FINAL PROGRAM

QUÉBEC CITY, CANADA
QUÉBEC CONVENTION CENTRE

JULY 13-18, 2014

Energy and our Changing Planet

IEEE
Advancing Technology for Humanity

IEEE GRSS Geoscience and Remote Sensing Society

Canadian Remote Sensing Society
Société Canadienne de Télédétection

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Welcome from the General Chair

On behalf of the Local Organizing Committee it gives me great pleasure to welcome you to the joint International Geoscience and Remote Sensing Symposium (IGARSS 2014) / 35th Canadian Symposium on Remote Sensing (35th CSRS). This partnership between the **IEEE Geoscience and Remote Sensing Society (GRSS)** and the **Canadian Remote Sensing Society / Société canadienne de télédétection (CRSS-SCT)** builds on a fine tradition of collaboration that began over 25 years ago. We anticipate welcoming over 1,800 attendees (including more than 500 graduate students) from the remote sensing and geoscience communities of 70 countries, and we are pleased that you will be part of the success of IGARSS 2014 / 35th CSRS.

The symposium theme is "Energy and our Changing Planet". The development of new and renewable sources of energy in the context of a changing planet is a critical issue throughout the world.

IGARSS 2014 / 35th CSRS will begin on Monday morning, July 14, with a plenary session that will include words of welcome, award presentations and keynote speeches on how current and future remote sensing technologies can be used by energy resource managers around the world. Our four keynote speakers are **Dr. Gaétan Lantagne**, Hydro-Québec Research Institute (IREQ - Canada); **Dr. Matthieu Le Lay**, Électricité de France; **Dr. Stan Benjamin**, NOAA Earth Systems Research Laboratory (USA); and **Prof. Trevor Gaunt**, University of Cape Town (South Africa). Their talks will be preceded by welcome addresses from **General (Retired) Walter Natynczyk**, President, Canadian Space Agency (CSA); **Brian Gray**, Assistant Deputy Minister, Earth Sciences Sector, Natural Resources Canada; **Dr. Marina Ruggieri**, Director, IEEE Division IX; **Dr. Melba Crawford**, President, IEEE GRSS; and **Dr. Anne Smith**, Vice-President, CRSS-SCT. Two prestigious CRSS-SCT awards will be presented, followed by the GRSS Awards Ceremony hosted by **Dr. Werner Wiesbeck**.

The IGARSS 2014 / 35th CSRS week features high-quality peer-reviewed technical sessions, social events, awards banquet, network luncheons for students, industry, various committees, and Society meetings, and of course the traditional IGARSS soccer tournament. Additionally, you have the opportunity to attend tutorials all day on July 13, while on July 10-11 the GRSS Summer School was attended by 50 graduate students. We hope these will all provide excellent networking opportunities. As well, we encourage you to visit Québec City, the only walled city north of Mexico City. Local and regional tours have also been made available especially for IGARSS 2014 / 35th CSRS attendees.

We invite you to visit the exhibition area adjacent to the coffee break area and posters, where over 25 exhibitors are showcasing their capabilities, sensors, software, and services. The exhibition area opens on Monday, July 14 at 17:20 and closes on Thursday, July 17 at 16:00. At the IEEE-GRSS/CRSS-SCT booth you will have the opportunity to meet two award-winning high school students, William Gadoury (Québec) and Victor Ling (Ontario). William's project, entitled *Born from the Sky*, was selected from those presented at the Québec Provincial Science Fair, and Victor's, entitled *Unlocking the Geology of Mars*, from those at the Canada-wide Science Fair.

IGARSS 2014 / 35th CSRS in Québec City would not have become a reality without the support of the IEEE GRSS Administrative Committee (AdCom) and the CRSS-SCT Executive over the last four years, and the dedication of a team of over 20 volunteers forming the Local Organizing Committee, supported by two professional conference organizers, Conference Management Services (CMS, Texas) and Conferium Inc. (Québec). Many more GRSS and CRSS–SCT volunteers participated on the Technical Program Committee as well as reviewing abstracts and arranging all the sessions.

The Local Organizing Committee has worked hard to ensure a diverse and high-quality program of technical sessions, professional activities and social events. There have been many meetings and teleconferences and much work, but there has been a lot of laughter too. In particular, I would like to acknowledge the immense contributions of the three co-chairs of the Technical Program: Dr. Josée Lévesque, Dr. Jean-Marc Garneau, and Dr. Ellsworth LeDrew.

The Local Organizing Committee would like to thank our corporate partners Hydro-Québec, ABB Analytical - Measurement Products, MacDonald, Dettwiler and Associates Ltd., and Intergraph, and our institutional partners, the Canadian Space Agency, Tourisme Québec, the City of Québec and the Institut national de la recherche scientifique (INRS) for their financial support and contributions to the technical program.

I am looking forward to all the presentations as you share your most recent research results, as well as the many social and networking opportunities.

Welcome to Québec City! We wish you an educational and most enjoyable week.

Monique Bernier
General Chair, IGARSS 2014 / 35th CSRS

Welcome from the President of the Canadian Space Agency

On behalf of the Canadian Space Agency (CSA), I am delighted to welcome you to beautiful Quebec City, Canada, for the International Geoscience and Remote Sensing Symposium 2014 and the 35th Canadian Symposium on Remote Sensing. This year's theme, "Energy and our Changing Planet," is of great importance to the CSA and to our country. The development of new and renewable sources of energy is a critical and important issue for Canada—and throughout the world.

Space has taught us many things in the last 50 some years, the most important being that collaboration and partnerships are essential. This year, Canada is hosting the International Space University Space Studies Program and the International Astronautical Congress, one of the largest space conferences in the world. Along with IGARSS 2014, these events will be an excellent opportunity to share knowledge and expertise to further advance research for the benefit of all and to shape our collective future.

Please accept my best wishes for an enjoyable and productive symposium.

General (Retired) Walter Natynczyk
President of the Canadian Space Agency

Welcome from the IEEE Geoscience and Remote Sensing Society President

On behalf of the IEEE Geoscience and Remote Sensing Society, I am delighted to welcome you to IGARSS 2014 and the 35th Canadian Symposium on Remote Sensing, a joint partnership with the Canadian Remote Sensing Society (CRSS). "Energy and Our Changing Planet," the theme of the conference, highlights issues related to energy resources as an important contemporary issue to which our profession can uniquely contribute.

We are grateful to the organizing team, led by General Chair Monique Bernier and Technical Program Co-chairs Josée Lévesque, Jean-Marc Garneau and Ellsworth LeDrew, for developing an outstanding program, and to colleagues who supported the committee through the review and abstract selection process. In addition to traditional sessions focusing on remote sensing technologies, analysis methodologies, and applications, the program includes regionally relevant and energy focused sessions such as "Remote Sensing of Icebergs", and "Renewable Resources." An excellent offering of pre-conference tutorials led by internationally recognized experts includes many new topics, ranging from introductory to advanced material.

The Symposium continues our tradition of engaging students and young professionals. The two-day pre-conference GRSS'14 Summer School was hosted by the Institut National de la Recherche Scientifique. The number of submissions to the annual IGARSS Student Prize Paper contest increased once again, and we look forward to excellent presentations by finalists at the special session. Social events, including a Young Professionals Luncheon and the traditional Soccer Game will also provide networking opportunities for young professionals.

Demonstrating the hospitality for which Québec is internationally known, the team has also arranged a wonderful social program, culminating with the awards banquet at the historical Fairmont Le Château Frontenac.

We look forward to sharing the week with all of you at this wonderful venue.

Best regards,
Melba Crawford
President, IEEE GRSS

Welcome from the Vice-President of the Canadian Remote Sensing Society

On behalf of Canadian Remote Sensing Society President Monique Bernier, the CRSS-SCT Executive, and all of our members, I extend a warm welcome to the 35th Canadian Symposium on Remote Sensing being held in conjunction with IGARSS 2014. We are delighted, for the fourth time in our history, to be co-hosting this event with the IEEE Geoscience and Remote Sensing Society (GRSS).

We are indebted to the General Chair, Dr. Monique Bernier, the many members of the Local Organizing Committee and the volunteers for their dedication and numerous hours of preparation towards staging this world-class event in historic Québec City. The Technical Program Co-chairs, Drs. Josée Lévesque, Jean-Marc Garneau and Ellsworth LeDrew have put together an excellent program for which we are most grateful.

The theme of the Symposium is "Energy and Our Changing Planet". I trust you will have plenty of energy as it will be a busy week including tutorials, the opening plenary session, daily concurrent oral sessions, daily posters sessions and various social and professional events!

Attendees of the symposium will be arriving from all regions of the world. I hope you will take this opportunity to renew old, and make new acquaintances, as well as explore the unique culture and architecture of Québec City.

Best Regards
Anne Smith
Vice-President, Canadian Remote Sensing Society

Technical Program Overview

The Technical Program co-chairs and the Technical Program Committee of the 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS) and the 35th Canadian Symposium on Remote Sensing (CSRS) extend a heartfelt welcome to all of our colleagues visiting historic Québec City. We are proud of our heritage and hope you enjoy the hospitality and *joie de vivre* of our community during your stay with us.

The 33 previous IEEE Geoscience and Remote Sensing Symposia and 34 previous Canadian Symposia on Remote Sensing have fostered a long tradition of excellence, and we are delighted that you will be contributing to that reputation.

We have selected the theme "Energy and our Changing Planet" to reflect the challenges and opportunities we all encounter on a daily basis. With the extensive climate warming clearly indicated by the loss of sea ice in polar regions, as well as other unequivocal evidence, the remote sensing community is making important contributions to the related challenges confronting resource exploration and management, navigation, management of societal impact and ecological assessment. International transport of goods and services to meet global energy demands is fuelling wide-ranging political debates for which our discipline can provide definitive information.

These and many other dimensions of remote sensing in the energy field will be discussed at this symposium. It is an opportune time to highlight the role that our science, engineering and industry can play. Keynote speakers at the IGARSS 2014 opening plenary session have been invited to expres enlightening ideas and opinions that will prompt ongoing discussion throughout the week and beyond. These presentations will address the role that remote sensing should or could play in energy management, now and in the future.

Our event program includes 68 invited sessions on a variety of topics in remote sensing, ranging from satellite imagery applications of RADARSAT-1 and -2 data, to an update on the upcoming RADARSAT Constellation Mission, to applications of remote sensing techniques in ground water sciences, aquatic ecosystems and natural hazards. In addition, we will continue the discussion from previous meetings in a series of open topics—including hyperspectral techniques and education and remote sensing—and adress some new themes introduced by the Technical Program Committee, including oil, gas and mineral exploration, and remote sensing in developing countries.

These examples clearly illustrate the breadth and vitality of the discipline as well as the important part that IGARSS and the Canadian Symposium on Remote Sensing play in the evolution of our work and application of our knowledge for the public good.

Tutorials are being offered on the Sunday prior to the Symposium on such rapidly developing subjects as "Hyperspectral Imaging in the Thermal Range". We are reaching out to high-school students through partnerships with the Conseil du développement du loisir scientifique du Québec (CDLS) and Youth Sciences Canada. Winners of the Québec and Canada-Wide Science Fairs have been invited to present their projects at the IEEE GRSS/CRSS-SCT booth.

In addition to the GRSS Young Professionals lunch (Thursday), graduate students are invited to attend a panel discussion by industry experts to explore job opportunities (Tuesday) and a luncheon (Wednesday) where students can meet informally with their peers and potential employers.

As in the past, as part of an ongoing effort to reduce the number of "no-shows", the technical program includes only papers presented by those delegates who have registered at the time of the printing of the program. Unfortunately, there will doubtless still be "missing presentations." In order to stick to the symposium schedule and allow participants to move from one session to another, we request that session chairs kindly adhere to the timeline and fill any gaps left by unavailable presentations with extended discussion and debate with the audience. The session chairs have been selected for their expertise, and their contribution to the vitality of the conference is much appreciated.

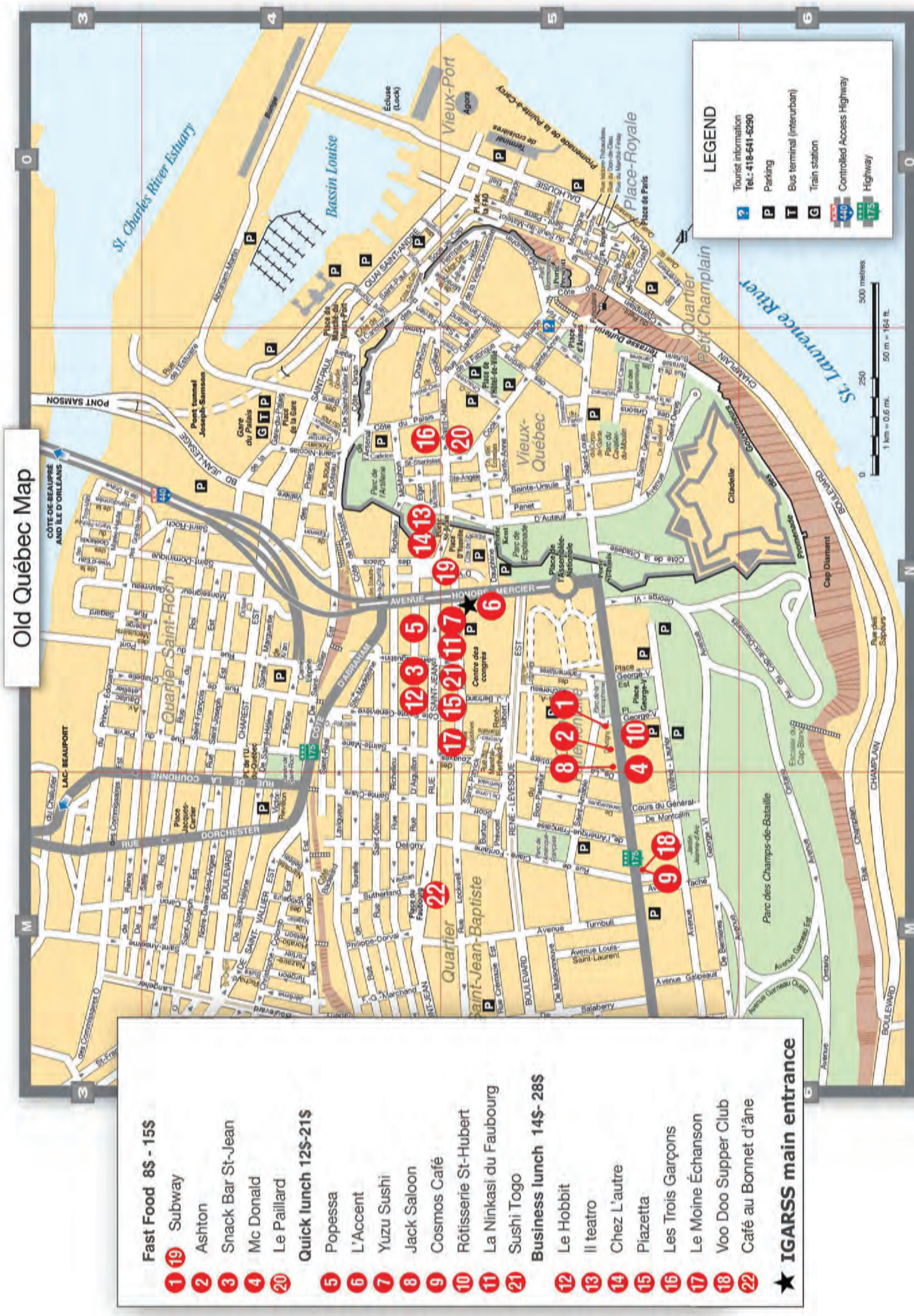
A core Technical Program Committee of 21 members has been meeting monthly since November 2012 to develop and refine the program. We have evaluated the feedback provided from previous symposia with the assistance of the GRSS Vice-President of Meetings and Symposia, Dr. Adriano Camps, and the Chair of the GRSS Conference Advisory Committee, Dr. Irena Hajnsek. As well, we have collaborated with 15 theme coordinators, more than 200 session organizers, and a volunteer group of over 850 technical reviewers of the extended abstracts to ensure a high-quality program. We thank these colleagues whose names appear in the online version of this publication.

