATES 5554

Clement Soriot, Catherine Prigent, Observatoire de Paris, France; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Lise Kilic, Carlos Jimenez, Observatoire de Paris, France; Fabien Blarrel, LEGOS, France

TH3.O-15: NEW SPACE SAR INSTRUMENTS

TH3.O-15.1: NEWSPACE SYNTHETIC APERTURE RADAR INSTRUMENT ACTIVITIES 1480

Jose Marquez-Martinez, Radarmetrics, S.L., Spain

TH3.O-15.3: CAPELLA SPACE FIRST OPERATIONAL SAR SATELLITE..... 1483

Davide Castelletti, Gordon Farquharson, Craig Stringham, Michael Duersch, Duncan Eddy, Capella Space, United States

TH3.O-15.4: THE LATEST STATUS OF OUR FIRST DEMONSTRATION SATELLITE OF THE COMMERCIAL SMALL SYNTHETIC APERTURE RADAR AFTER THE LAUNCH 1487

Toshihiro Obata, Motoyuki Arai, Shoichiro Asada, Tomoyuki Imaizumi, Yutaka Suzuki, Synspective Inc., Japan

TH3.O-15.5: FROM NOVASAR-S TO S250 RADAR: AIRBUS NEW SPACE PAYLOAD DEVELOPMENTS 1490

Sam Doody, Martin Cohen, Airbus Defence and Space, United Kingdom

TH3.O-15.6: ICEYE MICROSATELLITE SAR CONSTELLATION STATUS UPDATE: LONG DWELL SPOTLIGHT AND WIDE SWATH IMAGING MODES 1493

Vladimir Ignatenko, Matthew Nottingham, Andrea Radius, Leszek Lamentowski, Darren Muff, ICEYE Oy, Finland

TH3.O-16: BIODIVERSITY AND PHENOLOGY

TH3.O-16.1: EXPLAINING PATTERNS OF BIODIVERSITY ACROSS NEON SITES USING LANDSAT-BASED DISTURBANCE METRICS 6252

Jasper Van doninck, Michigan State University, United States; Annie Smith, Washington State Department of Natural Resources, United States; Jon Knott, Michigan State University, United States; Sydne Record, Bryn Mawr College, United States; Phoebe Zarnetske, Michigan State University, United States

TH3.O-16.2: CROP PHENOLOGY RETRIEVAL THROUGH GAUSSIAN PROCESS REGRESSION 6256

Santiago Belda, University of Valencia, Spain; Luca Pipia, Institut Cartogràfic i Geològic de Catalunya (ICGC), Spain; Eatidal Amin, Matías Salinero, Pablo Reyes, Jochem Verrelst, University of Valencia, Spain

TH3.O-16.3: MAPPING ESSENTIAL VEGETATION VARIABLES OVER EUROPE USING GAUSSIAN PROCESS REGRESSION AND SENTINEL-3 DATA IN GOOGLE EARTH ENGINE 6260

Pablo Reyes, University of Valencia, Spain; Luca Pipia, Institut Cartogràfic i Geològic de Catalunya (ICGC), Spain; Matías Salinero, Charlotte De Grave, Jose Estévez, Santiago Belda, Jochem Verrelst, University of Valencia, Spain

TH3.O-16.4: FUEL BREAK VEGETATION MONITORING WITH SENTINEL-2 NDVI ROBUST TO PHENOLOGY AND ENVIRONMENTAL CONDITIONS 6264

João E. Pereira-Pires, Centre of Technology and Systems/UNINOVA, School of Science and Technology–NOVA University of Lisbon, Portugal; Valentine Aubard, Forest Research Centre, School of Agriculture–University of Lisbon, Portugal; Rita A. Ribeiro, José M. Fonseca, Centre of Technology and Systems/UNINOVA, School of Science and Technology–NOVA University of Lisbon, Portugal; João M. N. Silva, Forest Research Centre, School of Agriculture–University of Lisbon, Portugal; André Mora, Centre of Technology and Systems/UNINOVA, School of Science and Technology–NOVA University of Lisbon, Portugal

TH3.O-16.5: A NOVEL LAND USE CLASSIFIER WITH CONVOLUTIONAL RECURRENT STRUCTURE 6268

Dong Xie, Arthur Depoian, Colleen Bailey, University of North Texas, United States

TH3.O-16.6: MAPPING FOREST THINNING, SYSTEMIC AND SELECTIVE LOGGING OPERATIONS USING VARIOUS IMAGING MODES OF X-BAND SAR IMAGES 6272

Oleg Antropov, Anne Lönnqvist, Yrjö Rauste, VTT Technical Research Centre of Finland, Finland; Kimmo Kortelainen, Tornator Oyj, Finland; Tuomas Häme, VTT Technical Research Centre of Finland, Finland

TH3.O-17: PRECISION AGRICULTURE II

TH3.O-17.1: CROP YIELD PREDICTION USING SATELLITE/UAV SYNERGY AND MACHINE LEARNING 6276

Maitiniyazi Maimaitijiang, Vasit Sagan, Saint Louis University, United States; Felix B. Fritschi, University of Missouri, United States

TH3.O-17.2: PANICLE COUNTING IN UAV IMAGES FOR ESTIMATING FLOWERING TIME IN SORGHUM 6280

Enyu Cai, Sriram Baireddy, Changye Yang, Melba Crawford, Edward Delp, Purdue University, United States

TH3.O-17.3: AGRICULTURAL SANDBOXNL: A CROP PARCEL LEVEL DATABASE USING SENTINEL-1 SAR AND GOOGLE EARTH ENGINE 6284

Vineet Kumar, Delft University of Technology, Netherlands; Manuel Huber, European Space Agency (ESA), Netherlands; Maurice Shorachi, Delft University of Technology, Netherlands; Björn Rommen, European Space Agency (ESA), Netherlands; Susan C. Steele-Dunne, Delft University of Technology, Netherlands

TH3.O-17.4: MACHINE LEARNING MATCHING OF SENTINEL-2 AND GPS COMBINE HARVESTER DATA TO ESTIMATE WITHIN-FIELD WHEAT GRAIN YIELD	6288
<i>Joel Segarra, Jose Luis Araus, Shawn Carlisle Kefauver, University of Barcelona, Spain</i>	
TH3.O-17.5: DRONE-ACQUIRED DATA IN SUPPORT OF BELGIAN FRUIT PRODUCTION	6292
<i>Joke Vandermaesen, Bjorn Rombouts, pcfruit vzw, Belgium; Stephanie Delalieux, VITO, Belgium; Dany Bylemans, Serge Remy, pcfruit vzw, Belgium</i>	
TH3.O-17.6: EFFECTS OF NITROGEN STRESS ON CROP SURFACE TEMPERATURE AND LEAF THERMAL EMISSIVITY: A GREENHOUSE CASE STUDY	6296
<i>Heba Alzaben, Roydon Fraser, University of Waterloo, Canada; Clarence Swanton, University of Guelph, Canada</i>	
TH3.O-18: SOIL MOISTURE RETRIEVALS AT HIGH SPATIAL RESOLUTIONS	
TH3.O-18.1: ACTIVE-PASSIVE SURFACE SOIL MOISTURE RETRIEVALS WITH L-BAND AND C-BAND ACTIVE AND L-BAND PASSIVE	6300
<i>Narendra Das, Michigan State University, United States; Dara Entekhabi, Massachusetts Institute of Technology, United States; Seyed Mohammad Mousavi, Simon Yueh, Roy Scott Dunbar, Andreas Colliander, NASA Jet Propulsion Laboratory, California Institute of Technology, United States</i>	
TH3.O-18.2: QUASI-GLOBAL GNSS-R SOIL MOISTURE RETRIEVALS AT HIGH SPATIO-TEMPORAL RESOLUTION FROM CYGNSS AND SMAP DATA	6303
<i>Fangni Lei, Volkan Senyurek, Mehmet Kurum, Ali Gurbuz, Dylan Boyd, Robert Moorhead, Mississippi State University, United States</i>	
TH3.O-18.3: SPATIAL AND TEMPORAL INTERPOLATION OF CYGNSS SOIL MOISTURE ESTIMATIONS	6307
<i>Volkan Senyurek, Ali Gurbuz, Mehmet Kurum, Fangni Lei, Dylan Boyd, Robert Moorhead, Mississippi State University, United States</i>	
TH3.O-18.4: OPTIMAL SPATIAL RESOLUTION OF SENTINEL-1 SURFACE SOIL MOISTURE EVALUATED USING INTENSIVE IN SITU OBSERVATIONS	6311
<i>Theresa C. van Hateren, Marco Chini, Patrick Matgen, Luxembourg Institute of Science and Technology, Luxembourg; Luca Pulvirenti, CIMA Research Foundation, Italy; Nazzareno Pierdicca, Sapienza University of Rome, Italy; Adriaan J. Teuling, Wageningen University and Research, Netherlands</i>	
TH3.O-18.5: CROP-CASMA - A WEB GIS TOOL FOR CROPLAND SOIL MOISTURE MONITORING AND ASSESSMENT BASED ON SMAP DATA	6315
<i>Zhengwei Yang, USDA National Agricultural Statistics Service, United States; Chen Zhang, Haoteng Zhao, Ziheng Sun, George Mason University, United States; Rajat Bindlish, Pang-Wei Liu, NASA Goddard Space Flight Center, United States; Andreas Colliander, California Institute of Technology, United States; Rick Mueller, USDA National Agricultural Statistics Service, United States; Liping Di, George Mason University, United States; Wade Crow, USDA Agricultural Research Service, United States; Rolf Reichle, NASA Goddard Space Flight Center, United States</i>	
TH3.O-18.6: MAPPING TRANSIENT SOIL MOISTURE POST RAINSTORM EVENTS IN HYPER-ARID KARST ENVIRONMENTS USING MULTI-SENSOR OBSERVATIONS	6319
<i>Jonathan Normand, Essam Heggy, University of Southern California, United States</i>	
TH3.O-19: NEXT GENERATION OF LEO/GEO MICROWAVE AND INFRARED SOUNDERS	
TH3.O-19.1: FUTURE NOAA LEO CONSTELLATION: TEMPERATURE AND MOISTURE SOUNDING FOR NWP AND FUTURE OBSERVATIONS	1497
<i>Vanessa Griffin, Frank Gallagher, David Spencer, National Oceanic and Atmospheric Administration (NOAA), United States</i>	
TH3.O-19.4: NEXT-GENERATION LEO MICROWAVE SOUNDERS: OPTIONS AND TRADEOFFS	1504
<i>Edward Kim, NASA, United States</i>	

**TH3.O-19.5: HIMAWARI-8/9 FOLLOW-ON SATELLITE PROGRAM AND IMPACTS OF 1507
POTENTIAL USAGE OF HYPERSPECTRAL IR SOUNDER**

Kotaro Bessho, Hiromi Owada, Japan Meteorological Agency, Japan; Kozo Okamoto, Tadashi Fujita, Meteorological Research Institute, Japan

**TH3.O-19.6: NASA TROPICS PATHFINDER AND CONSTELLATION MISSION PREPARATIONS 1511
FOR LAUNCHES IN 2021 AND 2022**

William J. Blackwell, MIT Lincoln Laboratory, United States

TH3.O-20: CLOUDS AND CLOUD REMOVAL

**TH3.O-20.1: USING SLOW FEATURE ANALYSIS AND A CLOUD-FREE AUXILIARY IMAGE TO 7156
REMOVE THIN CLOUDS IN LANDSAT-5 VNIR BAND DATA**

Yue Gao, University of Electronic Science and Technology of China, China; Yong Wang, East Carolina University, United States; Binxing Zhou, Zhongxing Telecommunication Equipment Technology Corporation, China

**TH3.O-20.2: A HYBRID MODEL-BASED AND DATA-DRIVEN APPROACH FOR CLOUD 7160
REMOVAL IN SATELLITE IMAGERY USING MULTI-SCALE DISTORTION-AWARE NETWORKS**

Weikang Yu, Xiaokang Zhang, Man-On Pun, Chinese University of Hong Kong, Shenzhen, China; Ming Liu, Shanghai CAS-NOVA Satellite Technology Company Limited, China

**TH3.O-20.3: ESTIMATING TOTAL PRECIPITABLE WATER DISTRIBUTION ACROSS FREE 7164
STATE PROVINCE, SOUTH AFRICA USING REMOTE SENSING DATA AND TOOLS**

Adeyemi Oludapo Olusola, Samuel Adewale Adelabu, University of the Free State, South Africa

**TH3.O-20.4: ANALYSIS OF THE SEASONAL VARIATION OF HORIZONTAL DELAY GRADIENT 7168
FOR THE TROPICAL ISLAND SINGAPORE**

*Anik Biswas, Lee Yee Hui, Nanyang Technological University, Singapore; Shilpa Manandhar, Agency for Science, Technology and Research (A*STAR), Singapore*

**TH3.O-20.5: EVALUATION OF MACHINE LEARNING BASED NOWCASTING BETWEEN 7172
STORMS OVER DIFFERENT GEOGRAPHICAL REGIONS**

EunYeol Kim, V. Chandrasekar, Colorado State University, United States

TH4.O-1: REMOTE SENSING OF NATURAL HAZARDS IN LATIN AMERICA II

**TH4.O-1.1: QUANTIFYING THE INFLUENCE OF INTENSITY CHANNELS FROM POLSAR 1514
IMAGES FOR EDGE DETECTION ON INFORMATION FUSION**

Anderson A. De Borba, IBMEC-SP, Brazil; Mauricio Marengoni, Universidade Federal de Minas Gerais - UFMG, Brazil; Alejandro C. Frery, Victoria University of Wellington, New Zealand

**TH4.O-1.3: WATER POLLUTION DETECTION IN ACAPULCO COASTS USING MERGED 1518
DATA FROM THE SENTINEL-2 AND SENTINEL-3 SATELLITES**

Roberto Lomeli-Huerta, Himer Avila-George, Universidad de Guadalajara, Mexico; Juan Pablo Rivera-Caicedo, Universidad Autónoma de Nayarit, Mexico; Miguel De-la-Torre, Universidad de Guadalajara, Mexico

**TH4.O-1.4: IDENTIFICATION OF DROUGHT PERIODS IN AGRICULTURAL AREAS USING 1522
ENHANCED SMAP BRIGHTNESS TEMPERATURE PRODUCT**

Juan Carlos Hernández-Sánchez, Alejandro Monsiváis-Huertero, Instituto Politécnico Nacional, Mexico; Jasmeet Judge, University of Florida, United States; Héctor Ernesto Huerta-Bátiz, Daniel Enrique Constantino-Recillas, Eduardo Arizmendi-Vasconcelos, José Carlos Jiménez-Escalona, Instituto Politécnico Nacional, Mexico

**TH4.O-1.5: BRAZILIAN BEACHES AND DUNES STATUS: THREE DECADES OF DETECTION 1526
USING MACHINE LEARNING**

Maria Pinheiro, Luiz Cortinhas, Alexandre Filho, Luis Sadeck, Bruno Haick, Cesar Diniz, Solved Solutions in Geoinformation, Brazil

TH4.O-1.6: VALIDATION OF MICROWAVE MODELS TO IDENTIFY EXTREME CONDITIONS IN MEXICAN ECOSYSTEMS	1530
<i>Daniel Enrique Constantino-Recillas, Alejandro Monsiváis-Huertero, Héctor Ernesto Huerta-Bátiz, Instituto Politécnico Nacional, Mexico</i>	
TH4.O-2: ADVANCED POLARIMETRIC AND TOMOGRAPHIC SAR PROCESSING TECHNIQUES FOR THE CHARACTERIZATION OF FORESTS	
TH4.O-2.1: POLARIMETRIC SAR TOMOGRAPHY FOR THE CHARACTERIZATION OF FORESTED AREAS	1534
<i>Stefano Tebaldini, Mauro Mariotti d’Alessandro, Politecnico di Milano, Italy; Thuy Le Toan, Ludovic Villard, Centre d’Etudes Spatiales de la Biosphère (CESBIO), France; Dinh Ho Tong Minh, National Research Institute for Agriculture, Food and Environment (INRAE), France; Laurent Ferro-Famil, Université de Rennes 1, France</i>	
TH4.O-2.3: IMPROVEMENT PROSPECTS OF DTM RECONSTRUCTION FROM P-BAND SAR TOMOGRAPHY OVER TROPICAL DENSE FORESTS	1538
<i>Maël Smessaert, Centre d’Etudes Spatiales de la Biosphère (CESBIO) / Capgemini, France; Ludovic Villard, Laurent Polidori, Centre d’Etudes Spatiales de la Biosphère (CESBIO), France; Sandrine Daniel, Capgemini, France; Laurent Ferro-Famil, Centre d’Etudes Spatiales de la Biosphère (CESBIO), France</i>	
TH4.O-2.4: POL-INSAR FOREST HEIGHT INVERSION USING TOMOSAR REFLECTIVITY PROFILES	1542
<i>Roman Guliaev, Jun Su Kim, Konstantinos P. Papathanassiou, Matteo Pardini, German Aerospace Center (DLR), Germany</i>	
TH4.O-2.5: COMPARISON OF BIOMASS ACQUISITION MODES FOR THE CHARACTERIZATION OF FORESTS	1545
<i>Laurent Ferro-Famil, Yue Huang, IETR, University of Rennes 1, France; Ludovic Villard, Thuy Le Toan, Thierry Kolečk, Centre d’Etudes Spatiales de la Biosphère (CESBIO), University of Toulouse, France</i>	
TH4.O-2.6: DEEP LEARNING FOR MAPPING THE AMAZON RAINFOREST WITH TANDEM-X	1549
<i>José-Luis Bueso-Bello, Andrea Pulella, Francescopaolo Sica, Paola Rizzoli, German Aerospace Center (DLR), Germany</i>	
TH4.O-3: INTERNATIONAL COOPERATION TO VISUALIZE COVID-19’S IMPACT FROM SPACE II	
TH4.O-3.1: A MULTI-AGENCY COVID-19 DASHBOARD WITH SATELLITE AIR QUALITY DATA	1553
<i>Barry Lefer, NASA Headquarters, United States; David Crisp, NASA Jet Propulsion Laboratory, United States; Zachary Fasnacht, Lok Lamsal, NASA Goddard Space Flight Center, United States; Kenneth Jucks, Abigail Seadler, NASA Headquarters, United States; Claus Zehner, European Space Agency - ESRIN, Italy</i>	
TH4.O-3.3: THE COVID-19 EARTH OBSERVATION DASHBOARD: A NASA-ESA-JAXA COLLABORATIVE PRODUCT	1556
<i>Anca Angheloa, Yves-Louis Desnos, European Space Agency (ESA), Italy; Manil Maskey, NASA, United States; Shin-ichi Sobue, Japan Aerospace Exploration Agency (JAXA), Japan; Stephan Meissl, EOX IT Services GmbH, Austria</i>	
TH4.O-3.4: COVID-19 IMPACT MONITORING FOR CLIMATE ENVIRONMENT (GREENHOUSE GASES)	1560
<i>Akihiko Kuze, Yousuke Ikehata, Nobuhiro Kikuchi, Japan Aerospace Exploration Agency (JAXA), Japan; Fumie Kataoka, RESTEC, Japan; Kei Shiomi, Japan Aerospace Exploration Agency (JAXA), Japan; Ken Jucks, NASA, United States; David Crisp, NASA Jet Propulsion Laboratory, United States; Brad Weir, Lesley Ott, NASA, United States</i>	

TH4.O-3.5: TRILATERAL WATER QUALITY MONITORING FROM SPACE DURING COVID-19..... 1563
Marie-Hélène Rio, European Space Agency (ESA), Italy; Laura Lorenzoni, NASA, United States; Hiroshi Murakami, Japan Aerospace Exploration Agency (JAXA), Japan; Federico Falcini, CNR-ISMAR, Italy; Simone Colella, Gianluca Volpe, CNR, Italy; Vittorio Ernesto Brando, National Research Council of Italy, Italy; Federica Braga, CNR, Italy; Javier Concha, Gian Marco Scarpa, CNR-ISMAR, Italy; Maria Tzortziou, Brice K. Grunert, City College of New York, United States; Nima Pahlevan, Armin Mehrabian, Science Systems and Applications, Inc., United States

TH4.O-3.6: COVID-19 IMPACT MONITORING FOR AGRICULTURE..... 1567
Benjamin Koetz, European Space Agency (ESA), Italy; Bradely Doorn, NASA Headquarters, United States; Shin-ichi Sobue, Japan Aerospace Exploration Agency (JAXA), Japan; Inbal Becker-Reshef, GEOGLAM Secretariat, Switzerland; Pierre Defourny, Sophie Bontemps, Philippe Malcorps, Pierre Houdmont, Université catholique de Louvain, Belgium; Brian Barker, Christina Justice, Hannah Kerner, Gabriel Tseng, University of Maryland, United States; Kei Oyoshi, Yoshinobu Sasaki, Keishiro Nakamoto, Japan Aerospace Exploration Agency (JAXA), Japan; Olaf Veerman, Development Seed, Portugal

TH4.O-4: DATA INTENSIVE COMPUTING FOR REMOTE SENSING

TH4.O-4.1: PRACTICE AND EXPERIENCE IN USING PARALLEL AND SCALABLE MACHINE LEARNING IN REMOTE SENSING FROM HPC OVER CLOUD TO QUANTUM COMPUTING 1571
Morris Riedel, University of Iceland, Iceland; Gabriele Cavallaro, Forschungszentrum Jülich, Germany; Jón Atli Benediktsson, University of Iceland, Iceland

TH4.O-4.3: COMPARING AREA-BASED AND FEATURE-BASED METHODS FOR CO-REGISTRATION OF MULTISPECTRAL BANDS ON GPU 1575
Álvaro Ordóñez, Dora B. Heras, Francisco Argüello, Universidade de Santiago de Compostela, Spain

TH4.O-4.4: AN FPGA-BASED IMPLEMENTATION OF A HYPERSPECTRAL ANOMALY DETECTION ALGORITHM FOR REAL-TIME APPLICATIONS 1579
Maria Diaz, University of Las Palmas de Gran Canaria (ULPGC), Spain; Julian Caba, University of Castilla La Mancha (UCLM), Spain; Raul Guerra, University of Las Palmas de Gran Canaria (ULPGC), Spain; Jesus Barba, University of Castilla La Mancha (UCLM), Spain; Sebastian Lopez, University of Las Palmas de Gran Canaria (ULPGC), Spain

TH4.O-4.5: ENHANCING LARGE BATCH SIZE TRAINING OF DEEP MODELS FOR REMOTE SENSING APPLICATIONS 1583
Rocco Sedona, Gabriele Cavallaro, Forschungszentrum Jülich, Germany; Morris Riedel, Matthias Book, University of Iceland, Iceland

TH4.O-4.6: EVOLUTIONARY OPTIMIZATION OF NEURAL ARCHITECTURES IN REMOTE SENSING CLASSIFICATION PROBLEMS 1587
Daniel Coquelin, Karlsruhe Institut für Technologie, Germany; Rocco Sedona, Morris Riedel, Forschungszentrum Jülich / University of Iceland, Germany; Markus Götz, Karlsruhe Institut für Technologie, Germany

TH4.O-5: INNOVATIVE APPROACHES FOR CHANGE DETECTION AND MULTI-TEMPORAL ANALYSIS

TH4.O-5.1: CAPTIONING CHANGES IN BI-TEMPORAL REMOTE SENSING IMAGES 2891
Seloua Chouaf, University of Sciences and Technology Houari Boumediene, Algeria; Genc Hoxha, University of Trento, Italy; Youcef Smara, University of Sciences and Technology Houari Boumediene, Algeria; Farid Melgani, University of Trento, Italy

TH4.O-5.2: BLUE NOISE SAMPLING AND NYSTRÖM EXTENSION FOR GRAPH BASED CHANGE DETECTION 2895
David Alejandro Jimenez Sierra, Hernan Darío Benitez Restrepo, Universidad Pontificia Javeria, Colombia; Gonzalo R. Arce, Juan Felipe Flórez Ospina, University of Delaware, United States

TH4.O-5.3: WILDFIRE DETECTION USING STREAMING SATELLITE IMAGERY 2899
Steven Xu, Seunghyun Kong, Zohreh Asgharzadeh, SAS Institute Inc., United States

TH4.O-5.4: INTER-ORBIT CHANGE DETECTION FOR HIGH-RESOLUTION SAR IMAGERY USING CONDITIONAL SIAMESE NETWORK	2903
<i>Eiji Kaneko, Takahiro Toizumi, Kazutoshi Sagi, Masato Toda, NEC corporation, Japan</i>	
TH4.O-5.5: SPATIO-TEMPORAL SUPER-RESOLUTION RECONSTRUCTION OF REMOTE SENSING DATA	2907
<i>Igor Yanovsky, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Jing Qin, University of Kentucky, United States</i>	
TH4.O-5.6: TRIAL OF DETECTION ACCURACIES IMPROVEMENT FOR JJ-FAST DEFORESTATION DETECTION ALGORITHM USING DEEP LEARNING	2911
<i>Manabu Watanabe, Tokyo Denki University, Japan; Christian Koyama, Masato Hayashi, Izumi Nagatani, Takeo Tadono, Japan Aerospace Exploration Agency (JAXA), Japan; Masanobu Shimada, Tokyo Denki University, Japan</i>	
TH4.O-6: MAPPING, MONITORING AND MODELLING SAVANNAH VEGETATION WITH EARTH OBSERVATION II	
TH4.O-6.1: MAPPING SAHELIAN ECOSYSTEM VULNERABILITY TO VEGETATION COLLAPSE: VEGETATION MODEL OPTIMIZATION	1591
<i>Wim Verbruggen, Hans Verbeeck, Ghent University, Belgium; Stéphanie Horion, University of Copenhagen, Denmark; Niels Souverijns, Flemish Institute for Technological Research (VITO), Belgium; Guy Schurgers, University of Copenhagen, Denmark</i>	
TH4.O-6.3: ESTIMATING SOUTH AFRICAN MAIZE BIOMASS USING INTEGRATED HIGH-RESOLUTION UAV AND SENTINEL 1 AND 2 DATASETS	1594
<i>Laven Naidoo, Russell Main, Moses Cho, Sabelo Madonsela, Nobuhle Majozi, Council for Scientific and Industrial Research (CSIR), South Africa</i>	
TH4.O-6.4: MONITORING SAVANNA VEGETATION PHENOLOGY USING ADVANCED HIMAWARI IMAGER	1597
<i>Xuanlong Ma, Lanzhou University, China; Ngoc Nguyen Tran, Song Leng, Qiaoyun Xie, Alfredo Huete, University of Technology Sydney, Australia</i>	
TH4.O-6.5: WHICH PIXEL IS A FOREST? TREE CROWN DELINEATION USING VHR IMAGES TO ESTIMATE TREE COVER IN LANDSAT BASED CLASSIFICATION	1600
<i>Banchero Santiago, Verón Santiago, de Abelleyra Diego, Ferraina Antonella, Propato Tamara, Gómez Taffarel María Cielo, INTA, Argentina; Dieguez Hernán, Universidad de Buenos Aires, Argentina</i>	
TH4.O-6.6: MACHINE LEARNING CLASSIFICATION OF PLANT FUNCTIONAL TYPES IN SOUTHERN AFRICAN SAVANNAHS USING WORLDVIEW-3 IMAGERY	1604
<i>Paul Aplin, Kwame Awuah, Edge Hill University, United Kingdom; Christopher Marston, Centre for Ecology and Hydrology, United Kingdom; Ian Powell, Edge Hill University, United Kingdom; Izak Smit, Kruger National Park, South Africa</i>	
TH4.O-7: SAR TOMOGRAPHY AND 3D MAPPING	
TH4.O-7.1: DUAL-FREQUENCY SAR TOMOGRAPHY WITH LONG SPARSE NON-UNIFORM BASELINE IN GROUND-BASED LUNAR MAPPING	2915
<i>Ying Li, Yan Wang, Zegang Ding, Tao Zeng, Beijing Institute of Technology, Beijing Institute of Technology Chongqing Innovation Center, China</i>	
TH4.O-7.2: NONPARAMETRIC ARRAY MANIFOLD CALIBRATION FOR ICE SHEET SAR TOMOGRAPHY	2919
<i>Theresa Moore, The Johns Hopkins University Applied Physics Laboratory, United States; John Paden, University of Kansas, United States</i>	

TH4.O-7.3: 3-D TARGET RECONSTRUCTION USING C-BAND CIRCULAR SAR IMAGERY BASED ON BACKGROUND CONSTRAINTS	2923
<i>Hanqing Zhang, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Yun Lin, North China University of Technology, China; Shanshan Feng, Fei Teng, Wen Hong, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
TH4.O-7.4: AN ANALYSIS OF INSAR DISPLACEMENT VECTOR DECOMPOSITION FALLACIES AND THE STRAP-DOWN SOLUTION	2927
<i>Wietske Brouwer, Ramon Hanssen, Delft University of Technology, Netherlands</i>	
TH4.O-7.5: GENERATION OF LARGE SCALE 3-D CITY MODELS USING INSAR AND OPTICAL DATA	2931
<i>Yilei Shi, Technical University of Munich, Germany; Richard Bamler, Yuanyuan Wang, Xiao Xiang Zhu, German Aerospace Center (DLR), Germany</i>	
TH4.O-7.6: 3D POINT CLOUD GENERATION USING ADVERSARIAL TRAINING FOR LARGE-SCALE OUTDOOR SCENE	2935
<i>Takayuki Shinohara, Haoyi Xiu, Masashi Matsuoka, Tokyo Institute of Technology, Japan</i>	
TH4.O-8: SUBSURFACE SENSING / GROUND PENETRATING RADAR II	
TH4.O-8.1: FREQUENCY-DOMAIN TRAPEZOID GRID ACOUSTIC WAVE SIMULATING METHOD	2939
<i>Wenzhuo Tan, Bangyu Wu, Wenhao Xu, Xi'an Jiaotong University, China; Jun Lei, Changqing Oilfield Company, China</i>	
TH4.O-8.2: SIMULATIONS OF ENGLACIAL RADIOSTRATIGRAPHY FROM ICE CORE MEASUREMENTS	2943
<i>Riley Culberg, Dustin Schroeder, Stanford University, United States</i>	
TH4.O-8.3: MEASURING ENGLACIAL TEMPERATURES WITH A COMBINED RADAR-RADIOMETER	2947
<i>Anna Broome, Dustin Schroeder, Stanford University, United States; Joel Johnson, The Ohio State University, United States</i>	
TH4.O-8.4: ROBUST INVERSION SCHEME FOR LOGGING RESPONSES INTERPRETATION OF MICRO-CYLINDRICALLY FOCUSED LOGGING	2951
<i>Peng Hao, Yongpeng Zhao, Xiangyang Sun, Zaiping Nie, University of Electronic Science and Technology of China, China</i>	
TH4.O-8.5: AN UNSUPERVISED DEEP LEARNING METHOD FOR SUBSURFACE TARGET DETECTION IN RADAR SOUNDER DATA	2955
<i>Elena Donini, Francesca Bovolo, Fondazione Bruno Kessler, Italy; Lorenzo Bruzzone, University of Trento, Italy</i>	
TH4.O-8.6: INFLUENCE OF GRAVEL ON OBJECT DETECTION WITH A UAV-BASED GROUND PENETRATING RADAR	2959
<i>Bernd Arendt, Ralf Burr, Thomas Walter, Ulm University of Applied Sciences, Germany</i>	
TH4.O-9: UNCONVENTIONAL SAR IMAGING TECHNIQUES	
TH4.O-9.1: SPATIAL RESOLUTION IMPROVEMENT VIA RADAR PARAMETER ADJUSTMENT FOR EXTREMELY-HIGH-SQUINT SPOTLIGHT SAR	2963
<i>Rui Min, Yan Wang, Zegang Ding, Linghao Li, Beijing Institute of Technology, China</i>	
TH4.O-9.2: ON A DUAL PRI PULSE SEQUENCE MODE FOR HIGH-RESOLUTION WIDE-SWATH SAR IMAGING	2967
<i>Felipe Queiroz de Almeida, Marwan Younis, Gerhard Krieger, Alberto Moreira, German Aerospace Center (DLR), Germany</i>	

TH4.O-9.3: SQUINT VIDEO SAR BY EXPLOITING FREQUENCY DISPERSION OF WIDEBAND PHASED ARRAY	2971
<i>Nan Liu, Yuanyuan Chen, Xuyang Wu, Linrang Zhang, Xidian University, China</i>	
TH4.O-9.4: A NOVEL UNAMBIGUOUS IMAGING METHOD FOR GEOSYNCHRONOUS SPACEBORNE-AIRBORNE BISTATIC SAR	2975
<i>Zhichao Sun, Hongyang An, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
TH4.O-9.5: NAVIGATION-AIDED AUTOMOTIVE SAR IMAGING IN URBAN ENVIRONMENTS	2979
<i>Marco Rizzi, Dario Tagliaferri, Stefano Tebaldini, Monica Nicoli, Politecnico di Milano, Italy; Ivan Russo, Christian Mazzucco, Huawei Technologies Italia S.r.l., Italy; Andrea Virgilio Monti-Guarnieri, Claudio Maria Prati, Umberto Spagnolini, Politecnico di Milano, Italy</i>	
TH4.O-9.6: NON-LINE-OF-SIGHT IMAGING BY MILLIMETER WAVE RADAR	2983
<i>Jinshan Wei, Shunjun Wei, Xinyuan Liu, Mou Wang, Jun Shi, Xiaoling Zhang, University of Electronic Science and Technology of China, China</i>	
 TH4.O-10: ATMOSPHERIC SOUNDING: TECHNOLOGY, METHODS AND APPLICATIONS II	
TH4.O-10.1: SHORT-TERM PREDICTION OF PRECIPITATION ASSOCIATED WITH LANDFALLING HURRICANES THROUGH DEEP LEARNING	7176
<i>Shun Yao, Haonan Chen, Colorado State University, United States; Lei Han, Ocean University of China, China</i>	
TH4.O-10.2: IMPROVED OBSERVATION OF TRANSIENT PHENOMENA WITH DOPPLER RADARS: A COMMON FRAMEWORK FOR OCEANIC AND ATMOSPHERIC SENSING	7180
<i>Baptiste Domsps, Julien Marmain, Degreane Horizon, France; Charles-Antoine Guérin, Université de Toulon, Aix-Marseille Univ., CNRS, IRD, MIO, France</i>	
TH4.O-10.3: THE APPLICATION OF THE EXTERNAL RECONSTRUCTION TECHNIQUE TO THE RETRIEVAL OF TROPOSPHERIC WATER VAPOR	7184
<i>Agnese Mazzinghi, CNIT, Italy; Luca Facheris, Fabrizio Argenti, University of Florence, Italy; Fabrizio Cuccoli, CNIT, Italy; Andrea Antonini, Lamma, Italy; Luca Rovai, Lamma, CNR IBE, Italy</i>	
TH4.O-10.4: USING THE ROTATIONALLY INVARIANT SPECTRUM TO STUDY THE IMPACT OF ASSIMILATING INSAR PRODUCTS IN AN NWP MODEL	7188
<i>Giovanni Nico, Consiglio Nazionale delle Ricerche (CNR), Italy; Pedro Mateus, João Catalão, Universidade de Lisboa, Portugal</i>	
TH4.O-10.6: HARNESSING MULTIPLE-PLATFORM/SENSOR REAL-TIME INFORMATION THROUGH COMMUNITY SATELLITE PROCESSING PACKAGE (CSPP)	7196
<i>Allen Huang, University of Wisconsin-Madison, United States; Mitch Goldberg, National Oceanic and Atmospheric Administration (NOAA), United States</i>	
 TH4.O-11: WATER COLOR REMOTE SENSING	
TH4.O-11.2: IDENTIFICATION OF COMMERCIAL TUNA HOTSPOT IN THE SOUTHERN WATERS OF JAVA-BALI THROUGH SATELLITE REMOTE SENSING DATA	7434
<i>Martiwi Diah Setiawati, Indonesian Institute of Sciences, Indonesia; Herlambang Aulia Rachman, IPB University, Indonesia; Abd. Rahman As-syakur, Udayana University, Indonesia; Augy Syahailatua, Indonesian Institute of Sciences, Indonesia</i>	
TH4.O-11.3: UNCERTAINTIES FROM ANCILLARY DATA IN SEADAS REMOTE SENSING REFLECTANCES USING THE ERA5 ENSEMBLE	7438
<i>Pieter De Vis, Samuel Hunt, National Physical Laboratory, United Kingdom; Frederic Melin, European Commission, Joint Research Centre, Italy</i>	

TH4.O-11.4: EVALUATION OF MULTI- AND HYPER- SPECTRAL CHL-A ALGORITHMS IN THE RÍO DE LA PLATA TURBID WATERS DURING A CYANOBACTERIA BLOOM 7442

Ana Inés Dogliotti, Juan Ignacio Gossn, Instituto de Astronomía y Física del Espacio (IAFE) CONICET/UBA, Argentina; Carolina Gonzalez, Lilen Yema, María Laura Sánchez, Inés O'Farrell, Instituto de Ecología, Genética y Evolución (IEGEB-CONICET) - Dep. de Ecología, Genética y Evolución, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Argentina

TH4.O-11.5: CREATION OF HIGH RESOLUTION SUSPENDED PARTICULATE MATTER DATA IN THE NORTH SEA FROM SENTINEL-2 AND SENTINEL-3 DATA 7446

Aida Alvera-Azcárate, Alexander Barth, Charles Troupin, Jean-Marie Beckers, University of Liège, Belgium; Dimitry Van der Zande, RBINS, Belgium

TH4.O-11.6: SUPPORT VECTOR REGRESSION FOR CHLOROPHYLL-A ESTIMATION USING SENTINEL-2 IMAGES IN SMALL WATERBODIES 7449

Amir Chegoonian, Kiana Zolfaghari, University of Waterloo, Canada; Helen Baulch, University of Saskatchewan, Canada; Claude R. Duguay, University of Waterloo, Canada

TH4.O-12: OCEAN SALINITY REMOTE SENSING

TH4.O-12.2: CCI+SSS, A NEW SMOS L2 REPROCESSING REDUCES ERRORS ON SEA SURFACE SALINITY TIME SERIES 7457

Xavier Perrot, Jacqueline Boutin, LOCEAN-IPSL, France; Jean-Luc Vergely, Frederic Rouffi, ACRI-st, France; Adrien Martin, NOCS, United Kingdom; Sébastien Guimbard, OceanScope, France; Julia Koehler, University of Hamburg, Germany; Nicolas Reul, LOPS-IFREMER, France; Rafael Catany, ARGANS Ltd., United Kingdom; Paolo Cipollini, Roberto Sabia, European Space Agency (ESA), Netherlands

TH4.O-12.3: WIDE BANDWIDTH RADIOMETER SENSITIVITY FOR REMOTE SENSING OF OCEAN SALINITY 7461

David Le Vine, Emmanuel Dinnat, NASA Goddard Space Flight Center, United States

TH4.O-12.4: SEAWATER DIELECTRIC CONSTANT AT L-BAND: HOW CONSISTENT ARE NEW PARAMETRISATIONS INFERRED FROM SMOS AND LABORATORY MEASUREMENTS? 7465

Jacqueline Boutin, CNRS, France; Jean-Luc Vergely, ACRI-st, France; Xavier Perrot, CNRS, France; Yiwen Zhou, George Washington University, United States; Emmanuel Dinnat, NASA Goddard Space Flight Center / Chapman University, United States; Roberto Sabia, European Space Agency (ESA), Italy

TH4.O-12.5: NUMERICAL STUDY ON THE WIND DIRECTION ASYMMETRIES OF FULLY POLARIMETRIC OCEAN EMISSION AT L-BAND 7468

Yanlei Du, Wentao Ma, Xiaofeng Yang, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Jian Yang, Tsinghua University, China

TH4.O-12.6: MONTHLY ACCURACY SIMULATION OF SALINITY MEASUREMENT FOR THE CHINESE OCEAN SALINITY SATELLITE 7472

Yan Li, Xiaobin Yin, Shishuai Wang, Piesat Information Technology Co., Ltd., China; Wu Zhou, Mingsen Lin, National Satellite Ocean Application Service, China

TH4.O-13: SMALL SATELLITE MISSIONS

TH4.O-13.1: DESIGN OF A LOW-COST SYNTHETIC APERTURE RADAR FOR CONTINUOUS SHIP MONITORING 7872

Nertjana Ustalli, Michelangelo Villano, Gerhard Krieger, German Aerospace Center (DLR), Germany

TH4.O-13.2: RITA: A 1U MULTI-SENSOR PAYLOAD FOR THE GRSSAT CONTRIBUTING TO SOIL MOISTURE, VEGETATION ANALYSIS AND RFI DETECTION 7876

Adrian Perez-Portero, Pau Fabregat, Marc Badia, Marco Sobrino, Carlos Molina, Lara Fernandez, Laura Rayón, Albert Rodriguez, Joan Francesc Munoz-Martin, Amadeu Gongga, Juan Ramos-Castro, Universitat Politècnica de Catalunya, Spain; Abdul-Halim Jallad, Zulkifli Abdul Aziz, National Space Science and Technology Center, United Arab Emirates

**TH4.O-13.3: CALIBRATION OF CHAFF: CUBESAT HYPERSPECTRAL APPLICATION FOR 7880
FARMING**

Callum Middleton, University of Surrey, United Kingdom; Emma Woolliams, Chris Maclellan, National Physical Laboratory, United Kingdom; Craig Underwood, University of Surrey, United Kingdom; Nigel Fox, National Physical Laboratory, United Kingdom

**TH4.O-13.4: IN-ORBIT VALIDATION OF THE FMPL-2 DUAL MICROWAVE PAYLOAD 7884
ONBOARD THE FSSCAT MISSION**

Joan Francesc Munoz-Martin, Lara Fernandez, Adrian Perez, Hyuk Park, Joan Adrià Ruiz-de-Azúa, Adriano Camps, Universitat Politècnica de Catalunya, Spain

**TH4.O-13.5: A CUBESAT-READY PHASE SYNCHRONIZATION DIGITAL PAYLOAD FOR 7888
COHERENT DISTRIBUTED REMOTE SENSING MISSIONS**

Jorge Querol, Juan Carlos Merlano-Duncan, Liz Martinez-Marrero, Jevgenij Krivochiza, Sumit Kumar, Nicola Maturo, University of Luxembourg, Luxembourg; Adriano Camps, Universitat Politècnica de Catalunya, Spain; Symeon Chatzinotas, Björn Ottersten, University of Luxembourg, Luxembourg

TH4.O-13.6: CROSS VALIDATION OF TEMPEST-D AND RAINCUBE OBSERVATIONS 7892

Chandrasekar V, Chandrasekar Radhakrishnan, Steven C. Reising, Wesley Berg, Colorado State University, United States; Shannon T. Brown, Simone Tanelli, Ousmane O. Sy, Gian Franco Sacco, NASA Jet Propulsion Laboratory, California Institute of Technology, United States

TH4.O-14: SAR INSTRUMENT PERFORMANCE ASSESSMENT AND CALIBRATION

**TH4.O-14.1: SYSTEM PERFORMANCE AND FLIGHT MODEL EVALUATION OF PALSAR-3 7896
ONBOARD ALOS-4**

Masanobu Shibata, Tasuku Kuriyama, Takehiro Hoshino, Shohei Nakamura, Mitsubishi Electric Co, Japan; Yukihiko Kankaku, Takeshi Motohka, Shinichi Suzuki, Japan Aerospace Exploration Agency (JAXA), Japan

**TH4.O-14.2: PERFORMANCE ASSESSMENT OF THE FSRETC ALGORITHM FOR THE 7900
ESTIMATION OF THE FREQUENCY SWEEP RATE IN AIRBORNE FMCW SAR SYSTEMS**

Paolo Berardino, Carmen Esposito, Antonio Natale, IREA-CNR, Italy; Stefano Perna, Università degli Studi di Napoli Parthenope and IREA-CNR, Italy

**TH4.O-14.3: AN EFFICIENT TRANSMIT WAVEFORMS DESIGN UNDER CONSTANT 7904
MODULUS CONSTRAINT**

Chunchun Zheng, University of Electronic Science and Technology of China, China; Pei Li, Xing-yi Su, Shanghai Aerospace Electronic Technology Institute, China; Qin He, Yangjingzhi Zhuang, Zishu He, University of Electronic Science and Technology of China, China

**TH4.O-14.4: ROBUST RATIONAL POLYNOMIAL CAMERA MODELLING FOR SAR AND 7908
PUSHBROOM IMAGING**

Roland Akiki, Université Paris-Saclay & Kayrros, France; Roger Marí, Université Paris-Saclay, France; Carlo de Franchis, Université Paris-Saclay & Kayrros, France; Jean-Michel Morel, Gabriele Facciolo, Université Paris-Saclay, France

**TH4.O-14.5: ADAPTIVE SINGLE-CHANNEL DIRECT SIGNAL SUPPRESSION FOR AMBIENT 7912
NOISE PASSIVE RADAR SOUNDING**

Sean Peters, Dustin Schroeder, Stanford University, United States; Andrew Romero-Wolf, NASA Jet Propulsion Laboratory, California Institute of Technology, United States

TH4.O-15: HYPERSPECTRAL SENSORS CALIBRATION AND VALIDATION

**TH4.O-15.1: NEW PROCESSOR AND REFERENCE DATASET FOR HYPERSPECTRAL 7916
CHRIS-PROBA IMAGES OVER COASTAL AND INLAND WATERS**

Héloïse Lavigne, Quinten Vanhellemont, Kevin Ruddick, Royal Belgium Institute of Natural Sciences, Belgium; Ana Inés Dogliotti, Instituto de Astronomía y Física del Espacio (IAFE) CONICET/UBA, Argentina

**TH4.O-15.2: AUTOMATED GENERATION OF HYPERSPECTRAL FIDUCIAL REFERENCE 7920
MEASUREMENTS OF WATER AND LAND SURFACE REFLECTANCE FOR THE HYPERNETS
NETWORKS**

Clémence Goyens, Royal Belgium Institute of Natural Sciences, Belgium; Pieter De Vis, Samuel Hunt, National Physical Laboratory, United Kingdom

**TH4.O-15.3: RECENT IMPROVEMENTS TO NOAA-20 OZONE MAPPER PROFILER SUITE 7924
NADIR PROFILER SENSOR DATA RECORDS**

Chunhui Pan, University of Maryland College Park, United States; Banghua Yan, Lawrence Flynn, Trevor Beck, NOAA/STAR, United States; Junye Chen, Jingfeng Huang, ERT, United States

**TH4.O-15.6: INFORMATION CONTENT ANALYSIS ON THE SPECTRAL RANGE 350 - 2500NM 7935
USING SPECTRAL CONVOLUTION AND PCA**

Mike Werfeli, Helena Kuehne, Carmen Meiller, Andreas Hueni, Remote Sensing Laboratories, University of Zurich, Switzerland

TH4.O-16: UAV AND AIRBORNE PLATFORMS

**TH4.O-16.1: EELGRASS MAPPING WITH SENTINEL-2 AND UAV MULTISPECTRAL IMAGERY 7939
IN ATLANTIC CANADA**

Eleanor Gallant, Armand LaRocque, Brigitte Leblon, University of New Brunswick, Canada; Angela Douglas, Southern Gulf of St. Lawrence Coalition on Sustainability, Canada

**TH4.O-16.2: SENSOR-SPECIFIC ADVERSARIAL NETWORK FOR TRANSFERABLE 7943
LAND-COVER CLASSIFICATION**

Junjue Wang, Yanfei Zhong, Zhuo Zheng, Ailong Ma, Wuhan University, China

**TH4.O-16.4: UAV MULTISPECTRAL OPTICAL CONTRIBUTION TO COASTAL 3D 7951
MODELLING**

Dorothee James, Antoine Collin, Antoine Mury, Mathilde Letard, Benoit Guillot, EPHE, PSL Université Paris, CNRS UMR 6554 LETG, France

**TH4.O-16.5: THE TOMOSENSE EXPERIMENT: MONO- AND BISTATIC SAR TOMOGRAPHY 7955
OF FORESTED AREAS AT P-, L-, AND C-BAND**

Stefano Tebaldini, Mauro Mariotti d'Alessandro, Politecnico di Milano, Italy; Lars M.H. Ulander, Chalmers University of Technology, Sweden; Anders Gustavsson, Swedish Defence Research Agency (FOI), Sweden; Alex Coccia, Karlus Macedo, MetaSensing, Netherlands; Mathias Disney, University College London, United Kingdom; Hans-Joachim Spors, Nico Schumacher, Landesbetrieb Wald und Holz Nordrhein-Westfalen, Germany; Jan Hanuš, Jan Novotný, CzechGlobe, Czech Republic; Dirk Dirk Schuettemeyer, Klaus Scipal, European Space Agency (ESA), Netherlands

**TH4.O-16.6: RECENT ADVANCES IN ARTIFICIAL INTELLIGENCE AND COMPUTER VISION 7959
FOR UNMANNED AERIAL VEHICLES**

Juan Carrillo, Katherine Borda, Global Spatial Technnology Solutions, Canada

**TH4.O-17: INTERNATIONAL SPACEBORNE IMAGING SPECTROSCOPY MISSIONS:
CALIBRATION AND VALIDATION ACTIVITIES**

**TH4.O-17.1: INITIAL ONBOARD CALIBRATION RESULTS OF THE HISUI HYPERSPECTRAL 1608
SENSOR**

Minoru Urai, Satoshi Tsuchida, Satoru Yamamoto, National Institute of Advanced Industrial Science and Technology, Japan; Tetsushi Tachikawa, Japan Space Systems, Japan; Akira Iwasaki, University of Tokyo, Japan; Juntaro Ishii, National Institute of Advanced Industrial Science and Technology, Japan

TH4.O-17.3: VICARIOUS CALIBRATION OF THE DESIS IMAGING SPECTROMETER.....	1611
<i>Emiliano Carmona, Kevin Alonso, Martin Bachmann, German Aerospace Center (DLR), Germany; Kara Burch, Innovative Imaging and Research, Corp. (I2R), United States; Daniele Cerra, Raquel de los Reyes Lopez, Uta Heiden, Uwe Knodt, David Krutz, David Marshall, Rupert Mueller, German Aerospace Center (DLR), Germany; Mary Pagnutti, Innovative Imaging and Research, Corp. (I2R), United States; Peter Reinartz, German Aerospace Center (DLR), Germany; Robert Ryan, Innovative Imaging and Research, Corp. (I2R), United States</i>	
TH4.O-17.4: THE FLARE: NETWORK: AUTONOMOUS, ON-DEMAND SPATIAL AND RADIOMETRIC CALIBRATION AND VALIDATION FOR IMAGING SPECTROSCOPY	1615
<i>Brandon Russell, Jeff Holt, Chris Durell, Will Arnold, Labsphere, Inc., United States; David Conran, Rochester Institute of Technology, United States; Stephen Schiller, Raytheon Space/Airborne Systems, United States</i>	
TH4.O-17.5: THE POTENTIAL CALIBRATION AND VALIDATION REQUIREMENTS FOR IMAGING SPECTROSCOPY FOR IRON OXIDE DUST MONITORING	1619
<i>Cindy Ong, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia</i>	
TH4.O-18: HAZARDS ON WATER	
TH4.O-18.1: SAR SATELLITE ON-BOARD SHIP, WIND, AND SEA STATE DETECTION	8289
<i>Stefan Wiehle, Dominik Günzel, Björn Tings, German Aerospace Center (DLR), Germany</i>	
TH4.O-18.2: INTEGRATED MONITORING SYSTEM FOR BEACH LITTER PREPAREDNESS AND RESPONSE	8293
<i>Konstantinos Topouzelis, Apostolos Papakonstantinou, Marios Batsaris, Spyros Spondylidis, University of the Aegean, Greece</i>	
TH4.O-18.3: VISUAL PREDICTION OF TROPICAL CYCLONES WITH DEEP CONVOLUTIONAL GENERATIVE ADVERSARIAL NETWORKS	8297
<i>Pengfei Xie, Fan Meng, China University of Petroleum (East China), China; Bowen Li, South China University of Technology, China; Ying Li, Zhiyong Yu, Handan Sun, Tao Song, China University of Petroleum (East China), China; Danya Xu, Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), China</i>	
TH4.O-18.4: FLOOD INDEX ESTIMATION USING L-BAND SAR DATA FOR ASSAM FLOOD PRONE REGIONS	8301
<i>Samvedya Surampudi, Vijay Kumar, Vellore Institute of Technology, India; Kiran Yarrakula, Ghani Khan Choudhury Institute of Engineering & Technology, India</i>	
TH4.O-18.5: AUTOMATIC COLLECTION OF TRAINING SAMPLES FOR FLOODED AREAS	8305
<i>Luis Moya, Faculty of Civil Engineering, National University of Engineering, Peru; Masakazu Hashimoto, Erick Mas, Shunichi Koshimura, Tohoku University, Japan</i>	
TH4.O-18.6: ASSESSMENT AND MONITORING OF HIGH SEA STATE GENERATED BY TROPICAL CYCLONES	8309
<i>Maria Yurovskaya, Marine Hydrophysical Institute, Russia; Vladimir Kudryavtsev, Russian State Hydrometeorological University, Russia; Bertrand Chapron, IFREMER, France</i>	
FR1.O-1: FEATURE LEARNING FOR REMOTE SENSING AND EARTH OBSERVATION	
FR1.O-1.1: UNSUPERVISED LEARNING OF LOW DIMENSIONAL SATELLITE IMAGE REPRESENTATIONS VIA VARIATIONAL AUTOENCODERS	2987
<i>Silvia Valero, Ferran Agullo, Jordi Inglada, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France</i>	
FR1.O-1.2: A DISENTANGLED VARIATIONAL AUTOENCODER FOR PREDICTION OF ABOVE GROUND BIOMASS FROM HYPERSPECTRAL DATA	2991
<i>Parth Naik, University of Trento, Italy; Michele Dalponte, Fondazione Edmund Mach, Italy; Lorenzo Bruzzone, University of Trento, Italy</i>	

**FR1.O-1.3: DESPECKLING SENTINEL-1 GRD IMAGES BY DEEP-LEARNING AND 2995
APPLICATION TO NARROW RIVER SEGMENTATION**

Gasnier Nicolas, Dalsasso Emanuele, Télécom Paris, France; Loïc Denis, Laboratoire Hubert Curien, France; Florence Tupin, Télécom Paris, France

**FR1.O-1.4: SELF-PACED CURRICULUM LEARNING FOR VISUAL QUESTION ANSWERING 2999
ON REMOTE SENSING DATA**

Zhenghang Yuan, Lichao Mou, Xiao Xiang Zhu, Technical University of Munich & German Aerospace Center, Germany

**FR1.O-1.5: SUBSPACE-BASED FEATURE FUSION FROM HYPERSPECTRAL AND 3003
MULTISPECTRAL IMAGES FOR LAND COVER CLASSIFICATION**

Juan Ramirez, Universidad Rey Juan Carlos, Spain; Héctor Vargas, Universidad Manuela Beltrán, Colombia; José Ignacio Martínez, Universidad Rey Juan Carlos, Spain; Henry Arguello, Universidad Industrial de Santander, Colombia

FR1.O-1.6: QUANTUM IMAGING FOR REMOTE SENSING AND EARTH OBSERVATION 3007

Francesco V. Pepe, Università degli Studi di Bari Aldo Moro, Italy; Cristoforo Abbattista, Leonardo Amoroso, Planetek Italia srl, Italy; Milena D'Angelo, Università degli Studi di Bari Aldo Moro, Italy

FR1.O-2: SAR IMAGE INTERPRETATION

**FR1.O-2.1: DEEP LEARNING APPROACH FOR TROPICAL CYCLONES CLASSIFICATION 3010
BASED ON C-BAND SENTINEL-1 SAR IMAGES**

Ana Raquel Carmo, Nicolas Longépé, European Space Agency (ESA), Italy; Alexis Mouche, Ifremer, France; Dario Amorosi, Noelle Cremer, European Space Agency (ESA), Italy

FR1.O-2.2: PRIVILEGED KNOWLEDGE DISTILLATION FOR SAR BUILDING EXTRACTION 3014

Eunghwan Lee, Somi Jeong, Kwanghoon Sohn, Yonsei University, Korea (South)

**FR1.O-2.4: EXPERIMENTAL COMPARISON OF REGISTRATION METHODS FOR 3022
MULTISENSOR SAR-OPTICAL DATA**

Béatrice Pinel-Puysségur, CEA, France; Luca Maggiolo, University of Genoa, Italy; Michel Roux, Nicolas Gasnier, Télécom Paris, France; David Solarna, Gabriele Moser, University of Genoa, Italy; Sebastiano Serpico, Università degli Studi di Genova, Italy; Florence Tupin, Télécom Paris, France

FR1.O-2.5: A SAR-TO-OPTICAL IMAGE TRANSLATION METHOD BASED ON PIX2PIX..... 3026

Zongcheng Zuo, Yuanxiang Li, Shanghai Jiao Tong University, China

FR1.O-2.6: ACCELERATED-YOLOV3 FOR SHIP DETECTION FROM SAR IMAGES..... 3030

Mohammad Alkhaleefah, Shang-Chih Ma, Tan-Hsu Tan, National Taipei University of Technology, Taiwan; Lena Chang, National Taiwan Ocean University, Taiwan; Kuan Wang, National Taipei University of Technology, Taiwan; Chin-Pin Ko, National Taipei University of Technology/Sinotech Engineering Consultants, Taiwan; Chiung-Shen Ku, National Taipei University of Technology, Taiwan; Chiang-An Hsu, Sinotech Engineering Consultants, Taiwan; Yang-Lang Chang, National Taipei University of Technology, Taiwan

FR1.O-3: NOVEL IMAGE SEGMENTATION FOR ACTIVE AND PASSIVE SENSORS

**FR1.O-3.1: SEEING THE BIGGER PICTURE: ENABLING LARGE CONTEXT WINDOWS IN 3033
NEURAL NETWORKS BY COMBINING MULTIPLE ZOOM LEVELS**

Konrad Heidler, Lichao Mou, Xiao Xiang Zhu, German Aerospace Center (DLR), Germany

**FR1.O-3.2: HED-UNET: A MULTI-SCALE FRAMEWORK FOR SIMULTANEOUS 3037
SEGMENTATION AND EDGE DETECTION**

Konrad Heidler, Lichao Mou, Celia Baumhoer, Andreas Dietz, Xiao Xiang Zhu, German Aerospace Center (DLR), Germany

FR1.O-3.3: EVOLUTIONS OF SENTINEL-2 LEVEL-2A CLOUD MASKING ALGORITHM: SEN2COR PROTOTYPE FIRST RESULTS	3041
<i>Jérôme Louis, Telespazio France, France; Bringfried Pflug, German Aerospace Center (DLR), Germany; Vincent Debaecker, Telespazio France, France; Uwe Mueller-Wilm, Telespazio Deutschland, Germany; Rosario Quirino Iannone, RHEA SpA, Italy; Valentina Boccia, Ferran Gascon, European Space Agency (ESA), Italy</i>	
FR1.O-3.4: POLSAR IMAGE CLASSIFICATION WITH COMPLEX-VALUED RESIDUAL ATTENTION ENHANCED U-NET	3045
<i>Shijie Ren, Feng Zhou, Xidian University, China</i>	
FR1.O-3.5: LAND COVER SEMANTIC SEGMENTATION OF HIGH-RESOLUTION GAOFEN-3 SAR IMAGE	3049
<i>Xianzheng Shi, Feng Xu, Fudan University, China</i>	
FR1.O-3.6: ROBUST FEATURE MATCHING USING MOTION CONSISTENCY AND GEOMETRICAL CONSTRAINT FOR UAV IMAGES	2254
<i>Tong Qiao, Hanjiang Xiong, Xianwei Zheng, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, China</i>	
 FR1.O-4: INTERPRETATION AND APPLICATION OF POLARIMETRIC SAR IMAGERY	
FR1.O-4.1: A TARGET-TO-MECHANISM MAPPING NETWORK FOR POLSAR DATA INTERPRETATION	3053
<i>Yan-Cui Duan, Guo-Qing Wu, Shun-Ping Xiao, Si-Wei Chen, National University of Defence Technology, China</i>	
FR1.O-4.2: MAN-MADE TARGETS CHARACTERIZATION WITH POLARIMETRIC CORRELATION PATTERN INTERPRETATION TOOL	3057
<i>Haoliang Li, Mingdian Li, Siwei Chen, State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System (CEMEE), National University of Defense Technology, China</i>	
FR1.O-4.3: COMBINATION OF WISHART TEST STATISTICS AND LOEWNER ORDER FOR CHANGE DETECTION IN QUAD/FULL AND DUAL POLARIZATION SAR DATA	3061
<i>Allan A. Nielsen, Henning Skriver, Knut Conradsen, Technical University of Denmark, Denmark</i>	
FR1.O-4.4: COMPLEMENTARITY AND POTENTIAL OF POLSAR AND TOMOSAR FOR GLACIER SUBSURFACE CHARACTERIZATION	3065
<i>Giuseppe Parrella, Georg Fischer, Matteo Pardini, Konstantinos P. Papathanassiou, German Aerospace Center (DLR), Germany; Irena Hajnsek, German Aerospace Center (DLR) / ETH Zurich, Germany</i>	
FR1.O-4.5: FAST GENERAL POLARIMETRIC MODEL-BASED DECOMPOSITION	3069
<i>Guoqing Wu, Siwei Chen, Yongzhen Li, State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System (CEMEE), National University of Defense Technology, China</i>	
FR1.O-4.6: LINEAR PRINCIPAL POLARIZATIONS IN BISTATIC SAR MISSION COMPANIONS	3073
<i>Lorenzo Iannini, Marcel Kleinherenbrink, Andreas Theodosiou, Paco López-Dekker, Delft University of Technology, Netherlands</i>	
 FR1.O-5: SAR TOMOGRAPHY	
FR1.O-5.1: PARTIALLY COHERENT SCATTERERS IN SAR TOMOGRAPHY: AN APPLICATION ON COSMO-SKYMED DATA	3077
<i>Gianfranco Fornaro, Antonio Pauciuolo, Diego Reale, Simona Verde, Institute for Electromagnetic Sensing of the Environment - National Research Council (IREA-CNR), Italy</i>	
FR1.O-5.2: PERFORMANCE IMPROVEMENT OF SAR TOMOGRAPHY IN URBAN SCENARIOS BASED ON LOCAL-PLANE GLRT	3081
<i>Wenkang Liu, Xidian University, China; Alessandra Budillon, Vito Pascazio, Gilda Schirinzi, Università di Napoli "Parthenope", Italy; Mengdao Xing, Xidian University, China</i>	

FR1.O-5.3: DEEP LEARNING BASED JOINT RECONSTRUCTION AND EXTRACTION OF URBAN STRUCTURES FROM TOMOGRAPHIC SAR DATA	3085
<i>Olivier D'Hondt, Olaf Hellwich, Technical University of Berlin, Germany</i>	
FR1.O-5.4: TOMOGRAPHIC CALIBRATION OF THE NEW ESA TOMOSENSE CAMPAIGN	3089
<i>Mauro Mariotti d'Alessandro, Yanghai Yu, Stefano Tebaldini, Politecnico di Milano, Italy; Mingsheng Liao, Wuhan University, China</i>	
FR1.O-5.5: STATISTICAL REGULARIZATION AS AN ALTERNATIVE TO MODEL ORDER SELECTION	3093
<i>Gustavo Daniel Martín-del-Campo-Becerra, German Aerospace Center (DLR), Germany; Sergio Alejandro Serafín-García, Center for Research and Advanced Studies (Cinvestav), National Polytechnic Institute (IPN), Mexico; Andreas Reigber, German Aerospace Center (DLR), Germany; Susana Ortega-Cisneros, Center for Research and Advanced Studies (Cinvestav), National Polytechnic Institute (IPN), Mexico</i>	
FR1.O-5.6: SAR TOMOGRAPHY BASED ON REWEIGHTED ATOMIC NORM MINIMIZATION	3097
<i>Ning Liu, Xinwu Li, Fangfang Li, Wen Hong, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
FR1.O-6: MACHINE LEARNING AND AI METHODS FOR SOIL MOISTURE RETRIEVAL	
FR1.O-6.1: CYGNSS SOIL MOISTURE ESTIMATION USING MACHINE LEARNING REGRESSION	6323
<i>Yan Jia, Nanjing University of Posts and Telecommunications, China; Qingyun Yan, Shuanggen Jin, Nanjing University of Information Science and Technology, China; Patrizia Savi, Politecnico di Torino, Italy</i>	
FR1.O-6.2: NEURAL NETWORK INTEGRATION OF SMAP AND SENTINEL-1 FOR ESTIMATING SOIL MOISTURE AT HIGH SPATIAL RESOLUTION	6327
<i>Emanuele Santi, Simonetta Paloscia, Simone Pettinato, Giacomo Fontanelli, CNR-IFAC, Italy</i>	
FR1.O-6.3: AN EVALUATION OF SOIL MOISTURE RETRIEVAL USING MACHINE LEARNING METHODS: APPLICATION IN ARID REGIONS OF TUNISIA	6331
<i>Noureddine Jarray, Ali Ben Abbes, Imed Riadh Farah, RIADI Laboratory, National School of Computer Science, Tunisia</i>	
FR1.O-6.4: MACHINE LEARNING BASED SOIL MOISTURE RETRIEVAL ALGORITHM AND VALIDATION AT SELECTED AGRICULTURAL SITES OVER INDIA USING CYGNSS DATA	6335
<i>Shivani Tyagi, Dharmendra Kumar Pandey, Deepak Putrevu, Space Application Centre Ahmedabad, India; Prashant k. Srivastava, Banaras Hindu University, Varanasi, India; Arundhati Misra, Space Application Centre Ahmedabad, India</i>	
FR1.O-6.5: DEEP MULTI-MODAL SATELLITE AND IN-SITU OBSERVATION FUSION FOR SOIL MOISTURE RETRIEVAL	6339
<i>Grigorios Tsagkatakis, Foundation for Research and Technology - Hellas, Greece; Mahta Moghaddam, University of Southern California, United States; Panagiotis Tsakalides, Foundation for Research and Technology - Hellas, Greece</i>	
FR1.O-6.6: OBSERVING SOIL MOISTURE CHANGE USING C-BAND INTERFEROMETRY USING MACHINE LEARNING REGRESSION	6343
<i>Nuno Cirne Mira, CINAMIL - Academia Militar, Portugal; João Catalão, IDL, Faculdade de Ciências da Universidade de Lisboa, Portugal; Giovanni Nico, Consiglio Nazionale delle Ricerche, Istituto per le Applicazioni del Calcolo, Italy</i>	
FR1.O-7: MONITORING WATER CONTAIN, IRRIGATION AND EVAPOTRANSPIRATION USING RS DATA	
FR1.O-7.1: SPATIOTEMPORAL ASSESSMENT OF EVAPOTRANSPIRATION OF DESERT STEPPE IN NORTHERN CHINA: A CASE OF OTOG FRONT BANNER	6347
<i>Jiabin Wu, Institute of Water Resources for Pastoral Area, MWR, China; Lili Xu, Central China Normal University, China; Hexiang Zheng, Xuesong Cao, Haiyuan Lu, Institute of Water Resources for Pastoral Areas, MWR, China</i>	