Throughout the development of the technical program we have worked closely with the staff of Conference Management Services (CMS) who have been enthusiastic in their support in streamlining the process and bringing order out of chaos. In particular, we would like to acknowledge the dedication of Billene Cannon, President, and Lance Cotton, Technical Developer, who provided valuable advice and status updates.

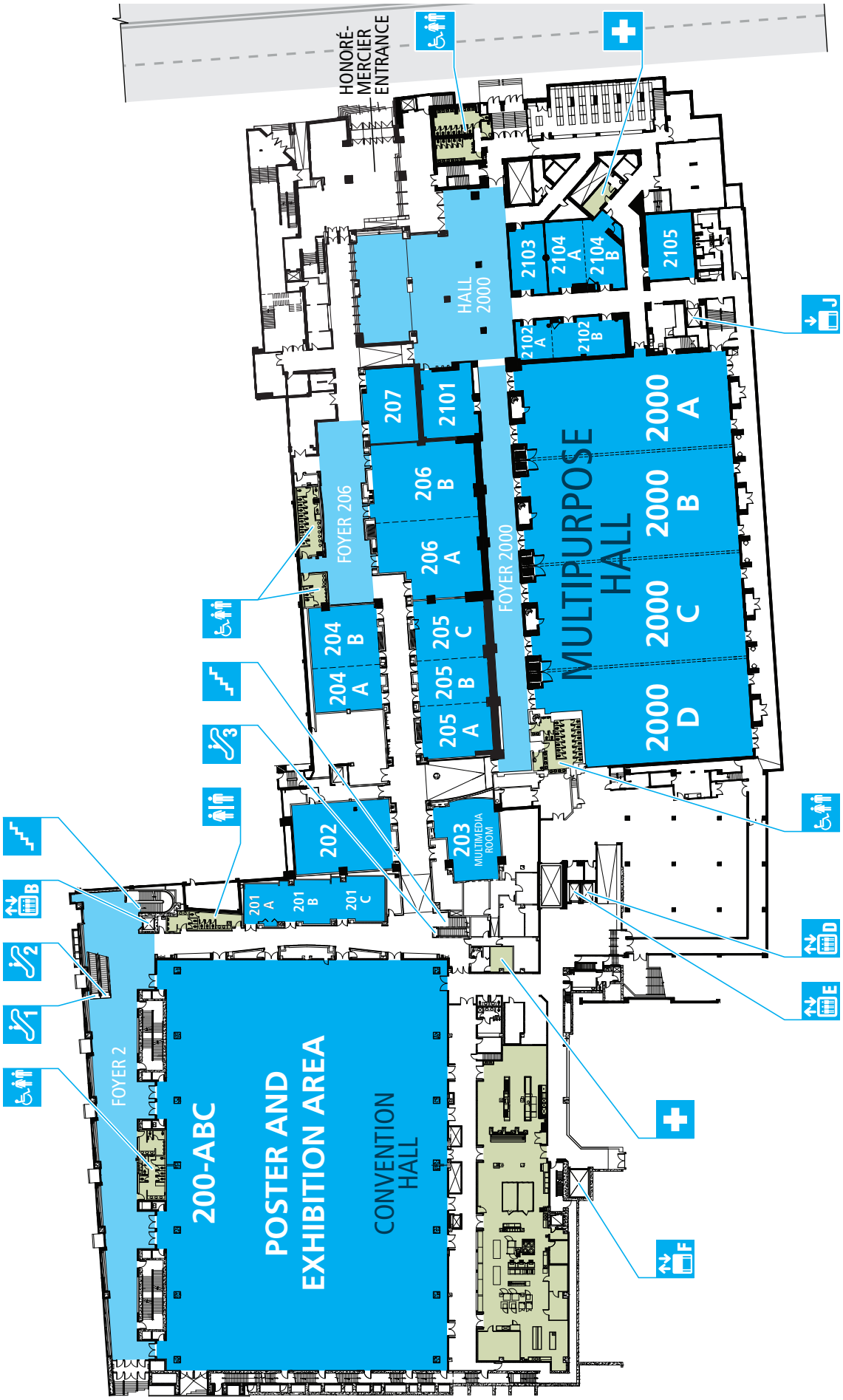
Finally we would like to thank you, the presenters and delegates, for making these annual symposia a continuing success. Your enthusiastic discussion and helpful feedback have contributed to making IGARSS and the Canadian Symposium on Remote Sensing highly anticipated events by scientists, engineers and students from around the world. Over 70 different countries are represented in this year's program. We all look forward to a stimulating week of discussion and fellowship at IGARSS 2014 and the 35th Canadian Symposium on Remote Sensing.

Josée Lévesque, Jean-Marc Garneau, and Ellsworth LeDrew
Technical Program Co-Chairs
IGARSS 2014, Québec

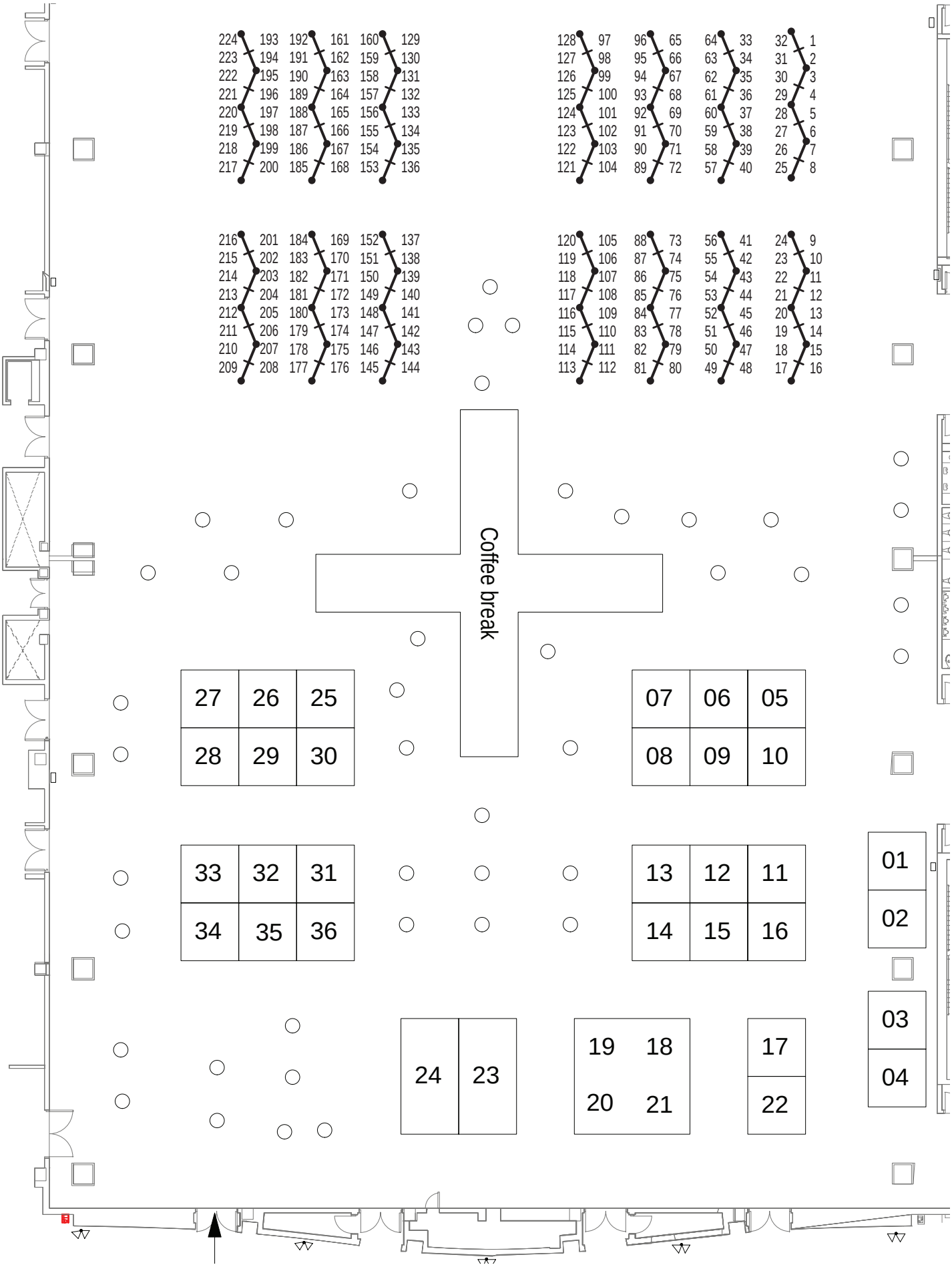
Old Québec Area Map (with nearby restaurants)



Venue Map: Québec City Convention Centre — Level 2



Venue Map: Québec City Convention Centre — Convention Hall Room 200-ABC (Exhibits & Posters)



Technical Program Overview - Tutorials, Plenary and Oral Sessions

Sunday, July 13 - Tutorials

	2104-A	2104-B	205-B	205-C	206-A	207	206-B
09:00 - 12:00	FD-02: The Technique of Fourier Transform Spectroscopy and its Applications in Remote Sensing	FD-03: Thermal Hyperspectral Imaging: from basics to ground-based and airborne applications	FD-04: Mining Earth Observation Big Data: methods and applications	FD-05: Remote Sensing with Reflected Global Navigation Satellite System (GNSS-R) Signals	HD-02: SAR Interferometry and Multidimensional Tomography for Advanced Imaging and Monitoring	HD-03: Recent Results on the Use of Information Theory in Image Understanding	HD-05: Spectral data systems for field spectrometry
10:15 - 10:30	Break						
13:00 - 17:00	[FD-02 Continued]	[FD-03 Continued]	[FD-04 Continued]	[FD-05 Continued]	**206-A** HD-04: The New Imaging Spectrometer Data Analysis System (ISDAS2013)		**206-B** HD-06: Recent Advances in Registration, Integration and Fusion of Remotely Sensed Data
15:15 - 15:30	Break						
08:30 - 17:00	ABCC Workshop 2014 – Room 202						
11:00 - 17:00	Tour: Les Sept Chutes Centennial Power Plant Tour A						
13:30 - 16:00	Tour: Walking Tour of Old Quebec, World Heritage City						
17:30 - 20:00	Welcome Reception – Foyer 400						

Monday, July 14 - Plenary and Oral Sessions

	2000-A	2000-B	2000-C	2000-D	205-AB	206-A	206-B	202	2104-AB	205-C	207	2101
08:30 - 11:45	Opening and Plenary Session – Room 2000-ABC											
11:45 - 13:30	Lunch Break											
13:30 - 15:10	MO3.01 INSAR Techniques I	MO3.02 Novel Approaches to Polarimetric SAR - In Honor of Jong-Sen Lee's 75th Birthday	MO3.03 Forest Mapping	MO3.04 SAR Missions I	MO3.05 GCOM-C1/SGLI	MO3.06 Emerging Trends and Challenges of Remote Sensing in Mexico I	MO3.07 Renewable Energies (hydro, solar)	MO3.08 Data Fusion I	MO3.09 Radio Frequency Interference Management and Spectrum Allocation for Remote Sensing I	MO3.10 Dynamics of Earth Processes and Climate Change	MO3.11 Remote Sensing of Icebergs	MO3.12 Active Microwave Remote Sensing Applications
15:10 - 15:40	Break											
15:40 - 17:20	MO4.01 INSAR Techniques II	MO4.02 SAR Polarimetry: Theory and Applications	MO4.03 Forest Parameter Estimation	MO4.04 SAR Missions II	MO4.05 GCOM-W1 Status	MO4.06 Emerging Trends and Challenges of Remote Sensing in Mexico II	MO4.07 Lidar Signal Processing	MO4.08 Data Fusion II	MO4.09 Radio Frequency Interference Management and Spectrum Allocation for Remote Sensing II	MO4.10 Oil, Gas, and Mineral Exploration	MO4.11 Hyperspectral Sensing in Support of Resource Exploration	MO4.12 Passive Microwave Remote Sensing of Vegetation Optical Depth
17:30 - 18:30								IADF TC Meeting	FARS TC Meeting			
18:15 - 22:30	Tour: Visit and dinner at a Traditional Huron Site A											
19:00 - 23:30	Tour: Sugar Shack Dinner: La Sucrerie Blouin											

Technical Program Overview - Oral Sessions

Tuesday, July 15

	2000-A	2000-B	2000-C	2000-D	205-AB	206-A	206-B	202	2104-AB	205-C	207	2101
08:20 - 10:00	TU1.01 High Resolution SAR Techniques	TU1.02 RADARSAT I	TU1.03 Forest Biomass	TU1.04 Airborne SAR	TU1.05 Hyper-temporal Image Analysis and Change Detection	TU1.06 Joint Polar Satellite System (JPSS) Sensor Performance, Products and Progress	TU1.07 Fourier-Transform Spectroscopy Applied to Remote-Sensing	TU1.08 Tomography and 3D Mapping I	TU1.09 Thermal Infrared Sensing	TU1.10 Biomass: ESA's Future Earth Explorer to Measure Global Forests	TU1.11 The Copernicus Sentinel-1 Mission	TU1.12 Student Paper Contest Finalists I
10:00 - 10:30	Break											
10:30 - 12:10	TU2.01 INSAR Applications I	TU2.02 RADARSAT II	TU2.03 Forest Modelling	TU2.04 SAR Calibration and Processing	TU2.05 Space Lidar: Missions, Technologies and Observations	TU2.06 SOAR: SAR Imagery for Cryosphere	TU2.07 Fusion of LiDAR and Hyperspectral Data	TU2.08 Tomography and 3D Mapping II	TU2.09 Optical Sensor Calibration	TU2.10 Temporal Analysis Techniques and Applications I	TU2.11 Global Information Extraction from HR Imagery: Achievements and Challenges	TU2.12 Student Paper Contest Finalists II
12:10 - 13:30	Lunch Break											
12:10 - 13:30	Women in Geosciences, Remote Sensing and Engineering Luncheon – Hilton, Les Plaines											
	2000-A	**2000-B**	**2000-C**	**2000-D**	**205-AB**	**206-A**	**206-B**	**202**	**2104-AB**	**205-C**	**207**	**2101**
13:30 - 15:10	TU3.01 INSAR Applications II	TU3.02 Advanced Methods for Polarimetric Information Extraction	TU3.03 Multi-temporal Analysis I	TU3.04 SAR Instrument and Processing I	TU3.05 Urban Remote Sensing	TU3.06 SOAR: SAR Imagery for Land Use and Land Cover and Natural Hazard	TU3.07 Image Classification I	TU3.08 Lidar-based Vegetation Assessment I	TU3.09 Advancing Science through Management of the Geospatial Data Lifecycle	TU3.10 Temporal Analysis Techniques and Applications II	TU3.11 Agricultural Applications using Radar and Optical Remote Sensing I	TU3.12 Canadian Preparation for Radarsat Constellation Mission (RCM) Compact Polarimetry (CP)
15:10 - 15:40	Break											
15:40 - 17:20	TU4.01 INSAR Applications III	TU4.02 Signal Processing Techniques for POL-SAR and POL-inSAR Applications	TU4.03 Biomass	TU4.04 SAR Instrument and Processing II	TU4.05 Monitoring Temporal and Spatial Changes in Wetland Ecosystems with SAR	TU4.06 SOAR: SAR Imagery for Ocean and Water Resources and Wetlands	TU4.07 Change Detection Techniques	TU4.08 Lidar-based Vegetation Assessment II	TU4.09 Implications of Big Data to Remote Sensing	TU4.10 Environmental Remediation and Assessment I	TU4.11 Agricultural Applications using Radar and Optical Remote Sensing II	TU4.12 Challenges and Opportunities in Remote Sensing Education and Training
17:30 - 18:30									ESI TC Meeting			
18:15 - 23:30	St-Lawrence River Cruise on the AML Louis Jolliet - Evening Cruise											

Technical Program Overview - Oral Sessions

Wednesday, July 16

	2000-A	2000-B	2000-C	2000-D	205-AB	206-A	206-B	202	2104-AB	205-C	207	2101
08:20 - 10:00	WE1.01 Persistent Scatterer Interferometry	WE1.02 SMOS: Continuing to Provide Global Soil Moisture and Ocean Salinity Data I	WE1.03 Carbon in the Forests	WE1.04 Ionospheric Effects and Calibration	WE1.05 Optical, Laser, and Radar Remote Sensing Applied to Natural Hazards I	WE1.06 Soil Moisture-SMAP Mission	WE1.07 Parallel and Scalable Image Processing Techniques	WE1.08 Radiometer Calibration Techniques and Technologies	WE1.09 International Spaceborne Imaging Spectroscopy Missions: Updates and News I	WE1.10 Remote Sensing in Developing Countries	WE1.11 Superresolution Reconstruction and Mapping for Hyperspectral Imagery	WE1.12 Accurate SAR Geolocalization: Techniques and Applications
10:00 - 10:30	Break											
10:30 - 12:10	WE2.01 Interferometric Phase Unwrapping	WE2.02 SMOS: Continuing to Provide Global Soil Moisture and Ocean Salinity Data II	WE2.03 Multi-temporal Analysis II	WE2.04 EO Response to Major Disasters	WE2.05 Optical, Laser, and Radar Remote Sensing Applied to Natural Hazards II	WE2.06 Soil Moisture-SMOS	WE2.07 Image Restoration, Compression, and Fusion	WE2.08 Advanced Microwave Radiometer Concepts	WE2.09 International Spaceborne Imaging Spectroscopy Missions: Updates and News II	WE2.10 Ground Penetrating Radar	WE2.11 Ocean Surfactants and Surface Features from Spaceborne SAR	WE2.12 High-resolution Ocean Winds, Waves and Currents with Spacebourne Synthetic Aperture Radar (SAR)
12:10 - 13:30	Lunch Break											
12:10 - 13:30	Industry Student Lunch – Room 204-AB											
	2000-A	**2000-B**	**2000-C**	**2000-D**	**205-AB**	**206-A**	**206-B**	**202**	**2104-AB**	**205-C**	**207**	**2101**
13:30 - 15:10	WE3.01 INSAR Systems	WE3.02 High Resolution Optical Image Analysis	WE3.03 Classification I	WE3.04 Optical and Infrared Monitoring I	WE3.05 Microwave Remote Sensing of Terrestrial Snow	WE3.06 Soil Moisture-Aquarius	WE3.07 Image Processing and Analysis I	WE3.08 Microwave Radiometry: Modeling And Applications	WE3.09 Calibration and Validation and standards in support of Spaceborne Imaging Spectroscopy Missions I	WE3.10 Manned and Unmanned Airborne Remote Sensing	WE3.11 Special Topics in Microwave Ocean Observations: A Tribute to William J. Plant I	WE3.12 Imaging Spectrometry and LiDAR Algorithms for the National Ecological Observatory Network (NEON)
15:10 - 15:40	Break											
15:40 - 17:20	WE4.01 High Resolution SAR Applications	WE4.02 Object Detection in High Resolution Optical Images	WE4.03 Classification II	WE4.04 Optical and Infrared Monitoring II	WE4.05 Multi-Sensor Remote Sensing of Terrestrial Snow	WE4.06 Soil Moisture-Product Intercomparisons	WE4.07 Pan-sharpening and Image Fusion	WE4.08 Microwave Radiometer Intercalibration	WE4.09 Calibration and Validation and standards in support of Spaceborne Imaging Spectroscopy Missions II	WE4.10 Remote Sensing Applications in Groundwater Science	WE4.11 Special Topics in Microwave Ocean Observations: A Tribute to William J. Plant II	WE4.12 Lidar Applications in Aquatic Ecosystems
17:30 - 18:30						SMOS-Aquarius Working Group Meeting			ISIS TC Meeting			
17:30 - Midnight	IGARSS 2014 Soccer Game – Telus Centre											
18:15 - 22:30	Visit and Dinner at a Traditional Huron Site B											
19:00 - 22:00	Technical Committee and Chapter Chairs Dinner – Hilton, Les Plaines											

Technical Program Overview - Oral Sessions

Thursday, July 17

	2000-A	2000-B	2000-C	2000-D	205-AB	206-A	206-B	202	2104-AB	205-C	207	2101
08:20 - 10:00	TH1.01 3D and 4D SAR Tomography	TH1.02 ALOS-2 / ALOS	TH1.03 PolSAR Decomposition and Classification	TH1.04 Data Mining and Classification	TH1.05 L-band Remote Sensing of the Cryosphere using SMOS, Aquarius, and SMAP Radiometers I	TH1.06 Soil Moisture Algorithms	TH1.07 Analysis of Hyperspectral Images	TH1.08 Global Precipitation Measurement Instrumentation Status Five Months After Launch	TH1.09 GNSS+R Remote Sensing I	TH1.10 Digital Beamforming SAR Systems and MIMO Techniques	TH1.11 Sensing the Biology and Quality of Ocean and Inland Waters	TH1.12 Sentinel-2: ESA's High Resolution Multispectral Land Mapping Mission
10:00 - 10:30	Break											
10:30 - 12:10	TH2.01 SAR Images for Land Surface Characterization in Agricultural Areas	TH2.02 Classification of Hyperspectral Data I	TH2.03 Physiological State/ Foliar Chemistry	TH2.04 Feature Selection and Classification	TH2.05 L-band Remote Sensing of the Cryosphere using SMOS, Aquarius, and SMAP Radiometers II	TH2.06 Soil Moisture Experiments	TH2.07 Analysis of SAR Images	TH2.08 Global Precipitation Measurement Science and Retrievals	TH2.09 GNSS+R Remote Sensing II	TH2.10 Wetland	TH2.11 Satellite Radar Sensing of High Winds	TH2.12 Inter-Calibration of Spaceborne Microwave Radiometers
12:10 - 13:30	Lunch Break											
	Editors Luncheon – Le Parlementaire – The National Assembly Restaurant											
	Young Professionals Lunch – Hilton, Les Plaines											
	2000-A	**2000-B**	**2000-C**	**2000-D**	**205-AB**	**206-A**	**206-B**	**202**	**2104-AB**	**205-C**	**207**	**2101**
13:30 - 15:10	TH3.01 TanDEM-X: Mission Status	TH3.02 Classification of Hyperspectral Data II	TH3.03 Land Use and Land Cover Change I	TH3.04 Feature Extraction	TH3.05 Earth Remote Sensing with Small Satellites: Missions	TH3.06 Soil Moisture-Global and Regional	TH3.07 Image Classification II	TH3.08 Tropical Rainfall Measuring Mission	TH3.09 Recent Advances in Reflectometry using GNSS and other Opportunity Signals I	TH3.10 Flood Land	TH3.11 Satellite Techniques of Wind Retrieval and Climatologies	TH3.12 Multi-temporal Remote Sensing for Detecting and Describing Biodiversity
15:10 - 15:40	Break											
15:40 - 17:20	TH4.01 TanDEM-X: Science Activities	TH4.02 Spectral Unmixing and Feature Extraction in Hyperspectral Images	TH4.03 Land Use and Land Cover Change II	TH4.04 Object Detection and Recognition	TH4.05 Earth Remote Sensing with Small Satellites: Technology Developments	TH4.06 Snow Cover I	TH4.07 Image Segmentation I	TH4.08 Numerical Weather Prediction and Data Assimilation	TH4.09 Recent Advances in Reflectometry using GNSS and other Opportunity Signals II	TH4.10 Water Quality	TH4.11 High Resolution Sensing of Ocean Winds and Currents	TH4.12 Bistatic SAR
17:30 - 18:30					IFT TC Meeting							
18:00 - 19:30	Cocktails – Château Frontenac											
19:30 - 23:00	Fairmont Le Chateau Frontenac Awards Banquet – Château Frontenac											

Technical Program Overview - Oral Sessions

Friday, July 18

	2000-A	2000-B	2000-C	2000-D	205-AB	206-A	206-B	202	2104-AB	205-C	207	2101
08:20 - 10:00	FR1.01 POLSAR Techniques I	FR1.02 Anomaly Detection in Hyperspectral Images	FR1.03 Land Use and Land Cover Change III	FR1.04 Information Extraction in Radar Data	FR1.05 Geology and Topographic Applications I	FR1.06 Snow Cover II	FR1.07 Image Segmentation II	FR1.08 TRMM and GPM	FR1.09 Ocean Surface Modeling	FR1.10 Remote Sensing Applications in Crop Mapping, Yield, and Parameter Estimation I	FR1.11 Ocean Surface Salinity Remote Sensing	FR1.12 The Chinese HY-2 Ocean Dynamic Environment Mission: Date Processing and Applications
10:00 - 10:30	Break											
10:30 - 12:10	FR2.01 POLSAR Techniques II	FR2.02 Noise Reduction and Enhancement of Hyperspectral Images	FR2.03 Land Use and Land Cover Change IV	FR2.04 Information Extraction I	FR2.05 Geology and Topographic Applications II	FR2.06 Ice Sheets and Glaciers	FR2.07 Object Detection	FR2.08 Radar Rainfall Techniques	FR2.09 Vegetation Modeling	FR2.10 Remote Sensing Applications in Crop Mapping, Yield, and Parameter Estimation II	FR2.11 Satellite Altimeter Observations of Sea Surface Heights and Dynamics	FR2.12 The Chinese HY-2 Ocean Dynamic Environment Mission: Mission and Payloads
12:10 - 13:30	Lunch Break											
12:10 - 13:30	The Canadian Remote Sensing Society (CRSS-SCT) AGM Lunch – Hilton, Les Plaines											
	2000-A	**2000-B**	**2000-C**	**2000-D**	**205-AB**	**206-A**	**206-B**	**202**	**2104-AB**	**205-C**	**207**	**2101**
13:30 - 15:10	FR3.01 POLSAR Applications	FR3.02 Advanced Data Processing for the Analysis of Hyperspectral Images I	FR3.03 Land Use and Land Cover Change V	FR3.04 Information Extraction II	FR3.05 Urban and Built Environment I	FR3.06 Sea Ice	FR3.07 Image Fusion and Analysis	FR3.08 Atmospheric Sounding	FR3.09 Electromagnetic Modelling	FR3.10 Remote Sensing Applications in Agriculture I	FR3.11 Oceans: Coastal Zones I	FR3.12 Ground Processing and Data Management
15:10 - 15:40	Break											
15:40 - 17:20	FR4.01 Pol INSAR	FR4.02 Advanced Data Processing for the Analysis of Hyperspectral Images II	FR4.03 Land Use and Land Cover Change VI	FR4.04 Geographic Information Science	FR4.05 Urban and Built Environment II	FR4.06 Permafrost	FR4.07 Parameter Estimation, Detection, and Monitoring	FR4.08 Aerosols, Dust, and Haze	FR4.09 Ground-based Remote Sensing	FR4.10 Remote Sensing Applications in Agriculture II	FR4.11 Oceans: Coastal Zones II	FR4.12 Remote Sensing Data and Policy Decisions

Technical Program Overview - Tours

Saturday, July 19

07:45 - 19:45	Tour: Tadoussac Bus-Whale Express Package
08:45 - 17:00	Tour: Tour by Train to Charlevoix

Technical Program Overview - Poster Sessions

Monday, July 14

	Session Code	Starting Board Number	Session Name
17:20 - 19:00	MOP.A	1	Forest and Land Modeling
	MOP.B	10	Ocean Surface Scattering
	MOP.C	19	EM Modeling
	MOP.D	26	High Resolution SAR Processing
	MOP.E	34	INSAR Techniques
	MOP.F	42	INSAR DEM Techniques
	MOP.G	49	INSAR Applications I
	MOP.H	57	INSAR Applications II
	MOP.I	62	High Resolution SAR
	MOP.J	68	High Resolution SAR and INSAR Applications I
	MOP.K	74	High Resolution SAR and INSAR Applications II
	MOP.L	81	Feature Extraction and Detection I
	MOP.M	90	Feature Extraction and Detection II
	MOP.N	97	Ship and Oil Spill Detection
	MOP.O	103	Multi-Channel SAR Techniques
	MOP.P	109	Airborne SAR Techniques
	MOP.Q	118	SAR Processing and Image Analysis
	MOP.R	126	SAR Techniques
	MOP.S	133	Radar Scatterometer Systems and Techniques
	MOP.T	139	Active Microwave
	MOP.U	144	Biomass Assessment I
	MOP.V	151	Multi-temporal Analysis
	MOP.W	159	Forest Parameter Estimation I
	MOP.X	168	Forest Parameter Estimation II
	MOP.Y	177	Forest Parameter Estimation III
	MOP.Z	184	Biomass Assessment II
	MOP.AA	187	Dynamics of Earth Processes and Climate Change
	MOP.BB	193	Oil, Gas, and Mineral Exploration II
	MOP.CC	199	Oil, Gas, and Mineral Exploration III
	MOP.DD	202	Renewable Energies (hydro, solar, wind)
	MOP.EE	205	Remote Sensing Archeology and Forensic Science
	MOP.FF	209	Mobile Laser Scanning and Point Cloud Processing

Technical Program Overview - Poster Sessions

Tuesday, July 15

	Session Code	Starting Board Number	Session Name
17:20 - 19:00	TUP.A	1	Image Segmentation and Clustering I
	TUP.B	7	Analysis of Mulitemporal and Multisource Images
	TUP.C	12	Image Processing and Analysis II
	TUP.D	20	Image Processing and Analysis III
	TUP.E	27	Analysis of SAR Images
	TUP.F	33	Image Classification
	TUP.G	41	Image Segmentation and Clustering II
	TUP.H	49	Information Extraction I
	TUP.I	56	Classification and Data Mining
	TUP.J	63	Feature Extraction and Estimation
	TUP.K	70	Information Extraction in Radar Data
	TUP.L	79	Information Extraction II
	TUP.M	84	Tomography and 3D Mapping I
	TUP.N	92	Tomography and 3D Mapping II
	TUP.O	95	Radiometer Calibration Techniques
	TUP.P	105	Advanced Microwave Radiometer Concepts
	TUP.Q	114	Microwave Radiometry: Modeling And Applications
	TUP.R	121	Lidar Atmospheric Studies
	TUP.S	128	Lidar-based Environmental Studies
	TUP.T	132	Lidar-based Urban Applications
	TUP.U	137	Optical Sensors
	TUP.V	145	Optical Sensor Calibration, Processing, and Products
	TUP.W	152	Manned and Unmanned Airborne Remote Sensing
	TUP.X	155	Classification
	TUP.Y	164	Droughts and Extreme Events
	TUP.Z	173	Crop Specific Studies
	TUP.AA	180	Crop Classification and Radar Studies
	TUP.BB	186	Crop Monitoring and Indices
	TUP.CC	191	Temporal Analysis Techniques and Applications I
	TUP.DD	199	Temporal Analysis Techniques and Applications II
	TUP.EE	205	Environmental Remediation and Assessment
	TUP.FF	208	Remote Sensing in Developing Countries