FR1.O-7.3: DETECTING IRRIGATION EVENTS USING SENTINEL-1 DATA.....	6355
<i>Hassan Bazzi, Nicolas Baghdadi, Ibrahim Fayad, INRAE, France; Mehrez Zribi, Valerie Demarez, Yann Pageot, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Hatem Belhouchette, IAMM, France</i>	
FR1.O-7.4: INFLUENCE OF SURFACE WATER VARIATIONS ON VOD AND BIOMASS ESTIMATES FROM PASSIVE MICROWAVE SENSORS	6359
<i>Emma Bousquet, Arnaud Mialon, Nemesio Rodríguez-Fernández, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Catherine Prigent, Laboratoire d'Études du Rayonnement et de la Matière en Astrophysique et Atmosphères, France; Fabien H. Wagner, GeoProcessing Division, Foundation for Science, Technology and Space Applications, Brazil; Yann Kerr, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France</i>	
FR1.O-7.5: MONITORING ECO-HYDROLOGICAL SPRING ONSET OVER ALASKA AND NORTHERN CANADA WITH COMPLEMENTARY SATELLITE REMOTE SENSING DATA	6363
<i>Youngwook Kim, United Arab Emirates University, United Arab Emirates; John Kimball, University of Montana, United States; Nicholas Parazoo, Xiaolan Xu, Scott Dunbar, Andreas Colliander, NASA Jet Propulsion Laboratory, United States; Rolf Reichle, NASA Goddard Space Flight Center, United States</i>	
FR1.O-7.6: TRACKING WATER LIMITATION IN PHOTOSYNTHESIS WITH SUN-INDUCED CHLOROPHYLL FLUORESCENCE	6367
<i>Simon De Canniere, François Jonard, Université Catholique de Louvain, Belgium</i>	
FR1.O-8: EARTH OBSERVATION DATA PROCESSING FOR URBAN/BUILT UP AREA CHARACTERIZATION	
FR1.O-8.1: GEOSPATIAL LANDSCAPE ANALYSIS OF AN URBAN AGGLOMERATION: A CASE STUDY OF NATIONAL CAPITAL REGION OF INDIA	6371
<i>Prathiba A. P., Kamal Jain, Indian Institute of Technology Roorkee, India</i>	
FR1.O-8.2: LARGE-SCALE URBAN ROAD VECTORIZATION MAPPING VIA A ROAD NODE PROPOSAL NETWORK FOR HIGH-RESOLUTION REMOTE SENSING IMAGERY	6375
<i>Dingyuan Chen, Yanfei Zhong, Ailong Ma, Wuhan University, China</i>	
FR1.O-8.4: EARTHQUAKE DAMAGE ASSESSMENT USING C-BAND POLSAR MEASUREMENTS AND GROUND SURVEYS	6383
<i>Emanuele Ferrentino, Ferdinando Nunziata, Università degli studi di Napoli Parthenope, Italy; Christian Bignami, Laura Graziani, Alessandra Maramai, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Maurizio Migliaccio, Università degli studi di Napoli Parthenope, Italy</i>	
FR1.O-8.5: BUILDING FACADE COMPLETION USING SEMANTIC-SYNCHRONIZED GAN	6387
<i>Zhenhuang Cai, Yangbin Lin, Jimei University, China; Jialian Li, Xiamen University, China; Zongliang Zhang, Xingwang Huang, Jimei University, China</i>	
FR1.O-8.6: POWER PLANT CLASSIFICATION FROM REMOTE IMAGING WITH DEEP LEARNING	6391
<i>Michael Mommert, Linus Scheibenreif, Joelle Hanna, Damian Borth, University of St. Gallen, Switzerland</i>	
FR1.O-9: MULTI-SOURCE DATA AND FUSION APPROACHES FOR CHANGE DETECTION AND MULTI-TEMPORAL ANALYSIS	
FR1.O-9.1: SELF-SUPERVISED CHANGE DETECTION BY FUSING SAR AND OPTICAL MULTI-TEMPORAL IMAGES	3101
<i>Yuxing Chen, Lorenzo Bruzzone, University of Trento, Italy</i>	
FR1.O-9.2: ASSESSING THE INTEREST OF A MULTI-MODAL GAP-FILLING STRATEGY FOR MONITORING CHANGES IN GRASSLAND PARCELS	3105
<i>Anatol Garioud, IGN & CESBIO, France; Silvia Valero, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Clément Mallet, Institut national de l'information géographique et forestière, France</i>	

FR1.O-9.3: CHARACTERISING FOREST DEGRADATION FACTORS WITH SENTINEL-1: A CASE STUDY OF CHARCOAL PRODUCTION IN MOZAMBIQUE	3109
<i>Tristan Williams, Anca Angheloa, European Space Agency (ESA), Italy</i>	
FR1.O-9.4: MITIGATING SPATIAL AND SPECTRAL DIFFERENCES FOR CHANGE DETECTION USING SUPER-RESOLUTION AND UNSUPERVISED LEARNING	3113
<i>Jonathan Prexl, Sudipan Saha, Technical University of Munich, Germany; Xiao Xiang Zhu, German Aerospace Center (DLR), Germany</i>	
FR1.O-9.5: STYLE TRANSFORMATION-BASED CHANGE DETECTION USING ADVERSARIAL LEARNING WITH OBJECT BOUNDARY CONSTRAINTS	3117
<i>Xiaokang Zhang, Weikang Yu, Man-On Pun, Chinese University of Hong Kong, Shenzhen, China; Ming Liu, Shanghai CAS-NOVA Satellite Technology Company Limited, China</i>	
FR1.O-9.6: A GLOBAL REGISTRATION METHOD FOR SATELLITE IMAGE SERIES	3121
<i>Charles Hessel, Carlo de Franchis, Université Paris-Saclay & Kayrros, France; Gabriele Facciolo, Jean-Michel Morel, Université Paris-Saclay, France</i>	
 FR1.O-10: GEOS VIRTUAL CONSTELLATION OF OCEAN SURFACE VECTOR WIND: CONSOLIDATION OF STANDARDS AND METRICS FOR OPTIMIZED SCIENTIFIC AND OPERATIONAL APPLICATIONS	
FR1.O-10.1: TOWARDS CONSISTENT WIND OBSERVATIONS FROM C- AND KU-BAND SCATTEROMETERS	1623
<i>Wenming Lin, Nanjing University of Information Science and Technology, China; Marcos Portabella, Institute of Marine Sciences (ICM-CSIC), Spain; Sirui Lv, Nanjing University of Information Science and Technology, China; Ad Stoffelen, Royal Netherlands Meteorological Institute (KNMI), Netherlands; Zhixiong Wang, Nanjing University of Information Science and Technology, China</i>	
FR1.O-10.3: CONE METRICS FOR C AND KU-BAND SCATTEROMETERS	1627
<i>Ad Stoffelen, Maria Belmonte Rivas, Jeroen Verspeek, Royal Netherlands Meteorological Institute (KNMI), Netherlands</i>	
FR1.O-10.4: CONSOLIDATION OF QUALITY CONTROL PROCEDURES FOR SCATTEROMETERS	1630
<i>Marcos Portabella, Institute of Marine Sciences (ICM-CSIC), Spain; Wenming Lin, Nanjing University of Information Science and Technology, China; Ad Stoffelen, Royal Netherlands Meteorological Institute (KNMI), Netherlands; Xingou Xu, Xiaolong Dong, National Space Science Center, Chinese Academy of Science (NSSC-CAS), China</i>	
FR1.O-10.5: KU-BAND POLARIZATION DIFFERENCE MODEL FOR THE SCATTEROMETER WIND INVERSION	1634
<i>Alexey Mironov, eOdyn, France; Yves Quilfen, Bertrand Chapron, IFREMER, France; Vladimir Kudryavtsev, Russian State Hydrometeorological University, Russia</i>	
 FR1.O-11: MULTIPLATFORM TARGET DETECTION	
FR1.O-11.1: REDUCED-DIMENSION SPACE-TIME ADAPTIVE PROCESSING IN THE PRESENCE OF MULTIPLE TARGETS	3125
<i>Lei Xie, University of Electronic Science and Technology of China, China; Pei Li, Xingyi Su, Shanghai Aerospace Electronic Technology Institute, China; Jun Tong, University of Wollongong, China; Zishu He, Wei Zhang, University of Electronic Science and Technology of China, China</i>	
FR1.O-11.2: INFRARED SMALL-TARGET DETECTION BASED ON THREE-ORDER TENSOR CREATION AND TUCKER DECOMPOSITION	3129
<i>Mingjing Zhao, Wei Li, Beijing Institute of Technology, China; Lu Li, Beijing Information Science and Technology University, China; Ran Tao, Beijing Institute of Technology, China</i>	

FR1.O-11.3: SUB-PULSE MATCHING CORRECTION FOR RADAR TARGET DETECTION	3133
<i>Mengmeng Shen, Feng He, Zhen Dong, Zhaoke Wang, National University of Defence Technology, China; Manqing Wu, China Electronics Technology Group Corporation, China</i>	
FR1.O-11.4: A MACHINE LEARNING APPROACH TO CLUTTER SUPPRESSION FOR MARINE SURVEILLANCE RADAR	3137
<i>Zebiao Wu, Jifang Pei, Weibo Huo, Yulin Huang, Yin Zhang, Haiguang Yang, University of Electronic Science and Technology of China, China</i>	
FR1.O-11.5: MOVING TARGET DETECTION IN MULTI UAV PLATFORMS	3141
<i>Qiwei Yang, Di Wang, Hao Zhang, Zhe Liu, University of Electronic Science and Technology of China, China</i>	
FR1.O-11.6: MULTIPLE-OVERLAID-TARGETS SEPARATION AND HIGH PRECISION VELOCITY ESTIMATION BASED ON BAYESIAN CRITERION IN VSAR SYSTEM	3145
<i>Yuanlin Hu, Xiaoling Zhang, Xu Zhan, University of Electronic Science and Technology of China, China</i>	
 FR1.O-12: REMOTE SENSING OF AEROSOLS AND ATMOSPHERIC CORRECTION I	
FR1.O-12.1: RETRIEVAL AND VALIDATION OF LONG-TERM AEROSOL OPTICAL DEPTH FROM AVHRR OVER CHINA MAINLAND	7200
<i>Chunlin Jin, Yong Xue, Xingxing Jiang, Rui Bai, Yuxin Sun, Shuhui Wu, China University of Mining and Technology, China</i>	
FR1.O-12.2: ALGORITHMS FOR AEROSOL RETRIEVAL FROM HEAVY BIOMASS BURNING WITH MUTUAL USE OF RADIANCE AND POLARIZATION OBSERVATIONS BY SGLI	7204
<i>Sonoyo Mukai, Kyoto College of Graduate Studies for Informatics, Japan; Itaru Sano, Makiko Nakata, Kindai University, Japan</i>	
FR1.O-12.3: A NEW AEROSOL RETRIEVAL ALGORITHM FOR LANDSAT 8 OLI IMAGES OVER URBAN AREAS	7208
<i>Yue Yang, Yunping Chen, Kangzhuo Yang, Yan Chen, University of Electronic Science and Technology of China, China; Yuan Sun, Chinese Academy of Sciences, China; Dan Yang, Sichuan University, China</i>	
FR1.O-12.4: ATMOSPHERIC CORRECTION OF GF-6/WFV SENSOR SUPPORTED BY MODIS	7212
<i>Yu Sun, Lin Sun, Chen Jia, Shandong University of Science and Technology, China</i>	
FR1.O-12.5: EXPLORING THE LINK BETWEEN GROUND BASED PM2.5 AND REMOTELY SENSED AEROSOLS AND GASES DATA TO MAP FINE PARTICULATE MATTERS IN MALAYSIA USING MACHINE LEARNING ALGORITHMS	7216
<i>Kasturi Devi Kanniah, Nurul Amalin Fatimah Kamarul Zaman, Universiti Teknologi Malaysia, Malaysia</i>	
 FR1.O-13: PROCESSES IN CHANGING MARINE ENVIRONMENTS MONITORED BY SAR II: MARINE SURFACE FILMS	
FR1.O-13.1: SAR REMOTE SENSING OF MARINE SURFACE FILMS	1638
<i>Martin Gade, Universität Hamburg, Germany</i>	
FR1.O-13.3: CHARACTERIZATION OF OFFSHORE OIL SEEPS USING RADARSAT-2 POLARIMETRIC FEATURES	1642
<i>Gordon Staples, MDA, Canada</i>	
FR1.O-13.4: STABILITY ANALYSIS OF FREELY FLOATING OIL SLICK IN MULTIFREQUENCY AIRBORNE SAR IMAGERY ACQUIRED IN S- AND L-BAND	1646
<i>Cornelius Quigley, Camilla Brekke, Torbjørn Eltoft, UiT The Arctic University of Norway, Norway</i>	

FR1.O-13.5: HOW ENVIRONMENTAL CONDITIONS INFLUENCE THE SAR DETECTABILITY OF A HEAVY FUEL LEAKAGE FROM A SHIP WRECK	1650
<i>Dana King, Martin Gade, Universität Hamburg, Germany</i>	
FR1.O-13.6: DETECTION OF BIOGENIC OIL FILM IN AQUACULTURE SITES USING SAR DATA	1654
<i>Andromachi Chatziantoniou, Konstantinos Topouzelis, University of the Aegean, Greece</i>	
 FR1.O-14: RADIO FREQUENCY INTERFERENCE (RFI) IN ACTIVE MICROWAVE SENSORS	
FR1.O-14.1: A GLOBAL C-BAND RFI MONITORING SYSTEM BASED ON SENTINEL-1 DATA	1658
<i>Niccolò Franceschi, Andrea Recchia, Riccardo Piantanida, Davide Giudici, Aresys s.r.l., Italy; Clément Albinet, ESA - European Space Research Institute, Italy; Nuno Miranda, European Space Agency (ESA), Italy</i>	
FR1.O-14.3: RADIO FREQUENCY INTERFERENCE DETECTION FOR SAR DATA USING SPECTROGRAM-BASED SEMANTIC NETWORK	1662
<i>Mingliang Tao, Shuting Tang, Jieshuang Li, Northwestern Polytechnical University, China; Xiang Zhang, Shanghai Institute of Satellite Engineering, China; Yifei Fan, Jia Su, Northwestern Polytechnical University, China</i>	
FR1.O-14.4: MODELING AND ANALYSIS OF RADIO FREQUENCY INTERFERENCE IMPACTS FROM GEOSYNCHRONOUS SAR ON LOW EARTH ORBIT SAR	1666
<i>Yi Sui, Beijing Institute of Technology, Zimbabwe; Xichao Dong, Beijing Institute of Technology; The Key Laboratory of Electronic and Information Technology in Satellite Navigation; Beijing Institute of Technology Chongqing Innovation Center, China; Peng Yin, Defence Industry Secrecy Examination and Certification Center, China; Cheng Hu, Beijing Institute of Technology; The Key Laboratory of Electronic and Information Technology in Satellite Navigation; Beijing Institute of Technology Chongqing Innovation Center, China; Zhiyang Chen, Yuanhao Li, Beijing Institute of Technology, China</i>	
FR1.O-14.5: ON-BOARD RFI DETECTION FOR REFLECTOR-BASED MULTICHANNEL SAR SYSTEMS	1670
<i>Tobias Bollian, Marwan Younis, German Aerospace Center (DLR), Germany</i>	
 FR1.O-15: RESEARCH ON ACTIVE REMOTE SENSING OBSERVATIONS OF GREENHOUSE GASES	
FR1.O-15.1: THE NASA GODDARD CO2 SOUNDER LIDAR: 2017 AIRBORNE CAMPAIGN AS A DEMONSTRATION TOWARD A FUTURE SPACE MISSION	1673
<i>Jianping Mao, University of Maryland, United States; James B. Abshire, University of Maryland and NASA Goddard Space Flight Center, United States; S. Randy Kawa, Haris Riris, Xiaoli Sun, Julie M. Nicely, Paul T. Kolbeck, NASA Goddard Space Flight Center, United States</i>	
FR1.O-15.3: OBSERVATION OF GREENHOUSE GASES BY GROUND-BASED FTIR AT HEFEI SITE AND COMPARISON WITH SATELLITE DATA	1677
<i>Cheng Liu, Department of Precision Machinery and Precision Instrumentation, University of Science and Technology of China, China; Wei Wang, Key Laboratory of Environmental Optics and Technology, Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China; Youwen Sun, Changgong Shan, Department of Precision Machinery and Precision Instrumentation, University of Science and Technology of China, China</i>	
FR1.O-15.5: REMOTE SENSING INVERSION OF PM10 BASED ON SPARK PLATFORM	1685
<i>Zhenyu Yu, Zhibao Wang, Northeast Petroleum University, China; Lu Bai, Ulster University, United Kingdom; Liangfu Chen, Jinhua Tao, University of Chinese Academy of Sciences, China</i>	

FR1.O-16: SAR POLARIMETRY: A USEFUL TOOL FOR URBAN APPLICATIONS

FR1.O-16.1: A FRAMEWORK FOR STATISTICAL NONLOCAL MEANS NOISE REDUCTION IN 1689 POLARSAR DATA

*Luis Gomez, Universidad de Las Palmas de Gran Canaria, Spain; Jie Wu, Shaanxi Normal University, China;
Alejandro C. Frery, Victoria University of Wellington, New Zealand*

FR1.O-16.3: BUILT-UP AREA MAPPING USING FULL AND DUAL POLARIMETRIC SAR DATA..... 1693

*Subhadip Dey, Narayanarao Bhogapurapu, Avik Bhattacharya, Indian Institute of Technology Bombay, India;
Alejandro C. Frery, Victoria University of Wellington, New Zealand; Paolo Gamba, University of Pavia, Italy*

FR1.O-16.4: POLARSAR TOMOGRAPHIC TECHNIQUES USING SURFACE SLOPE PARAMETERS 1697 IN URBAN AREAS

Alessandra Budillon, Gilda Schirinzi, University of Napoli Parthenope, Italy

FR1.O-16.5: POLARIMETRIC SAR IMAGES FOR CHARACTERIZATION OF URBAN TARGETS 1701

*Hossein Aghababaei, University of Twente, Netherlands; Giampaolo Ferraioli, Roghayeh Zamani, Università di
Napoli Parthenope, Italy*

FR1.O-16.6: URBAN AREA CHARACTERIZATION USING 2-D AND 3-D SPACEBORNE POLARSAR 1705 DATA

*Yue Huang, Laurent Ferro-Famil, University of Rennes 1, France; Lu Zhang, Key Laboratory of Digital Earth Science,
Chinese Academy of Sciences, China; Xing Peng, University of Geosciences, China*

FR1.O-17: ADVANCED GNSS METHODS FOR SPATIAL AND TEMPORAL PREDICTIONS

FR1.O-17.1: MODIFIED DEEP TRANSFORMERS FOR GNSS TIME SERIES PREDICTION..... 8313

Mostafa Kiani Shahvandi, Benedikt Soja, ETH Zurich, Switzerland

FR1.O-17.2: SPATIO-TEMPORAL IONOSPHERIC TEC PREDICTION USING A DEEP 8317 CNN-GRU MODEL ON GNSS MEASUREMENTS

*Maria Kaselimi, Nikolaos Doulamis, Athanasios Voulodimos, Anastasios Doulamis, Demetris Delikaraoglou, National
Technical University of Athens, Greece*

FR1.O-17.3: REAL-TIME GNSS METEOROLOGY IN EUROPE – HURRICANE LORENZO 8321 CASE STUDY

*Tomasz Hadas, University of Stuttgart, Germany; Michael Bender, Deutscher Wetterdienst (DWD), Germany;
Grzegorz Marut, Wrocław University of Environmental and Life Sciences, Poland; Thomas Hobiger, University of
Stuttgart, Germany*

FR1.O-17.4: ESTIMATING HIGH AMPLITUDE WATER LEVEL VARIATIONS DURING 8324 ASYMMETRIC TIDES IN THE GARONNE RIVER WITH GNSS-REFLECTOMETRY

*Pierre Zeiger, LEGOS, UMR 5566, CNES/CNRS/UPS/IRD, France; Frédéric Frappart, Laboratoire d'Etudes en
Géophysique et Océanographie Spatiales (LEGOS), France; José Darrozes, GET, UMR 5563, CNES/CNRS/UPS/IRD,
France; Philippe Bonneton, Natalie Bonneton, EPOC, UMR 5805, CNRS/Université de Bordeaux, France*

FR1.O-17.5: A PERFORMANCE ASSESSMENT OF POLARIMETRIC GNSS-R SEA LEVEL 8328 MONITORING IN THE PRESENCE OF SEA SURFACE ROUGHNESS

*Mahmoud Rajabi, Mostafa Hoseini, Hossein Nahavandchi, Norwegian University of Science and Technology NTNU,
Norway; Maximilian Semmling, German Aerospace Center (DLR), Germany; Markus Ramatschi, German Research
Centre for Geosciences GFZ, Germany; Mehdi Goli, Shahrood University of Technology, Iran; Rudiger Haas, Chalmers
University of Technology, Sweden; Jens Wickert, German Research Centre for Geosciences GFZ / Technische
Universität Berlin, Germany*

FR1.O-17.6: A NEW METHOD FOR OCEAN WIND DIRECTION RETRIEVAL FROM 8332 DELAY-DOPPLER MAPS USING STARE PROCESSING AND MACHINE LEARNING: PRELIMINARY SIMULATION RESULTS

Ian Collett, Yunxiang Liu, Y. Jade Morton, University of Colorado Boulder, United States

FR1.O-18: GEO-INFORMATION AND INTEGRATION FOR SMART AND GREEN CITIES

FR1.O-18.1: A DEEP LEARNING BASED APPROACH FOR ROOFTOP SOLAR POTENTIAL ESTIMATION OF A CITY: A CASE STUDY OF INDIAN METROPOLIS 8336

Prakash P S, Bharath H Aithal, Indian Institute of Technology Kharagpur, India

FR1.O-18.2: MAPPING THE SOUND LANDSCAPE DURING SOCIAL ISOLATION DUE TO COVID-19 8340

Malcon Mora-Araus, Andrés Velastegui-Montoya, Yadira Jaramillo-Lindao, Hector Apolo, Escuela Superior Politécnica del Litoral, Ecuador

FR1.O-18.3: MANAGING THE OCEANS CLEANUP VIA SEA CURRENT ANALYSIS AND BIO-INSPIRED COORDINATION OF USV SWARMS 8344

Manilo Monaco, University of Florence, Italy; Mario Giovanni C. A. Cimino, Gigliola Vaglini, Francesco Fusai, University of Pisa, Italy; Giovanni Nico, Italy's National Research Council, Italy

FR1.O-18.4: GPS-ASSISTED FEATURE MATCHING IN AERIAL IMAGES WITH HIGHLY REPETITIVE PATTERNS 8348

Gonzalo Luzardo, Michiel Vlaminc, imec-UGent, Belgium; Dionysios Lefkaditis, SITEMARK, Belgium; Wilfried Philips, Hiep Luong, imec-UGent, Belgium

FR1.O-18.5: MICROWAVE METHOD FOR DETERMINING THE CONTENT OF HARMFUL GASES IN ATMOSPHERE 8352

Igor Shirokov, Pavel Evdokimov, Mariya Sokolova, Elena Shirokova, Sevastopol State University, Russia

FR1.O-18.6: STREAMLINING EXPERIMENT PROJECTIONS FOR RESOLUTE BAY INCOHERENT SCATTER RADAR (RISR) TO FACILITATE RESEARCH OF SPACE WEATHER DRIVEN GLOBAL POSITIONING SYSTEM SCINTILLATIONS 8356

Adam Hoxeng, Diana Loucks, William Wright, Christopher Oxendine, United States Military Academy, United States

FR1.O-19: MONITORING THE IMPACTS OF COVID FROM SPACE

FR1.O-19.2: A NOVEL DATASET AND BENCHMARK FOR SURFACE NO₂ PREDICTION FROM REMOTE SENSING DATA INCLUDING COVID LOCKDOWN MEASURES 8364

Linus Scheibenreif, Michael Mommert, Damian Borth, University of St. Gallen, Switzerland

FR1.O-19.3: AIR QUALITY IMPROVEMENT DURING COVID-19 PANDEMIC: STUDY OF LAND AND MARITIME POLLUTION 8368

Pedro Silva, Mariana Ávila, Emanuel Castanho, Atlantic International Research Centre, Portugal

FR1.O-19.4: IMPACT OF COVID19-INDUCED LOCKDOWN ON AIR QUALITY IN IRELAND 8372

Dewansh Kaloni, The ADAPT Centre, Ireland; Yee Hui Lee, Nanyang Technological University, Singapore; Soumyabrata Dev, University College Dublin, Ireland

FR1.O-19.5: AN ANALYSIS FOR THE WORK RESUMPTION UNDER THE COVID-19 EPIDEMIC BASED ON VIIRS-DNB NIGHTTIME LIGHTS IN CHINA 8376

Suzheng Tian, Ruyi Feng, Lizhe Wang, China University of Geosciences, China

FR1.O-19.6: DETECTING AIRPORT ACTIVITY FROM SENTINEL-2 IMAGERY DURING COVID-19 PANDEMIC BY USING DEEP LEARNING 8380

Hang Yang, University of Tokyo, Japan; Toru Kouyama, Fumiharu Suzuki, National Institute of Advanced Industrial Science and Technology, Japan; Shutaro Sato, Ichiro Yoshikawa, University of Tokyo, Japan

FR1.O-20: LAND MOVEMENTS MONITORING

FR1.O-20.1: DYNAMICS OF A GIANT SLOW LANDSLIDE ALONG THE COAST OF THE ARAL SEA (CENTRAL ASIA) 8384

Gökhan Aslan, Marcello De Michele, Daniel Raucoules, BRGM, France; François Renard, University of Oslo, Norway; Ziyadin Cakir, Istanbul Technical University, Turkey

FR1.O-20.2: INSAR DRIVEN LANDSLIDE DETECTION AND MONITORING BASED ON SMALL BASELINE SETS: A CASE STUDY OF JINSHA RIVER VALLEY (DONGCHUAN SECTION) 8388

Hongying Jia, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Yingjie Wang, University of Chinese Academy of Sciences, China; Daqing Ge, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China; Yunkai Deng, Robert Wang, Aerospace Information Research Institute, Chinese Academy of Sciences, China

FR1.O-20.3: LAND SUBSIDENCE OBSERVED IN THE MERCHTEM AREA (FLANDERS) – 30 YEARS OF SAR DATA ASSOCIATED TO GROUNDWATER WITHDRAWAL? 8392

Atefe Chooapani, Pierre-Yves Declercq, Royal Belgium Institute of Natural Sciences, Belgium; Alain Dassargues, University of Liège, Belgium; Xavier Devleeschouwer, Royal Belgium Institute of Natural Sciences, Belgium

FR1.O-20.4: BRIDGING CONSECUTIVE DINSAR METHOD FOR LONG-TERM LAND DEFORMATION OBSERVATION 8396

Josaphat Tetuko Sri Sumantyo, Chiba University, Japan; Daniele Perissin, Razer Limited, Hong Kong SAR of China; Joko Widodo, The Agency for Assessment and Applications of Technology, Indonesia; Heri Andreas, Ketut Wikantika, Institute of Technology Bandung, Indonesia; Mohammad Rohmaneo Darminto, Akbar Kurniawan, Mokhamad Nur Cahyadi, Teguh Hariyanto, Sepuluh Nopember Institute of Technology, Indonesia

FR1.O-20.5: THE APPLICATION OF HIGH ALTITUDE PSEUDO-SATELLITES FOR A RAPID DISASTER RESPONSE 8400

Vincenzo Rosario Baraniello, Giuseppe Persechino, Cesario Vincenzo Angelino, Francesco Tufano, CIRA Italian Aerospace Research Centre, Italy

FR1.O-20.6: AN ADAPTIVE FCM-BASED APPROACH OF FIRST ARRIVAL TIME PICKING FOR MICROSEISMIC DATA 8404

Zhiqiang Lan, Yaojun Wang, Peng Wang, Peng Gao, Jiandong Liang, University of Electronic Science and Technology of China, China

FR2.MM-1: A VARIETY OF PROMISING COASTAL AND OCEANIC APPLICATIONS

FR2.MM-1.1: COMBINED USE OF OPTICAL AND SAR IMAGES FOR MAPPING COASTAL EROSION RISK 7549

Mariano Bresciani, Nicola Ghirardi, Gianfranco Fornaro, Virginia Zamparelli, Francesca De Santi, Giacomo De Carolis, CNR, Italy; Deodato Tapete, Italian Space Agency (ASI), Italy; Monica Palandri, e-GEOS S.p.A., Italy; Claudia Giardino, CNR, Italy

FR2.MM-1.2: SUPPORTING ATLANTIC CITIES AND PORTS THROUGH EARTH OBSERVATION 7553

Nina Sofia Wyniawskij, Deimos Space UK Ltd., United Kingdom; Pedro Ribeiro, CoLAB + ATLANTIC, Portugal; Stefano Ferretti, European Space Agency (ESA), Italy; David Petit, Deimos Space UK Ltd., United Kingdom; Nuno Grosso, Deimos Engenharia, Portugal; Pritimoy Podder, Deimos Space UK Ltd., United Kingdom; Sara Aparicio, Solenix for European Space Agency, Italy

FR2.MM-1.3: MAPPING THE SPATIO-TEMPORAL CHANGES IN MANGROVE VEGETATION ALONG THANE CREEK, INDIA 7557

Nitish Zurmure, Suraj Sawant, Mahesh Shindikar, College of Engineering Pune, India; Nikhil Lele, Space Application Centre, India