Technical Program Overview - Poster Sessions

Wednesday, July 16

	Session Code	Starting Board Number	Session Name
17:20 - 19:00	WEP.A	1	EO Response to Major Disasters
	WEP.B	5	Polarimetry
	WEP.C	8	POLSAR Applications I
	WEP.D	17	POLSAR Applications II
	WEP.E	26	POLSAR Techniques
	WEP.F	36	Bistatic SAR
	WEP.G	39	High Resolution Optical Techniques
	WEP.H	49	Classification of Hyperspectral Data
	WEP.I	58	Monitoring the Environment with Hyperspectral Remote Sensing
	WEP.J	68	Spectral Unmixing and Dimension Reduction
	WEP.K	75	Multimodal Data Fusion and Hyperspectral Remote Sensing
	WEP.L	81	Hyperspectal Remote Sensing: Models, Methods and Applications I
	WEP.M	89	Hyperspectal Remote Sensing: Models, Methods and Applications II
	WEP.N	91	Optical and Infrared Monitoring I
	WEP.O	101	Optical and Infrared Monitoring II
	WEP.P	110	Optical and Infrared Monitoring III
	WEP.Q	114	Resolution Enhancement and Super-resolution
	WEP.R	121	Geographic Information Science I
	WEP.S	129	Geographic Information Science II
	WEP.T	136	Ground Penetrating Radar
	WEP.U	140	Urban and Built Environment I
	WEP.V	147	Urban and Built Environment II
	WEP.W	155	Soil Moisture-SMOS and SMAP
	WEP.X	160	Soil Dielectric Propeties
	WEP.Y	166	Soil Moisture-Radar
	WEP.Z	174	Soil Properties I
	WEP.AA	180	Soil Properties II
	WEP.BB	187	Soil Moisture Retrieval I
	WEP.CC	197	Soil Moisture Retrieval II
	WEP.DD	204	Inland Waters

Technical Program Overview - Poster Sessions

Thursday, July 17

	Session Code	Starting Board Number	Session Name
17:20 - 19:00	THP.A	1	Sea Ice
	THP.B	7	Snow Cover I
	THP.C	14	Snow Cover II
	THP.D	22	Ice Sheets and Glaciers I
	THP.E	28	Ice Sheets and Glaciers II
	THP.F	32	Permafrost
	THP.G	35	GNSS+R Remote Sensing
	THP.H	44	Ground-based Remote Sensing
	THP.I	54	Rainfall Measurement Techniques
	THP.J	61	Cloud and Rain Measurement Techniques
	THP.K	66	Atmospheric Measurements
	THP.L	73	Numerical Weather Prediction and Data Assimilation
	THP.M	76	Atmospheric Sounding
	THP.N	79	Aerosols, Dust, and Haze
	THP.O	87	Land Use and Land Cover Change I
	THP.P	95	Land Use and Land Cover Change II
	THP.Q	105	Land Use and Land Cover Change III
	THP.R	114	Land Use and Land Cover Change IV
	THP.S	121	Land Use and Land Cover Change V
	THP.T	124	Physiological State/Foliar Chemistry
	THP.U	126	Topography, Geology, Geomorphology Applications I
	THP.V	133	Topography, Geology, Geomorphology Applications II
	THP.W	140	Topography, Geology, Geomorphology Applications III
	THP.X	142	Wetland I
	THP.Y	147	Wetland II
	THP.Z	150	Anomalous Conditions Related to Oil Spills and Seasonal Processes
	THP.AA	154	Modeling and Algorithms for Sensing of Sea Spectra and Currents
	THP.BB	161	Wind Vector Retrievals Using Scatterometers and SAR
	THP.CC	168	Active and Passive Observations of Ocean Bology, Spectra, Rain and Wnds.
	THP.DD	174	Ocean Temperature Remote Sensing Science and Application
	THP.EE	178	Ocean Surface Salinity Remote Sensing
	THP.FF	181	Oceans: Coastal Zones I
	THP.GG	188	Oceans: Coastal Zones II
	THP.HH	191	Altimeter Technology and Model Development: Validation Campaigns
	THP.II	195	Ground Processing Systems
	THP.JJ	201	Data Stewardship, Discovery and Access
	THP.KK	209	Remote Sensing Data and Policy Decisions
	THP.LL	211	Earth Observation: Education
	THP.MM	215	The Chinese HY-2 Ocean Dynamic Environment Mission: Date Processing and Applications

36th Canadian Symposium on Remote Sensing / 36e Symposium canadien sur la télédétection
St. John's, Newfoundland and Labrador / St. John's, Terre-Neuve-et-Labrador
June 9-11 juin 2015: Delta Hotel and Conference Centre

www.CRSS-SCT.ca

Signal Hill National Historic Site, Cabot Tower, and St. John's Harbour – Gateway to the Atlantic.
(Photo credit: Province of Newfoundland)

The Canadian Symposium on Remote Sensing is the longest running national remote sensing conference series in the world. Hosted by the Canadian Remote Sensing Society, we invite you to beautiful and historic downtown St. John's in 2015 for a truly unique experience of culture, vibrant people, and, of course, a top-rate scientific, social, and event program.

The Conference Theme "***Exploring Synergies***" highlights remote sensing in exploration and sustainable resource development involving all sectors & technologies. *Newfoundland: A magical place to explore; unforgettable people to enjoy. See you on the Edge !*

Conference Chair: Randy Gillespie - Marine Institute, Memorial University. Co-Chair: Joan Luther - NRCan, Canadian Forest Service

Le Symposium canadien de télédétection est la série de conférences en télédétection la plus longue du monde. Il est organisé par la Société canadienne de télédétection. Nous vous invitons à St. John's, une ville riche d'histoires, pour une expérience vraiment unique, un peuple enthousiaste et bien sûr un programme scientifique et social de première classe. Le thème de la conférence "***Explorons les synergies***" met en évidence la télédétection dans l'exploration et le développement durable des ressources incluant tous les secteurs et technologies*. Venez nous voir à St. John's - une place magique à explorer; un peuple inoubliable à découvrir !*

Président de la conférence: R. Gillespie - Marine Institute, MUN. Co-présidente: J. Luther - RNCan, Service canadien des forêts.

IGARSS 2014 & 35th Canadian Symposium on Remote Sensing

IGARSS Conference 2014

July 13-18
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Room 200 AB, NASA booth 23-24

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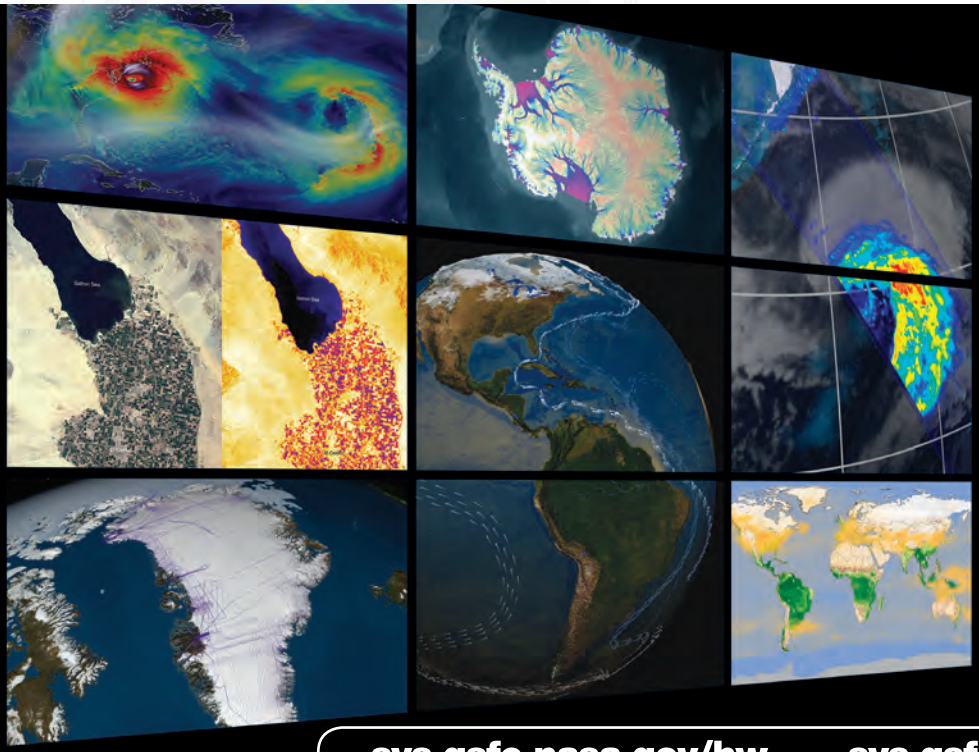

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Developing Nations e-Membership	$81	$41	N/A	N/A	N/A	N/A
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Developing Nations e-Membership	$72	$36	N/A	N/A	N/A	N/A
Asia Pacific	$161	$81	$36	$18	$81	$41
Developing Nations e-Membership	$73	$36	N/A	N/A	N/A	N/A

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The Canadian Remote Sensing Society - Société canadienne de télédétection (CRSS-SCT) is a federally incorporated, not-for-profit scientific and professional organization that advances research, education, and commercialization of remote sensing and related technologies. This year, we celebrate a rich heritage of 40 years of innovation and excellence as a diverse membership across Canada and abroad, comprising student, professional, and retired/senior members in government, industry, education, and other sectors.

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- access to excellent career and business networking opportunities and social events;
- preferred rates at the annual Canadian Symposium on Remote Sensing;
- recognition for career/education achievement: eligible for the prestigious CRSS-SCT National Awards Program;
- all CRSS-SCT members receive full access for free to the Canadian Journal of Remote Sensing;
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- regional and local science and social activities through the growing network of CRSS-SCT Chapters across Canada;
- additional benefits through partnerships with other domestic and international organizations (signed MOU's);
- join any of the five CRSS-SCT Working Groups that focus on specific issues with the CRSS-SCT Board of Directors.

You are invited to learn more about the Society at **http://www.CRSS-SCT.ca**, and consider joining online. Full-year membership rates ($CAD) are reasonable: Student $25, Professional $90, and Retired/Senior $35. You are also invited to stop by the CRSS-SCT Booth (#18) this week, and join the CRSS-SCT Annual General Meeting and Lunch (Friday July 18th).

CRSS-SCT: *Celebrating our 40th year in 2014*

www.CRSS-SCT.ca

CRSS-SCT, une société sans but lucratif de juridiction fédérale, est une organisation scientifique et professionnelle qui fait la promotion de la recherche, l'éducation, et la commercialisation de la télédétection et des technologies parentes. Cette année, la SCT célèbre un héritage riche de 40 ans d'innovation et d'excellence. Ses membres proviennent du Canada et d'autres pays. Ils comptent des étudiants, des professionnels, des retraités provenant des gouvernements, de l'industrie, ou du milieu académique. Parmi beaucoup d'autres avantages, les membres de CRSS-SCT reçoivent:

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- un tarif préférentiel au Symposium canadien sur la télédétection;
- une reconnaissance académique ou professionnelle: accessibilité aux Prix et récompenses nationaux de la CRSS-SCT;
- un accès personnel au Journal canadien de télédétection;
- de nouvelles opportunités pour les membres étudiants, incluant le leadership;
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- l'opportunité de joindre cinq groupes de travail permettant de faire avancer les dossiers importants pour les membres et ainsi appuyer le Bureau de direction.

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CRSS-SCT: *Fête son 40ième anniversaire en 2014 !*

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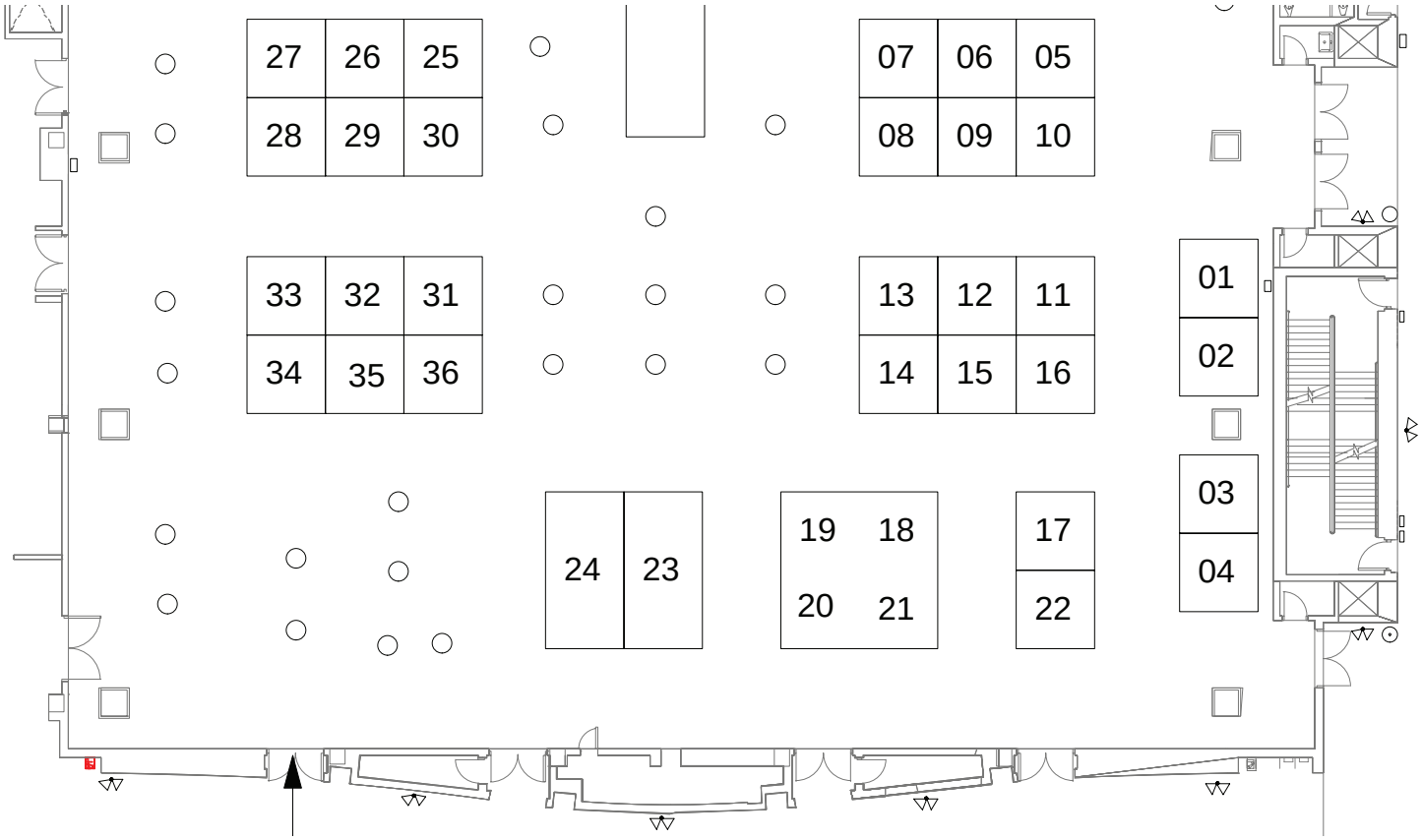
Exhibition: Level 2, Convention Hall Room 200-ABC



4	Committee on Earth Observation (CEOS)	17	Effigis Geo Solutions	26	PANalytical
5, 6	Japanese Aerospace Exploration Agency	18	Canadian Remote Sensing Society	27	FLIR Systems, Ltd.
7	Telops	19	Geoscience and Remote Sensing Society	28	University of Lethbridge-ATIC
8	Spectral Evolution	20	IGARSS 2015, Milan, Italy	29	ITRES Research Limited
9	Channel Systems, Inc.	21	Canadian High School Student Science Fair IGARSS 2014 Winners	30	Headwall Photonics, Inc.
10	Taylor & Francis	22	INRS (Institut national de la recherche scientifique)	31	Enterprise Electronics Corporation (EEC)
12	Institut de recherche d'Hydro-Quebec (IREQ) Groupe Technologie	23, 24	National Aeronautics and Space Administration (NASA)	32	Intergraph
13	PCI Geomatics	25	Array Systems Computing, Inc.	33	Spectra Vista Corporation
14, 15	Canadian Space Agency			34	ABB Analytical Measurement
16	SeaSpace Corporation			35, 36	MDA

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ARRAY SYSTEMS COMPUTING INC.	Array Systems Computing, Inc. Array Systems Computing Inc. is a Canadian software and signal processing company established in 1981. We focus on providing technical investigations and engineering support services to military and government research and development organizations. Our core areas of expertise include Sonar, Radar and Remote Sensing, and Intelligent Transportation Systems. We have delivered operationally proven software solutions to military, governmental and scientific organizations worldwide.