FR2.MM-1.4: QUANTITATIVE EVALUATION OF ALGAE DETECTION BASED ON DEEP NEURAL NETWORK MULTI-SOURCE DATA FUSION	7561
<i>Le Gao, Xiaofeng Li, Yuan Guo, Jifeng Qi, Bin Zhang, Institute of Oceanography, Chinese Academy of Sciences, China</i>	
FR2.MM-1.5: SEPARATION OF WIND-SEA AND SWELL WAVE HEIGHTS USING ALTIMETER DATA	7564
<i>Zheng Yang, China University of Geosciences, China; Lili Song, National Marine Data and Information Service, China; Lin Mu, Shenzhen University, China; Haoyu Jiang, China University of Geosciences, China</i>	
FR2.MM-1.6: COMPARATIVE ANALYSIS OF THE SEMI-EMPIRICAL PHYSICAL MODELS FOR SHALLOW WATER DEPTH INVERSION IN BEIBU GULF	7568
<i>Jiasheng Xu, Guoqing Zhou, Qiaobo Cao, Sikai Su, Zhou Tian, Weiguang Liu, Haocheng Hu, Xiang Zhou, Guilin University of Technology, China</i>	
FR2.MM-1.7: EVALUATION OF THE SIGNIFICANT WAVE HEIGHT FROM HY2B/ALT USING CRYOSAT2/SIRAL AND ICESAT2/ATLAS DATA SETS IN THE ARCTIC	7572
<i>Lu Han, Lele Li, Haihua Chen, Ocean University of China, China</i>	
FR2.MM-1.8: A DEEP LEARNING MODEL FOR EDDY TRACKING BASED ON MULTI-SOURCE REMOTE SENSING IMAGERY	7576
<i>Qian Liu, Yingjie Liu, Xiaofeng Li, Institute of Oceanology, Chinese Academy of Sciences, China</i>	
 FR2.MM-2: SAR IMAGE FORMATION APPROACHES	
FR2.MM-2.1: MOTION COMPENSATION FOR MULTIROTORS MINISAR SYSTEM	5143
<i>Yixiang Luomei, Feng Xu, Fudan University, China</i>	
FR2.MM-2.2: UNIFIED COORDINATE SYSTEM FORMATION FOR AIRBORNE VIDEOSAR IMAGING: TOWARD A COMPLETE SCHEME	5147
<i>Ying Zhang, Daiyin Zhu, Nanjing University of Aeronautics and Astronautics, China; Yulei Qian, Nanjing Marine Radar Institute, China; Yuan Cheng, Xinhua Mao, Gong Zhang, Nanjing University of Aeronautics and Astronautics, China; Henry Leung, University of Calgary, Canada</i>	
FR2.MM-2.3: A REGULARIZED ITERATIVE ADAPTIVE APPROACH BASED FOR RADAR FORWARD-LOOKING IMAGING	5151
<i>Yongwei Zhang, Jie Li, Yongchao Zhang, Fanyun Xu, Yulin Huang, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
FR2.MM-2.4: AN FPGA HARDWARE IMPLEMENTATION FOR OMEGA-K SAR IMAGING ALGORITHM	5155
<i>Ning Ding, Zhulin Zong, Bolun Liu, Shiwei Yuan, University of Electronic Science and Technology of China, China</i>	
FR2.MM-2.5: AN FPGA/MPSOC BASED LOW LATENCY ONBOARD SAR PROCESSOR	5159
<i>Helko Breit, Srikanth Mandapati, Ulrich Balss, German Aerospace Center (DLR), Germany</i>	
FR2.MM-2.6: A NEAR-FIELD FAST TIME-FREQUENCY JOINT 3-D IMAGING ALGORITHM BASED ON APERTURE LINEARIZATION	5163
<i>Xuan Zeng, Yuxin Ma, Zhongyu Li, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, Chengdu, China</i>	
FR2.MM-2.7: PROCESSING MULTIRECEIVER SAS DATA BASED ON THE PTRS LINEARIZATION	5167
<i>Xuebo Zhang, Northwest Normal University, China; Wenwei Ying, Naval Research Academy, China; Yaqian Liu, Xiangyu Deng, Northwest Normal University, China</i>	

FR2.MM-2.8: NOVEL APPROACH OF MOTION COMPENSATION FOR THE TERAHERTZ SAR IMAGING BASED ON MEASURED DATA	5171
<i>Zhaofa Wang, Nanjing Research Institute of Electronics Technology, China; Yong Wang, Harbin Institute of Technology, China; Yang Dong, Xueyong Shen, Gang Tian, Nanjing Research Institute of Electronics Technology, China</i>	
FR2.MM-2.9: AN EFFICIENT MOTION ERROR COMPENSATION METHOD FOR LINEAR ARRAY 3-D SAR IMAGING	5175
<i>Xinyu Mao, Zhongyu Li, Yuxin Ma, Yu Hai, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
FR2.MM-2.10: AN EFFICIENT PFA SUBAPERTURE ALGORITHM FOR VIDEO SAR IMAGING	5179
<i>Yue Song, Yu Hai, Junjie Wu, Zhongyu Li, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
 FR2.MM-3: MULTI-TEMPORAL / MULTI-PASS SAR ANALYSIS	
FR2.MM-3.1: USE OF SENTINEL-1 TIME-SERIES FOR ARCHAEOLOGICAL STRUCTURES DETECTION	5183
<i>Florent Michenot, Giovanni Manfredi, Régis Guinvarc'h, Laétitia Thirion-Lefevre, SONDRRA, CentraleSupélec, Université Paris-Saclay, France</i>	
FR2.MM-3.2: REVEALING LONG-TERM DEFORMATION TIME SERIES OF RADAR SCATTERERS USING MULTI-SENSOR SAR DATA	5187
<i>Bin Zhang, Ling Chang, Alfred Stein, University of Twente, Netherlands</i>	
FR2.MM-3.3: COHERENT RECONSTRUCTION OF MULTI-PASS COSMO-SKYMED IMAGES	5191
<i>Wenkang Liu, Xidian University, China; Gianfranco Fornaro, National Research Council (CNR), Italy; Vito Pascazio, Gilda Schirinzi, Università di Napoli "Parthenope", Italy; Mengdao Xing, Xidian University, China</i>	
FR2.MM-3.4: POLARIMETRIC COHERENCE ANALYSIS FOR MANGROVE TYPES DISCRIMINATION OF PICHAVARAM, INDIA USING SENTINEL-1 SATELLITE DATA	5195
<i>Sandra Maria Cherian, Rajitha K, BITS Pilani, Hyderabad Campus, India</i>	
FR2.MM-3.5: RESEARCH ON REGISTRATION ALGORITHM BASED ON HYBRID FEATURE POINT DETECTION USING GAOFEN-3 IMAGE	5199
<i>Furong Liao, Yan Chen, Yunping Chen, University of Electronic Science and Technology of China, China; Chunliang Xu, Youchun Lu, China Centre for Resources Satellite Data and Application, China; Haichang Wei, University of Electronic Science and Technology of China, China</i>	
FR2.MM-3.6: A METHOD FOR EXTRACTING DEM BASED ON SUB-APERTURE IMAGE CORRELATION IN CSAR MODE	5203
<i>Yishi Li, Leping Chen, Daoxiang An, National University of Defence Technology, China</i>	
FR2.MM-3.7: THREE DIMENSIONAL SURFACE RECONSTRUCTION WITH MULTISTATIC SAR	5207
<i>Xiaowen Zhang, Wenchao Li, Chuan Huang, Wenjing Wang, Zhongyu Li, Junjie Wu, University of Electronic Science and Technology of China, Chengdu, China</i>	
FR2.MM-3.8: TOMOSAR SPARSE 3-D IMAGING VIA DEM-AIDED SURFACE PROJECTION	5211
<i>Shan Liu, Shunjun Wei, Jinshan Wei, Xiangfeng Zeng, Xiaoling Zhang, School of Information and Communication Engineering, University of Electronic Science and Technology of China, China</i>	
FR2.MM-3.9: AZIMUTH SPECTRUM RECONSTRUCTION ALGORITHM FOR MULTICHANNEL SQUINT SAR ON HIGH SPEED AIRBORNE PLATFORM	5215
<i>Bowen Bie, Yinghui Quan, Guang-Cai Sun, Wei Feng, Mengdao Xing, Xidian University, China</i>	

FR2.MM-4: APPLICATIONS OF POLARIMETRIC, BISTATIC AND DIGITAL BEAMFORMING SAR I

FR2.MM-4.1: COMPARISON OF POLARIMETRIC FILTERS TO RETRIEVE FOREST BIOMASS 5219

Henrique Luis Godinho Cassol, Luiz Eduardo Oliveira e Cruz de Aragão, Elisabete Caria Moraes, National Institute for Space Research, Brazil; João Manuel Brito Carreiras, University of Sheffield, United Kingdom; Camila Valéria Jesus Silva, Lancaster University, United Kingdom; Yosio Edemir Shimabukuro, National Institute for Space Research, Brazil

FR2.MM-4.3: COMPARISON OF TARGET DETECTORS TO IDENTIFY ICEBERGS IN QUAD-POLARIMETRIC SAR ALOS-2 IMAGES 5223

Johnson Bailey, Armando Marino, Vahid Akbari, University of Stirling, United Kingdom

FR2.MM-4.4: SENSITIVITY TO SOIL MOISTURE OVER AN AGRICULTURAL AREA BY EXPLOITING A MODEL-BASED POLARIMETRIC DECOMPOSITION 5227

Giovanni Anconitano, Sapienza University of Rome, Italy; Marco Lavalle, NASA Jet Propulsion Laboratory, United States; Nazzareno Pierdicca, Sapienza University of Rome, Italy

FR2.MM-4.5: TROPICAL PEATLAND FOREST BIOMASS ESTIMATION BY EXPLOITING POLARIMETRIC PARAMETERS IN SYNERGY WITH IN-SITU DATA 5231

Mirza Muhammad Waqar, Heein Yang, Myeong Ryong Nam, Lumir Inc, Korea (South); Rahmi Sukmawati, Padang State University, Indonesia

FR2.MM-4.6: AN IMPROVED DUAL-BASELINE POLINSAR METHOD FOR FOREST HEIGHT ESTIMATION BASED ON RMOG MODEL 5235

Yue Shi, Zhanmang Liao, Binbin He, University of Electronic Science and Technology of China, China

FR2.MM-4.7: TRANSIENT REACTIVATION OF KARA-BOGAZ-GOL COASTAL LANDSLIDE, MODULATED BY HYDROLOGICAL FORCES CAPTURED USING INSAR (TURKMENISTAN) 5239

Gökhan Aslan, Marcello De Michele, Daniel Raucoules, Severine Bernardie, BRGM, France; Ziyadin Cakir, Istanbul Technical University, Turkey

FR2.MM-4.8: AN ADAPTIVE MOVING TARGET INDICATION METHOD FOR GEO SPACEBORNE-AIRBORNE BISTATIC SAR 5243

Chang Cui, Xichao Dong, Cheng Hu, Weiming Tian, Beijing Institute of Technology, China

FR2.MM-4.9: JOINT PERFORMANCE OPTIMIZATION OF MONOSTATIC AND BISTATIC SAR CONFIGURATIONS 5247

Nehir Berk Onat, Eindhoven University of Technology, Netherlands; Ozan Dogan, Delft University of Technology, Netherlands; Mario Azcueta, MetaSensing B.V., Netherlands; Ruud J.G. van Sloun, Eindhoven University of Technology, Netherlands

FR2.MM-4.10: ANTI-DECEPTIVE JAMMING OF JAMMER ON THE COAST FOR MULTISTATIC SAR 5251

Wenjing Wang, Junjie Wu, Jifang Pei, Zhichao Sun, Jianyu Yang, University of Electronic Science and Technology of China, China

FR2.MM-5: DEEP LEARNING FOR REMOTELY SENSED IMAGE ANALYSIS

FR2.MM-5.1: A FILTERING APPROACH FOR GENERATED SAMPLES BY GANS IN SAR ATR 5255

Changjie Cao, Zongyong Cui, Zongjie Cao, Liying Wang, Jielei Wang, Jianyu Yang, University of Electronic Science and Technology of China, China

FR2.MM-5.2: AUTOMATED COUNTING WILD BIRDS ON UAV IMAGE USING DEEP LEARNING 5259

Kenta Ogawa, Rakuno Gakuen University, Japan; Yuting Lin, Hiroshi Takeda, Kanji Hashimoto, Kokusai Kogyo Co., Ltd, Japan; Yukiko Konno, Kaori Mori, Rakuno Gakuen University, Japan

FR2.MM-5.3: ADVERSARIAL ROBUSTNESS EVALUATION OF DEEP CONVOLUTIONAL NEURAL NETWORK BASED SAR ATR ALGORITHM	5263
<i>Hao Sun, Yanjie Xu, Gangyao Kuang, National University of Defence Technology, China; Jin Chen, Beijing Institute of Remote Sensing Information, China</i>	
FR2.MM-5.4: ISAR IMAGES GENERATION VIA GENERATIVE ADVERSARIAL NETWORKS	5267
<i>Ruo-Yi Zhou, Zhi-Long Yang, Feng Wang, Fudan University, China</i>	
FR2.MM-5.5: OIL DEPOT DETECTION VIA CNN SEMANTIC SEGMENTATION	5271
<i>Antoine Tadros, Sébastien Drouyer, Rafael Grompone von Gioi, Centre Borrel - ENS Paris-Saclay, France</i>	
FR2.MM-5.6: SIAMMRAAN : SIAMESE MULTI-LEVEL RESIDUAL ATTENTION ADAPTIVE NETWORK FOR HYPERSPECTRAL VIDEOS TRACKING	5275
<i>Ye Wang, Shaohui Mei, Shun Zhang, Northwestern Polytechnical University, China; Qian Du, Mississippi State University, United States</i>	
FR2.MM-5.7: TRANSFERRED TENSOR DECOMPOSITION-BASED DEEP LEARNING FOR HYPERSPECTRAL ANOMALY DETECTION	5279
<i>Yulei Wang, Fengchao Wang, Qingyu Zhu, Meiping Song, Chunyan Yu, Dalian Maritime University, China</i>	
FR2.MM-5.9: URBAN FOREST IDENTIFICATION FROM HIGH-RESOLUTION IMAGES USING DEEP-LEARNING METHOD	5283
<i>Wei Wang, Rongyuan Liu, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China; Huiyun Yang, China Research Institute of Radiowave Propagation, China; Ping Zhou, China University of Geosciences-Beijing, China; Xiangwen Zhang, Ling Ding, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China</i>	
FR2.MM-5.10: SAR IMAGE CHANGE DETECTION VIA A FEW-SHOT LEARNING-BASED NEURAL NETWORK	5287
<i>Ronfang Wang, Weidong Wang, Xidian University, China; Pinghai Dong, Tsinghua Shenzhen International Graduate School, China; Haojiang Wei, Licheng Jiao, Jia-Wei Chen, Xidian University, China</i>	
 FR2.MM-6: DATA ANALYSIS TECHNIQUES IN REMOTE SENSING	
FR2.MM-6.1: SCALE EXPANSION PYRAMID NETWORK FOR CROSS-SCALE OBJECT DETECTION IN SAR IMAGES	5291
<i>Zheng Zhou, Rui Guan, Zongyong Cui, Zongjie Cao, Yiming Pi, Jianyu Yang, University of Electronic Science and Technology of China, China</i>	
FR2.MM-6.2: A COMPLETE BUILDING EXTRACTION FRAMEWORK FOR AIRBORNE LASER SCANNING POINT CLOUD	5295
<i>Chunhui Zhao, Hemin Lin, Yiming Yan, Nan Su, Harbin Engineering University, China; Shu Tian, Harbin Institute of Technology, China</i>	
FR2.MM-6.3: AI MAPPING RISKS TO WILDLIFE IN TANZANIA: RAPID SCANNING AERIAL IMAGES TO FLAG THE CHANGING FRONTIER OF HUMAN-WILDLIFE PROXIMITY	5299
<i>Zhuang-Fang Yi, Development Seed, United States; Howard Frederick, Tanzania Conservation Resource Center, Tanzania; Ruben Lopez, Ryan Avery, Lane Goodman, Development Seed, United States</i>	
FR2.MM-6.4: FULLY AUTOMATED SAR BASED OIL SPILL DETECTION USING YOLOV4	5303
<i>Yi-Jie Yang, University of Kiel, Germany; Suman Singha, German Aerospace Center (DLR), Germany; Roberto Mayerle, University of Kiel, Germany</i>	
FR2.MM-6.5: ONE-STAGE DETECTOR FROM COARSE TO FINE FOR ROTATING OBJECT OF REMOTE SENSING	5307
<i>Zhiguo Li, Yuan Yuan, Dandan Ma, Northwestern Polytechnical University, China</i>	

FR2.MM-6.6: A HOG FEATURE FUSION METHOD TO IMPROVE CNN-BASED SAR SHIP CLASSIFICATION ACCURACY	5311
<i>Tianwen Zhang, Xiaoling Zhang, Jun Shi, Shunjun Wei, University of Electronic Science and Technology of China, China</i>	
FR2.MM-6.7: A MOVING TARGET DETECTION METHOD BASED ON YOLO FOR DUAL-BEAM SAR	5315
<i>Xinxin Tang, Xiaoling Zhang, Jun Shi, Shunjun Wei, University of Electronic Science and Technology of China, China</i>	
FR2.MM-6.8: ORIENTED SPATIAL CORRELATIVE ALIGNED FEATURE FOR REMOTE SENSING OBJECT DETECTION	5319
<i>Guangmiao Guo, Leyuan Fang, Hunan University, China; Jun Yue, Changsha University of Science and Technology, China</i>	
FR2.MM-6.9: AUTOMATIC DETECTION OF BUILDING IN MEDIUM DENSITY IMAGE USING MORPHOLOGICAL OPERATION	5323
<i>Karuna Kirwale, Marathwada University, India</i>	
FR2.MM-6.10: INVARIANT SUBMERGED MATERIAL RECOGNITION WITH FLUORESCENCE LIDAR AND SPARSITY-BASED APPROACHES	5327
<i>Stefania Matteoli, Consiglio Nazionale delle Ricerche, Italy; Giovanni Corsini, Università di Pisa, Italy; Marco Diani, Accademia Navale, Italy</i>	
 FR2.MM-7: DINSAR APPLICATIONS TO NATURAL HAZARD MONITORING	
FR2.MM-7.1: REMODAMS: MONITORING DAMS FROM SPACE USING SATELLITE RADAR INTERFEROMETRY	5331
<i>Antonio Miguel Ruiz-Armenteros, University of Jaén, Spain; Jose Manuel Delgado Blasco, Universidad de Jaén, Spain; Matus Bakon, insar.sk, Slovakia; Joaquim J. Sousa, Universidade de Trás-os-Montes e Alto Douro, Portugal; Francisco Lamas-Fernandez, University of Granada, Spain; Miguel Marchamalo-Sacristan, POLITECHNICAL UNIVERSITY OF MADRID, Spain; Vanesa Sanchez-Ballesteros, University of Jaén, Spain; Juraj Papco, Slovak University of Technology in Bratislava, Slovakia; Beatriz Gonzalez-Rodrigo, POLITECHNICAL UNIVERSITY OF MADRID, Sudan; Milan Lazecky, University of Leeds, United Kingdom; Daniele Perissin, Università degli Studi di Padova, Italy</i>	
FR2.MM-7.2: INSAR SURFACE DEFORMATION SIGNATURES OVER THE OMAN OPHIOLITE	5335
<i>Molly Zebker, Jingyi Chen, Marc Hesse, University of Texas at Austin, United States</i>	
FR2.MM-7.4: MONITORING BEIJING-TIANJIN REGION LAND SUBSIDENCE USING ALOS-2 SCANSAR IMAGES	5338
<i>Bin Liu, Man Li, Ling Zhang, Daqing Ge, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China</i>	
FR2.MM-7.5: THE APPLICATION OF INTERFEROMETRIC SYNTHETIC APERTURE RADAR (INSAR) ON DAMAGED AREA MAPPING: THE CASE OF THE 2020 TAAL VOLCANO ERUPTION	5342
<i>Ryan Ramirez, University of Santo Tomas, Philippines</i>	
FR2.MM-7.6: DEFORMATION OF CHENGDU DOWNTOWN WITH SENTINEL-1A	5346
<i>Tianming Shao, University of Electronic Science and Technology of China, China; Mingcang Zhu, Department of Natural Resources of Sichuan Province, China; Yong He, Sichuan Research Institute for Eco-System Restoration & Geo-Hazard Prevention, China; Boya Yang, University of Electronic Science and Technology of China, China; Zhanyong He, Sichuan Research Institute for Eco-System Restoration & Geo-Hazard Prevention, China; Fangrong Zhou, Yunnan Power Grid Co., Ltd., China; Juan Ren, Hongqiong Tang, Sichuan Research Institute for Eco-System Restoration & Geo-Hazard Prevention, China; Yao Fu, Zezhong Zheng, University of Electronic Science and Technology of China, China; Zhongnian Li, Central China Normal University, China; Guoqing Zhou, Guilin University of Technology, China; Zhiyong Wang, Mingqi Li, Ling Jiang, University of Electronic Science and Technology of China, China</i>	

FR2.MM-7.7: SURFACE DEFORMATION ANALYSIS IN JIUZHAIGOU, CHINA USING SBAS-INSAR TECHNIQUE	5350
<i>Xingyu Lu, Taoli Yang, University of Electronic Science and Technology of China, China; Zhidong Wang, Wei Tang, Second Institute of Surveying and Mapping Geographic Information Engineering of Sichuan Province, China</i>	
FR2.MM-7.8: LAND DEFORMATION AT LONGYAO GROUND FISSURE AND ITS SURROUNDINGS REVEALED BY TIME SERIES INSAR	5354
<i>Hongyu Liu, Tongji University; The Hong Kong Polytechnic University, China; Bofeng Li, Tongji University, China</i>	
FR2.MM-7.9: INVESTIGATION FOR THE SURFACE DEFORMATION OF TANGGULA MOUNTAIN PERMAFROST USING DISTRIBUTED SCATTERER INSAR	5358
<i>Jing Wang, Chao Wang, Yixian Tang, Hong Zhang, Wei Duan, Longkai Dong, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	
FR2.MM-7.10: A STUDY ON THE DETECTION OF DEFORMATION OF TUOTUOHE AREA ON THE QINGHAI-TIBET PLATEAU	5362
<i>Xiaokang Kou, Xinda Liu, Yuzhi Zhang, Shijiazhuang Tiedao University, China; Yichi Zhang, Beijing Normal University, China; Tianliang Wang, Shijiazhuang Tiedao University, China; Shuang Yan, Hebei Academy of Sciences, China</i>	
 FR2.MM-8: DEEP LEARNING FOR IMAGE ANALYSIS AND CLASSIFICATION	
FR2.MM-8.1: RETHINKING THE HIGH FREQUENCY COMPONENTS IN DEEP SUB-PIXEL MAPPING NETWORK	5366
<i>Da He, Sun Yat-Sen University, China; Yanfei Zhong, Wuhan University, China; Qian Shi, Xiaoping Liu, Sun Yat-Sen University, China</i>	
FR2.MM-8.2: A MULTI-BRANCH NETWORK BASED ON WEIGHT SHARING AND ATTENTION MECHANISM FOR HYPERSPECTRAL IMAGE CLASSIFICATION	5370
<i>Zhen Guo, Caihong Mu, Yi Liu, Xidian University, China</i>	
FR2.MM-8.3: DOMAIN ADAPTATION BASED ON GRAPH AND STATISTICAL FEATURES FOR CROSS-SCENE HYPERSPECTRAL IMAGE CLASSIFICATION	5374
<i>Yuxiang Zhang, Wei Li, Ran Tao, Beijing Institute of Technology, China</i>	
FR2.MM-8.4: COMPARING CNN ARCHITECTURES FOR LAND COVER CLASSIFICATION ON MULTISPECTRAL IMAGES	5378
<i>Bryce Engelbrecht, Amazon Development Center South Africa, South Africa; Terence Van Zyl, University of Johannesburg, South Africa</i>	
FR2.MM-8.5: FEATURE EXCHANGE FOR MULTISOURCE DATA CLASSIFICATION IN WETLAND SCENE	5382
<i>Yunhao Gao, Wei Li, Mengmeng Zhang, Ran Tao, Beijing Institute of Technology, China</i>	
FR2.MM-8.6: SEMI-SUPERVISED POLSAR IMAGE CLASSIFICATION BASED ON DEEP CO-TRAINING WITH SUPERPIXEL RESTRAINED STRATEGY	5386
<i>Feng Zhao, Lin Liu, Lu Zhang, Xi'an University of Posts and Telecommunications, China; Hanqiang Liu, Shaanxi Normal University, China; Yanyang Cheng, Xi'an University of Posts and Telecommunications, China</i>	
FR2.MM-8.7: DEEP REGRESSOR NETWORKS FOR BLIND IMAGE DEBLURRING	5390
<i>Rafael Pires, Daniel Santos, Leandro Passos, Joao Papa, Sao Paulo State University, Brazil</i>	
FR2.MM-8.9: EML-GAN: GENERATIVE ADVERSARIAL NETWORK-BASED END-TO-END MULTI-TASK LEARNING ARCHITECTURE FOR SUPER-RESOLUTION RECONSTRUCTION AND SCENE CLASSIFICATION OF LOW-RESOLUTION REMOTE SENSING IMAGERY	5397
<i>Weihuan Deng, Qiqi Zhu, China University of Geosciences, China; Xiongli Sun, Wuhan University, China; Weihua Lin, Qingfeng Guan, China University of Geosciences, China</i>	

FR2.MM-9: IMAGE CLASSIFICATION FOR VEGETATION AND AGRICULTURE

FR2.MM-9.1: EXPLORING A DEEP CONVOLUTIONAL NEURAL NETWORK AND GEOBIA 5401 FOR AUTOMATIC RECOGNITION OF BRAZILIAN PALM SWAMPS (VEREDAS) USING SENTINEL-2 OPTICAL DATA

Hugo Bendini, National Institute for Space Research (INPE), Brazil; Leila Fonseca, National Institute for Space Research, Brazil; Raian Maretto, Universiteit Twente (UT), Netherlands; Bruno Matosak, Evandro Taquary, Philipe Simões, National Institute for Space Research, Brazil; Ricardo Haidar, Federal University of Tocantins, Brazil; Dalton Valeriano, National Institute for Space Research, Brazil

FR2.MM-9.2: SURVEYING GREEN SPACES IN EUROPEAN HUMAN SETTLEMENTS AT 30 M 5405 SUB-PIXEL LEVEL

Fei Xu, Ben Somers, KU Leuven, Belgium

FR2.MM-9.3: WOODLAND SEGMENTATION OF GAOFEN-6 REMOTE SENSING IMAGES 5409 BASED ON DEEP LEARNING

Yuanyuan Gui, Wei Li, Mengmeng Zhang, Beijing Institute of Technology, China; Anzhi Yue, Chinese Academy of Sciences, China

FR2.MM-9.4: DEMONSTRATION OF WILDFIRE DETECTION USING IMAGE 5413 CLASSIFICATION ONBOARD CUBESAT

Muhammad Hasif bin Azami, Necmi Cihan Orger, Victor Hugo Schulz, Kitsune Members, Mengu Cho, Kyushu Institute of Technology, Japan

FR2.MM-9.5: NEW APPROACH OF SAMPLE GENERATION AND CLASSIFICATION FOR 5417 WILDFIRE FUEL MAPPING ON HYPERSPECTRAL (PRISMA) IMAGE

Riyaz Uddien Shaik, Giovanni Laneve, Lorenzo Fusilli, Sapienza Università di Roma, Italy

FR2.MM-9.6: TREE SPECIES MAPPING IN TROPICAL FORESTS USING HYPERSPECTRAL 5421 REMOTE SENSING AND MACHINE LEARNING

Anushree Badola, University of Alaska Fairbanks, United States; Hitendra Padalia, Indian Institute of Remote Sensing, ISRO, Dehradun, India; Mariana Belgiu, University of Twente, Netherlands; Prabhakar Alok Verma, Indian Institute of Remote Sensing, ISRO, Dehradun, India

FR2.MM-9.7: A DESCRIPTOR TO SEPARATE URBAN TARGETS WITH LARGE AZIMUTH 5425 ORIENTATION ANGLES FROM VEGETATION TARGETS IN POLSAR DATA

Dingfeng Duan, University of Electronic Science and Technology of China, China; Yong Wang, Hong Li, East Carolina University, United States

FR2.MM-10: CALIBRATION, REGISTRATION, AND MATCHING

FR2.MM-10.1: SPATIALLY WEIGHTED MUTUAL INFORMATION FOR IMAGE 5429 REGISTRATION

Chris Aldrich, Curtin University, Australia; Anthony Amankwah, Amankwah Consult, Ghana

FR2.MM-10.2: MULTI-SCALE FEATURE EXTRACTION AND TOTAL VARIATION BASED 5433 FUSION METHOD FOR HSI AND LIDAR DATA CLASSIFICATION

Yingping Tong, Yinghui Quan, Wei Feng, Xidian University, China; Gabriel Dauphin, University Paris XIII, France; Yong Wang, Xidian University, China; Puxia Wu, Shaan Xi Academy of Forestry, China; Mengdao Xing, Xidian University, China

FR2.MM-10.3: MULTI-SCALE HARRIS-PIIFD FEATURES FOR REGISTRATION OF VISIBLE 5437 AND INFRARED IMAGES

Chenzhong Gao, Wei Li, Beijing Institute of Technology, China

FR2.MM-10.4: GHOST-FREE FUSION OF MULTI-EXPOSURE IMAGES IN THE GLOBAL 5441 GRADIENT REGION UNDER PATCH ALIGNMENT

Yulei Wang, Man Liu, Xi Chen, Enyu Zhao, Dalian Maritime University, China

FR2.MM-10.5: IMPROVING GMI BRIGHTNESS TEMPERATURE DIURNAL CYCLE AT GLOBAL SCALE	5445
<i>Zahra Sharifnezhad, City College of New York, United States; Hamidreza Norouzi, New York City College of Technology, United States; Reginald Blake, CUNY - citytech, United States; Reza Khanbilvardi, City College of New York, United States</i>	
FR2.MM-10.6: THE EFFECT OF DEBLURRING ON MATCHING OF MOTION BLURRED REMOTE SENSING IMAGES	5449
<i>Jie Han, Zhen Ye, Songlin Zhang, Hanyu Wang, Tongji University, China</i>	
FR2.MM-10.7: A TOPOLOGY DESIGN METHOD BASED ON WAVENUMBER SPECTRUM GENERATION FOR MULTISTATIC SYNTHETIC APERTURE RADAR	5453
<i>Junyu Zhu, Deqing Mao, Yongchao Zhang, Yin Zhang, Yulin Huang, Haiguang Yang, University of Electronic Science and Technology of China, China</i>	
FR2.MM-10.8: DEEP GLOBAL FEATURE-BASED TEMPLATE MATCHING FOR FAST MULTI-MODAL IMAGE REGISTRATION	5457
<i>Ruiqi Lei, Bowu Yang, Dou Quan, Yi Li, Baorui Duan, Shuang Wang, Xidian University, China; Huarong Jia, Beijing institute of control and electronic technology, China; Biao Hou, Licheng Jiao, Xidian University, China</i>	
FR2.MM-10.9: FISHEYE CAMERA CALIBRATION WITH INDOOR 3D CALIBRATION FIELD	5461
<i>Yongfan Xie, Guoqing Zhou, Qingyang Wang, Ruhao Song, Mengyuan Luo, Guilin University of Technology, China</i>	
FR2.MM-10.10: AUTOMATED REGISTRATION OF VECTOR DATA TO OVERHEAD IMAGERY	5465
<i>Jacob McKee, Melanie Laverdiere, U.S. Department of Energy, United States</i>	
 FR2.MM-11: REMOTE SENSING FOR FOREST AND VEGETATION GROWTH AND DYNAMICS II	
FR2.MM-11.1: THE B-PARAMETER RELATING L-VOD TO SATELLITE-SCALE CROP PLANT WATER MAY NOT BE CONSTANT OVER A GROWING SEASON	6857
<i>Kati Togliatti, USDA Agricultural Research Service, United States; Colin Lewis-Beck, University of Iowa, United States; Victoria Walker, University of Montana, United States; Theo Hartman, Andy VanLoocke, Brian Hornbuckle, Iowa State University, United States</i>	
FR2.MM-11.2: DETECTING THE INFLUENCE OF HYDROCARBON SEEPAGE ON PLANTS: A SPECTROSCOPIC APPROACH	6861
<i>Adnan Ahmad, Arnab Kumar Pal, Shailesh Kumar Yadav, Archana M Nair, Indian Institute of Technology Guwahati, India</i>	
FR2.MM-11.3: MACHINE LEARNING APPROACH FOR TREE PLANTATION SUITABILITY MAPPING	6865
<i>Jojene Santillan, Arnaldo Gagula, Meriam Makinano-Santillan, Caraga State University, Philippines</i>	
FR2.MM-11.4: EVALUATION OF EIGHT THERMAL INFRARED KERNEL-DRIVEN MODELS USING LIMITED OBSERVATIONS	6869
<i>Xueting Ran, University of Electronic Science and Technology of China, China; Biao Cao, Boxiong Qin, Zunjian Bian, Yongming Du, Hua Li, Qing Xiao, Qinhua Liu, Chinese Academy of Sciences, China</i>	
FR2.MM-11.5: REMOTE SENSING OF EVAPOTRANSPIRATION AND SURFACE HEAT FLUXES IN THE LSA-SAF PROGRAMME	6873
<i>José Miguel Barrios, Alirio Arboleda, Françoise Gellens-Meulenberghs, Royal Meteorological Institute, Belgium</i>	
FR2.MM-11.6: WEB-BASED MONITORING OF BORO RICE PRODUCTION USING IMPROVISED NDVI THRESHOLD OF MODIS MOD13Q1 AND MYD13Q1 IMAGES	6877
<i>Kazi Kalpoma, Ahsanullah University of Science and Technology (AUST), Bangladesh; Ashiqur Rahman, Promiti Computers & Network (Pvt.) Ltd., Bangladesh</i>	

FR2.MM-11.7: LINKING SAP FLOW MEASUREMENTS WITH EARTH OBSERVATIONS..... 6881
Enrico Tomelleri, Giustino Tonon, Free University of Bozen/Bolzano, Italy

FR2.MM-11.8: UNCERTAINTIES IN THE S-SEBI MODEL TO ESTIMATE SURFACE ENERGY 6885
FLUXES OVER NATURAL GRASSLANDS IN BRAZIL
Pâmela Suélen Käfer, Nájila Souza da Rocha, Universidade Federal do Rio Grande do Sul, Brazil; Drazen Skokovic, Universitat de Valencia, Spain; Gustavo Pujol Veeck, Universidade Federal de Santa Maria, Brazil; Lucas Ribeiro Diaz, Savannah Tamara Lemos da Costa, Universidade Federal do Rio Grande do Sul, Brazil; Débora Regina Robérti, Universidade Federal de Santa Maria, Brazil; José Antonio Sobrino, Universitat de Valencia, Spain; Sílvia Beatriz Alves Rolim, Universidade Federal do Rio Grande do Sul, Brazil