Canadian High School Student Science Fair IGARSS 2014 / 35th CSRS Winners

During the recent Quebec Science Fair and the Canada Wide Science Fair, two local high school students received awards for having the best poster presentations covering remote sensing technologies. These two students will be attending IGARSS 2014 to present their winning posters, including: from the Quebec Science Fair, William Gadoury, of the Academie Antoine Manseau Joliette, in Quebec, Canada, with his poster entitled, "Born From the Sky"; and from the Canada Wide Science Fair, Victor Ling, of Central Secondary School, Thames Valley, Ontario, Canada, with his poster entitled "Unlocking the Geology of Mars". Stop by Booth #21, which is part of a 20' x 20' booth featuring The Geoscience and Remote Sensing Society, The Canadian Remote Sensing Society, and IGARSS 2015, Milan, Italy, and learn about the poster presentations of these two talented high school students.

The mission of the *Conseil de développement du loisir scientifique* is to promote the development of a scientific culture to youths in the Province of Québec by presenting them with a wide range of possibilities offered by the wonderful world of sciences. Its mission includes the promotion of careers in Sciences and Technologies in addition to the development of scientific leisure.

Canadian Remote Sensing Society

The Canadian Remote Sensing Society - Société canadienne de télédétection (CRSS-SCT) is a Canadian federally incorporated, not-for-profit, scientific and professional organization. The CRSS-SCT is the focal point for leadership and excellence in advancing the art, science, technologies and applications of remote sensing and related fields for our members from all sectors (education, government, industry, others) in Canada and abroad. The CRSS-SCT was formed in 1974 and among other highlights hosts the Canadian Symposium on Remote Sensing. At the occasion of its 40th anniversary of foundation, CRSS-SCT is delighted to partner with the IEEE GRSS in co-hosting IGARSS 2014 with the 35th Canadian Symposium, and we invite all delegates to the 36th Canadian Symposium on Remote Sensing that will be held 9-11 June 2015 in St. John's Newfoundland Canada.

Canadian Space Agency

Established in 1989, the Canadian Space Agency coordinates all civil, space-related policies and programs on behalf of the Government of Canada. The CSA directs its resources and activities through three key Business Lines: Space Utilization, supporting government partners; Space Exploration, positioning Canada as a credible partner in international space exploration missions; and, Space Science and Technology driving capacity building in academia and space industry. By leveraging international cooperation and collaboration, the CSA generates world-class scientific research and industrial development for the benefit of humanity.

Channel Systems, Inc.

Channel Systems is a complete spectral imaging solution source. We provide spectral cameras for UV, VIS, NIR, MWIR and LWIR. We offer a full line of accessories including lighting, lenses, software and scanners. We are authorized distributors of spectral imaging components from the industry's leading manufacturers including Specim, Spectral Imaging and XenICs, Infrared Solutions. Channel Systems provides system integration and instrument development for imaging and traditional measurement systems. We are always looking for new partnerships to develop spectral imaging instruments and applications.

Committee on Earth Observation Satellites (CEOS)

CEOS ensures international coordination of civil space-based Earth observation programs and promotes exchange of data to optimize societal benefit and inform decision making. The CEOS exhibition will highlight the initiatives of the CEOS organization and its systems engineering tools and databases.

Effigis Geo Solutions

Drawing on the expertise of its resources, Effigis designs, develops and executes novel geospatial solutions (Earth observation services, infrastructure inventory, telecommunications network monitoring, GNSS software, geological studies) aimed at improving its customers' business processes. Flexible and professional, Effigis can adapt to every customer's specific challenges whatever the size of its project. Effigis Geo Solutions serves a variety of sectors, including public administration, aeronautics, agriculture, environment, forestry, consulting engineering, mining, oil and gas, public utilities and telecommunications.

Enterprise Electronics Corporation (EEC)

EEC TeleSpace is a leading provider of ground stations for the real-time reception of meteorological, environmental and defense satellite data. EEC TeleSpace is a division of Enterprise Electronics Corporation (EEC). EEC incorporated in 1971, manufactures high quality meteorological radar systems. EEC TeleSpace leverages EEC's core engineering capabilities for in-house antenna design, and production, seamlessly coupled with the flagship satellite data visualization and analysis software suite, PROTEUS. Applications include; continuous weather and environmental monitoring, high resolution satellite imagery, and disaster management. EEC has manufactured and delivered more than 100 satellite and 1000 radar ground stations in over 90 countries worldwide. Visit our booth to see the latest developments in weather radar systems technologies.

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Geoscience and Remote Sensing Society

The Geoscience and Remote Sensing Society seeks to advance science and technology in geoscience, remote sensing and related fields using conferences, education, and other resources. The fields of interest of the Society are the theory, concepts, and techniques of science and engineering as they apply to the remote sensing of the earth, oceans, atmosphere, and space, as well as the processing, interpretation and dissemination of this information.

	Headwall Photonics, Inc. Headwall is the world's leading designer and manufacturer of spectral imaging instruments for remote sensing and geo-spatial applications. Headwall's products include high performance hyperspectral imagers and Raman imaging sensors which are specifically designed for harsh remote sensing environments. Headwall offers sensors and instrumentation that are space-qualified (UV, VNIR, SWIR) as well as hyperspectral sensors for airborne deployment. These include very compact hyperspectral sensors designed for small, ultralight UAVs and robotic platforms. Headwall's sensors are available for a broad range of spectral imaging ranges and laser excitation wavelengths, including UV, Visible, VNIR, NIR, SWIR, and MWIR. High-performance instruments are made possible by Headwall's ability to design and manufacturer aberration-corrected diffractive optics, which are core components within each sensor.
	IGARSS 2015, Milan, Italy You are cordially invited to join us in Milan, Italy, for IGARSS 2015. This conference will bring together approximately 2,000 engineers, researchers, teachers, scientists and students from around the world to review the latest issues and studies using remote sensing technologies for observations of the Earth, oceans, atmosphere, and space. Join your colleagues and see the latest in geoscience instruments, equipment, software, books, journals and scientific programs of the world's premier annual remote sensing symposium. And, of course, enjoy all that the beautiful city of Milan, Italy, has to offer from arts, fashion, entertainment and delicious Italian food. Ciao!
	INRS (Institut national de la recherche scientifique) The Centre Eau Terre Environnement (Research Centre on Water, Earth, and the Environment) involves 40 professors who work to improve the protection, conservation, and development of natural resources. They work with a multidisciplinary approach that they believe is crucial for creating the global vision necessary for the understanding and sustainable management of water and land resources.
	Institut de recherche d'Hydro-Quebec (IREQ) Groupe Technologie Hydro-Québec is a major supplier of electricity, relying on clean, renewable energy. Hydro-Québec generates, transmits and distributes electricity. Its sole shareholder is the Québec government. It uses mainly renewable generating options, in particular large hydro, and supports the development of other technologies–such as wind energy and biomass. A responsible corporate citizen committed to sustainability, Hydro-Québec carries out construction projects to prepare for the future. It also conducts R&D in energy-related fields, including energy efficiency.
	Intergraph Intergraph Security, Government & Infrastructure (SG&I) provides geospatially powered solutions, including ERDAS technologies, to the public safety and security, defense and intelligence, government, transportation, photogrammetry, and utilities and communications industries. Intergraph is a wholly owned subsidiary of Hexagon AB (Nordic exchange: HEXA B). For more information, visit www.intergraph.ca/sgi and www.hexagon.com.
	ITRES Research Limited ITRES (1979) is an airborne hyperspectral remote sensing imager manufacturer and worldwide mapping survey provider. ITRES imagers feature unmatched precision, focus, and resolution for hyperspectral and thermal imaging of infrastructure and environmental applications. Our Lidar-ready systems cover all major spectral regions: hyperspectral VNIR CASI, SWIR SASi, MWIR MASI, hyperspectral thermal TASI and broadband thermal TABI. Supporting products include multiple sensor operation, remote operation capability, and (soon) in-flight geocorrection. New development: Wide-array thermal TABI-1800. Halve survey costs with a mapping swath twice as wide as the closest competing imager. Applications include mapping shorelines, stream effluent, aquatic habitat, building heat loss, urban heat islands, underground fires, and rapid response.
	Japanese Aerospace Exploration Agency On October 1, 2003, the Institute of Space and Astronautical Science (ISAS), the National Aerospace Laboratory of Japan (NAL) and the National Space Development Agency of Japan (NASDA) were merged into one independent administrative institution to be able to perform all their activities in the aerospace field as one organization, from basic research and development to utilization. The independent administrative institution is the Japan Aerospace Exploration Agency (JAXA.) Research and development in space and aviation areas as well as their wider applications are important means to achieve Japan's policy targets, thus one of JAXA's important missions is to contribute to solving various domestic and international issues. In 2013, an important year for JAXA as it celebrates its 10th anniversary, we renewed our corporate slogan, which became "Explore to Realize." In an environment where JAXA's role has been diversified, we chose the words "Explore," which is the basic principle of our activities, and also"Realize" to reflect our determination to be re-born as an organization for "realization," which is our management philosophy. JAXA will realize a safe and affluent society by utilizing space and the sky.
	MDA MDA delivers advanced geospatial information solutions derived from the RADARSAT satellite, commercial optical satellites, and aerial systems. Our experience in delivering solutions for complex and demanding operational support has made MDA the primary source used by the Civil Government, Defence and Security, Energy, and Aviation sectors.
	National Aeronautics and Space Administration (NASA) NASA Earth System Science conducts and sponsors research on global climate and environmental change and its consequences for life on Earth. Our observations from space help to identify the sources of change in the Earth system, their magnitude and trends, and how the Earth system will change in the future.
	PANalytical PANalytical Boulder (formerly ASD Inc.) is the world's leading supplier of precision field portable NIR spectrometers and spectroradiometers. Our ruggedized analytical instruments provide the freedom to rapidly collect high-quality spectra in the field for real-time lab quality results. For more information please visit www.asdi.com.

PCI Geomatics
PCI Geomatics is a world-leading developer of software and systems for remote sensing, imagery processing, and photogrammetry. With more than 30 years of experience in the geospatial industry, PCI is recognized globally for its excellence in providing software for accurately and rapidly processing satellite and aerial imagery. There are more than 30,000 PCI licenses, in over 150 countries worldwide. Find out more about PCI Geomatics at www.pcigeomatics.com

SeaSpace Corporation
SeaSpace Corporation provides antenna ground stations and TeraScan® software to over 500 customers world-wide, on all seven continents including Antarctica, and on many vessels including U.S. icebreakers. We also provide complete Eumetcast systems for the acquisition and cataloging of data from Eumetcast data streams over Europe and the Middle East. SeaSpace most recently supported customers wishing to receive and process the United States' newest Earth observing satellite, Suomi NPP, and is working towards providing systems for reception of the National Oceanic and Atmospheric Administration's (NOAA) next generation weather satellite, GOES-R. Besides ground stations, SeaSpace Corporation provides real-time data to customers via its WorldMet® data service. The satellites available include GOES, MTSAT, COMS, MSG, Meteosat, Suomi NPP, Terra, Aqua, NOAA, and MetOp. With the availability of reliable internet, this is now a viable option for many customers. Let SeaSpace be your provider of "Earth on Demand."

Skye Instruments Ltd
Skye Instruments Ltd have been designing and manufacturing instrumentation for Remote Sensing, Environmental Monitoring, Plant and Agricultural Research since 1983. We have a range of Remote Sensing instruments for ground, tower and airborne installations, which include Eddy Covariance/ Flux Towers & UAV's. Our Multi-Spectral sensors include wavelengths for LANDSAT, SPOT, NOAA, AVHRR, MODIS, plus many more Earth observation satellites. Please visit us at booth #11 to see our product range and to discuss your requirements. We look forward to seeing you at IGARSS 2014 – The Skye Instruments Team.

Spectra Vista Corporation
Building on over 20 years of experience in the design and manufacture of Field Portable Spectroradiometers and Airborne Imaging Spectrometers, SVC is demonstrating the flagship SVC HR-1024i spectroradiometer. This is one of a family of fully integrated instruments providing the highest quality data while including an internal camera, built-in GPS and second Bluetooth radio for communication with external sensors. Now, all the important spectral, positional, time, and image information is collected coincidentally and stored in one place. This is ideal for conducting agricultural, geological, environmental, research and critical for ground truthing efforts. The SVC HR-1024i is being used by a number of top level government institutions for demanding meteorological and inter-calibration applications. Please drop by booth #33 so we can discuss your application.

Spectral Evolution
SPECTRAL EVOLUTION is a leading manufacturer of field portable and laboratory spectroradiometers, spectrometers, and spectrophotometers for applications including geological remote sensing, ground truthing, spectral remote sensing, environmental and climate research, crop and soil research, vegetative studies, forestry and canopy studies, calibration transfer, upwelling and downwelling measurement, and more. www.spectralevolution.com

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Telops
Telops is a leading supplier of hyperspectral imaging systems and high performance infrared cameras for the defence, industrial, environmental and research industries. Telops also offers R&D services for optical systems technology development in order to respond to the specific needs of its customers.

University of Lethbridge-ATIC
The Alberta Terrestrial Imaging Centre (ATIC) is a Centre of Excellence at the University of Lethbridge. The focus of ATIC is remote sensing research, development and training led by a team of remote sensing faculty, staff, PDFs and students, and involving a network of international agencies and collaborators. Major funding includes a 6-year federal government grant - The Advanced Methods, Education and Training in Hyperspectral Science and Technology (AMETHYST) Program, which is a NSERC Collaborative Research and Training Experience (CREATE) grant at the University of Lethbridge. Research and training opportunities cover a broad spectrum of development and applications in terrestrial and atmospheric remote sensing and imaging sciences. AMETHYST students (B.Sc.,M.Sc.,Ph.D.) gain essential career experience through internship placements chosen from over 30 national and international agency partners around the world.

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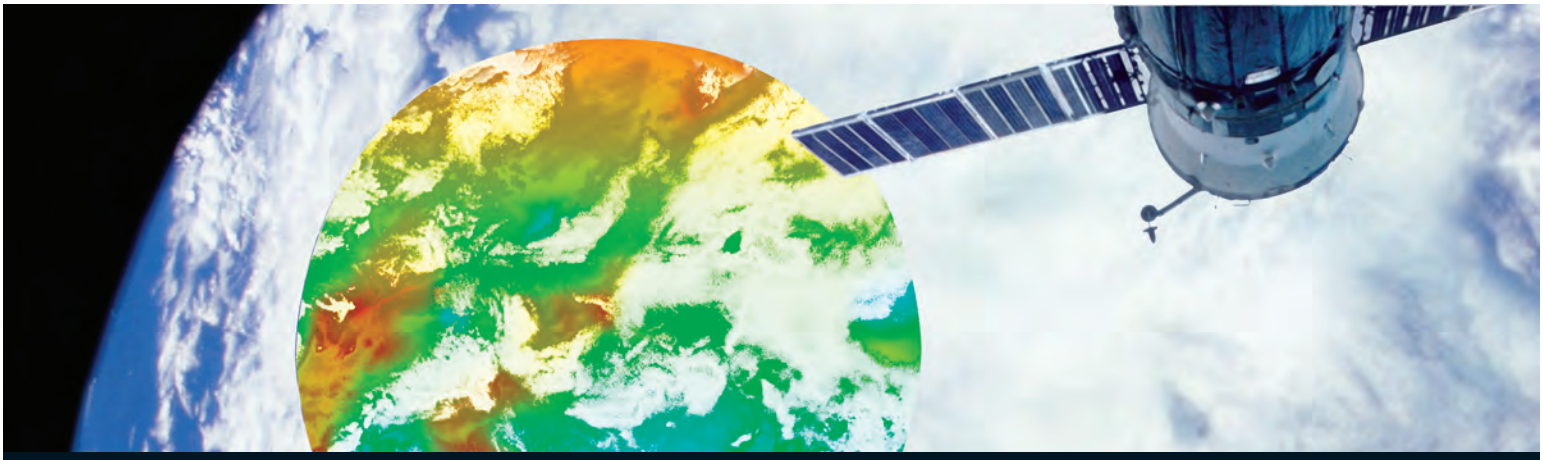

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IGARSS 2015

Milan, Italy

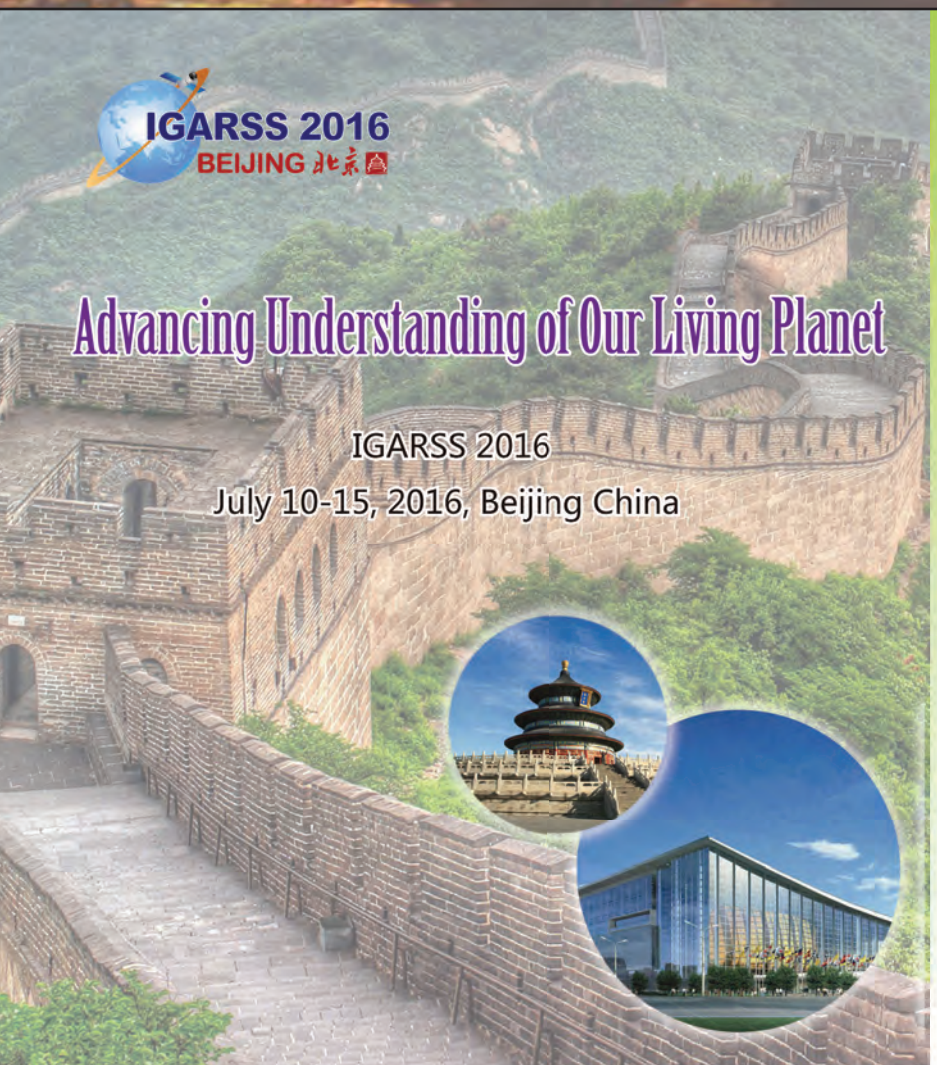
July 26 - 31

Remote Sensing: Understanding the Earth for a Safer World

Hosted by the IEEE Geoscience and Remote Sensing Society, the International Geoscience and Remote Sensing Symposium 2015 (IGARSS 2015) will be held from Sunday July 26th through Friday July 31th, 2015 at the Convention Center in Milan, Italy. This is the same town of the EXPO 2015 exhibition, whose topic is "Feeding the planet: energy for life". The conference main theme highlights the role of remote sensing for assessing, monitoring and managing risks related to natural disasters.

On behalf of the IEEE Geoscience and Remote Sensing Society and the IGARSS Organising Committee we invite you to participate in IGARSS 2015, the world's premier symposium on the subject of remote sensing. We look forward to meeting you and talking to you in Milan during IGARSS 2015

For more information, please visit: www.igarss2015.org



On behalf of the Local Organizing Committee, we warmly welcome you to the 2016 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2016), to be held from July 10-15, at the China National Convention Center located in the 2008 Olympic Park in Beijing, China.

In addition to the technical sessions, IGARSS 2016 will also include tutorials, exhibitions, professional meetings, a soccer game, a Beijing eve reception and an unforgettable award banquet on the Great Wall. We will also arrange a variety of social events for you.

Welcome to Beijing in July, 2016!

Your hosts:

General Co-Chairs:

Prof. Ji Wu, National Space Science Center, Chinese Academy of Sciences (NSSC, CAS)

Prof. Ya-Qiu Jin, Fudan University

Technical Program Co-Chairs:

Prof. Hua-Dong Guo, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences (RADI, CAS)

Prof. Jian-Cheng Shi, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences (RADI, CAS)

Prof. Kun-Shan Chen, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences (RADI, CAS)

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Opening Session and Plenary Speakers

Ellsworth LeDrew, Master of Ceremonies

08:30 **Welcome to IGARSS 2014 / 35th CSRS**
Monique Bernier, General Chair

08:40 **Welcome from the Canadian Space Agency**
Walter Natynczyk, President

08:50 **Welcome from Natural Resources Canada**
Brian Gray, Assistant Deputy Minister, Earth Sciences Sector

09:00 **Welcome from the IEEE**
Marina Ruggieri, IEEE Division IX Director

09:10 **Welcome from the IEEE Geoscience and Remote Sensing Society**
Melba Crawford, President

09:20 **Welcome from the Canadian Remote Sensing Society and CRSS-SCT Awards**
Anne Smith, Vice-President

09:30 **Major GRSS Awards and Recognitions**
Werner Wiesbeck, Master of Ceremony
2014 IEEE Fellows
2014 IEEE GRSS Distinguished Achievement Award
2014 IEEE GRSS Outstanding Service Award

10:10 **Break**

Plenary Session

10:30 **Remote Sensing in Support of Electric System Management at Hydro-Québec**
Gaétan Lantagne, Institut de recherche d'Hydro-Québec (IREQ)

10:45 **Use of satellite products for hydrological applications at EDF**
Matthieu Le Lay, Électricité de France (EDF DTG)

11:00 **Assimilation of Remote Sensed Observations in NOAA RAP and HRRR Weather Models toward Improved Wind and Solar Forecasts for Renewable Energy**
Stan Benjamin, NOAA Earth Systems Research Laboratory

11:15 **Remote Sensing for Electricity Networks in Africa**
Trevor Gaunt, University of Cape Town

11:30 **Concluding remarks for plenary**
Danielle De Sève, Institut de recherche d'Hydro-Québec (IREQ)

Symposium Introduction

11:35 **IGARSS 2014 / 35th CSRS Technical Program**
Josée Lévesque, Jean-Marc Garneau, Ellsworth LeDrew
Technical Co-Chairs

11:50 **Closing remarks**
Monique Bernier, General Chair

12:00 **Lunch**

Plenary Speakers

The aim of the plenary session is to present major issues related to energy management in our society. The plenary speakers have been invited to address the challenges and opportunities that we all encounter on a daily basis, and their presentations will explore the role or potential role of remote sensing in energy management, now and in the future.

Our four speakers are:

Dr. Gaétan Lantagne
Scientific Director, Hydro-Québec Research Institute (IREQ)
Varennes, Quebec, Canada

Remote Sensing in Support of Electric System Management at Hyrdo-Québec

As Scientific Director of the Hydro-Québec Research Institute (IREQ), Gaétan Lantagne is responsible for the scientific direction of 300 researchers and plays key roles in Hydro-Québec's energy efficiency and renewable energy research activities. Additionally, he is chair of Hydro-Québec's steering committee on wind power, vice president of the board of directors of C3E (the Centre of Excellence in Energy Efficiency), vice president of the board of the Natural Sciences and Engineering Research Council (NSERC)'s Centres of Excellence for Commercialization and Research (CECR), and a member of NSERC's Focus Group on Energy Technology.

Gaétan holds a PhD in chemical engineering from the University of Sherbrooke. His awards and distinctions include the 2004 Fernand-Séguin award for best paper (Réseau Environnement) and the 2009 Jacques-Bazinet prize for teaching excellence (Faculty of Engineering, University of Sherbrooke).

Dr. Matthieu Le Lay
Hydrometeorologist, Électricité de France – Direction technique générale (EDF DTG)
Département Surveillance
Service Développement Mesures Méthodes
Grenoble, France

Use of satellite products for hydrological application at EDF (Électricité de France)

Matthieu Le Lay obtained his doctorate in 2006 from the National Polytechnic Institute of Grenoble, France, with a thesis on hydrological modeling in the context of hydro-climatic variability in Benin (African Monsoon Multidisciplinary Analyses [AMMA] research program). After working briefly at Météo-France's National Meteorological Research Centre on the modeling of surface atmosphere coupling, in 2008 he joined the General Technical Division (DTG) of Électricité de France in Grenoble. He worked as a forecast engineer from 2008–12, and is currently working on the development of the modelling and forecasting system used by EDF to monitor daily streamflows affecting hydroelectric dams.

Dr. Stan Benjamin
Chief, Assimilation and Modeling Branch (AMB)
Global Systems Division
NOAA Earth Systems Research Laboratory
Boulder, Colorado, USA

Assimilation of Remote Sensed Observations in NOAA RAP and HRRR Weather Models Toward Improved Wind and Solar Forecasts for Renewable Energy

Dr. Stan Benjamin is a research meteorologist at the NOAA Earth System Research Laboratory in Boulder, CO. Stan received a Ph.D. in meteorology from Penn State and a B.A. in mathematics from Albion College in Michigan. He leads NOAA research projects on development of advanced regional and global atmospheric prediction models applied to forecast problems including renewable (wind and solar) energy, aviation, severe thunderstorms, winter storms, and air quality.

Prof. Trevor Gaunt
Department of Electrical Engineering
University of Cape Town, South Africa

Remote Sensing for Electricity Networks in Africa

Professor Trevor Gaunt is an electrical engineer. His initial experience after graduation was with an electrical manufacturer and an electricity utility. After 20 years in consulting engineering, mostly engaged in power system planning and design in Southern Africa, he joined the University of Cape Town. He completed his own PhD in 2003 and has supervised to completion 45 postgraduate research students. His research interests include electrification, distributed generation, reliability analysis, geomagnetically induced currents (GICs) and other complex engineering systems. Innovative results from the research include new approaches to network calculations, transformer condition monitoring, and power system reliability.

Fier partenaire de IGARSS 2014

Hydro Québec

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Dr. Riadh Abdelfattah, COSIM Lab – SUPCOM, University of Carthage, Tunis
Dr. Joseph Buckley, Royal Military College, Kingston, ON (retd)
Dr. Sylvie Daniel, Université Laval, Québec, QC
Dr. Jean-Pierre Dedieu, CNRS-UJF-IRD Grenoble
Mr. Daniel De Lisle, Canadian Space Agency, St-Hubert, QC
Dr. Danielle De Sève, IREQ, Hydro-Québec, Varennes, QC
Dr. Richard Fernandes, Canada Centre for Remote Sensing, Ottawa, ON
Dr. Brigitte Leblon, University of New Brunswick, Fredericton, NB
Dr. Joseph Piwowar, University of Regina, SK
Mrs. Carla Schmitt, Canada Centre for Remote Sensing, Ottawa, ON
Dr. Ahmed Shaker, Ryerson University, Toronto, ON
Dr. Anita Simic, G-Eco Research, Toronto, ON
Dr. Anne Smith, Agriculture and Agri-Food Canada, Lethbridge, AB
Dr. Francois Vachon, IREQ, Hydro-Québec, Varennes, QC
Dr. Peter White, Canada Centre for Remote Sensing, Ottawa, ON

Theme Coordinators

Tom Ainsworth	**Analysis Technique Group**	AG1	Analysis Techniques -SAR (A.1,A.2,A.3, A.4, A.12)
Jocelyn Chanussot		AG2	Analysis Techniques - Optics and hyperspectral (A.5, A.6, A.7)
Lorenzo Bruzzone		AG3	Analysis Techniques - Image analysis (A.8, A.9, A.10, A.11)
Monique Bernier	**Cryosphere**	C	Cryosphere
Adriano Camps	**Sensor & Platform Group**	SG1	Sensors and Platforms - Microwaves (S1, S.2, S.3)
John Kerekes		SG2	Sensors and Platforms - Optics (S5)
Shannon Brown		SG3	Sensors and Platforms - Others (S.4, S.6, S.7)
Al Gasiewski	**Atmosphere**	M	Atmosphere
Ellsworth LeDrew	**Land Group**	LG1	Land use, land cover change, urban environment (L.1, L.4)
David Goodenough		LG2	Forest and vegetation
Tom Jackson		LG3	Agriculture and soil (L.3, L.6)
Irena Hajnsek		LG4	Geology, geomorphology, inland waters (L.5, L.7, L.8)
David Weissman	**Oceans**	O	Oceans
David Kunkee	**Data Management, Dissemination, Education and Policy**	D	Data management, dissemination, education and policy

Session Organizers

Riadh Abdelfattah
Jon Atli Benediktsson
Monique Bernier
William J. Blackwell
Andrew Blanchard
Wolfgang Boerner
Shannon Brown
Joseph Buckley
Adriano Camps
Michael Cathcart
Chandrasekar V Chandra
Paul Chang
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Richard Fernandes
Paolo Ferrazzoli
Paolo Gamba
Jean-Marc Garneau
Albin Gasiewski
Irena Hajnsek
Martti Hallikainen
Linda Hayden
Scott Hensley
Akira Hirose
Michael Inggs
Jasmeet Judge
John Kerekes
Duk-jin Kim
David Kunkee
David M. Le Vine
Brigitte Leblon
Josée Lévesque
Peijun Li
Boon Lim
Richard Lucas
Tom Lukowski
Charles Luther
Animesh Maitra
Sidharth Misra
Mahta Moghaddam
Jose Moreno
Gabriele Moser
Ryuei Nishii
Cindy Ong
Fabio Pacifici
Derek Peddle
Joseph Piwowar
Antonio Plaza
Hampapuram Ramapriyan
Steven C. Reising
Helmut Rott
Christopher Ruf
Kamal Sarabandi
Motoyuki Sato
Jiancheng Shi
Masanobu Shimada
Vern Singhroy
Gail Skofronick-Jackson
Anne Smith
Jose A. Sobrino
Gordon Staples
Ridha Touzi
Leung Tsang
Devis Tuia
Jan Van Aardt
Haipeng Wang
Marwan Younis
Simon Yueh