FR2.MM-11.9: A DEEP LEARNING METHOD FOR DETECTING LEAF PHENOLOGY FROM 6889
PHENOCAM IMAGERY
Mengying Cao, Qinchuan Xin, Guangdong Provincial Key Laboratory of Urbanization and Geo-simulation, School of Geography and Planning, Sun Yat-sen University, China

FR2.MM-12: FORESTS AND BIOMASS FROM SPACE II

FR2.MM-12.1: ESTIMATION OF FOREST SURFACE DEAD FUEL LOADS BASED ON 6893
MULTI-SOURCE REMOTE SENSING DATA
Li Yanxi, He Binbin, University of Electronic Science and Technology of China, China; Kong Peng, Xu Hao, Zhang Qiang, Institute of Spacecraft System Engineering (ISSE), China; Quan Xingwen, University of Electronic Science and Technology of China, China

FR2.MM-12.2: THE FIRST ABOVE-GROUND BIOMASS MAP OF THE PHILIPPINES 6897
PRODUCED USING REMOTE SENSING AND MACHINE LEARNING
Arnan Araza, Martin Herold, Lars Hein, Wageningen University and Research, Netherlands; Marcela Quiñones, SarVision, Netherlands

FR2.MM-12.3: TEMPORAL MAPPING OF GRASSLAND ABOVEGROUND BIOMASS IN 6901
QINGHAI PROVINCE FROM LANDSAT 8 AND SENTINEL-2
Yixin Jiang, University of Electronic Science and Technology of China, China; Peng Kong, Hao Xu, Qiang Zhang, Institute of Spacecraft System Engineering (ISSE), China; Xingwen Quan, Binbin He, University of Electronic Science and Technology of China, China

FR2.MM-12.5: GEOGRAPHICALLY WEIGHTED REGRESSION MODELING USING OPTICAL 6909
AND LIDAR DATA TO MAP ABOVEGROUND BIOMASS OF URBAN TREES
Linze Bai, Yuxuan Shu, Wuhan University, China; Jiaqi Qian, University College London, United Kingdom; Sihang Zhang, Zhenfeng Shao, Wuhan University, China

FR2.MM-12.6: ZERO DEFORESTATION AGREEMENT ASSESSMENT AT FARM LEVEL IN 6913
COLOMBIA USING ALOS PALSAR: CHALLENGES OF MONITORING SYSTEMS AIMED TO
REDUCE DEFORESTATION
Carlos Pedraza, Earth Big Data / Universidad del Rosario, Colombia; Nicola Clerici, Universidad del rosario, Colombia; Cristhian Fabian Forero, Instituto de Hidrología, Meteorología, y Estudios Ambientales-IDEAM, Colombia; America Melo, The Nature Conservancy, Colombia

FR2.MM-12.7: COMPARISON OF LIGHT USE EFFICIENCY, PLANT PHENOLOGY INDEX, 6917
AND LIGHT RESPONSE FUNCTION-BASED GPP MODELS IN THE NORTHERN FOREST
LANDSCAPE
Sofia Junttila, Natascha Kljun, Lars Eklundh, Lund University, Sweden

FR2.MM-13: THERMAL AND NON-OPTICAL MONITORING OF URBAN AREAS

FR2.MM-13.1: TEMPORAL NORMALIZATION OF LAND SURFACE TEMPERATURE 6921
RETRIEVED FROM LANDSAT-8 DATA
Jie Wang, Guanghui Wang, Yu Liu, Jianwei Qi, Land Satellite Remote Sensing Application Center of The Ministry of Natural Resources, China

FR2.MM-13.3: DEVELOPMENT OF DOWNSCALED URBAN LAND SURFACE TEMPERATURE 6925 FOR NEW YORK CITY

Abdou Rachid Bah, City University of New York, Graduate Center, United States; Hamidreza Norouzi, New York City College of Technology, United States; Satya Prakash, Divecha Centre for Climate Change, Indian Institute of Science, United States; Makini Valentine, Reginald Blake, New York City College of Technology, United States

FR2.MM-13.4: DEVELOPMENT OF A LONG-TERM DATASET OF CHINA SURFACE URBAN 6928 HEAT ISLAND FOR POLICY MAKING: SPATIO-TEMPORAL CHARACTERISTICS

Lu Niu, Renmin University of China, China; Zhong Peng, Ronglin Tang, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China; Zhengfeng Zhang, Renmin University of China, China

FR2.MM-13.5: SEGMENTATION OF TREE CANOPIES IN URBAN ENVIRONMENTS USING 6932 DILATED CONVOLUTIONAL NEURAL NETWORK

José Martins, Federal University of Mato Grosso do Sul, Brazil; Keiller Nogueira, University of Stirling, United Kingdom; Pedro Zamboni, Paulo Tarso Sanches de Oliveira, Wesley Nunes Gonçalves, Federal University of Mato Grosso do Sul, Brazil; Jefersson A. dos Santos, Federal University of Minas Gerais, UFMG, Brazil; José Marcato Junior, Federal University of Mato Grosso do Sul, Brazil

FR2.MM-13.6: TOWARDS ENABLING DEEP LEARNING-BASED QUESTION-ANSWERING 6936 FOR 3D LIDAR POINT CLOUDS

Rajat Shinde, Surya Durbha, Abhishek Potnis, Pratyush Talreja, Gaganpreet Singh, Indian Institute of Technology Bombay, India

FR2.MM-14: MODELING THE URBAN ENVIRONMENT

FR2.MM-14.1: SIMULATING CITY EXPANSION USING A CA URBAN GROWTH MODEL, 6940 THROUGH A CASE STUDY OF NAIROBI, KENYA

Lingfei Shi, Feng Zhang, Zhenhong Du, Zhejiang University, China

FR2.MM-14.3: SECTORAL ENERGY-CONSUMPTION ESTIMATION BY UNMIXED 6948 NIGHTTIME LIGHT IN SHANGHAI, CHINA

Zhehao Ren, Lixian Zhang, Ministry of Education Key Laboratory for Earth System Modeling, China; Bin Chen, University of California, Davis, United States; Haohuan Fu, Bing Xu, Ministry of Education Key Laboratory for Earth System Modeling, China

FR2.MM-14.4: ANALYSIS OF THE INFLUENCE OF SKY VIEW FACTOR ON URBAN 6952 SURFACE TEMPERATURE BASED ON MULTI-SOURCE DATA

Qianhao Cheng, Qiang Chen, Yuanyuan Li, Beilei Cao, Beijing University of Civil Engineering and Architecture, China

FR2.MM-14.5: MONITORING ARTIFICIAL ISLANDS SUBSIDENCE IN NORTH JAKARTA 6956 USING PERSISTENT AND DISTRIBUTED SCATTERERS INSAR ANALYSIS

Jumpei Takami, University of Washington, Japan

FR2.MM-14.6: ASSESSMENT OF SKY DIFFUSE IRRADIANCE AND BUILDING REFLECTED 6960 IRRADIANCE IN CAST SHADOWS

Manchun Lei, French National Institute of Geographic and Forest Information, France; Yulu Xi, Ecole nationale des sciences géographiques, France; Jean-Philippe Gastellu-Etchegorry, Centre d'Etudes Spatiales de la Biosphère (CESBIO), CNES-CNRS-IRD-UPS, University of Toulouse, France

FR2.MM-14.7: APPLICATION OF TRANSPORTATION SUPERIORITY IN 6964 BEIJING-TIANJIN-HEBEI REGION BASED ON HIGH-RESOLUTION SATELLITE REMOTE SENSING DATA

Shulei Zheng, Hailun Dai, Guanghui Wang, Land Satellite Remote Sensing Application Center, China; Lei Miao, Beijing Siwei Space Digital Technology Co. Ltd, China; Wei Zhang, Land Satellite Remote Sensing Application Center, China

- FR2.MM-14.8: TOWARDS AN INTEGRATE SOLUTION FUSING SATELLITE AND IN-SITU 6968**
MEASUREMENTS FOR A FULL-ASSESSMENT OF TRANSPORT INFRASTRUCTURES
Chiara Clementini, Fabio Del Frate, Daniele Latini, Giovanni Schiavon, Tor Vergata University of Rome, Italy
- FR2.MM-14.9: WETLANDS IN URBAN CONTEXTS: A CASE OF BHOJ WETLAND..... 6972**
Nirupam Das, Surabhi Mehrotra, Maulana Azad National Institute of Technology Bhopal, India
- FR2.MM-14.10: EXTRACTION OF EARTHQUAKE-INDUCED BUILDING DAMAGE USING 6976**
BI-TEMPORAL SPECTRAL AND HEIGHT DATA
Peijun Li, Yuanchu Ke, Xiaoxue Feng, Peking University, China
- FR2.MM-15: REMOTE SENSING APPLICATIONS FOR SOILS AND SOIL MOISTURE**
- FR2.MM-15.1: STAND-ALONE RETRIEVALS OF SOIL MOISTURE AND VEGETATION 6980**
OPACITY USING THE CYGNSS DATA
Qingyun Yan, Shuanggen Jin, Nanjing University of Information Science and Technology, China; Weimin Huang, Memorial University of Newfoundland, Canada; Yan Jia, Nanjing University of Posts and Telecommunications, China
- FR2.MM-15.2: SOIL MOISTURE RETRIEVAL USING STACKED GENERALIZATION: AN 6984**
ENSEMBLE MACHINE LEARNING METHOD
Yuan Cheng, Yuxia Li, University of Electronic Science and Technology of China, China; Huanping Wu, China Meteorological Administration, China; Fan Li, University of Electronic Science and Technology of China, China; Yuzhen Li, ChengDu Software Industry Development Center, China; Lei He, Chengdu University of Information Technology, China
- FR2.MM-15.3: SOIL MOISTURE ESTIMATION OVER CEREAL FIELDS BASED ON SAR 6988**
ALOS-2 DATA
Emna Ayari, Université de Carthage, Institut National Agronomique de Tunisie / Centre d'Etudes de la Biosphère (CNES/CNRS/INRAE/IRD/UPS), Tunisia; Zeineb Kassouk, Zohra Lili Chabaane, Université de Carthage, Institut National Agronomique de Tunisie, Tunisia; Safa Bousbih, Université de Carthage, Institut National Agronomique de Tunisie / Centre d'Etudes de la Biosphère (CNES/CNRS/INRAE/IRD/UPS), Tunisia; Nicolas Baghdadi, University of Montpellier, France; Mehrez Zribi, Centre d'Etudes Spatiales de la Biosphère (CNES/CNRS/INRAE/IRD/UPS), France
- FR2.MM-15.4: SMAP VALIDATION EXPERIMENT 2019-2022 (SMAPVEX19-22): DETECTION OF 6992**
SOIL MOISTURE UNDER TEMPERATE FOREST CANOPY
Andreas Colliander, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Michael Cosh, US Department of Agriculture, United States; Sidharth Misra, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Laura Bourgeau-Chavez, Michigan Tech Research Institute, United States; Vicky Kelly, Cary Institute of Ecosystem Studies, United States; Paul Siqueira, University of Massachusetts Amherst, United States; Alexandre Roy, University of Quebec at Trois-Rivieres, United States; Tarendra Lakhankar, NOAA Center for Earth System Sciences and Remote Sensing Technologies (CESSRST), United States; Simon Kraatz, University of Massachusetts Amherst, United States; Alexandra G. Konings, Stanford University, United States; Mehmet Kurum, Mississippi State University, United States; Dara Entekhabi, Massachusetts Institute of Technology, United States; Peggy O'Neill, NASA Goddard Space Flight Center, United States; Simon Yueh, NASA Jet Propulsion Laboratory, California Institute of Technology, United States
- FR2.MM-15.5: GLOBAL ESTIMATION OF SURFACE SOIL MOISTURE USING NEURAL 6996**
NETWORKS TRAINED BY IN-SITU MEASUREMENTS AND PASSIVE L-BAND TELEMTRY
Alireza Mahmoodi, Nemesio Rodríguez-Fernández, Philippe Richaume, Yann Kerr, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France
- FR2.MM-15.6: SENSITIVITY OF MULTIPATH PEAK FREQUENCY OF NAVIGATION WITH 7000**
INDIAN CONSTELLATION (NAVIC) TOWARDS SURFACE SOIL MOISTURE OVER BARE LAND
Sushant Shekhar, Rishi Prakash, Graphic Era Deemed University, India; Dharmendra Kumar Pandey, Indian Space Research Organisation, India; Anurag Vidyarthi, Graphic Era Deemed University, India; Shivani Tyagi, Deepak Putrevu, Arundhati Misra, Indian Space Research Organisation, India

FR2.MM-15.7: SOIL MOISTURE TEMPORAL STABILITY ANALYSIS IN GENHE WATERSHED OBSERVATION NETWORK	7004
<i>Xiyao Fang, Lingmei Jiang, Beijing Normal University, China</i>	
 FR2.MM-16: REMOTE SENSING APPLICATIONS IN INLAND WATERS AND WETLANDS II	
FR2.MM-16.1: MAPEO-WATER: DRONE DATA PROCESSING INTO WATER QUALITY PRODUCTS	7008
<i>Liesbeth De Keukelaere, Robrecht Moelans, Els Knaeps, VITO, Belgium</i>	
FR2.MM-16.2: HIGH-RESOLUTION MAPPING OF RAINWATER HARVESTING SYSTEM CAPACITY FROM SATELLITE DERIVED PRODUCTS IN SOUTH INDIA	7011
<i>Claire Pascal, Université Paul Sabatier, France; Sylvain Ferrant, Institut de Recherche pour le Développement (IRD), France; Adrien Selles, Jean-Christophe Maréchal, Université de Montpellier, France; Simon Gascoin, Olivier Merlin, Centre National de la Recherche Scientifique (CNRS), France</i>	
FR2.MM-16.3: FY-3D/MERSI GLOBAL SURFACE WATER EXTRACTION BASED ON DNN METHOD	7015
<i>Kuanle Bao, University of Electronic Science and Technology of China, China; Jinlong Fan, China Meteorological Administration, China; Wenbo Xu, University of Electronic Science and Technology of China, China; Chunliang Zhao, Wenhui Du, Chinese Academy of Agricultural Sciences, China</i>	
FR2.MM-16.4: RIVER DETECTION AND WIDTH CALCULATION	7019
<i>Bocheng Peng, Yan Chen, Yunping Chen, Youchun Lu, Chunliang Xu, University of Electronic Science and Technology of China, China</i>	
FR2.MM-16.5: MAPPING OF PEATLAND DRAINAGE CANALS IN INDONESIA USING POLARIZATION DATA OF ALOS-2 PALSAR-2	7023
<i>Haemi Park, Takeo Tadono, Japan Aerospace Exploration Agency (JAXA), Japan</i>	
FR2.MM-16.6: CO2 MODELLING FROM EDDY COVARIANCE MEASUREMENTS FOR BIEBRZA WETLANDS	7027
<i>Katarzyna Misiura, IGIK, Poland; Katarzyna Dąbrowska-Zielińska, Radosław Gurdak, Institute of Geodesy and Cartography, Poland; Patryk Tadeusz Grzybowski, University of Warsaw, Poland; Marcin Kluczek, IGIK, Poland</i>	
FR2.MM-16.7: MONITORING PHOSPHATE LEVELS USING UNMANNED AERIAL VEHICLES ON GEOTHERMAL WATER POOLS	7031
<i>Cesar Ivan Alvarez Mendoza, Victor Noroña, Universidad Politécnica Salesiana, Ecuador; Ana Cláudia Teodoro, Universidade do Porto, Portugal</i>	
 FR2.MM-17: CLOUDS AND AEROSOL DETECTION	
FR2.MM-17.1: SIMULATION STUDY OF PRECIPITATION USING SPACEBORNE SYNTHETIC APERTURE RADAR	7220
<i>Shashank S Joshil, V Chandrasekar, Colorado State University, United States; Kevin R Maschhoff, Martin F Ryba, BAE Systems, United States; Yanting Wang, U.S. Naval Research Laboratory, United States</i>	
FR2.MM-17.2: PRECIPITATION RETRIEVAL USING THE MWHTS AND MWTS ON CHINA METEOROLOGICAL SATELLITE	7224
<i>Na Li, Shengwei Zhang, Jieying He, Chinese Academy of Sciences, China</i>	
FR2.MM-17.3: POWER SPECTRAL RATIO FOR ESTIMATING THE LIQUID WATER CONTENT BETWEEN TWO COROTATING LEO SATELLITES	7228
<i>Fabrizio Cuccoli, CNIT, Italy; Luca Facheris, Fabrizio Argenti, University of Florence, Italy; Agnese Mazzinghi, CNIT, Italy; Andrea Antonini, Lamma, Italy; Luca Rovai, Lamma, CNR IBE, Italy</i>	

FR2.MM-17.4: A CLOUD DETECTION ALGORITHM FOR ENTEROMORPHA IN YELLOW SEA: PSEUDO-INVARIANT FEATURE-BASED RELATIVE RADIOMETRIC CORRECTION ALGORITHM	7232
<i>Xianci Wan, Jianhua Wan, Mingming Xu, Hui Sheng, China University of Petroleum (East China), China</i>	
FR2.MM-17.5: CLOUD SEGMENTATION OF SENTINEL-2 IMAGES USING CONVOLUTIONAL NEURAL NETWORK WITH DOMAIN ADAPTATION	7236
<i>Antonio Mazza, Pasquale Sepe, Giovanni Poggi, Giuseppe Scarpa, University Federico II, Italy</i>	
FR2.MM-17.6: BIAS CORRECTION OF SATELLITE RETRIEVALS OF OROGRAPHIC PRECIPITATION	7240
<i>Luyao Sun, Ocean University of China and Colorado State University, United States; Haonan Chen, Colorado State University, United States; Lei Han, Ocean University of China, China</i>	
FR2.MM-17.7: A NOVEL WAY TO CALCULATE SHORTWAVE BLACK CARBON DIRECT RADIATIVE FORCING	7244
<i>Wei Chen, Zhe Wang, Hengyang Wang, Xuepeng Zhang, China University of Mining and Technology, China</i>	
FR2.MM-17.8: ANALYSIS OF FACTORS AFFECTING PM2.5 CONCENTRATION IN THE MOUNTAINOUS AREAS OF JAPAN THROUGH GROUND OBSERVATIONS AND SIMULATIONS	7248
<i>Makiko Nakata, Tatsuaki Moriyama, Itaru Sano, Kindai University, Japan; Sonoyo Mukai, Kyoto College of Graduate Studies for Informatics, Japan</i>	
FR2.MM-17.9: MEASURING CO2 CONCENTRATION BY AIRBORNE LIDAR	7252
<i>Tianqi Shi, Ge Han, Xin Ma, Wuhan University, China</i>	
 FR2.MM-18: ATMOSPHERIC APPLICATIONS: WEATHER AND AEROSOL MONITORING	
FR2.MM-18.1: A SNOW WATER EQUIVALENT RETRIEVAL FRAMEWORK COUPLING MICROWAVE REMOTE SENSING AND HYDROLOGY MODEL	7256
<i>Chunzeng Luo, Shurun Tan, Zhejiang University, China; Do-Hyuk Kang, University of Maryland, United States</i>	
FR2.MM-18.2: METHODS OF THE POLAR LOW MONITORING AND MODELING	7260
<i>Alexandra Kuznetsova, Alexander Dosaev, Nikita Rusakov, Evgeny Poplavsky, Yuliya Troitskaya, Institute of Applied Physics, Russian Academy of Sciences, Russia</i>	
FR2.MM-18.3: EVALUATION OF 3DVAR DATA ASSIMILATION WITH AUTOMATIC WEATHER STATION DATA FOR HEAVY RAINFALL FORECASTING IN THAILAND	7263
<i>Thippawan Thodsan, Falin Wu, Beihang University, China; Kritanai Torsri, Ministry of Higher Education Science Research and Innovation, Thailand; Gongliu Yang, Beihang University, China</i>	
FR2.MM-18.5: GENERATING SPATIAL DISTRIBUTION OF VOLCANIC ASH SPREAD	7271
<i>Malini Krishnan, International Institute of Information Technology - Hyderabad, India; Krishnan Sundara Rajan, International Institute of Information Technology, Hyderabad, India</i>	
FR2.MM-18.6: GROUND POLLUTION SOURCE TARGET DETECTION BASED ON MODIS AND SENTINEL-5P PRODUCTS	7275
<i>Ziwei Yuan, Yunping Chen, Yue Yang, Yuanlei Cheng, Xiang Guo, University of Electronic Science and Technology of China, China; Yuan Sun, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Yan Chen, University of Electronic Science and Technology of China, China</i>	
FR2.MM-18.7: VARIATION OF SATELLITE-DERIVED AEROSOL OPTICAL DEPTH OVER CHINA BEFORE AND AFTER THE COVID-19 PANDEMIC	7279
<i>Qingmiao Ma, Yingjie Li, Shuguo Wang, Peipei Cui, Jiangsu Normal University, China</i>	
FR2.MM-18.8: SENSITIVITY OF MIXING STATES ON ABSORPTION OF BLACK CARBON AEROSOLS WITH DIVERSE MONOMER SIZES	7283
<i>Lijuan Zheng, Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of China, China; Yu Wu, Aerospace Information Research Institute, Chinese Academy of Sciences, China</i>	

FR2.MM-18.9: REMOTE ESTIMATION OF SULFUR CONTENT IN FUEL FROM SO₂ AND CO₂ QUANTIFICATION OF SHIP EXHAUST PLUMES	7287
<i>Jean-Philippe Gagnon, Martin Martin Larivière-Bastien, Jacob Thibodeau, Stephane Boubanga Tombet, Telops inc., Canada</i>	
 FR2.MM-19: OCEAN SURFACE WINDS	
FR2.MM-19.1: MULTI-OBSERVABLE WIND SPEED RETRIEVAL BASED ON SPACEBORNE GNSS-R DELAY DOPPLER MAPS	7580
<i>Jinwei Bu, Kegen Yu, Shuai Han, Changyang Wang, China University of Mining and Technology, China</i>	
FR2.MM-19.2: A COMPARISON OF QUALITY INDICATORS FOR KU-BAND WIND SCATTEROMETRY & FOR TYPHOONS LEKIMA AND KROSA	7584
<i>Xingou Xu, Key Laboratory of Microwave Remote Sensing, National Space Science Center, China; Ad Stoffelen, Royal Netherlands Meteorological Institute [KNMI], Netherlands; Marcos Portabella, Institute of Marine Sciences (ICM-CSIC), Spain; Wenming Lin, School of Marine Sciences, China; Xiaolong Dong, Key Laboratory of Microwave Remote Sensing, National Space Science Center, China</i>	
FR2.MM-19.3: WIND DIRECTION ESTIMATION AND ACCURACY RETRIEVAL FROM SENTINEL-1 SAR IMAGES UNDER THERMAL AND DYNAMICAL UNSTABLE CONDITIONS	7588
<i>Romain Husson, Collecte Localisation Satellites, France; Nicolas Longépé, European Space Agency (ESA), Italy; Alexis Mouche, IFREMER, France; Henrick Berger, Chunze Lin, Collecte Localisation Satellites, France; Olivier Archer, IFREMER, France; Aurélien Colin, Collecte Localisation Satellites, France</i>	
FR2.MM-19.4: BIOGEOCHEMICAL RESPONSE OF THE UPPER OCEAN TO TWO SEQUENTIAL TROPICAL CYCLONES	7592
<i>Jue Ning, Qing Xu, Hohai University, China</i>	
FR2.MM-19.6: UMASS SIMULTANEOUS FREQUENCY MICROWAVE RADIOMETER (USFMR) INSTRUMENT DESCRIPTION, CURRENT AND FUTURE WORK	7600
<i>Jezabel Vilardell Sanchez, University of Massachusetts Amherst, United States; Joseph Sapp, Global Science & Technology, Inc, United States; Zorana Jelenak, Paul S. Chang, NOAA/NESDIS/STAR, United States; Stephen Frasier, University of Massachusetts Amherst, United States</i>	
FR2.MM-19.7: WIND SPEED RETRIEVAL ALGORITHM FOR KU-BAND RADAR ONBOARD GPM SATELLITE	7604
<i>Mariya Panfilova, Vladimir Karaev, Leonid Mitnik, Institute of Applied Physics, Russian Academy of Sciences, Russia</i>	
 FR2.MM-20: OCEAN COLOUR, TEMPERATURE AND SALINITY	
FR2.MM-20.1: VALIDATION SATELLITE SEA SURFACE TEMPERATURE IN THE COASTAL REGIONS	7607
<i>Eun-Young Lee, Kyung-Ae Park, Seoul National University, South Korea</i>	
FR2.MM-20.2: ACCURACY OF SEA SURFACE TEMPERATURE FROM SMR OF THE HY-2B COMPARED WITH IN-SITU DATA IN 2020	7611
<i>Shishuai Wang, Beijing Piesat Information Technology Co., Ltd., China; Wu Zhou, National Satellite Ocean Application Service, China; Xiaobin Yin, Yan Li, Beijing Piesat Information Technology Co., Ltd., China</i>	
FR2.MM-20.3: RETRIEVAL OF SEA SURFACE SKIN TEMPERATURE FROM FY-3C/VIRR DATA IN THE ARCTIC	7615
<i>Zhuomin Li, Lei Guan, Mingkun Liu, Ocean University of China, China</i>	
FR2.MM-20.4: TWO-STEP ALGORITHM FOR SEA SURFACE TEMPERATURE DETERMINATION	7619
<i>Roberto Alonso, National Commission of Space Activities (CONAE), Argentina; Robert Frouin, Scripps Institution of Oceanography (UCSD), United States</i>	

FR2.MM-20.6: REMOTE SENSING BASED ANALYSIS OF CHANGES IN WATER QUALITY - CASE STUDY AT QUINTERO BAY (CHILE)	7627
<i>Kevin Salazar, Guido Staub, University of Concepción, Chile</i>	
FR2.MM-20.7: MAPPING BENTHIC SUBSTRATE TYPE IN A SHALLOW COASTAL AREA USING AIRBORNE HYPERSPECTRAL IMAGES	7631
<i>Wonkook Kim, Pusan National University, Korea (South); Sung Hak Kim, Geostory, Korea (South); Sueng-il Baek, Pusan National University, Korea (South); Hyunkyum Kim, Korea Fisheries Resources Agency, Korea (South); Jaehong Oh, Korea Maritime and Ocean University, Korea (South)</i>	
FR2.MM-20.8: THE WATERCOLOURS PROJECT - PRELIMINARY ASSESSMENT OF CHLOROPHYLL-A VARIABILITY IN THE MALTA SHELF AREA	7634
<i>Adam Gauci, Ankita Misra, University of Malta, Malta; Nikola Krlovic, Mundus Noster Engineering, Serbia; Aldo Drago, University of Malta, Malta; Daniele Ciani, Federico Falcini, Consiglio Nazionale delle Ricerche (CNR-ISMAR), Italy</i>	
FR2.MM-21: SENSOR CALIBRATION IN UAV AND GROUND SYSTEMS	
FR2.MM-21.1: EVOLVING REMOTE SENSING APPLICATIONS AS SYSTEM-OF-SYSTEMS	8181
<i>Ramakrishnan Raman, Honeywell Technology Solutions, India</i>	
FR2.MM-21.2: A MODIFIED SINGLE-CHANNEL ALGORITHM FOR ESTIMATING LAND SURFACE TEMPERATURE FROM UAV TIR IMAGERY	8185
<i>Letian Wei, University of Chinese Academy of Sciences, China; Hua Wu, Chinese Academy of Sciences, China; Xiao-Guang Jiang, Chen Ru, University of Chinese Academy of Sciences, China; Ya-Zhen Jiang, Cai-Xia Gao, Chinese Academy of Sciences, China</i>	
FR2.MM-21.3: TOTAL SUSPENDED SOLIDS (TSS) ESTIMATION OVER A SECTION OF THE UPPER BOGOTA RIVER BASIN (COLOMBIA) THROUGH PROCESSING MULTISPECTRAL IMAGES CAPTURED USING UAV	8189
<i>Carol Chicuzazuque, Javier Sarmiento, Universidad Distrital Francisco José de Caldas, Colombia; Jorge Rodríguez, Universidad Nacional de Colombia, Colombia; Erika Upegui, Universidad Distrital Francisco José de Caldas, Colombia</i>	
FR2.MM-21.4: UAV-BASED OBSERVATIONS FOR SURFACE BRDF CHARACTERIZATION	8193
<i>Daniele Latini, GEO-K, Italy; Ilaria Petracca, Giovanni Schiavon, University of Rome, Italy; Fabrizio Niro, SERCO for ESA, Italy; Stefano Casadio, SERCO, Italy; Fabio Del Frate, University of Rome, Italy</i>	
FR2.MM-21.5: AN END-TO-END PIPELINE FOR ACQUIRING, PROCESSING, AND IMPORTING UAS DATA FOR USE IN THE OPEN DATA CUBE (ODC)	8197
<i>Brian Terry, Joshua Baptist, John Rattz, Otto Wagner, Oguz Yetkin, Sanjay Gowda, Analytical Mechanics and Associates, Inc., United States</i>	
FR2.MM-21.6: ON THE INTERFEROMETRIC CAPABILITIES OF THE PULSON P440 UWB RADAR	8201
<i>Adrian Focsa, Stefan-Adrian Toma, Damian Gorgoteanu, Military Technical Academy, Romania</i>	
FR2.MM-21.7: COMPARISON BETWEEN THREE REGISTRATION METHODS IN THE CASE OF NON-GEOREFERENCED CLOSE-RANGE MULTISPECTRAL IMAGES	8205
<i>Claudio Fernandez, University of New Brunswick, Canada; Ataollah Haddadi, A&L Canada Laboratories Inc., Canada; Brigitte Leblon, University of New Brunswick, Canada; Jinfei Wang, Western University, Canada; Keri Wang, A&L Canada Laboratories Inc., Canada</i>	
FR2.MM-21.8: AN EXTREMELY-LOW COST GROUND-BASED WHOLE SKY IMAGER	8209
<i>Mayank Jain, Isabella Gollini, Michela Bertolotto, Gavin McArdle, Soumyabrata Dev, University College Dublin, Ireland</i>	

FR2.MM-21.9: SIMULATION AND EVALUATION OF AN MM-WAVE MIMO GROUND-BASED SAR IMAGING SYSTEM FOR DISPLACEMENT MONITORING	8213
<i>Benyamin Hosseiny, Jalal Amini, University of Tehran, Iran; Safieddin Safavi-Naeini, University of Waterloo, Canada</i>	
 FR2.MM-22: ADVANCED GNSS METHODS AND SYSTEMS FOR SPATIAL AND TEMPORAL PREDICTIONS	
FR2.MM-22.1: SCANNING GNSS-R BEAMS FROM CUBESATS USING SEQUENTIALLY ROTATED DEPLOYABLE DIPOLES	8538
<i>Valentin Sokolow, Farzad Jabbarigargari, Paul Fisette, Christophe Craeye, UCLouvain, Belgium</i>	
FR2.MM-22.2: IMPROVING SMARTPHONES GNSS ELEVATION ACCURACY USING EMBEDDED SENSORS AND EXTERNAL SOURCES	8542
<i>Elias Issawy, Sagi Dalyot, The Technion, Israel</i>	
FR2.MM-22.3: AMPLITUDE ESTIMATION OF DOMINANT TIDAL CONSTITUENTS USING GNSS INTERFEROMETRIC REFLECTOMETRY TECHNIQUE	8546
<i>Yusof Ghiasi, University of Waterloo, Canada; Saeed Farzaneh, Kamal Parvazi, University of Tehran, Iran; Claude R. Duguay, University of Waterloo, Canada</i>	
FR2.MM-22.4: GNSSPY: PYTHON TOOLKIT FOR GNSS DATA	8550
<i>Mustafa Serkan Işık, Volkan Özbey, Serdar Erol, Ergin Tarı, Istanbul Technical University, Turkey</i>	
FR2.MM-22.5: ANALYSIS OF THE EFFECT OF GNSS INTERFERENCE ON HIGH-PRECISION POSITIONING APPLICATIONS OF SATELLITE NAVIGATION SYSTEMS	8554
<i>Yixu Liu, Shengli Wang, Liangliang Hu, Chao Han, Shandong University of Science and Technology, China; Dashuai Chai, Shandong Jianzhu University, China</i>	
FR2.MM-22.6: GNSS-BASED PASSIVE RADAR FOR TARGET DETECTION ALGORITHM AND EXPERIMENTS	8558
<i>Zhenyuan Ji, Lei Yu Zhang, Qiankun Xu, School of Electronic and Information Engineering, Harbin Institute of Technology; Key Laboratory of Marine Environmental Monitoring and Information Processing, Ministry of Industry and Information Technology, China; Guangteng Fan, National Innovation Institute of Defense Technology, Academy of Military Sciences, China; Xin Qi, Yun Zhang, Jin Wei, School of Electronic and Information Engineering, Harbin Institute of Technology; Key Laboratory of Marine Environmental Monitoring and Information Processing, Ministry of Industry and Information Technology, China</i>	
 FR2.MM-23: HAZARD DETECTION AND MONITORING I	
FR2.MM-23.1: SPATIOTEMPORAL CONTRASTIVE REPRESENTATION LEARNING FOR BUILDING DAMAGE CLASSIFICATION	8562
<i>Bo Peng, Qunying Huang, Jinqiang Rao, University of Wisconsin-Madison, United States</i>	
FR2.MM-23.2: STUDY ON THE EXTRACTION OF BUILDING DAMAGE CAUSED BY EARTHQUAKE FROM POLARIMETRIC SAR IMAGE BASED ON IMPROVED FREEMAM DECOMPOSITION	8566
<i>Heng Miao, Xiaoqing Wang, Ling Ding, Xiang Ding, Institute of Earthquake Forecasting, CEA, China</i>	
FR2.MM-23.3: BUILDING DAMAGE DETECTION IN VHR SATELLITE IMAGES VIA MULTI-SCALE SCENE CHANGE DETECTION	8570
<i>Wenjun Zhang, Li Shen, Wenfan Qiao, Southwest Jiaotong University, China</i>	
FR2.MM-23.4: MARINE SHIP TARGET DETECTION IN SAR IMAGE BASED ON GOOGLE EARTH ENGINE	8574
<i>Yu Lei, National University of Defence Technology, China; Xiang Guang Leng, National Defense University of Technology, China; Ke Feng Ji, National University of Defence Technology, China</i>	