Invited Session Organizers

James Abshire
Tom Ainsworth
Ole Andersen
Matt Arkett
Nicolas Baghdadi
Jean-Stephane Bailly
Yifang Ban
William J. Blackwell
Brian Brisco
Ludovic Brucker
Angus I. Calderhead
Adriano Camps
Pascal Castellazzi
Stéphane Chalifoux
Jonathan Cheung-Wai Chan
Chandrasekar V Chandra
Paul Chang
Francois Charbonneau
Andreas Colliander
Paolo de Matthaeis
Carlos Roberto de Souza Filho
Yves-Louis Desnos
Emmanuel Dinnat
Daniel Doktor
Xiaolong Dong
Mark Drinkwater
David Dubois
Michael Eineder
Gordon Farquharson
Laurent Ferro-Famil
Michael Förster
John Furgerson
Paul Gader
Paolo Gamba
Pablo J. Gonzalez
Jennifer Grant
Lionel Gueguen
Irena Hajnsek
Ramon Hanssen
Uta Heiden
Murakami Hiroshi
Yoshiaki Honda
Brian Hornbuckle
Andrew Jessup
Alexandre Jouan
John Kerekes
Yann Kerr
Siri Jodha S Khalsa
Waldo Kleynhans
Kwo-Sen Kuo
Richard Lachance
Thuy Le Toan
Brigitte Leblon
Jong-Sen Lee
Susanne Lehner
Richard Lepage
Josée Lévesque
Jonathan Li
Wenzhi Liao
Boon Lim
Mingsen Lin
Fabrizio Lombardini
Carlos Lopez-Martinez
Kari Luojus
Pesaresi Martino
Darren McKague
Gary McWilliams
Susanne Mecklenburg
Sidharth Misra
Alejandro Monsivais
Martin Montes-Hugo
Louis Moreau
Alberto Moreira
Gabriele Moser
Andreas Mueller
Cindy Ong
William Perrie
Pierre Potin
Eric Pottier
Desmond Power
Rahul Ramachandran
Benoit Rivard
Achim Roth
Brian Salmon
Sergey V. Samsonov
Klaus Scipal
Jiancheng Shi
Masanobu Shimada
Haruhisa Shimoda
Anita Simic
Upendra Singh
Gail Skofronick-Jackson
David Small
Alexander Soloviev
Francois Spoto
Satish Srivastava
Gordon Staples
Shinichi Suzuki
Ramón Torres
Ridha Touzi
Leung Tsang
Devis Tuia
Tomoo Ushio
Paris Vachon
Ivan Esteban Villalon Turrubiates
Cheng Wang
Shimon Wdowinski
Jens Wickert
Marwan Younis
Peng Yue
Yongqiang Zhao
Mehrez Zribi

A ticket is required for entry to all social activities. Additional tickets to social functions can be purchased at the registration desk. If you are unable to attend a social function, please return your ticket to the registration desk.

Welcome Reception

Date: Sunday, July 13
Time: 17:30 – 20:00
Location: Québec City Convention Centre, Foyer 400
Cost: Included for delegates registered to attend on Sunday.

Welcome to the International Geoscience and Remote Sensing Symposium (IGARSS 2014)! Catch up on news from long-time colleagues and make new friends at the opening reception. Complimentary appetizers will be served.

Symposium Awards Banquet

Date: Thursday, July 17
Time: 19:30 – 23:00
Location: Fairmont Le Château Frontenac
Cost: Before May 30: C$90 (15% tax & serv. incl.)
After May 30: C$110 (15% tax & serv. incl.)

This year's IGARSS-CSRS awards banquet will be held at the Fairmont Le Château Frontenac. Please spread the word to other IGARSS-CSRS participants, and encourage them to join us in Québec City's landmark hotel for this great banquet evening.

Situated in the heart of Old Québec, this heritage urban resort will seduce you with its historic charm, distinctive elegance, world-class hospitality and magic touch. The IGARSS-CSRS banquet at the Fairmont Le Château Frontenac promises to be a memorable and inspiring evening.

IGARSS 2014 Soccer Tournament

Date: Wednesday, July 16
Schedule: 17:30 – 19:00 Shuttle between the Québec City Convention Centre and Laval University
18:30 – 23:00 Soccer games
22:00 – 00:00 Shuttle between Laval University and the Québec City Convention Centre
Cost for players: C$25 (15% Tax incl.)
Cost for spectators: C$12 (15% Tax incl.)
Format: Mini World Cup (indoors)

The IGARSS soccer tournament will be held at the TELUS Centre, a brand new, top-notch sports facility on the campus of Laval University just five kilometres from Old Québec City. Transportation will be provided for both participants and spectators. Fees cover the cost of snacks, drinks, trophies and referees. There will be two groups of four teams, each team with a maximum of 10 players (7 on field and 3 on bench). Teams in each group will play against each other in a round robin arrangement. The first and second group winners will play off in the semifinals. Winners of the two semifinals will play off in the final contest, the IGARSS World Cup, while the losers of the two semifinals will compete in the third place playoff.

Women in Geosciences, Remote Sensing and Engineering Luncheon

Date: Tuesday, July 15
Time: 12:10 – 13:30
Location: Hilton Hotel, Les Plaines Room (23rd floor)
Cost: Before May 30: C$20 CAD (15% tax & serv. incl.)
After May 30: C$30 (15% tax & serv. incl.)

This is the third annual Women in Geosciences and Remote Sensing event at IGARSS. The reception is open by registration to women and men at all stages in their careers. The event will provide networking opportunities and a forum of discussion between participants. The Les Plaines Room offers a sweeping panoramic view of the St. Lawrence River, the Plains of Abraham, and Old Québec.

Technical Committee and Chapter Chairs Dinner

Date: Wednesday, July 16
Time: 19:00 – 22:00
Location: Hilton Hotel, Les Plaines Room (23rd floor)
Cost: Before May 30: C$45 (15% tax & serv. incl.)
After May 30: C$60 (15% tax & serv. incl.)

Members of GRSS technical committees and GRSS Chapter Chairs and IGARSS delegates (and guests) are invited to learn more about our technical committees and chapters. This event provides a venue for discussion of GRSS activities accompanied by a fine meal. The Les Plaines Room offers a sweeping panoramic view of the St. Lawrence River, the Plains of Abraham, and Old Québec.

Editors Luncheon

Date: Thursday, July 17
Time: 12:10 – 13:30
Location: Le Parlementaire – (the National Assembly restaurant)
Cost: By invitation

Industry Student Lunch

Date: Wednesday, July 16
Time: 12:10 – 13:30
Location: Québec City Convention Centre, Room 204-AB
Cost: Before May 30: C$20 (15% tax & serv. incl.)
After May 30: C$30 (15% tax & serv. incl.)

The flagship event of the student program is a reception-style buffet luncheon that gives you the opportunity to make valuable connections with industry professionals and peers. Don't miss this opportunity to put your networking skills to good use. There will be a random draw of door prizes. Proof of student membership is required to collect a prize. RSVP when you register for the conference.

Industry participants:

Canadian Space Agency (CSA)	Daniel Delisle
Intergraph	Desmond Khor
MDA Corporation	Gordon Staples
NASA	Winnie Humberson
PCI Geomatics	Kevin Jones
SeaSpace Corporation	Kota Prasad
C-Core	Des Power
Spectral Evolution	Nate Bloomingdale
Kim Geomatics	Bob Ryerson
Hydro-Québec	François Vachon

Q&A Session on Job Market in Remote Sensing

Date: Tuesday, July 15
Time: 13:20 – 15:20
Location: Room 204-B

Panel Chair: Brigitte Leblon (UNB)
Panelists: Alberto Moreira (German Aerospace Centre [DLR], Germany)
Bob Ryerson (KimGeomatics, Canada)
Gordon Staples (MDA, Canada)
François Vachon (Hydro-Québec)
Steve Volz (NASA, USA)

This event will feature keynote addresses from a panel of international industry/space agency experts about the job market in remote sensing. Learn about the exciting range of career opportunities in the industry and take part in the Q&A session that follows the presentation. There will be a random draw of door prizes. Proof of student membership is required to collect a prize.

Young Geoscience Professionals Lunch

Date: Thursday, July 17
Time: 12:10 – 13:30
Location: Hilton Hotel, Les Plaines Room (23rd floor)
Cost: Before May 30: C$20 (15% tax & serv. incl.)
After May 30: C$30 (15% tax & serv. incl.)

The Young Professionals Lunch is intended to encourage discussion between current students and GOLD members (Graduates of the Last Decade). The lunch will provide an opportunity to discuss potential career paths and skill sets beneficial to secure employment in the geosciences and remote sensing industries, as well as professional development opportunities. The Les Plaines Room offers a sweeping panoramic view of the St. Lawrence River, the Plains of Abraham and Old Québec.

Canadian Remote Sensing Society – Société canadienne de télédétection (CRSS–SCT) AGM and Lunch (For members only)

Date: Friday, July 18
Time: 12:10 – 13:30
Location: Hilton Hotel, Les Plaines Room (23rd floor)
Cost: Before May 30: C$20 (15% tax & serv. incl.)
After May 30: C$30 (15% tax & serv. incl.)

This is the 2014 Annual General Meeting (AGM) of the Canadian Remote Sensing Society/Société canadienne de télédétection. Lunch will be served for those members who have purchased a lunch ticket in advance. You do not need to purchase a lunch to attend the meeting, but food not purchased at the event is not permitted.

Symposium Venue

Quebec City Convention Center
900, boul. René-Lévesque Est, 2nd Floor
Québec (Québec), Canada G1R 2B5
Phone: 418-644-4000 / 888-679-4000
Fax: 418-644-6455
IGARSS Entrance: 900, boul. Honoré-Mercier
Québec, (Québec), G1R 5T8
www.convention.qc.ca

Registration Desk

The registration desk is located in Hall 2000 on the main floor of the QCCC.

Hours of operation:

Sunday, July 13 .....07:30 – 20:00
Monday, July 14 .....07:30 – 19:00
Tuesday, July 15 .....07:30 – 19:00
Wednesday, July 16.....07:30 – 19:00
Thursday, July 17.....07:30 – 19:00
Friday, July 18 .....07:30 – 17:30

Business Centre

A business centre will be available for the duration of the event on Level 3 of the QCCC. The business centre will also double as a concierge and tourism information office.

Language

The official language of IGARSS 2014 is English and all presentations must be given in English. No simultaneous interpretation service will be provided.

In Case of Emergency

For any emergency call **Pierre Bolduc** at **418-928-4854**.

Messages

Messages received by the Organizers for delegates will be posted on the message board located in Hall 2000, near the registraiton desk. Messages between delegates may also be left on this board.

Internet Café

The Internet Café is located on level 3 in the Foyer area. You are welcome to use this at any time during the official opening hours.

WiFi Internet

IGARSS 2014 / 35th CSRS is offering you a free wireless Internet access for the duration of your stay. This connection offers speeds of 5Mbps and a bandwidth total of 3GB per device per day.

WiFi connection procedure:

1. Activate the wireless networking card on your device.
2. Connect to *Vidéotron_Centre_des_congres*.
3. You will be redirect to the Free Wireless Internet Access Vidéotron page, choose: *Wireless Internet with access code*
5. Enter the access code **IGARSS2014** in the field and accept the terms and conditions.
6. Click on the *Connect now* button to complete the procedure.

This procedure has to be completed only on the first connection to the wireless network. The access code provided will be valid from July 11 to July 18 at 3am.

Please use this code only on 1 of your devices, if you need to connect a second device use the free Internet offered by the Congress Centre.

Mobile App

The IGARSS 2014 / 35th CSRS mobile app is a native application for iPad and smartphones, a hybrid web-based app for Blackberry. There is also a web-based version of the application for all other web browser-enabled phones.

Downloading the app is easy. Simply :

- Scan the QR Code (all device types)
- Search for IGARSS 2014 in the app store (Android and iOS)
- Type the following URL into your device's mobile browser: http://m.core-apps.com/igarss2014

Mobile Phones

Please ensure that your cellular phone, pager, etc., are turned off or put on silent/vibrate mode during sessions.

Charge Bar

A free standing mobile and tablet charger will be available in Hall 2000, near the registration desk for quick recharge if you are running low on power.

Name Badges

All delegates will receive a name badge upon registration. Name badges must be worn at all times for identification purposes and admission to symposium technical sessions, exhibitions and catering breaks. In case of loss, replacement badges can be obtained at the registration desk.

Tickets for Social Events

You have been issued a package containing your name badge and the tickets you ordered for tours and social events when you checked in at the Registration Desk. Please bring the appropriate ticket(s) to all social events. Additional tickets will be available for purchase at the Registration Desk, based on space availability.

Facilities Accessibility

The Québec City Convention Centre's facilities are accessible and adapted to the needs of the mobility impaired, and comply with the requirements of the National Building Code of Canada and the American Disability Act.

The QCCC offers:

- Telephone device for the deaf
- Restrooms with automatic doors
- Each public floor is wheelchair accessible
- Wheelchairs available upon request
- Adapted elevators and ramps
- Mobile ramp for wheelchairs
- Help and supervision for the mobility impaired during emergencies
- Personalized management service

Smoking Policy

The Quebec provincial government imposes a strict "no smoking" policy in public venues, restaurants, bars and shopping centres.

The Québec City Convention Centre is a smoke-free facility and no indoor smoking areas are provided.

Speaker Preparation Room

The speaker preparation room is located in QCCC meeting room 2102-B. This room will be available for all presenters to upload their presentations with the assistance of the IT technician on duty.

Sunday, July 13 .....17:30 – 20:00
Monday, July 14 .....08:00 –17:30
Tuesday, July 15 .....07:30 – 17:30
Wednesday, July 16.....07:30 – 17:30
Thursday, July 17.....07:30 – 17:30
Friday, July 18 .....07:30 – 17:30

All presenters are required to visit the speaker preparation room and provide their presentation on a USB key to the IT technician at least two hours prior to the start of their session. This will ensure that the technician has met with all presenters and that he/she is fully aware of your presentation requirements. Your collaboration is requested to ensure that all sessions run as smoothly as possible.

Symposium Meeting Room

A meeting space is available for short (up to one hour), informal meetings. A booking sheet is available at the registration desk.

Catering

Morning and afternoon health breaks will be served in the exhibition and poster area.

Personal Property

Please take good care of your personal belongings and do not leave them unattended. The organizers and the symposium secretariat cannot be responsible for any loss or damage to your personal property.

Disclaimer

The 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2014) and 35th Canadian Symposium on Remote Sensing, including the organizing committee and the secretariat, and all suppliers to the symposium and their servants, agents, contractors and consultants, will not accept liability for damages of any nature sustained by participants or their accompanying persons or loss or damage to their personal property as a result of attending the IGARSS 2014 or related events.

The information contained in this handbook was correct at the time of printing.

Future IGARSS Symposia

- IGARSS 2015: July 26 - July 31, Milan, Italy
- IGARSS 2016: July 10 - July 15, Beijing, China
- IGARSS 2017: July 23 - July 28, Fort Worth, Texas, USA
- IGARSS 2018: TBA

Future Canadian Symposia

- CSRS 2015: June 9-11, St. John's, NL
- CSRS 2016: June. Winnipeg, MB

Les Sept-Chutes Power Plant

Date: Sunday, July 13
Time: 11:00 – 17:00
Schedule: 11:00 Departure from the Québec City Convention Centre by bus
12:00 Arrival at Les Sept Chutes
Box lunch provided
12:30 to 16:00 Guided tour
16:00 Departure from Les Sept Chutes by bus
17:00 Arrival at the Québec City Convention Centre
Cost: C$55 (15% tax included)

Discover a spectacular natural wonder with seven waterfalls and dramatic landscapes in Saint- Ferréol-les-Neiges, just 45 minutes from Québec City. Enjoy the incredible natural surroundings and learn about the fundamentals of hydroelectric power generation.