- FR2.MM-23.5: USING SYNTHETIC APERTURE RADAR AND RADIOMETER OBSERVATIONS 8578
TO ESTIMATE TROPICAL CYCLONE WIND STRUCTURE AND INTENSITY**
Ziqiang Zhu, Nanjing University of Information Science and Technology, China; Ailing Lv, Shubo Liu, Xi'an Institute of Space Radio Technology, China; Biao Zhang, Nanjing University of Information Science and Technology, China
- FR2.MM-23.6: MARINE LITTER SURVEY AT THE MAJOR SEA TURTLE NESTING ISLANDS 8582
IN THE ARABIAN GULF USING IN-SITU AND REMOTE SENSING METHODS**
Rommel H. Maneja, King Fahd University of Petroleum and Minerals, Saudi Arabia; Rejoice Thomas, Chapman University, United States; Jeffrey D. Miller, King Fahd University of Petroleum and Minerals, Saudi Arabia; Wenzhao Li, Hesham El-Askary, Chapman University, United States; Ace Vincent B. Flandez, Joselito Francis A. Alcaria, Jinoy Gopalan, Abdulrahman Jukhdar, Abdullajid U. Basali, Joshua Dagoy, King Fahd University of Petroleum and Minerals, Saudi Arabia; Sachi Perera, Chapman University, United States; Perdana K. Prihartato, Ronald A. Loughland, Tyas I. Hikmawan, Ali Qasem, SAUDI ARAMCO, Saudi Arabia; Mohamed A. Qurban, Ministry of Environment, Water and Agriculture, Saudi Arabia; Daniele Struppa, Chapman University, United States
- FR2.MM-23.7: SURFACE-DOWNHOLE JOINT REAL-TIME MICROSEISMIC MONITORING 8586
SYSTEM: A CASE STUDY IN A COALMINE LOCATED IN SICHUAN BASIN, CHINA**
Zhiqiang Lan, Yaojun Wang, Peng Wang, Peng Gao, Jiandong Liang, University of Electronic Science and Technology of China, China
- FR2.MM-23.8: SMOULDER DETECTION USING SPLIT-WINDOW ALGORITHM: A CASE 8590
STUDY FROM BAGHJAN OILFIELD, ASSAM, INDIA**
Sandeep Kumar Mondal, Rishikesh Bharti, Indian Institute of Technology Guwahati, India
- FR2.MM-23.9: APPLICATION OF OBJECT BASED IMAGE ANALYSIS IN EARTHQUAKE 8594
EMERGENCY PRODUCTS**
Yayhui Chen, Xiaoyue Gao, Xiaoli Li, Yihao Duan, China Earthquake Networks Center, China
- FR2.MM-24: HAZARD DETECTION AND MONITORING II**
- FR2.MM-24.1: ASSESSMENT OF THE CAPABILITY TO MONITOR OIL INVENTORIES 8597
DURING THE COVID-19 PANDEMIC BY USING SENTINEL-1 DATA**
Omar Barrilero, Michele Lazzarini, Adrian Luna, Paula Saameno, Sergio Albani, Andrea Patrono, European Union Satellite Centre, Spain
- FR2.MM-24.2: SUBSURFACE VOIDS DETECTION FROM LIMITED GROUND 8600
PENETRATING RADAR DATA USING GENERATIVE ADVERSARIAL NETWORK AND YOLOV5**
Guanyi Chen, Xu Bai, Gang Wang, Long Wang, Xuerong Luo, Mingjie Ji, Pengfei Feng, Yang Zhang, Harbin Institute of Technology, China
- FR2.MM-24.3: MONITORING INTERTIDAL BARS AND 3D COASTAL MAPPING USING AN 8604
AUTOMATIC ALGORITHM ON A LIDAR DATASET**
Anne-Lise Montreuil, Margaret Chen, Vrije Universiteit Brussel, Belgium; Robrecht Moelans, Wouter Dierckx, VITO, Belgium; Rik Houthuys, Geoconsultant, Belgium; Albert Pintor Klein, Vrije Universiteit Brussel, Belgium; Patrick Bogaert, UC Louvain, Belgium
- FR2.MM-24.4: URBAN FLOOD MAPPING OF THE JULY 2020 KYUSHU, JAPAN HEAVY RAIN 8608
BASED ON INTERFEROMETRIC COHERENCE OF SENTINEL-1 IMAGES**
Hiroyuki Miura, Naoko Takeya, Hiroshima University, Japan
- FR2.MM-24.5: UTILIZING THE SAR, GIS, AND NOVEL HYBRID METAHEURISTIC-GMDH 8612
ALGORITHM FOR FLOOD SUSCEPTIBILITY MAPPING**
Fatemeh Rezaie, Korea Institute of Geoscience and Mineral Resources (KIGAM), Korea (South); Sayed M. Bateni, University of Hawaii at Manoa, United States; Essam Heggy, University of Southern California, United States; Saro Lee, Korea Institute of Geoscience and Mineral Resources (KIGAM), Iran
- FR2.MM-24.6: DROUGHT MONITORING METHOD BASED ON MULTISCALE REMOTE 8616
SENSING DATA FUSION**
Huayu Li, Jianhua Wan, Shanwei Liu, Jixiang Zhao, China University of Petroleum (East China), China

FR2.MM-24.7: ANOMALY DETECTION IN POST FIRE ASSESSMENT	8620
<i>Mihai Coca, Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB) and Computer Science and Cyber Security Laboratory, Military Technical Academy Ferdinand I of Bucharest, Romania; Mihai Datcu, Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB) and Earth Observation Center (EOC), German Aerospace Center (DLR), Romania</i>	
 FR2.MM-25: HAZARD ASSESSMENT: METHODOLOGY	
FR2.MM-25.1: USING VLF TIME SERIES FROM THE INFREP NETWORK FOR THE STUDY OF PRE-SEISMIC RADIO ANOMALIES	8624
<i>Manilo Monaco, University of Florence, Italy; Giovanni Nico, National Research Council (CNR), Italy; Pier Francesco Biagi, University of Bari, Italy; Anita Ermini, University of Tor Vergata, Italy; Aleksandra Nina, University of Belgrade, Serbia; Mario Giovanni C. A. Cimino, Gigliola Vaglini, University of Pisa, Italy</i>	
FR2.MM-25.2: GLOBAL ASSESSMENT OF DROUGHTS IN THE LAST DECADE FROM SMOS ROOT ZONE SOIL MOISTURE	8628
<i>Ahmad Al Bitar, Ali Mahmoodi, Centre d'Etudes Spatiales de la Biosphère (CESBIO), CNRS, France; Yann Kerr, Nemesio Rodríguez-Fernández, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France; Marie Parrens, Dynafor, France; Stephane Tarot, Ifremer, France</i>	
FR2.MM-25.3: STUDY OF THE EARTH'S MAGNETIC FIELD	8632
<i>Igor Shirokov, Sevastopol State University, Russia; Vladimir Minligareev, David Arutyunyan, E. K. Fedorov Institute of Applied Geophysics, Russia; Kirill Kuznetsov, Moscow State University, Russia</i>	
FR2.MM-25.4: A NEW COMPREHENSIVE DROUGHT INDEX BASED ON RESPONSE ADJUSTMENT FOR VEGETATION TYPES	8636
<i>Guoying Yin, Hongyan Zhang, Liangpei Zhang, Wuhan University, China</i>	
FR2.MM-25.5: ESTIMATION OF THE ATMOSPHERIC MICROWAVE RADIATION PARAMETERS IN TROPICAL CYCLONES FROM THE AMSR2 MEASUREMENT DATA	8640
<i>Elizaveta Zabolotskikh, Russian State Hydrometeorological University, Russia; Bertrand Chapron, Ifremer, France</i>	
FR2.MM-25.6: CAUSATION DISCOVERY OF WEATHER AND VEGETATION CONDITION ON GLOBAL WILDFIRE USING THE PCMCI APPROACH	8644
<i>Yuquan Qu, Carsten Montzka, Harry Vereecken, Juelich Research Center, Germany</i>	
FR2.MM-25.7: WILDFIRE DANGER ASSESSMENT OVER SOUTHWEST CHINA BASED ON SHORT-TERM FEATURES OF WEATHER AND FUEL VARIABLES	8648
<i>Qian Xie, Xingwen Quan, Binbin He, University of Electronic Science and Technology of China, China</i>	
FR2.MM-25.8: SPATIO-TEMPORAL ASSESSMENT OF HUMAN WILDFIRE EXPOSURE IN CHINA FROM 2001 TO 2019	8652
<i>Yufu Liu, Shuhan Lou, Yuqi Bai, Tsinghua University, China</i>	
FR2.MM-25.9: AN ONLINE PLATFORM FOR FULLY-AUTOMATED EO PROCESSING WORKFLOWS FOR DEVELOPERS AND END-USERS ALIKE	8656
<i>Guy Schumann, RSS-Hydro/WASDI, Luxembourg; Paolo Campanella, Fadeout Software/WASDI, Italy; Alberto Tasso, Fadeout Software, Italy; Laura Giustarini, RSS-Hydro, Luxembourg; Patrick Matgen, Marco Chini, Lucien Hoffmann, Luxembourg Institute of Science and Technology, Luxembourg</i>	
FR2.MM-25.10: VQA-AID: VISUAL QUESTION ANSWERING FOR POST-DISASTER DAMAGE ASSESSMENT AND ANALYSIS	8660
<i>Argo Sarkar, Maryam Rahneemofar, University of Maryland Baltimore County, United States</i>	

FR2.MM-26: PRECISION AGRICULTURE I

- FR2.MM-26.1: VIRTUAL ENVIRONMENTS & PRECISION VITICULTURE: A CASE STUDY 7035**
João Lourenço, João Teixeira, Paulo Carvalho, Luís Pádua, Telmo Adão, Emanuel Peres, Joaquim J. Sousa, Universidade de Trás-os-Montes e Alto Douro, Portugal
- FR2.MM-26.2: THE ADDED VALUE OF CYCLE-GAN FOR AGRICULTURE STUDIES..... 7039**
Ecre Sener, Istanbul Technical University, Turkey; Emre Colak, Chemnitz University of Technology, Germany; Esra Erten, Gülşen Taşkın, Istanbul Technical University, Turkey
- FR2.MM-26.3: DETECTION OF AGRICULTURAL ACTIVITY IN CENTER PIVOT AREAS IN 7043**
SOUTHEASTERN BRAZIL
Felipe Rafael de Sá Menezes Lucena, Aline Casassola, Thales Sehn Körting, Leila Maria Garcia Fonseca, Hermann Johann Heinrich Kux, National Institute for Space Research (INPE), Brazil
- FR2.MM-26.4: WEED IDENTIFICATION USING K-MEANS CLUSTERING WITH COLOR 7047**
SPACES FEATURES IN MULTI-SPECTRAL IMAGES TAKEN BY UAV
Rashi Agarwal, UIET, Chhatrapati Shahu Ji Maharaj University, India; Hariharan S Nair, University of Madras, India; Nagabhushana Rao, Vidya Jyothi Institute of Technology, India; Abhishek Agarwal, IIIT Bhubaneshwar, India
- FR2.MM-26.5: USE OF HYPERSPECTRAL PRISMA LEVEL-1 DATA AND ISDA SOIL 7051**
FERTILITY MAP FOR SOIL MACRONUTRIENT AVAILABILITY QUANTIFICATION IN A MOROCCAN AGRICULTURAL LAND
Khalil Misbah, Ahmed Laamrani, Mohammed VI Polytechnic University, Morocco; Abdelghani Chehbouni, Université de Toulouse, France; Driss Dhiba, Mohammed VI Polytechnic University, Morocco; Jamal Ezzahar, Université Cadi Ayyad, Morocco
- FR2.MM-26.6: GRAPEVINE VARIETY IDENTIFICATION THROUGH GRAPEVINE LEAF 7055**
IMAGES ACQUIRED IN NATURAL ENVIRONMENT
Gabriel Carneiro, Luís Pádua, University of Trás-os-Montes e Alto Douro, Portugal; Joaquim J. Sousa, Universidade de Trás-os-Montes e Alto Douro, Portugal; Emanuel Peres, Raul Morais, António Cunha, University of Trás-os-Montes e Alto Douro, Portugal
- FR2.MM-26.7: INVESTIGATING THE PERFORMANCE OF HYPERSPECTRAL AND 7059**
SIMULATED SENTINEL-2 DATA FOR SOYBEAN CANOPY NITROGEN ESTIMATION
Jayantrao Mohite, Suryakant Sawant, Ankur Pandit, Ajay Mittal, Srinivasu Pappula, Tata Consultancy Services, India
- FR3.O-1: OPTICAL AND MICROWAVE SENSING FOR MAPPING, MONITORING AND EARLY WARNING OF NATURAL HAZARDS**
- FR3.O-1.1: NASA DISASTERS PROGRAM: EARTH OBSERVATION FOR ACTIONABLE 1709**
KNOWLEDGE
David Green, National Aeronautics and Space Administration (NASA), United States
- FR3.O-1.3: THE NISAR MISSION'S CAPABILITIES FOR NATURAL HAZARDS MONITORING 1711**
Cathleen Jones, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Manjusree P, National Remote Sensing Centre, Indian Space Research Organisation, India; Srinivasa Rao, Indian Space Research Organisation, India
- FR3.O-1.4: MONITORING OF COASTAL SUBSIDENCE BY COMBINING MULTIPLE 1715**
SENSORS
Michael Willis, Eduard Heijkoop, Kristy Tiampo, Steven Nerem, University of Colorado Boulder, United States
- FR3.O-1.5: SATELLITE REMOTE SENSING FOR FINE SCALE MAPPING AND IMPACT 1719**
ASSESSMENT OF FIRES IN AGROFOREST ECOSYSTEMS
Dimitris Poursanidis, Foundation for Research and Technology Hellas, Greece; Anna Kagiambaki, Region of Crete, Greece; Nektarios Chrysoulakis, Foundation for Research and Technology Hellas, Greece

FR3.O-2: NOISE AND AZIMUTH AMBIGUITY SUPPRESSION TECHNIQUES FOR SAR DATA

FR3.O-2.1: ANALYSIS AND SUPPRESSION FOR PERIODICITY TRANSMITTED 3149 NARROW-BAND INTERFERENCE FOR SAR

Muyang Zhan, Penghui Huang, Shanghai Jiao Tong University, China; Dong Yang, Weiwei Wang, Academy of Space Electronic Information Technology, China; Jialian Sheng, Shanghai Radio Equipment Research Institute, China; Zhicheng Wang, Xingzhao Liu, Shanghai Jiao Tong University, China

FR3.O-2.2: AZIMUTH AMBIGUITIES SUPPRESSION FOR MULTICHANNEL SAR IMAGING 3153 BASED ON $L_2(Q)$ REGULARIZATION: INITIAL RESULTS OF NON-SPARSE SCENARIO

Mingqian Liu, Jie Li, Zhe Zhang, Bingchen Zhang, Yirong Wu, Aerospace Information Research Institute, Chinese Academy of Sciences, China

FR3.O-2.3: LINEAR PROGRAMMING BASED SIDELobe SUPPRESSION FOR SAR IMAGE 3157 OPTIMIZATION

Ruyi Deng, Xiang Tian, University of Electronic Science and Technology of China, China; Zhen-Mei Kang, Southwest China Institute of Electronic Technology, China; Bingqing Hong, University Of Electronic Science And Technology Of China, China; Wen-Q Wang, University of Electronic Science and Technology of China, China

FR3.O-2.4: IMPROVED SUBAPERTURE BASED APERTURE-DEPENDENT MOTION 3161 COMPENSATION BASED ON ADAPTIVE BLOCKING AND APODIZATION

Rifat Afroz, University of Adelaide, Australia; Rolf Scheiber, German Aerospace Center (DLR), Germany; Brian Ng, Derek Abbott, University of Adelaide, Australia

FR3.O-2.5: EXPLOITING AERIAL IMAGERY FOR SUPERVISED LEARNING OF SAR 3165 DESPECKLING NEURAL NETWORKS

Lloyd Hughes, Shaunak De, Davide Castelletti, Ganesh Yalla, Capella Space Corporation, United States

FR3.O-3: SENSORS AND CALIBRATION

FR3.O-3.1: LOW PAPR OFDM-CHIRP MODULATION SIGNALING SCHEME..... 7963

Wenkai Jia, Wen-Qin Wang, Jie Cheng, Yudian Hou, University of Electronic Science and Technology of China, China; Zhenmei Kang, Southwest China Institute of Electronic Technology, China

FR3.O-3.2: HEIGHT MEASUREMENT OF MICRO-UAVS WITH L-BAND STARRING RADAR 7967

Rui Guo, Yue Zhang, Biao Tian, Shiyong Xu, Zengping Chen, Sun Yat-Sen University, China

FR3.O-3.3: USING AN INERTIAL NAVIGATION SYSTEM FOR GRAVIMETRIC APPLICATIONS. 7971 A COMPARATIVE STUDY BETWEEN AN INS, A MICROGRAVITY METER AND A SEISMOMETER.

Benjamin Beirens, José Darrozes, Guillaume Ramillien, Seoane Lucia, Geosciences Environnement Toulouse, France

FR3.O-3.4: ATMOSPHERIC PHASE DRIFT ANALYSIS AND COMPENSATION IN PERMANENT 7974 GB-SAR MONITORING OF CROP FIELDS

Hector Palacio, Antoni Broquetas, Alberto Aguasca, Universitat Politècnica de Catalunya, Spain

FR3.O-3.5: IN SITU EXPLORATION OF SOIL LEAD IN RESIDENTIAL COMMUNITIES 7978 USING X-RAY FLUORESCENCE AND GEOSPATIAL VISUALIZATION

Benjamin Roth, Krystle Harrell, Benjamin Wallen, Mindy Kimball, William Wright, US Military Academy, United States

FR3.O-4: REMOTE SENSING OF ATMOSPHERIC POLLUTION I

FR3.O-4.1: ASSESSMENT OF SIBERIAN PERMAFROST IN THE CLIMATE CHANGE REGIME 1723

Costas Varotsos, National and Kapodistrian University of Athens, Greece; Vladimir Krapivin, Kotelnikov's Institute of Radioengineering and Electronics, Fryazino Branch, Russian Academy of Sciences, Russia; Yong Xue, China University of Mining and Technology, China

FR3.O-4.3: YET MORE EVIDENCE AGAINST THE 2D-3D TURBULENCE MODEL: 1727 CLOUDSAT CLOUD DISTRIBUTIONS CONFIRM THE 23/9 (2.55 D) SCALING, STRATIFIED, TURBULENCE MODEL	
<i>Shaun Lovejoy, McGill University, Canada</i>	
FR3.O-4.4: FY-4A AOD BASED ESTIMATES THE MASS CONCENTRATION OF PM2.5 AND PM10 1731 ON LAND	
<i>Yuxin Sun, Yong Xue, Kai Qin, Xiran Zhou, Xingxing Jiang, Chunlin Jin, Shuhui Wu, China University of Mining and Technology, China</i>	
FR3.O-4.5: ADVANCED ALGORITHM FOR AEROSOL RETRIEVAL FROM SENTINEL-2 1735 MULTISPECTRAL INSTRUMENT DATA	
<i>Yingjie Li, Fang Chen, Shuguo Wang, Ming Li, Qingmiao Ma, Jiangsu Normal University, China</i>	
FR3.O-4.6: VALIDATION AND LONG TERM VARIATION ANALYSIS OF SATELLITE-DERIVED 1739 AIR POLLUTION COMPONENTS	
<i>Fang Chen, Yingjie Li, Qingmiao Ma, Shuguo Wang, Jiangsu Normal University, China</i>	
 FR3.O-5: INTERNATIONAL SPACEBORNE SAR MISSIONS COORDINATION AND COLLABORATION	
FR3.O-5.1: INTERNATIONAL COORDINATION OF FUTURE SPACEBORNE SAR MISSIONS - 1743 AN OVERVIEW	
<i>Maurice Borgeaud, European Space Agency (ESA), Italy; Charles Elachi, California Institute of Technology, United States</i>	
FR3.O-5.3: A REVIEW OF SAR OBSERVATION REQUIREMENTS FOR GLOBAL AND 1745 TARGETED SCIENCE APPLICATIONS	
<i>Ake Rosenqvist, solo Earth Observation (soloEO), Japan; Cathleen Jones, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Eric Rignot, University of California, Irvine, United States; Mark Simons, California Institute of Technology, United States; Paul Siqueira, University of Massachusetts Amherst, United States; Takeo Tadono, Japan Aerospace Exploration Agency (JAXA), Japan</i>	
FR3.O-5.5: PRESENT AND FUTURE DATA VISIBILITY AND ACCESS OF INTERNATIONAL 1753 VIRTUAL SAR CONSTELLATION	
<i>Shin-ichi Sobue, Japan Aerospace Exploration Agency (JAXA), Japan; Gerald Bawden, NASA, United States; Raj Kumar, Indian Space Research Organisation, India; Shiro Kawakita, Japan Aerospace Exploration Agency (JAXA), Japan; Manil Maskey, NASA, United States; Wasanchai Vongsantivanich, GISTDA, Thailand; David Sandwell, UCSD, United States</i>	
FR3.O-5.6: SAOCOM-1B INDEPENDENT COMMISSIONING PHASE RESULTS 1757	
<i>Laura Fioretti, Davide Giudici, Pietro Guccione, Andrea Recchia, Martin Steinisch, Aresys s.r.l., Italy</i>	
 FR3.O-6: THERMAL REMOTE SENSING FOR ADVANCED MONITORING AND ASSESSMENT OF NATURAL AND ANTHROPOGENIC HAZARDS	
FR3.O-6.1: MONITORING MULTI-DECADAL VARIATIONS OF URBAN HEAT ISLAND 1761 INTENSITY	
<i>George Xian, United States Geological Survey (USGS) Earth Resources Observation and Science Center, United States; Hua Shi, ASRC Federal Data Solutions (AFDS), Contractor to the USGS EROS, United States; Kevin Gallo, NOAA/NESDIS, Center for Satellite Applications and Research, United States</i>	
FR3.O-6.2: SATIRIM: TOWARDS A THERMAL IR SMALL SATELLITES CONSTELLATION 1765	
<i>Joris Blommaert, VITO, Belgium; Stefan Lesschaeve, OIP, Belgium; Jonathan Leon Tavares, Dirk Nuyts, Bavo Delauré, Anne Gobin, Jan Dries, VITO, Belgium; Lieve De Vos, OIP, Belgium</i>	

FR3.O-6.3: INTEGRATING SATELLITE THERMAL IMAGERY AND GLOBAL WEATHER	1769
DATASETS FOR OPERATIONAL ACTUAL EVAPOTRANSPIRATION MAPPING AND DROUGHT EARLY WARNING APPLICATIONS	
<i>Gabriel Senay, U.S. Geological Survey, United States; Stefanie Kagone, ASRC Federal Data Solutions LLC, United States; Claudia Young, Innovate!, United States; Cheryl Holen, Maxwell Mcelhone, KBR, United States; Michael Budde, James Rowland, U.S. Geological Survey, United States</i>	
FR3.O-6.4: TEXTURE FEATURE ANALYSIS OF THERMAL INFRARED IMAGE IN	1773
EARTHQUAKE DAMAGED AREAS	
<i>Xiwei Fan, Gaozhong Nie, Xun Zeng, Chaoxu Xia, Institute of Geology, China Earthquake Administration, China</i>	
FR3.O-6.5: LAND SURFACE TEMPERATURE DIFFERENCES BETWEEN NATURAL AND	1777
ARTIFICIAL TURF SPORTS FIELDS AS ESTIMATED FROM SATELLITE: EXAMPLES FROM THE UNITED STATES AND EUROPE	
<i>Vasco Mantas, University of Coimbra, Portugal; George Xian, U.S. Geological Survey, United States</i>	
FR3.O-7: MULTI-TEMPORAL DINSAR DATA PROCESSING	
FR3.O-7.1: NON-GAUSSIAN EXTENSIONS FOR THE DETECTION OF PERSISTENT	3169
SCATTERERS: ADDRESSING THE LIMITATIONS OF GAUSSIAN MODELS FOR INSAR IMAGERY	
<i>Stacey Huang, Howard Zebker, Stanford University, United States</i>	
FR3.O-7.2: TROPOSPHERIC EXCESS PATH DELAY COMPENSATION ON WRAPPED	3173
GROUND-BASED SAR INTERFEROGRAMS	
<i>Francesco Falabella, University of Basilicata, Italy; Angela Perrone, Tony Alfredo Stabile, Institute of Methodologies for Environmental Analysis (IMAA) - National Research Council (CNR), Italy; Antonio Pepe, Institute for the Electromagnetic Sensing of the Environment (IREA) - National Research Council (CNR), Italy; Carmine Serio, University of Basilicata, Italy</i>	
FR3.O-7.3: A NEW PHASE UNWRAPPING METHOD COMBINING MINIMUM COST FLOW	3177
WITH DEEP LEARNING	
<i>Zhipeng Wu, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Teng Wang, Peking University, China; Yingjie Wang, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Daqing Ge, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, China</i>	
FR3.O-7.4: FADING SIGNAL: AN OVERLOOKED ERROR SOURCE FOR DISTRIBUTED	3181
SCATTERER INTERFEROMETRY	
<i>Homa Ansari, Francesco De Zan, Alessandro Parizzi, German Aerospace Center (DLR), Germany</i>	
FR3.O-7.5: A STOCHASTIC MODEL FOR INSAR TIMESERIES: ESTIMATION AND	3185
PROPAGATION FOR REDUCED DATASETS	
<i>Sami Samiei-Esfahany, University of Tehran, Iran; Freek J. van Leijen, Ramon F. Hanssen, Delft University of Technology, Netherlands</i>	
FR3.O-7.6: IMPACT OF SAR IMAGE RESOLUTION ON THE PERFORMANCE OF THE	3189
AMPLITUDE DISPERSION OPTIMIZATION FOR POLARIMETRIC PERSISTENT SCATTERER INTERFEROMETRY	
<i>Feng Zhao, China University of Mining and Technology, China; Jordi J. Mallorqui, CommSensLab, Universitat Politècnica de Catalunya, Spain; Juan M. Lopez-Sanchez, IUII, Universitat d'Alacant, Spain</i>	
FR3.O-8: DATA PROCESSING FOR HYPERSPECTRAL UNMIXING AND TARGET DETECTION	
FR3.O-8.1: GRADIENT-BASED NMF METHODS FOR HYPERSPECTRAL UNMIXING	3205
ADDRESSING SPECTRAL VARIABILITY WITH A MULTIPLICATIVE-TUNING LINEAR MIXING MODEL	
<i>Fatima Zohra Benhalouche, Moussa Sofiane Karoui, Agence Spatiale Algérienne, Centre des Techniques Spatiales, Algeria; Yannick Deville, Institut de Recherche en Astrophysique et Planétologie, France</i>	

FR3.O-8.2: HOW TO CONSTRUCT A DEEP NETWORK-BASED HYPERSPECTRAL TARGET DETECTOR? ----- A LSTM INSPIRED METHOD	3193
<i>Dehui Zhu, Bo Du, Liangpei Zhang, Wuhan University, China</i>	
FR3.O-8.3: MULTIPLE INSTANCE CONSTRAINED ENERGY MINIMIZATION FOR DISCRIMINATIVE HYPERSPECTRAL TARGET CHARACTERIZATION	3197
<i>Changzhe Jiao, Bo Yang, Jinjian Wu, Xidian University, China</i>	
FR3.O-8.4: LEARNING BASED ATMOSPHERIC COMPENSATION: RESULTS ON PRISMA DATA	3201
<i>Nicola Acito, University of Pisa, Italy; Marco Diani, Accademia Navale, Italy; Giovanni Corsini, University of Pisa, Italy</i>	
FR3.O-8.5: DYNAMIC UPDATE OF KRONECKER LEAST ANGLE REGRESSION FOR FAST UNMIXING OF HYPERSPECTRAL IMAGING DATA	3209
<i>Ahmed Elrewayny, Military Technical College, Egypt; Sherif Sherif, University of Manitoba, Canada</i>	
FR3.O-8.6: BAYESIAN DETECTION OF SOLID SUBPIXEL TARGETS	3213
<i>James Theiler, Los Alamos National Laboratory, United States; Stefania Matteoli, National Research Council (CNR), Italy; Amanda Ziemann, Los Alamos National Laboratory, United States</i>	
 FR3.O-9: INFORMATION EXTRACTION AND CLASSIFICATION FOR REMOTE SENSING IMAGES	
FR3.O-9.1: MODIFIED STRUCTURE-AWARE COLLABORATIVE REPRESENTATION FOR HYPERSPECTRAL IMAGE CLASSIFICATION	3217
<i>Chiranjibi Shah, Qian Du, Mississippi State University, United States</i>	
FR3.O-9.2: INTEGRATED GABOR-BASED DECISION FUSION FOR HYPERSPECTRAL IMAGE CLASSIFICATION	3221
<i>Runlin Cai, Chenying Liu, Jun Li, Sun Yat-Sen University, China</i>	
FR3.O-9.3: POLYGONAL PARTITION-BASED HYPERSPECTRAL IMAGE CLASSIFICATION WITH SINGLE LABELED SAMPLE	3225
<i>Shuo Zhang, Xiaohui Wei, Xudong Kang, Puhong Duan, Shutao Li, Hunan University, China</i>	
FR3.O-9.4: AN ACTIVE LEARNING STRATEGY FOR SVM-BASED CAPTIONING	3229
<i>Genc Hoxha, Farid Melgani, University of Trento, Italy</i>	
FR3.O-9.5: MULTI-LABEL HYPERSPECTRAL CLASSIFICATION WITH DISCRIMINATIVE FEATURES	3233
<i>Shuai Fang, Kun Zhang, YiBin Wang, Jing Zhang, Hefei University of Technology, China; Yang Cao, University of Science and Technology of China, China; WeiKai Shi, Macau University of Science and Technology, China</i>	
FR3.O-9.6: FAST ACCURATE SUPERVISED CLOUD ANNOTATION	3237
<i>Christien Williams, Massachusetts Institute of Technology, United States; Tristan Dagobert, Université Paris-Saclay, France; Carlo de Franchis, Université Paris-Saclay & Kayros, France; Jean-Michel Morel, Université Paris-Saclay, France; Charles Hessel, Université Paris-Saclay & Kayros, France</i>	
 FR3.O-10: CEOS AND THE PRIVATE SECTOR: INTERACTIONS AND EARLY PROGRESS ON ANALYSIS READY DATA	
FR3.O-10.1: CEOS ANALYSIS READY DATA AND THE PRIVATE SECTOR: EARLY PROGRESS AND THE WAY FORWARD	1781
<i>Adam Lewis, Andreia Siqueira, Jonathon Ross, Geoscience Australia, Australia; Alex Held, Flora Kerblat, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia</i>	

FR3.O-10.3: USGS CEOS ANALYSIS READY DATA FOR LAND ACHIEVEMENTS AND FUTURE PLANS	1785
<i>Christopher Barnes, KBR contractor to the U.S. Geological Survey, United States; Andreia Siqueira, Geoscience Australia, Australia; Steven Labahn, U.S. Geological Survey, United States</i>	
FR3.O-10.4: ANALYSIS READY DATA FOR AFRICA	1789
<i>Fang Yuan, Adam Lewis, Alex Leith, Tishampati Dhar, David Gavin, Geoscience Australia, Australia</i>	
FR3.O-10.5: ADVANCEMENTS IN THE OPEN DATA CUBE AND THE USE OF ANALYSIS READY DATA IN THE CLOUD	1793
<i>Brian Killough, NASA, United States; Syed Rizvi, Andrew Lubawy, Analytical Mechanics and Associates, Inc., United States</i>	
FR3.O-10.6: INTERCOMPARISON OF SENTINEL-1 DATASETS FROM GOOGLE EARTH ENGINE AND THE SINERGISE SENTINEL HUB CARD4L TOOL	1796
<i>George Dyke, Symbios Communications, Australia; Ake Rosenqvist, solo Earth Observation, soloEO, Japan; Brian Killough, NASA Langley, United States; Fang Yuan, Geoscience Australia, Australia</i>	
 FR3.O-11: COASTAL TOPOGRAPHY	
FR3.O-11.1: AN IMPROVED APPROACH FOR MONITORING INTERTIDAL TOPOGRAPHY USING THE WATERLINE METHOD	7484
<i>Edward Salameh, CNRS/M2C, France; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Imen Turki, Benoit Laignel, University of Rouen Normandy/M2C, France</i>	
FR3.O-11.2: MULTIMISSIION/MULTIFREQUENCY SAR FOR IMPROVING THE MONITORING OF COASTAL AREAS	7480
<i>Maria Daniela Graziano, Roberto Del Prete, Alfredo Renga, University of Naples Federico II, Italy</i>	
FR3.O-11.3: MONITORING THE INTERTIDAL TOPOGRAPHY USING THE FUTURE SWOT MISSION	7476
<i>Edward Salameh, CNRS/M2C, France; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Damien Desroches, CNES, France; Imen Turki, University of Rouen Normandy/M2C, France; Denis Carbonne, CNES, France; Benoit Laignel, University of Rouen Normandy/M2C, France</i>	
FR3.O-11.6: RECONSTRUCTION OF MISSING DATA IN SATELLITE IMAGES OF THE SOUTHERN NORTH SEA USING A CONVOLUTIONAL NEURAL NETWORK (DINCAE)	7493
<i>Alexander Barth, Aida Alvera-Azcárate, Charles Troupin, Jean-Marie Beckers, University of Liège, Belgium; Dimitry Van der Zande, Royal Belgium Institute of Natural Sciences, Belgium</i>	
 FR3.O-12: MULTIMODAL DATA ANALYSIS	
FR3.O-12.1: MULTI-MODAL SELF-SUPERVISED REPRESENTATION LEARNING FOR EARTH OBSERVATION	3241
<i>Pallavi Jain, Bianca Phelan, Robert John Ross, Technological University Dublin, Ireland</i>	
FR3.O-12.2: SIMILARITY MEASURE WITH ADDITIONAL MODALITY INFORMATION FOR MULTIMODAL REMOTE SENSING IMAGES	3245
<i>Mykhail M. Uss, National Aerospace University, Ukraine; Benoit Vozel, University of Rennes 1, France; Vladimir V. Lukin, National Aerospace University, Ukraine; Kacem Chehdi, University of Rennes 1, France</i>	
FR3.O-12.3: SUBSPACE OPTIMAL TRANSPORT FOR SPATIAL BIAS CORRECTION OF SOCIAL MEDIA DATA: A CASE STUDY OF 2013 BOULDER FLOOD EVENT	3249
<i>Zhenjie Liu, Jun Li, Sun Yat-Sen University, China; Javier Plaza, Antonio Plaza, University of Extremadura, Spain</i>	
FR3.O-12.4: THE FIELD CAMPAIGN EXPLORER	3257
<i>Geoffrey Stano, Yuling Wu, Navaneeth Selvaraj, University of Alabama in Huntsville, United States; Manil Maskey, Ajinkya Kulkarni, National Aeronautics and Space Administration (NASA), United States</i>	

FR3.O-12.5: CUMULATIVE ASSESSMENT FOR URBAN 3D MODELING..... 3261
Shea Hagstrom, Hee Won Pak, Stephanie Ku, Sean Wang, Gregory Hager, Myron Brown, Johns Hopkins University, United States

FR3.O-13: GEOINFORMATION FOR HAZARDS MONITORING, DISASTER RISK REDUCTION AND EMERGENCY RESPONSE

FR3.O-13.1: SAR AMPLITUDE EXPLOITATION FOR SYSTEMATIC LANDSLIDE FAILURE 1800
DETECTION
Alessandro Mondini, Consiglio Nazionale delle Ricerche, Italy

FR3.O-13.3: MONITORING NATURAL AND ANTHROPOGENIC GEOHAZARDS WITH SAR BIG 1804
DATA: SUCCESSFUL EXPERIENCES USING THE GEOHAZARDS EXPLOITATION PLATFORM
Francesca Cigna, Deodato Tapete, Italian Space Agency (ASI), Italy

FR3.O-13.4: RAPID MAPPING OF LANDSLIDES TRIGGERED BY THE STORM ALEX, 1808
OCTOBER 2020
Nikhil Prakash, Andrea Manconi, ETH Zurich, Switzerland

FR3.O-13.5: LANDSLIDE INFORMATION SYSTEM FOR DISASTER RISK FINANCING: EARTH 1812
OBSERVATION AND MODELLING PRODUCTS FOR NEAR-REAL-TIME ASSESSMENT
Clément Michoud, Terranum Sàrl, Switzerland; Jean-Philippe Malet, Ecole et Observatoire des Sciences de la Terre, CNRS/Université de Strasbourg, France; Thierry Oppikofer, Terranum Sàrl, Switzerland; Robert Emberson, Dalia Kirschbaum, NASA Goddard Space Flight Center, United States; Fabrizio Pacini, Terradue srl., Italy; Pascal Horton, Terranum Sàrl, Switzerland; Anne Puissant, Laboratoire Image Ville Environnement, CNRS/Université de Strasbourg, France; Paolo Mazzanti, NHAZCA srl, Italy; Mélanie Pateau, Agence Nationale de la Recherche, France; Abder Oulidi, Abderrahim Chaffai, Lahsen Ait Brahim, Fonds de Solidarité contre les Évènements Catastrophiques - FSEC, Morocco

FR3.O-13.6: IN-SITU AND PROXIMAL SENSING TECHNIQUES FOR MONITORING 1815
NATURALS HAZARDS TO MITIGATE RISK IN TOURISM ACTIVITIES: A CASE STUDY IN THE
GEOPARC BLETTERBACH, ITALY
Abraham Mejia-Aguilar, Eurac Research, Italy; Giulio Maria Bianco, Tor Vergata University of Rome, Italy; Gaetano Marrocco, University of Rome Tor Vergata, Italy; Anna Voegelé, Michiel Jan van Veelen, Giacomo Strapazzon, Eurac Research, Italy

FR3.O-14: RADIO FREQUENCY INTERFERENCE (RFI) IN PASSIVE MICROWAVE SENSORS

FR3.O-14.1: A PRE-CORRELATION RFI MITIGATION ALGORITHM FOR L-BAND 1819
INTERFEROMETRIC RADIOMETERS
Jorge Querol, University of Luxembourg, Luxembourg; Adriano Camps, Adrian Perez, Universitat Politècnica de Catalunya, Spain; Roger Oliva, Raul Onrubia, Zenithal Blue Technologies, Spain; Juan Ignacio Ramirez-Martinez, Albert Zurita, Airbus Defence and Space, Spain; Martin Suess, Manuel Martin-Neira, European Space Agency (ESA), Netherlands

FR3.O-14.3: ON THE DETECTION OF RFI THROUGH THE CORRELATION ANOMALY AT 1823
DIFFERENT TIME LAGS
Raúl Díez-García, Adriano Camps, Universitat Politècnica de Catalunya, Spain

FR3.O-14.4: RESULTS FROM THE GROUND RFI DETECTION SYSTEM FOR PASSIVE 1827
MICROWAVE EARTH OBSERVATION DATA
Roger Oliva, Raul Onrubia, Zenithal Blue technologies, Spain; Antonio Martellucci, Elena Daganzo-Eusebio, Flavio Jorge, Yan Soldo, ESA / ESTEC, Netherlands; Stephen English, Patricia de Rosnay, Peter Weston, European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; Jose Barbosa, Ioannis Nestoras, Research and Development in Aerospace GmbH, Switzerland

FR3.O-14.5: SMOS RFI DETECTION BASED ON REWEIGHTED L1-NORM MINIMIZATION..... 1831
Dong Zhu, Huazhong University of Science and Technology, China; Gang Li, Tsinghua University, China

FR3.O-14.6: ARCTIC SEA ICE MONITORED AT L-BAND: INITIAL RESULTS AND RFI FINDINGS 1835

Steen Savstrup Kristensen, Sten Schmidl Søbjaerg, Jan E. Balling, Niels Skou, Technical University of Denmark, Denmark

FR3.O-15: IEEE GRSS DATA FUSION CONTEST I

FR3.O-15.2: MULTISOURCE DATA FUSION FOR THE DETECTION OF SETTLEMENTS WITHOUT ELECTRICITY 1839

Yanbiao Ma, Yuxin Li, Kexin Feng, Xueli Geng, Licheng Jiao, Fang Liu, Yuting Yang, Xidian University, China

FR3.O-15.3: A MULTI-MODEL FUSION OF CONVOLUTION NEURAL NETWORK AND RANDOM FOREST FOR DETECTING SETTLEMENTS WITHOUT ELECTRICITY 1843

Yu Xia, Qi Huang, Hongyan Zhang, Wuhan University, China

FR3.O-15.4: MULTI-BRANCH DEEP LEARNING MODEL FOR DETECTION OF SETTLEMENTS WITHOUT ELECTRICITY 1847

Thomas Di Martino, ONERA, CentraleSupélec, Université Paris-Saclay, France; Maxime Lenormand, Independent, France; Elise Colin Koeniguer, ONERA, Université Paris-Saclay, France

FR3.O-15.5: DO-UNET, DO-LINKNET: UNET, D-LINKNET WITH DO-CONV FOR THE DETECTION OF SETTLEMENTS WITHOUT ELECTRICITY CHALLENGE 1851

Ruoxian Feng, Mengjiao Wang, Xuanming Zhang, Jun Zhang, Licheng Jiao, Xu Liu, Fang Liu, Xidian University, China

FR3.O-16: VEGETATION RETRIEVALS USING FLUORESCENCE AND OTHER OPTICAL METHODS

FR3.O-16.1: ANALYSIS OF THE INFLUENCE OF LEAF INCLINATION ANGLE DISTRIBUTION ON THE LEAF AREA INVERSION OF ISOLATED TREE BASED ON TERRESTRIAL LASER SCANNING 6395

Shiyu Cheng, Guangjian Yan, Beijing Normal University, China; Ronghai Hu, University of Chinese Academy of Sciences, China; Hailan Jiang, Beijing Normal University, China

FR3.O-16.2: GLOBAL L-BAND VEGETATION VOLUME FRACTION ESTIMATES FOR MODELING VEGETATION OPTICAL DEPTH 6399

David Chaparro, Universitat Politècnica de Catalunya, Spain; Thomas Jagdhuber, German Aerospace Center (DLR), Germany; Maria Piles, Universitat de València, Spain; Dara Entekhabi, Massachusetts Institute of Technology, United States; François Jonard, Forschungszentrum Jülich, Germany; Anke Fluhrer, German Aerospace Center (DLR), Germany; Andrew Feldman, Massachusetts Institute of Technology, United States; Mercè Vall-llossera, Adriano Camps, Universitat Politècnica de Catalunya, Spain

FR3.O-16.3: FIRST RETRIEVALS OF ASCAT IB VOD (VEGETATION OPTICAL DEPTH) AT GLOBAL SCALE 6403

Xiangzhuo Liu, Université de Bordeaux, France; Jean-Pierre Wigneron, INRAE, France; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France; Nicolas Baghdadi, University of Montpellier, France; Mehrez Zribi, Université de Toulouse, France; Thomas Jagdhuber, German Aerospace Center (DLR), Germany; Philippe Ciais, Université Paris-Saclay, France; Xiaojun Li, Université de Bordeaux, France; Mengjia Wang, Beijing Normal University, China; Lei Fan, Southwest University, China; Bertrand Ygorra, Université de Bordeaux, France; Hongliang Ma, Wuhan University, China; Zanpin Xing, Southwest University, China; Amen Al-Yaari, Sorbonne Université, France; Roberto Fernandez-Moran, University of Valencia, Spain; Christophe Moisy, INRAE, France

FR3.O-16.4: VEGETATION OPTICAL DEPTH RETRIEVAL FROM CYGNSS DATA 6407

Xiaolan Xu, Simon Yueh, Rashmi Shah, Akiko Hayashi, NASA Jet Propulsion Laboratory, United States

FR3.O-16.5: SOLAR-INDUCED CHLOROPHYLL FLUORESCENCE IS VERY SENSITIVE TO 6411 DROUGHT

Ruonan Qiu, Ge Han, Xin Ma, Wei Gong, Wuhan University, China

FR3.O-16.6: EMULATION OF SUN-INDUCED FLUORESCENCE FROM RADIANCE DATA 6415 RECORDED BY THE HYPLANT AIRBORNE IMAGING SPECTROMETER

Miguel Morata Dolz, Universidad de Valencia, Spain; Bastian Siegmann, Forschungszentrum Jülich, Germany; Pablo Morcillo-Pallarés, Universidad de Valencia, Spain; Juan Pablo Rivera-Caicedo, Universidad Autonoma de Nayarit, Mexico; Jochem Verrelst, Universidad de Valencia, Spain

FR3.O-17: CROP ASSESSMENT, YIELD ESTIMATION AND MODELING

FR3.O-17.1: FORECASTING WHEAT YIELD USING REMOTE SENSING: THE ARYA 6419 FORECASTING SYSTEM

Belen Franch, Universitat de Valencia, Spain / University of Maryland, United States; Eric Vermote, NASA Goddard Space Flight Center, United States; Sergii Skakun, Andres Santamaria-Artigas, Natacha Kalecinski, Jean-Claude Roger, University of Maryland / NASA GSFC, United States; Inbal Becker-Reshef, Brian Barker, University of Maryland, United States; José Antonio Sobrino, Universitat de Valencia, Spain; Chris Justice, University of Maryland, United States

FR3.O-17.2: IMPROVING SURFACE EVAPOTRANSPIRATION COMPONENTS THROUGH 6423 ASSIMILATING SOIL MOISTURE AND LAND SURFACE TEMPERATURE INTO FAO-56 MODEL

Abdelhakim Amazirh, Mohammed VI Polytechnic University (UM6P), Morocco, Center for Remote Sensing Applications (CRSA), Morocco; Salah Er-Raki, Mohammed VI Polytechnic University (UM6P), Center for Remote Sensing Applications (CRSA); ProcEDE, Département de Physique Appliquée, Faculté des Sciences et Techniques, Université Cadi Ayyad, Morocco; Olivier Merlin, Centre d'Etudes Spatiales de la Biosphère (CESBIO), Université de Toulouse, CNES, CNRS, IRD, UPS, France; Abdelghani Chehbouni, Mohammed VI Polytechnic University (UM6P), Center for Remote Sensing Applications (CRSA); Centre d'Etudes Spatiales de la Biosphère (CESBIO), Université de Toulouse, CNES, CNRS, IRD, UPS, Morocco

FR3.O-17.3: ALTERNATIVE SIMULATION OF CROP WATER RADIOMETRY 6427

Richard Cirone, Brian Hornbuckle, Iowa State University, United States; Anton Kruger, University Of Iowa, United States

FR3.O-17.4: MODELING SPATIAL-TEMPORAL WINE YIELD BASED ON LAND SURFACE 6431 TEMPERATURE, VEGETATION INDICES AND GIS - THE CASE OF THE DOURO WINE REGION

Pedro Moreira, Faculty of Sciences of the University of Porto, Portugal; Lia Duarte, Mário Cunha, Ana Cláudia Teodoro, Faculty of Sciences of the University of Porto; Institute for Systems and Computer Engineering, Technology and Science (INESC-TEC), Portugal

FR3.O-17.5: INCLUDING RADAR SOIL MOISTURE INTO TWO-SOURCE ENERGY BALANCE 6435 MODEL FOR IMPROVING TURBULENT FLUXES ESTIMATES

Bouchra Ait Hssaine, Abdelghani Chehbouni, Mohammed VI Polytechnic University, Morocco; Salah Er-Raki, Saïd Khabba, Jamal Ezzahar, Nadia Ouaadi, Cadi Ayyad University, Morocco; Vincent Rivalland, Olivier Merlin, Centre d'Etudes Spatiales de la Biosphère (CESBIO), France

FR3.O-17.6: ESTIMATION OF NORMAL RICE YIELD CONSIDERING HEADING STAGE 6439 BASED ON OBSERVATION DATA AND SATELLITE IMAGERY

Yuki Sofue, Chiharu Hongo, Naohiro Manago, Chiba university, Japan; Gunardi Sigit, Regional Office of Food Crops Service West Java Province, Indonesia; Koki Homma, Tohoku University, Japan; Baba Barus, Bogor Agricultural University, Indonesia

FR3.O-18: REMOTE SENSING OF SOIL PROPERTIES

FR3.O-18.1: ON THE RED TO FAR-RED RATIOS OF LIGHT PROPAGATED BY SAND-TEXTURED SOILS 6443

Gladimir Baranoski, Mark Iwanchyshyn, Bradley Kimmel, Petri Varsa, Spencer Van Leeuwen, University of Waterloo, Canada

FR3.O-18.2: ASSESSMENT OF FOUR MODEL-BASED SURFACE SOIL TEMPERATURE PRODUCTS UNSING GLOBAL DENSE IN SITU OBSERVATIONS 6447

Hongliang Ma, Wuhan University, China; Jiangyuan Zeng, Chinese Academy of Sciences, China; Jean-Pierre Wigneron, INRAE, France; Xiang Zhang, Nengcheng Chen, Wuhan University, China; Xiaojun Li, INRAE, France; Amen Al-Yaari, Sorbonne Université, France; Xiangzhuo Liu, Mengjia Wang, INRAE, France; Lei Fan, Southwest University, China; Frédéric Frappart, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (LEGOS), France

FR3.O-18.3: ALL-WEATHER DAILY EVAPOTRANSPIRATION DATA PRODUCT BASED ON MICROWAVE AND THERMAL INFRARED SATELLITE OBSERVATIONS 6451

Li Fang, University of Maryland, United States; Xiwu Zhan, Mitchell Schull, Satya Kalluri, NOAA/STAR, United States; Christopher Hain, NASA/SPoRT, United States; Martha Anderson, USDA Agricultural Research Service, United States; Istvan Laszlo, NOAA/STAR, United States

FR3.O-18.4: A FRAMEWORK FOR COUPLED ESTIMATION OF EVAPOTRANSPIRATION AND RECHARGE FLUX BY ASSIMILATING REMOTELY SENSED LAND SURFACE TEMPERATURE AND SOIL MOISTURE OBSERVATION 6455

Asif Mahmood, Leila Farhadi, Parisa Heidary, George Washington University, United States

FR3.O-18.5: A REDUCED-ADJOINT VARIATIONAL DATA ASSIMILATION FOR ESTIMATING SOIL MOISTURE PROFILE FROM SURFACE SOIL MOISTURE OBSERVATIONS 6458

Parisa Heidary, Leila Farhadi, George Washington University, United States; Muhammad Umer Altaf, King Abdullah University of science and Technology, Saudi Arabia

FR3.O-18.6: INVERSION OF TOTAL COPPER CONTENT IN MINING SOILS WITH DIFFERENT SPECTRAL PRETREATMENT TECHNIQUES USING AHSI/ZY1-02D DATA 6461

Kun Shang, Land Satellite Remote Sensing Application Center, Ministry of Natural Resources of China, China; He Gu, Beijing SatImage Information Technology Co. Ltd., China; Yayu Yang, China University of Geosciences, China

FR3.O-19: HIGH TEMPERATURE HAZARDS

FR3.O-19.1: SPECTRAL RULE-BASED EXPERT SYSTEM FOR AUTOMATIC NEAR REAL-TIME THERMAL ANOMALIES DETECTION IN GEOSTATIONARY GOES-16 ABI IMAGERY 8408

Luiz Fernando Rocha de Carvalho, Luiss Guido Carli University, Brazil; Giovanni Laneve, Sapienza University of Rome, Italy; Andrea Baraldi, Italian Space Agency, Italy; Giancarlo Santilli, University of Brasilia, Brazil

FR3.O-19.2: SHORT-TERM RESPONSES OF LAND SURFACE TEMPERATURE ANOMALIES TO EARTHQUAKES IN CHINA 8412

Zhong-Hu Jiao, Xinjian Shan, Institute of Geology, China Earthquake Administration, China

FR3.O-19.3: NEAR REAL-TIME WILDFIRE DETECTION IN SOUTHWESTERN CHINA USING HIMAWARI-8 DATA 8416

Yongqin Zhang, Binbin He, University of Electronic Science and Technology of China, China; Peng Kong, Hao Xu, Qiang Zhang, Institute of Spacecraft System Engineering, China; Xingwen Quan, Gengke Lai, University of Electronic Science and Technology of China, China

FR3.O-19.4: MAPPING SAVANNA WILDFIRES IN SOUTHERN BELIZE USING SENTINEL-1 SAR AND OBJECT BASED IMAGE ANALYSIS 8420

Christopher Halliday, Neil Stuart, University of Edinburgh, United Kingdom; Iain Cameron, Environment Systems Ltd, United Kingdom

FR3.O-19.5: APPLICATION OF S-BAND NOVASAR-1 TO BUSHFIRES IN AUSTRALIA.....	8424
<i>Amy Parker, Catherine Ticehurst, Zheng-Shu Zhou, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia; Tristan Ward, University of Western Australia, Australia</i>	
FR3.O-19.6: THE 2019 RAIKOKE ERUPTION: ASH DETECTION AND RETRIEVALS USING S3-SLSTR DATA	8428
<i>Ilaria Petracca, Davide De Santis, Tor Vergata University of Rome, Italy; Stefano Corradini, Lorenzo Guerrieri, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Matteo Picchiani, GEO-K s.r.l, Italy; Luca Merucci, Dario Stelitano, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Fabio Del Frate, Tor Vergata University of Rome, Italy; Fred Prata, AIRES Pty Ltd., Australia; Giovanni Schiavon, Tor Vergata University of Rome, Italy</i>	
FR3.O-20: REMOTE SENSING FOR MINERAL AND OIL & GAS EXPLORATION, PRODUCTION AND MONITORING	
FR3.O-20.1: IMAGING SPECTROSCOPY APPLIED TO MINERAL MAPPING OVER LARGE AREAS: IMPACT OF RESIDUAL ATMOSPHERIC ARTEFACTS IN REFLECTANCE SPECTRA ON MINERAL IDENTIFICATION AND MAPPING	1855
<i>Raymond Kokaly, Gregg Swayze, K. Eric Livo, Todd Hoefen, Bernard Hubbard, John Meyer, Evan Cox, Will Gnesda, US Geological Survey, United States</i>	
FR3.O-20.3: MINERAL MAPPING OF THE BATTLE MOUNTAIN DISTRICT, NEVADA, USA, USING AVIRIS-CLASSIC AND SPECTIR INC. AISAFENIX 1K IMAGING SPECTROMETER DATASETS	1859
<i>John Meyer, Colorado School of Mines - U.S. Geological Survey, United States; Elizabeth Holley, Colorado School of Mines, United States; Todd Hoefen, Raymond Kokaly, Gregg Swayze, US Geological Survey, United States</i>	
FR3.O-20.4: HOW CAN DRONES CONTRIBUTE TO MINERAL EXPLORATION?.....	1867
<i>René Booyesen, Sandra Lorenz, Robert Jackisch, Richard Gloaguen, Yuleika Madriz, Helmholtz-Zentrum Dresden-Rossendorf, Germany</i>	
FR3.O-20.5: ASSESSING SCIENTIFIC AND INDUSTRY GRADE SWIR AIRBORNE IMAGING SPECTROMETERS FOR CH4 MAPPING	1871
<i>Rebecca D.P.M. Scafutto, University of Campinas – UNICAMP, Brazil; Harald van der Werff, Wim H. Bakker, Freek van der Meer, ITC - University of Twente, Netherlands; Carlos Roberto de Souza Filho, University of Campinas – UNICAMP, Brazil</i>	
FR3.O-20.6: AN INFORMED NMF-BASED UNMIXING APPROACH FOR MINERAL DETECTION AND MAPPING IN THE ALGERIAN CENTRAL HOGGAR USING PRISMA REMOTE SENSING HYPERSPECTRAL DATA	1863
<i>Fatima Zohra Benhalouche, Oussama Benabbou, Lahsen Wahib Kebir, Ahmed Bennia, Moussa Sofiane Karoui, Agence Spatiale Algérienne, Centre des Techniques Spatiales, Algeria; Yannick Deville, Institut de Recherche en Astrophysique et Planétologie, France</i>	
FR4.O-1: ITALIAN SAR TECHNOLOGY AND PROGRAMMES FOR EARTH ADVANCED MONITORING AND ASSESSMENT OF HAZARDS	
FR4.O-1.1: ASI ROADMAP IN TECHNOLOGY AND PROGRAMMES FOR EARTH ADVANCED MONITORING AND ASSESSMENT OF HAZARDS	1875
<i>Roberto Formaro, Francesco Longo, Giancarlo Natale Varacalli, Luca Fasano, Vincenzo Pulcino, Italian Space Agency (ASI), Italy</i>	
FR4.O-1.5: SATELLITE SAR DATA EXPLOITATION: INNOVATIONS AND POTENTIALITIES FOR EARTH OBSERVATION ADVANCED MONITORING AND SERVICING	1887
<i>Axel Oddone, Filippo Daffinà, Dino Quattrociochi, Elena Francioni, Vittorio Gentile, Federica Pieralice, Lucio Cesarano, Filippo Britti, Luca Pietranera, Federico Minati, Lucia Luzietti, Domenico Grandoni, Pier Francesco Cardillo, Mariano Alfonso Biscardi, Francesca Bonetto, e-GEOS SpA, Italy</i>	

FR4.O-1.6: NOVEL PERSPECTIVES IN THE MONITORING OF TRANSPORT 1891
INFRASTRUCTURES BY SENTINEL-1 AND COSMO-SKYMED MULTI-TEMPORAL SAR
INTERFEROMETRY

Valerio Gagliardi, Luca Bianchini Ciampoli, Fabrizio D'Amico, Roma Tre University, Italy; Amir M. Alani, Fabio Tosti, University of West London (UWL), United Kingdom; Maria Libera Battagliere, Italian Space Agency (ASI), Italy; Andrea Benedetto, Roma Tre University, Italy

FR4.O-2: MASS PROCESSING AND TIME-SERIES ANALYSIS OF REMOTE SENSING DATA FOR THE STUDY AND MONITORING OF GEOHAZARDS

FR4.O-2.1: TERRASCOPE ENABLES GEOHAZARD MONITORING USING THE SENTINEL 1895
SATELLITE CONSTELLATION

Jurgen Everaerts, Dennis Clarijs, VITO, Flemish Institute for Technological Research, Belgium

FR4.O-2.3: MASTER: A FULL AUTOMATIC MULTI-SATELLITE INSAR MASS PROCESSING 1899
TOOL FOR RAPID INCREMENTAL 2D GROUND DEFORMATION TIME SERIES

Nicolas d'Oreye, National Museum of Natural History/European Center for Geodynamics and Seismology, Luxembourg; Dominique Derauw, Universidad Nacional de Rio Negro, Argentina; Sergey Samsonov, Canada Centre for Mapping and Earth Observation, Natural Resources Canada, Canada; Maxime Jaspard, Delphine Smittarello, European Center for Geodynamics and Seismology, Luxembourg

FR4.O-2.4: VOLCANIC HAZARD MONITORING USING MULTI-SOURCE SATELLITE 1903
IMAGERY

Gaetana Ganci, Giuseppe Bilotta, Sonia Calvari, Annalisa Cappello, Ciro Del Negro, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Alexis Herault, Conservatoire national des arts et métiers, France

FR4.O-2.5: TERRAIN DEFORMATION MEASUREMENTS FROM OPTICAL SATELLITE 1907
IMAGERY: ON-LINE PROCESSING SERVICES FOR GEOHAZARDS MONITORING

Floriane Provost, Jean-Philippe Malet, Ecole et Observatoire des Sciences de la Terre, CNRS UMS 830 - Université de Strasbourg, France; David Michéa, Application Satellite Survey, A2S - CNRS/Université de Strasbourg, France; Marie-Pierre Doin, Pascal Lacroix, Institut des Sciences de la Terre, CNRS UMR 5275 - OSUG/Université Grenoble-Alpes, France; Enguerran Boissier, Terradue, France; Elisabeth Pointal, ForM@Ter - Pôle de Données Terre Solide, CNRS, Université Paris Diderot, France; Philippe Bally, European Space Agency - ESA/ESRIN, France

FR4.O-2.6: GLOBAL MONITORING OF VOLCANIC SO₂ DEGASSING USING SENTINEL-5 1911
PRECURSOR TROPOMI

Nicolas Theys, Royal Belgian Institute for Space Aeronomy, Belgium; Hugues Brenot, Isabelle De Smedt, Christophe Lerot, BIRA-IASB, Belgium; Pascal Hedelt, Diego Loyola, German Aerospace Center (DLR), Belgium; Jonas Vlietinck, Huan Yu, BIRA-IASB, Belgium; Benoît Smets, François Kervyn, Royal Museum for Central Africa (RMCA), Belgium; Julien Barrière, Adrien Oth, Nicolas d'Oreye, European Center for Geodynamics and Seismology (ECGS), Belgium; Michel Van Roozendaal, BIRA-IASB, Belgium

FR4.O-3: MEASURING AND UNDERSTANDING THE DYNAMIC NATURE OF SOLAR-INDUCED FLUORESCENCE AND PHOTOSYNTHESIS ACROSS SCALES

FR4.O-3.1: ADVANCES IN THE RETRIEVAL AND INTERPRETATION OF SOLAR-INDUCED 1915
VEGETATION CHLOROPHYLL FLUORESCENCE USING PASSIVE REMOTE SENSING
TECHNIQUES

Jose Moreno, University of Valencia, Spain

FR4.O-3.4: MEASURING SOLAR-INDUCED FLUORESCENCE FROM UNMANNED AIRCRAFT 1921
SYSTEMS FOR OPERATIONAL USE IN PLANT PHENOTYPING AND PRECISION FARMING

Juliane Bendig, Forschungszentrum Jülich, Germany; Christine Yao-Yun Chang, Cornell University, United States; Na Wang, Wageningen University, Netherlands; Jonathan M. Atherton, University of Helsinki, Finland; Zbyněk Malenovský, University of Tasmania, Australia; Uwe Rascher, Forschungszentrum Jülich, Germany

**FR4.O-3.5: BEYOND APAR AND NPQ: FACTORS COUPLING AND DECOUPLING SIF AND 1925
GPP ACROSS SCALES**

Albert Porcar-Castell, University of Helsinki, Finland; Zbyněk Malenovský, University of Tasmania, Australia; Troy Magney, University of California, Davis, United States; Shari Van Wittenberghe, University of Valencia, Spain; Beatriz Fernández-Marín, University of La Laguna, Spain; Fabienne Maignan, Université Paris-Saclay, France; Yongguang Zhang, Nanjing University, China; Kadmiel Maseyk, The Open University, United Kingdom; Jonathan M. Atherton, University of Helsinki, Finland; Loren P. Albert, West Virginia University, United States; Thomas Matthew Robson, University of Helsinki, Finland; Feng Zhao, Beihang University, China; Jose-Ignacio Garcia-Plazaola, University of the Basque Country, Spain; Ingo Ensminger, University of Toronto, Canada; Paulina A. Rajewicz, University of Helsinki, Finland; Steffen Grebe, Mikko Tikkanen, University of Turku, Finland; James R. Kellner, Brown University, United States; Janne A. Ihalainen, University of Jyväskylä, Finland; Uwe Rascher, Forschungszentrum Jülich, Germany; Barry Logan, Bowdoin College, United States

FR4.O-4: REMOTE SENSING OF ATMOSPHERIC POLLUTION II

**FR4.O-4.1: RETRIEVAL OF AEROSOL OPTICAL DEPTH OVER LAND USING FY-4A AGRI 1931
GEOSTATIONARY SATELLITE DATA**

Xingxing Jiang, Yong Xue, Chunlin Jin, Rui Bai, Na Li, Yuxin Sun, China University of Mining and Technology, China

**FR4.O-4.3: RANDOM FOREST MODEL FOR PM2.5 CONCENTRATION IN CHINA USING 1935
HIMAWARI-8 HOURLY AOD PRODUCT**

Xin Li, Yingjie Li, Qingmiao Ma, Shuguo Wang, Jiangsu Normal University, China

**FR4.O-4.4: THE IMPACT OF THE “AIR POLLUTION PREVENTION AND CONTROL ACTION 1939
PLAN” ON PM 2.5 CONCENTRATION IN CHINA DURING 2014-2019**

Xin Li, Qingmiao Ma, Yingjie Li, Shuguo Wang, Jiangsu Normal University, China

FR4.O-5: SAR SIMULATIONS, IMAGING AND IMAGE FILTERING

**FR4.O-5.1: ASSESSMENT OF NONLOCAL MEANS STOCHASTIC DISTANCES SPECKLE 3265
REDUCTION FOR SAR TIME SERIES**

Juan Doblaz, INPE, Brazil; Alejandro C. Frery, Victoria University of Wellington, New Zealand; Sidnei Sant’Anna, Arian Carneiro, INPE, Brazil; Yosio Edemir Shimabukuro, National Institute for Space Research, Brazil

**FR4.O-5.2: ADAPTATION OF A RANGE-DOPPLER ALGORITHM TO MULTISTATIC SIGNALS 3269
FROM ULTRASOUND ARRAYS**

Marko Jakovljevic, Stanford University, United States; Roger Michaelides, Colorado School of Mines, United States; Ettore Biondi, Stanford University, United States; Carl Herickhoff, University of Memphis, United States; Dongwoon Hyun, Howard Zebker, Jeremy Dahl, Stanford University, United States

FR4.O-5.3: DESIGN OF LOOK FILTERS IN LOOK DIFFERENCE METHOD FOR SAR GMTI 3273

Wang Li, Junfeng Wang, Xingzhao Liu, Shanghai Jiao Tong University, China

FR4.O-5.4: RCS CALCULATION BASED ON NEAR-FIELD L1-REGULARIZED SAR IMAGING..... 3277

Yangyang Wang, Yang Li, Xiaoling Zhang, University of Electronic Science and Technology of China, China

**FR4.O-5.5: RESEARCH ON ACCELERATION ALGORITHM FOR RAW DATA SIMULATION OF 3281
HIGH RESOLUTION SQUINT SPOTLIGHT SAR**

Zewen Fu, Lan Bai, Zhengwei Guo, Lin Min, Ning Li, Henan University, China

**FR4.O-5.6: AIRBORNE SAR EXPERIMENT TO SIMULATE GEOSYNCHRONOUS 3285
HYDROTERRA DATA AND INVESTIGATE THE DETECTION OF DIURNAL CHANGES**

Valeria Gracheva, Rolf Scheiber, Pau Prats, Ralf Horn, Martin Keller, Jens Fischer, Alberto Moreira, German Aerospace Center (DLR), Germany; Julia Kubanek, Roger Haagmans, ESA / ESTEC, Netherlands

FR4.O-6: TERRESTRIAL RADAR/SAR SYSTEMS AND APPLICATIONS

FR4.O-6.1: A MULTI-FREQUENCY FMCW GBSAR: SYSTEM DESCRIPTION AND FIRST RESULTS 1943

Adrià Amézaga Sàrries, Carlos López-Martínez, Universitat Politècnica de Catalunya, Spain; Roger Jové Casulleras, Balam Ingeniería de Sistemas, SL, Spain

FR4.O-6.3: APERTURE SYNTHESIS AND CALIBRATION OF THE WBSCAT GROUND-BASED SCATTEROMETER 1947

Charles Werner, Othmar Frey, Gamma Remote Sensing AG, Switzerland; Reza Naderpour, Swiss Federal Institute WSL, Switzerland; Andreas Wiesmann, Gamma Remote Sensing AG, Switzerland; Martin Suess, ESA / ESTEC, Netherlands; Urs Wegmüller, Gamma Remote Sensing AG, Switzerland

FR4.O-6.4: KAPRI: A BISTATIC FULL-POLARIMETRIC INTERFEROMETRIC REAL-APERTURE RADAR SYSTEM FOR MONITORING OF NATURAL ENVIRONMENTS 1950

Marcel Stefko, Othmar Frey, ETH Zurich, Switzerland; Charles Werner, Gamma Remote Sensing, Switzerland; Irena Hajnsek, ETH Zurich, Switzerland

FR4.O-6.5: TOWER-BASED RADAR FOR MONITORING A BOREAL FOREST: MEASUREMENT PERFORMANCE AND DESIGN TRADE-OFFS 1954

Albert Monteith, Lars M.H. Ulander, Chalmers University of Technology, Sweden

FR4.O-6.6: COMPARISON OF RADAR IMAGING CONFIGURATIONS FOR THE CHARACTERIZATION AND DIAGNOSIS OF ROADWAYS 1958

Mengda Wu, Laurent Ferro-Famil, University of Rennes 1, France; Yide Wang, Polytech Nantes, France

FR4.O-7: DINSAR WIDE AREA MONITORING AND APPLICATIONS

FR4.O-7.1: EO4SD DISASTER RISK REDUCTION TERRAIN MOTION PRODUCTS IN SUPPORT OF THE CITY RESILIENCE PROGRAM 3289

Michael Foumelis, Aristotle University Of Thessaloniki, Greece; Alberto Lorenzo-Alonso, Indra, Spain; Ross Eisenberg, The World Bank, United States; Ángel Utanda González, Indra, Spain; Christoph Aubrecht, Philippe Bally, European Space Agency (ESA), Italy; Jan Kolomaznik, Gisat, Czech Republic; Vincenzo Massimi, Planetek Italia, Italy; Steven Rubinyi, The World Bank, United States; Francisco Cano Gonzalez, María Encina Aulló-Maestro, Indra, Spain; Francesco Casu, CNR-IREA, Italy; Fabrizio Pacini, Terradue, Italy

FR4.O-7.2: EUROPEAN GROUND MOTION SERVICE (EGMS) 3293

Mario Costantini, Federico Minati, Francesco Trillo, e-GEOS, an Italian Space Agency and Telespazio company, Italy; Alessandro Ferretti, Fabrizio Novali, Emanuele Passera, TRE Altamira, Italy; John Dehls, Geological Survey of Norway, Norway; Yngvar Larsen, NORCE - Norwegian Research Centre, Norway; Petar Marinkovic, PPO.labs, Netherlands; Michael Eineder, Ramon Brcic, German Aerospace Center (DLR), Germany; Robert Siegmund, Paul Kotzerke, Markus Probeck, GAF AG, Germany; Ambrus Kenyeres, Satellite Geodetic Observatory, Hungary; Sergio Proietti, e-GEOS, an Italian Space Agency and Telespazio company, Italy; Lorenzo Solari, CTTC, Spain; Henrik Andersen, European Environment Agency, Denmark

FR4.O-7.3: INSAR PERFORMANCE FOR LARGE-SCALE DEFORMATION MEASUREMENT: IMPACT OF TROPOSPHERIC CORRECTIONS AND VALIDATIONS 3297

Alessandro Parizzi, Ramon Brcic, Francesco De Zan, German Aerospace Center (DLR), Germany

FR4.O-7.4: INSAR DISPLACEMENT TIME SERIES MINING: A MACHINE LEARNING APPROACH 3301

Homa Ansari, German Aerospace Center (DLR), Germany; Marc Rußwurm, Technical University of Munich (TUM), Germany; Mohsin Ali, Sina Montazeri, Alessandro Parizzi, Xiao Xiang Zhu, German Aerospace Center (DLR), Germany

FR4.O-7.6: LANDSLIDE CHANGE DETECTION MONITORING WITH A BENCHMARKED RADARSAT CONSTELLATION MISSION HIGH TEMPORAL RESOLUTION DATASET 3309

David Huntley, Drew Rotheram-Clarke, Robert Cocking, Jamel Joseph, Geological Survey of Canada, Canada

FR4.O-8: NONLINEAR METHODS FOR HYPERSPECTRAL SNMIXING

FR4.O-8.1: ENDMEMBER CONSTRAINT NON-NEGATIVE TENSOR FACTORIZATION VIA 3313 TOTAL VARIATION FOR HYPERSPECTRAL UNMIXING

Jin-Ju Wang, Ding-Cheng Wang, Ting-Zhu Huang, Jie Huang, University of Electronic Science and Technology of China, China

FR4.O-8.2: SPARSITY CONSTRAINED CONVOLUTIONAL AUTOENCODER NETWORK FOR 3317 HYPERSPECTRAL IMAGE UNMIXING

Zhengang Zhao, Hao Wang, Yuchen Liang, Tao Huang, Yi Xiao, Xianchuan Yu, Beijing Normal University, China

FR4.O-8.3: SPECTRAL UNMIXING USING AUTOENCODER WITH SPATIAL AND SPECTRAL 3321 REGULARIZATIONS

Jignesh Patel, Manjunath Joshi, Dhirubhai Ambani Institute of Information and Communication Technology, India; Jignesh Bhatt, Indian Institute of Information Technology Vadodara, India

FR4.O-8.4: EVONAS: EVOLVABLE NEURAL ARCHITECTURE SEARCH FOR 3325 HYPERSPECTRAL UNMIXING

Zhu Han, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Danfeng Hong, German Aerospace Center (DLR), Germany; Lianru Gao, Aerospace Information Research Institute, Chinese Academy of Sciences, China; Jocelyn Chanussot, Université Grenoble Alpes, France; Bing Zhang, Aerospace Information Research Institute, Chinese Academy of Sciences, China

FR4.O-8.5: PIXELS-TO-ABUNDANCES TRANSLATION WITH SPATIAL-SPECTRAL 3329 CONDITIONAL GENERATIVE ADVERSARIAL NETWORKS FOR HYPERSPECTRAL UNMIXING

Li Wang, Xiaohua Zhang, Shengyuan Zheng, Tianrui Li, Jing Wang, Xidian University, China

FR4.O-8.6: WEIGHTED SPARSITY CONSTRAINT TENSOR FACTORIZATION FOR 3333 HYPERSPECTRAL UNMIXING

Yuan Yuan, Northwestern Polytechnical University, China; Le Dong, Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, China

FR4.O-9: GIS INTEGRATION OF REMOTE SENSING DATA FOR DAMAGE AND RISK ASSESSMENT OF THE BUILT ENVIRONMENT

FR4.O-9.1: INTEGRATION OF REMOTE SENSING DATA WITH BRIDGE GEOMETRIC AND 1962 NUMERICAL MODELS FOR DETECTION OF UNUSUAL BEHAVIOURS

Zahra Sadeghi, COMET, School of Earth and Environment, University of Leeds, United Kingdom; Tim Wright, Andrew Hooper, University of Leeds, United Kingdom; Sivasakthy Selvakumaran, University of Cambridge, United Kingdom

FR4.O-9.3: CITY SCALE INSAR MONITORING OF (BUILDINGS BEHIND) QUAY WALLS 1966

Mandy Korff, Deltares / Delft University of Technology, Netherlands; Arjan Venmans, Deltares, Netherlands; Patrick Stoppelman, Skygeo, Netherlands

FR4.O-9.4: A GENERIC STORAGE METHOD FOR COHERENT SCATTERERS AND THEIR 1970 CONTEXTUAL ATTRIBUTES

Marc Bruna, Freek J. van Leijen, Ramon F. Hanssen, Delft University of Technology, Netherlands

FR4.O-9.5: SATELLITE-BASED MONITORING OF URBAN DEEP EXCAVATIONS 1974

Stefan Ritter, Regula Frauenfelder, Malte Vöge, Norwegian Geotechnical Institute (NGI), Norway

FR4.O-9.6: EO4SD-DRR EARTH OBSERVATION TO SUPPORT THE RECONSTRUCTION 1978 AND REHABILITATION IN THE AFTERMATHS OF TSUNAMI AND EARTHQUAKE

Vincenzo Massimi, Angelo Amodio, Sergio Samarelli, Planetek Italia, Italy; Alberto Lorenzo-Alonso, Ángel Utanda González, INDRA, Spain; Michael Foumelis, French Geological Survey; Aristotle University of Thessaloniki, Spain; Floriane Provost, Philippe Bally, ESA / ESRIN, France; Raffaele Nutricato, Davide Oscar Nitti, Geophysical Applications Processing, Italy

FR4.O-10: CEOS LAND PRODUCT VALIDATION: SAMPLING-BASED ESTIMATION OF AREA AND ACCURACY FOR LAND COVER PRODUCTS

FR4.O-10.1: UPDATES TO GOOD PRACTICES FOR ESTIMATING AREA AND ASSESSING ACCURACY OF LAND COVER AND LAND COVER CHANGE PRODUCTS 1982

Pontus Olofsson, Boston University, United States

FR4.O-10.3: TOWARDS A MULTI-LEVEL SAMPLING SCHEME FOR LAND COVER AND LAND COVER CHANGE VALIDATION. LESSONS LEARNED FROM THE LAND COVER CLIMATE CHANGE INITIATIVE. 1986

Céline Lamarche, Université Catholique de Louvain, Belgium; Sophie Bontemps, Quentin Marissiaux, Pierre Defourny, UCLouvain, Belgium; Olivier Arino, European Space Agency (ESA), Italy

FR4.O-10.4: ACCURACY ASSESSMENT OF THE FIRST EU-WIDE CROP TYPE MAP WITH LUCAS DATA 1990

Astrid Verhegghen, Raphaël d'Andrimont, François Waldner, Marijn Van der Velde, Joint Research Center, European Commission, Italy

FR4.O-10.5: COPERNICUS SENTINEL-2 DATA FROM A CARD4L PERSPECTIVE: PRELIMINARY SELF-ASSESSMENT PERFORMED BY ESA 1994

Valentina Boccia, European Space Agency (ESA), Italy; Rosario Quirino Iannone, Rhea Group S.p.A., Italy; Ferran Gascon, European Space Agency (ESA), Italy

FR4.O-10.6: SENTINEL-1 AND SENTINEL-2 TIME SERIES BREAKPOINT DETECTION AS PART OF THE SOUTH AFRICAN LAND DEGRADATION MONITOR (SALDI) 1997

Marcel Urban, Friedrich Schiller University Jena, Germany; Andreas Hirner, German Aerospace Center (DLR), Germany; Jonas Ziemer, Marlin Mueller, Friedrich Schiller University Jena, Germany; Ursula Gessner, German Aerospace Center (DLR), Germany; Jussi Baade, Friedrich Schiller University Jena, Germany; Buster Mogonong, South African Environmental Observation Network, South Africa; Theunis Morgenthal, Department of Agriculture, Land Reform and Rural Development, South Africa; Gregor Feig, South African Environmental Observation Network, South Africa; Abel Ramoelo, South African National Parks, South Africa; Kai Heckel, Hilma Nghiyalwa, Christiane Schmullius, Friedrich Schiller University Jena, Germany

FR4.O-11: COASTAL ENVIRONMENT AND BEYOND

FR4.O-11.2: DETECTION OF MUSSEL BEDS USING AIRBORNE POLARIMETRIC SAR DATA 7501

Sylvia Schmitz, Karlsruhe Institute of Technology, Germany; Eva Wortmeyer, Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency, Germany; Antje Thiele, Fraunhofer Institute of Optronics, System Technologies and Image Exploitation IOSB, Germany; Holger Dirks, Andreas Wurpts, Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency, Germany

FR4.O-11.3: COASTAL MARINE DEBRIS DENSITY MAPPING USING A SEGMENTATION ANALYSIS OF HIGH-RESOLUTION SATELLITE IMAGERY 7505

Kenichi Sasaki, William Emery, University of Colorado Boulder, United States; Tatsuyuki Sekine, Louis Burtz, Yu Kudo, Amanogi, Japan

FR4.O-11.4: EVALUATION AND MITIGATION OF RAIN EFFECT ON WAVE DIRECTION ESTIMATION FROM X-BAND MARINE RADAR DATA 7509

Zhiding Yang, Weimin Huang, Xinwei Chen, Memorial University of Newfoundland, Canada

FR4.O-11.5: LAND CONTAMINATION CORRECTION FOR AMSR2 7513

Suleiman Alsheikh, Zorana Jelenak, Joseph Sapp, Paul Chang, National Oceanic and Atmospheric Administration (NOAA), United States

FR4.O-11.6: SATELLITE BASED ANALYSES ON POTENTIAL EFFECTS OF THE COVID19 LOCKDOWN OVER COASTAL AREAS: THE ESA-RACE SOON PROJECT 7516

Federico Falcini, Federica Braga, CNR, Italy; Vittorio Ernesto Brando, National Research Council of Italy, Italy; Daniele Ciani, Simone Colella, Javier Concha, Claudia Giardino, Emanuele Organelli, Jaime Pitarch, Gian Marco Scarpa, Gianluca Volpe, CNR, Italy; Marie-Hélène Rio, European Space Agency (ESA), Italy

FR4.O-12: GNSS-R MODELING

FR4.O-12.1: INTERCOMPARISON OF MODELS FOR CYGNSS DELAY-DOPPLER MAPS AT A VALIDATION SITE IN THE SAN LUIS VALLEY OF COLORADO 2001

James Campbell, University of Southern California, United States; Ruzbeh Akbar, Massachusetts Institute of Technology, United States; Amir Azemati, University of Southern California, United States; Alexandra Bringer, Ohio State University, United States; Davide Comite, La Sapienza University of Rome, Italy; Laura Dente, University of Rome Tor Vergata, Italy; Scott Gleason, University Corporation for Atmospheric Research (UCAR), United States; Leila Guerriero, University of Rome Tor Vergata, Italy; Erik Hodges, University of Southern California, United States; Joel Johnson, Ohio State University, United States; Seung-Bum Kim, California Institute of Technology, United States; Amer Melebari, University of Southern California, United States; Nazzareno Pierdicca, La Sapienza University of Rome, Italy; Bowen Ren, Christopher Ruf, Leung Tsang, Haokui Xu, Jiyue Zhu, University of Michigan, United States; Mahta Moghaddam, University of Southern California, United States

FR4.O-12.3: SIMULATION OF GNSS-R SIGNALS IN ARBITRARY VIEWING GEOMETRY WITH A CLOSED-FORM BISTATIC TWO-SCALE MODEL 2005

Gerardo Di Martino, Alessio Di Simone, Antonio Iodice, Daniele Riccio, Giuseppe Ruello, University of Naples Federico II, Italy

FR4.O-12.4: PARAMETER CONSIDERATIONS FOR THE RETRIEVAL OF SURFACE SOIL MOISTURE FROM SPACEBORNE GNSS-R 2009

Joan Francesc Munoz-Martin, Raul Onrubia, Daniel Pascual, Hyuk Park, Adriano Camps, Universitat Politècnica de Catalunya, Spain; Christoph Rüdiger, Jeffrey P. Walker, Monash University, Australia; Alessandra Monerri, University of Melbourne, Australia

FR4.O-12.5: TEMPORAL DECORRELATION OF SCATTERED GNSS SIGNALS..... 2013

Davide Comite, Nazzareno Pierdicca, Sapienza University of Rome, Italy

FR4.O-12.6: STUDIES OF TERRAIN SURFACE ROUGHNESS AND ITS EFFECT ON GNSS-R SYSTEMS USING AIRBORNE LIDAR MEASUREMENTS 2016

Alexandra Bringer, Joel Johnson, Charles Toth, Chris Ruf, The Ohio State University, United States; Mahta Moghaddam, University of Southern California, United States

FR4.O-13: MACHINE LEARNING WITH SMALL EARTH OBSERVATION DATASETS

FR4.O-13.1: THE TRAP OF RANDOM SAMPLING AND HOW TO AVOID IT - ALTERNATIVE SAMPLING STRATEGIES FOR A REALISTIC ESTIMATE OF THE GENERALIZATION ERROR IN REMOTE SENSING 2020

Ronny Hänsch, German Aerospace Center (DLR), Germany

FR4.O-13.3: INVESTIGATING THE IMPACT OF THE TRAINING SET SIZE ON DEEP LEARNING-POWERED HYPERSPECTRAL UNMIXING 2024

Lukasz Tulczyjew, KP Labs, Poland; Jakub Nalepa, KP Labs / Silesian University of Technology, Poland

FR4.O-13.4: ESTIMATING THE AREA OF APPLICABILITY OF REMOTE SENSING-BASED MACHINE LEARNING MODELS WITH LIMITED TRAINING DATA 2028

Hanna Meyer, Edzer Pebesma, University of Münster, Germany

FR4.O-13.5: TRUSTING SMALL TRAINING DATASET FOR SUPERVISED CHANGE DETECTION 2031

Sudipan Saha, Technical University of Munich, Germany; Biplab Banerjee, Indian Institute of Technology Bombay, India; Xiao Xiang Zhu, German Aerospace Center (DLR), Germany

FR4.O-13.6: PATCH SIZE SELECTION FOR ANALYSIS OF SUB-METER RESOLUTION HYPERSPETRAL IMAGERY OF FORESTS	2035
<i>Matti Mõttus, Matthieu Molinier, Eelis Halme, VTT Technical Research Centre of Finland, Finland; Hai Cu, Jorma Laaksonen, Aalto University, Finland</i>	
FR4.O-14: RADIO FREQUENCY INTERFERENCE (RFI) AND SPECTRUM MANAGEMENT IN PASSIVE MICROWAVE REMOTE SENSING	
FR4.O-14.1: RECENT EVOLVING ASPECTS OF RFI DETECTION	2039
<i>Edward Kim, NASA, United States</i>	
FR4.O-14.3: WRC-23 AGENDA ITEMS 1.16 AND 1.17 IN REGARDS TO PASSIVE REMOTE SENSING OPERATIONS IN THE 18.6-18.8 GHZ FREQUENCY BAND	2042
<i>Thomas von Deak, Science Services - SME, United States</i>	
FR4.O-14.5: STUDY OF A STRONG RFI SOURCE AT L-BAND USING SMAP RADIOMETER DATA	2048
<i>Paolo de Matthaëis, David Le Vine, NASA Goddard Space Flight Center, United States; Yan Soldo, ESA / ESTEC, Netherlands; Alvaro Llorente, ESA / ESAC, Spain</i>	
FR4.O-14.6: UPDATE ON ACTIVITIES OF THE U.S. NATIONAL ACADEMIES' COMMITTEE ON RADIO FREQUENCIES	2051
<i>Mahta Moghaddam, University of Southern California, United States; Liese van Zee, Indiana University, United States; Nathaniel Livesey, NASA Jet Propulsion Laboratory, California Institute of Technology, United States; Tomas Gergely, Independent Consultant, United States; Nancy Baker, Naval Research Laboratory, United States; Darrel Emerson, National Radio Astronomy Observatory, United States; William Emery, University of Colorado Boulder, United States; Dara Entekhabi, Massachusetts Institute of Technology, United States; Philip Erickson, Haystack Observatory, Massachusetts Institute of Technology, United States; Kelsey Johnson, University of Virginia, United States; Karen Masters, Haverford College, United States; Scott Paine, Center for Astrophysics Harvard & Smithsonian, United States; Frank Schinzel, National Radio Astronomy Observatory, United States; Gail Skofronick-Jackson, NASA Headquarters, United States</i>	
FR4.O-15: IEEE GRSS DATA FUSION CONTEST II	
FR4.O-15.2: CHANGE CROSS-DETECTION BASED ON LABEL IMPROVEMENTS AND MULTI-MODEL FUSION FOR MULTI-TEMPORAL REMOTE SENSING IMAGES	2054
<i>Zhuohong Li, Fangxiao Lu, Hongyan Zhang, Guangyi Yang, Liangpei Zhang, Wuhan University, China</i>	
FR4.O-15.3: HIGH-RESOLUTION LAND COVER CHANGE DETECTION USING LOW-RESOLUTION LABELS VIA A SEMI-SUPERVISED DEEP LEARNING APPROACH – 2021 IEEE DATA FUSION CONTEST TRACK MSD	2058
<i>Lilin Tu, Jiayi Li, Xin Huang, Wuhan University, China</i>	
FR4.O-15.4: MRTA: MULTI-RESOLUTION TRAINING ALGORITHM FOR MULTITEMPORAL SEMANTIC CHANGE DETECTION	2062
<i>Qianyue Bao, Yang Liu, Zixiao Zhang, Dafan Chen, Yuting Yang, Licheng Jiao, Fang Liu, Xidian University, China</i>	
FR4.O-15.5: WEAKLY SUPERVISED SEMANTIC CHANGE DETECTION VIA LABEL REFINEMENT FRAMEWORK	2066
<i>Zhuo Zheng, Yinhe Liu, Shiqi Tian, Junjue Wang, Ailong Ma, Yanfei Zhong, Wuhan University, China</i>	

FR4.O-16: NEXT GENERATION LAND COVER MONITORING SERVICES: TOWARDS A FLEXIBLE, USER-ORIENTED APPROACH

FR4.O-16.1: NEXT GENERATION LAND COVER MONITORING SERVICES: TOWARDS A FLEXIBLE, USER-ORIENTED APPROACH 2070

Zoltan Szantoi, European Commission, Joint Research Centre, Italy; Ruben van de Kerchove, Vlaamse Instelling Voor Technologisch Onderzoek (VITO) Research Organisation, Belgium; Nandin-Erdene Tsendbazar, Martin Herold, Wageningen University and Research, Netherlands

FR4.O-16.3: FOREST MONITORING: ISSUES AND GOOD PRACTICES IN SAMPLE-BASED AREA ESTIMATION 2074

Inge Jonckheere, FAO of the UN, Italy; Randy Hamilton, Silvacarbon, United States; Jose Maria Michel, Emily Donegan, FAO of the UN, Italy

FR4.O-16.4: CLC+ BACKBONE: SET THE SCENE IN COPERNICUS FOR THE COMING DECADE 2076

Markus Probeck, Inés Ruiz, Gernot Ramminger, Christoff Fourie, Pirmin Maier, Martin Ickerott, Cornelia Storch, Anna Homolka, Sybrand Jacobus Muller, Himanshu Tiwari, André Stumpf, Sooyeon Chun, Cristina Mattos, Amelie Lindmayer, Fahad Jahangir, Pilar Endara, Fabian Berndt, GAF, Germany; Mario Dohr, Wolfgang Kapferer, Christian Schleicher, Stefan Ralsler, Florian Innerbichler, Michael Riffler, Martin Siklar, GeoVille, Austria; Dora Aifantopoulou, Sideris Paralykidis, Geoapikonisis, Greece; Camille Pinet, Gabriel Jaffrain, Ingénierie Géographique Numérique Française à l'International, France; Annalaura di Federico, Marco Corsi, e-GEOS, Italy; Tobias Langanke, Hans Dufourmont, European Environment Agency, Denmark

FR4.O-17: PHYSICS-AWARE AI4EO AND SIMULATION

FR4.O-17.1: PHYSICS-AWARE MACHINE LEARNING FOR GEOSCIENCES AND REMOTE SENSING 2086

Gustau Camps-Valls, Daniel H. Svendsen, Jordi Cortés, Alvaro Moreno-Martínez, Adrián Pérez-Suay, Jose Adsuara, Irene Martin, Maria Piles, Jordi Muñoz-Marí, Luca Martino, Universitat de València, Spain

FR4.O-17.3: ZOOMING INTO UNCERTAINTIES: TOWARDS FUSING MULTI ZOOM LEVEL IMAGERY FOR URBAN LAND USE SEGMENTATION 2090

Eike Jens Hoffmann, Technical University of Munich (TUM), Germany; Mohsin Ali, German Aerospace Center (DLR), Germany; Xiao Xiang Zhu, Technical University of Munich (TUM) / German Aerospace Center (DLR), Germany

FR4.O-17.4: LIVEABILITY FROM ABOVE: UNDERSTANDING QUALITY OF LIFE WITH OVERHEAD IMAGERY AND DEEP NEURAL NETWORKS 2094

Alex Levering, Diego Marcos, Wageningen University, Netherlands; Devis Tuia, École Polytechnique Fédérale de Lausanne, Switzerland

FR4.O-17.5: CLASSIFICATION AND GENERATION OF EARTH OBSERVATION IMAGES USING A JOINT ENERGY-BASED MODEL 2098

Javiera Castillo-Navarro, ONERA / Université Bretagne Sud, France; Bertrand Le Saux, European Space Agency (ESA), Italy; Alexandre Boulch, valeo.ai, France; Sébastien Lefèvre, Université Bretagne Sud, France

FR4.O-17.6: HAZE AND SMOKE REMOVAL FOR VISUALIZATION OF MULTISPECTRAL IMAGES: A DNN PHYSICS AWARE ARCHITECTURE 2102

Iulia Coca Neagoe, Corina Vaduva, Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB), Romania; Mihai Datcu, Research Center for Spatial Information (CEOSpaceTech), University POLITEHNICA of Bucharest (UPB) and Earth Observation Center (EOC), German Aerospace Center (DLR), Romania

FR4.O-18: MULTIPLE HAZARD MONITORING AND MANAGEMENT IN URBAN DEPRIVED AREAS

FR4.O-18.1: EO-BASED LOW-COST FRAMEWORKS TO ADDRESS GLOBAL URBAN DATA GAPS ON DEPRIVATION AND MULTIPLE HAZARDS 2106

Monika Kuffer, University of Twente, Netherlands; Dana R. Thomson, University of Southampton, United Kingdom; Andrew Maki, Justice & Empowerment Initiatives, Nigeria; Sabine Vanhuyse, Stefanos Georganos, Université libre De Bruxelles, Belgium; Richard Sliuzas, Claudio Persello, University of Twente, Netherlands

FR4.O-18.3: GRIDDED URBAN DEPRIVATION PROBABILITY FROM OPEN OPTICAL IMAGERY AND DUAL-POL SAR DATA 2110

Sabine Vanhuyse, Stefanos Georganos, Université libre De Bruxelles, Belgium; Monika Kuffer, University of Twente, Netherlands; Tais Grippa, Moritz Lennert, Eléonore Wolff, Université libre De Bruxelles, Belgium

FR4.O-18.4: EXTRACTING URBAN DEPRIVATION INDICATORS USING SUPERSPECTRAL VERY-HIGH-RESOLUTION SATELLITE IMAGERY 2114

Stefanos Georganos, Sabine Vanhuyse, Université libre De Bruxelles, Belgium; Ángela Abascal, Universidad de Navarra, Spain; Monika Kuffer, University of Twente, Netherlands

FR4.O-18.5: MANAGING MULTI-HAZARDS RISK OF URBAN DEPRIVATION IN THE CONTEXT OF URBAN PLANNING AND DESIGN 2118

Jiong Wang, University of Twente, Netherlands

FR4.O-18.6: DEVELOPMENT OF A MULTI-CITY DEPRIVED AREA MAPPING ECOSYSTEM..... 2122

Ryan Engstrom, George Washington University, United States; Dana R. Thomson, University of Southampton, United Kingdom; Julia Ek, George Washington University, United States; Monika Kuffer, University of Twente, United States

FR4.O-19: ADVANCED APPLICATIONS AND PRE-PROCESSING METHODS IN CHANGE DETECTION AND MULTI-TEMPORAL ANALYSIS

FR4.O-19.1: AN UNSUPERVISED CHANGE DETECTION TECHNIQUE BASED ON A SUPER-RESOLUTION CONVOLUTIONAL AUTOENCODER 3337

Luca Bergamasco, Fondazione Bruno Kessler, Italy; Luca Martinatti, University of Trento, Italy; Francesca Bovolo, Fondazione Bruno Kessler, Italy; Lorenzo Bruzzone, University of Trento, Italy

FR4.O-19.2: OBSERVATION OF AN OPEN-PIT COPPER MINE USING INSAR COHERENCE-BASED NORMALIZED DIFFERENCE ACTIVITY INDEX (NDAI) 3341

Jihyun Moon, Hoonyol Lee, Kangwon National University, Korea (South)

FR4.O-19.3: SPATIO-TEMPORAL FEATURES PROCESSING NETWORK FOR CHANGE DETECTION IN REMOTE SENSING IMAGES 3344

Zihao Yang, Zhaobin Cao, Xiaohua Wan, Fa Zhang, Guangming Tan, Institute of Computing Technology, Chinese Academy of Sciences, China

FR4.O-19.4: DETECTING RECENT CHANGES OF ICE-FREE EXTENSIONS ON LIVINGSTON ISLAND, NORTHERN ANTARCTIC PENINSULA REGION USING LANDSAT DATA 3348

Ana Nieto Garcia, Thomas Schmid, CIEMAT (Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas), Spain; Jerónimo López Martínez, UAM (Universidad Autónoma de Madrid), Spain

FR4.O-19.5: BENCHMARKING CHANGE DETECTION IN URBAN 3D POINT CLOUDS 3352

Iris de Gélis, Magellium, France; Sébastien Lefèvre, Université Bretagne Sud, France; Thomas Corpetti, Centre National de la Recherche Scientifique, France; Thomas Ristorcelli, Chloé Thénoz, Magellium, France; Pierre Lassalle, Centre National d'Etudes Spatiales, France

FR4.O-19.6: AUTOMATIC MONITORING OF WATER LEVEL IN SMALL LAKES USING PLANETSCOPE 3356

Thibaud Ehret, Université Paris-Saclay, France; Simon Lajouanie, Victor Lefrançois, Kayrros, France; Carlo de Franchis, Université Paris-Saclay & Kayrros, France