Besides its magnificent natural attractions, the site has a rich and unique heritage. Les Sept-Chutes power plant is one of the oldest hydroelectric facilities in Québec. It was built in 1916 and became the property of Hydro-Québec in 1963. Visit the impressive power plant and dam.

Walking Tour of Old Québec, World Heritage Site

Date: Sunday, July 13
Time: 13:30 – 16:00
Schedule: 13:30 Departure from the Québec City Convention Centre
Guided walking tour
Dufferin Terrace (Upper Town)
Seminary of Québec (Upper Town)
Notre-Dame-de-Québec Basilica (Lower Town)
Place Royale (Lower Town)
...and more
16:00 Arrival at the Québec City Convention Centre
Cost: C$30 (15% tax included)

The tour will visit the Dufferin Terrace, a magnificent boardwalk overlooking the St. Lawrence River. Another stop is the Seminary of Québec, founded in 1663. Now occupied by the Architecture School of Laval University, this institution is a remarkable collection of buildings erected around enclosed courtyards.

The tour will also visit the magnificent interior of the Notre-Dame-de-Québec Basilica in the Lower Town. You will see Place Royale, where the Québec Government has restored the houses of merchant families from the New France era.

Sugar Shack Dinner: La Sucrerie Blouin

Date: Monday, July 14
Time: 19:00 – 23:30
Schedule: 19:00 Departure from the Québec City Convention Centre by bus
19:45 Arrival at the Sucrerie Blouin
20:00 All-you-can-eat dinner
20:45 to 22:45 Exploring the site
22:45 Departure from the Sucrerie Blouin by bus
23:30 Arrival at the Québec City Convention Centre
Cost: C$47 (15% tax included)

La Sucrerie Blouin invites you to relive the good old days in a typical sugar shack. You will enjoy the traditional method of collecting maple sap and boiling it over a woodstove in the old-fashioned way. You will have a very enjoyable "sugar party" in a picturesque setting in the sugar bush on the shores of the St. Lawrence River.

- Traditional meal (all you can eat, served at the table)
- Toffee on snow
- Explanation of maple syrup making
- Horse-drawn Ssleigh ride
- Dance hall
- Traditional music
- Sale of maple products

Visit and Dinner at Onhoüa Chetek8e Traditional Huron Site

Date: Monday, July 14 / Wednesday, July 16
Time: 18:15 – 22:30
Schedule: 18:15 Departure from the Québec City Convention Centre by bus
18:30 Arrival at the Onhoüa Chetek8e traditional Huron site and visit of the boutique
19:00 Guided tour
19:45 Traditional meal
- Terrine (game meat)
- Traditional soup of the day and bannock (Indian bread)
- Tender venison cubes Bourguignon, service with wild rice and traditional vegetables.
- Home-style cake with savoury maple sauce.
- Wild tea

20:45 Native show
22:00 Departure from the traditional Huron site by bus
22:30 Arrival at the Québec City Convention Centre
Cost: C$65 (15% tax included)

The trip to the Onhoüa Chetek8e traditional Huron site located on the Huron-Wendat reservation is a unique opportunity to discover the history, culture and lifestyle of the Huron people past and present.

> "The evolutionary path of the Americas has to a certain extent historically tied our people. By visiting our recreated village and letting yourselves be carried away by our stories, you will discover the hidden faces of the Huron way

of life. We trust your stay amongst us will bring a better understanding of our evolution and culture."
– Mario Gros-Louis, Founder and Owner

Visit the Annonchia, the long house, where you will be introduced to the traditional Huron way of life and the social organization at the time of the arrival of the Europeans. Learn about traditional techniques of food preservation (smoked and dried meats) and transportation. Receive an initiation to the spiritual life of the Huron people, including a sweat lodge and traditional medicine. Visit a giant tipi, find out about the different First Nations and learn about the present situation of the Huron-Wendat people

Native show: Sacred dances and ceremonies were traditionally performed in the fall (to thank the Creator for an abundant harvest of wild fruits and corn) and during special holidays. At the end of the show, visitors are invited to participate in the friendship dance, performed to strengthen the bonds between nations

St. Lawrence River Cruise on the AML *Louis Jolliet*

Date: Tuesday, July 15
Time: 18:15 – 23:30
Schedule: 18:15 Departure from the Québec City Convention Centre by bus
18:30 Arrival at the Chouinard Pier for boarding
19:00 Departure of the cruise
23:00 Return to the Chouinard Pier and departure by bus
23:30 Arrival at the Québec City Convention Centre
Cost: Option 1 (Gourmet Getaway and Evening Cruise): C$135 (15% tax included)
Cost: Option 2 (Evening Cruise only): C$75 (15% tax included)

Option 1: Gourmet Getaway (5-course dinner) and Evening Cruise
Come aboard the AML *Louis Jolliet* and savour the culinary delights prepared by our chef.

- 5-course dinner, excellent service and cozy atmosphere.
- The breathtaking beauty of the illuminated "Vieille Capitale" (historic capital).
- Live entertainment (performing artist and musician).
- Discover Québec City from one bridge (Pont de Québec) to another (Ile d'Orléans Bridge).

Option 2: Evening Cruise only
Make the most of summer on the largest floating terrace in Québec City!

- The breathtaking beauty of the "Vieille Capitale" with a unique view as the boat passes under the Québec bridges.
- A great place to spend the evening with colleagues and friends.
- Perfect setting to party with our DJ.

Train Trip to Charlevoix

Date: Saturday, July 19
Time: 08:45 – 17:00
Schedule: 08:45 Departure from the Québec City Convention Centre by bus
09:00 Arrival at the Parc de la Chute-Montmorency to take the train
09:30 Departure of the train
11:45 Arrival in Baie-Saint-Paul
14:30 Departure from Baie-Saint-Paul
16:45 Arrival at Parc de la Chute-Montmorency and departure by bus
17:00 Arrival at the Québec City Convention Centre
Cost: C$280 (15% tax included)

Enjoy the charms of the village of Baie-Saint-Paul and the landscapes that have made Quebec's Charlevoix region famous. On this excursion, sample delicious Charlevoix products on board while you're gently rocked by the rhythm of the train and enjoying the view of the river and mountains. Also, explore picturesque Baie-Saint-Paul, the gateway to countless activities and discoveries. During the summer passengers have direct access to the farmers' market and can relax in its café.

Make the most of your stopover in Baie-Saint-Paul to try one of our discovery circuits. Whether you're a gourmet, an adventure lover, an outdoor enthusiast or a culture and heritage buff, these theme circuits invite you to explore the many hidden treasures of this truly authentic region.

The package includes:

- One rail excursion (return trip) aboard the Train of Le Massif de Charlevoix
- One tasty Charlevoix breakfast on the way there
- One stopover in Baie-Saint-Paul
- Alcoholic beverage
- Snack on the return trip

Tadoussac Whale Watching Package

Date: Saturday, July 19
Time: 07:45 – 19:45
Schedule: 07:45 – 09:00 Shuttle service from your hotel to Place d'Armes by bus
09:00 Departure from Place d'Armes
12:30 Arrival at Baie-Ste-Catherine
13:15 Whale watching cruise (3 hours)
16:30 Return from Baie-Ste-Catherine to Québec City by bus
19:45 Arrival at Place d'Armes and shuttle service to your hotel
Cost: C$185 (15% tax included)

A truly unique guided sightseeing tour! Aboard a tour bus, let us take you to the whales in the Saguenay–St. Lawrence Marine Park. Enjoy breathtaking scenery, a privileged contact with nature and a memorable encounter with the giants of the sea. Includes lunch and snack.

Student Paper Competition

All IEEE student members were invited and encouraged to enter the IGARSS Student Paper Prize Competition. Ten finalists have been selected by a committee to present their papers during a special session at the symposium in Québec on Tuesday morning, July 15, in Room 2101. Three prizes will be presented: First Prize (Mikio Takagi Student Prize) endowed with US$ 1000.00, Second Prize endowed with US$ 750.00, Third Prize endowed with US$ 500.00, plus certificates for each. Following the special session at IGARSS, a complimentary ticket to the GRSS Annual Awards Banquet has been offered to the 10 finalists. The ten finalists are listed below:

TU1.12.1: EXTENDED RANDOM WALKERS FOR HYPERSPECTRAL IMAGE CLASSIFICATION

Xudong Kang; Hunan University
Shutao Li; Hunan University
Meixiu Li; Hunan University
Jon Atli Benediktsson; University of Iceland

TU1.12.2: POST CALIBRATION OF CHANNEL 1 OF NOAA-14 AVHRR: IMPLICATIONS ON AEROSOL OPTICAL DEPTH RETRIEVAL

Chi Li; Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences
Yong Xue; Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences
Quanhua Liu; University of Maryland, College Park
Jie Guang; Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences
Xingwei He; Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences
Aojie Di; Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences
Lu She; Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences

TU1.12.3: BACKGROUND JOINT SPARSE REPRESENTATION FOR HYPERSPECTRAL IMAGE SUB-PIXEL ANOMALY DETECTION

Jiayi Li; Wuhan University
Hongyan Zhang; Wuhan University
Liangpei Zhang; Wuhan University

TU1.12.4: MODEL BASED PCA/WAVELET FUSION OF MULTISPECTRAL AND HYPERSPECTRAL IMAGES

Frosti Palsson; University of Iceland
Johannes Sveinsson; University of Iceland
Magnus Ulfarsson; University of Iceland
Jon Benediktsson; University of Iceland

TU1.12.5: A NOISE-ADJUSTED ITERATIVE RANDOMIZED SINGULAR VALUE DECOMPOSITION METHOD FOR HYPERSPECTRAL IMAGE DENOISING

Wei He; the State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing, Wuhan University
Hongyan Zhang; the State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing, Wuhan University
Liangpei Zhang; the State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing, Wuhan University
Huanfeng Shen; the School of Resource and Environmental Science, Wuhan University

TU2.12.1: ADAPTIVE SPECTRAL AND TEXTURE MATCHING FOR ROAD EXTRACTION IN VHR FUSED IMAGERY

K.Sreekanth Reddy; International Institute of Information Technology-Hyderabad
KS Rajan; International Institute of Information Technology-Hyderabad

TU2.12.2: GPS SBAS L1/L5 BISTATIC RADAR ALTIMETER

Sara Powell; University of Colorado
Dennis Akos; University of Colorado
Valery Zavorotny; NOAA

TU2.12.3: AUTOMATIC LARGE AREA RECONSTRUCTION OF BUILDING FAÇADES FROM SPACEBORNE TOMOSAR POINT CLOUDS

Muhammad Shahzad; Technical University Munich (TUM), Germany
Xiao Xiang Zhu; Technical University Munich (TUM), Germany; German Aerospace Center (DLR), Oberpfaffenhofen, Germany

TU2.12.4: SUPER-MINIATURIZED BOREHOLE ANTENNA DESIGN AND RADIO-WAVE ESTIMATION OF SUB-SURFACE HYDRAULIC FRACTURES AT MF BAND

Jiangfeng Wu; University of Michigan
Kamal Sarabandi; University of Michigan

TU2.12.5: INTERPRETING THE REMOTELY SENSED MICROWAVE RADIANCE FROM SNOW COVERED MOUNTAINS VIA A HIGH-RESOLUTION MODELING FRAMEWORK

Dongyue Li; The Ohio State University
Michael Durand; The Ohio State University
Steven Margulis; UCLA

The Geoscience and Remote Sensing Society has established a number of Technical Committees to actively promote discussion and advances in areas of member technical interests. Activities of the Technical Committees include the organization of special sessions at IGARSS along with hosting committee meetings open to all IGARSS participants. The following is a list of current technical committees, brief statements of interest, special sessions and their meetings at IGARSS 2014.

Earth Science Informatics

The mission of the ESI TC is to advance the application of informatics to geosciences and remote sensing and to provide a platform for ESI professionals to collaborate. The ESI fields of interest include: data and information policies, stewardship, preservation, provenance and quality; knowledge representation, information models for spatial and temporal relationships; cyberinfrastructure, interoperability, standardization, web service, sensor web and cloud computing; tools for improving data discovery, access, visualization and analysis; and emerging information technologies trends.

ESI TC Session: Implications of Big Data to Remote Sensing, Tuesday, Room 2104-AB, 15:40-17:20

ESI TC Session: Advancing Science through Management of the Geospatial Data Lifecycle, Tuesday, Room 2104-AB, 13:30-15:10

ESI TC Meeting: Tuesday, Room 2104-AB, 17:30-18:30

Frequency Allocations in Remote Sensing

The FARS TC mission is to interface between the GRSS membership and the frequency regulatory process through educating the membership of current frequency management issues and influencing regulatory efforts by organizing a GRSS response. FARS TC coordinates GRSS technical recommendations and responses to regulatory organizations such as the U.S. CORF, ITU, etc. FARS TC also tracks current and future user spectrum requirements, investigates potential interference issues and promotes the development of interference mitigation techniques.

FARS TC Session: Radio-Frequency Interference Mitigation and Spectrum Allocation for Remote Sensing, Monday, Room 2104-AB, 13:30-17:20

FARS TC Meeting: Monday, Room 2104-AB, 17:30-18:30

Image Analysis and Data Fusion

The IADF TC serves as a global and multidisciplinary network for researchers and professionals active in the fields of geospatial data fusion and multimodal remote sensing image analysis. IADF TC aims at connecting people and resources, to reach students and senior scientists, and promote standards and best practices for remote sensing image analysis.

IADF TC Session: Data Fusion, Monday, Room 202, 13:30-17:20

IADF TC Meeting: Monday, Room 202, 17:30-18:30

Instrumentation and Future Technologies

The IFT TC vision statement is to foster international cooperation in advancing state-of the-art geoscience remote sensing instrumentation and technologies to improve knowledge for the betterment of society and the global environment. The aim is to facilitate, engage and coordinate GRSS members and the communities-at-large to: Assess the current state-of-the-art in remote sensing instruments and technology; Identify new instrument concepts and relevant technology trends; Recognize enabling technologies for future instruments; and Promote and provide insight to institutions and industry on remote sensing instrument and technology development.

IFT TC Active Microwave Session: Digital Beamforming SAR Systems and MIMO Techniques, Thursday, Room 205-C, 08:20-10:00

IFT TC Passive Microwave Session: Inter-Calibration of Spaceborne Microwave Radiometers, Thursday, Room 2101, 10:30-12:10

IFT TC Active Optical: Space Lidar: Missions, Technologies and Observations, Tuesday, Room 205-AB, 10:30-12:10

IFT TC Small Satellite Session: Earth Remote Sensing with Small Satellites – Missions and Technology Developments, Thursday, Room 205-AB, 13:30-17:20

IFT TC Meeting: Thursday, Room 205-AB, 17:30-18:30

International Spaceborne Imaging Spectroscopy

The International Spaceborne Imaging Spectroscopy Technical Committee (ISIS TC) provides a forum for technical and programmatic discussion and consultation among national space agencies, research institutions and other stakeholders in land surface and coastal zone oriented imaging spectroscopy. The main goal of the ISIS TC is to share information on current and future spaceborne imaging spectroscopy (hyperspectral) missions with a focus on land surface and coastal zone research. The group intends to foster the discussion between geo-scientific research groups, technology oriented and institutional Earth observation stakeholders. It seeks opportunities for new international partnerships to the benefit of the global user community. Specific discussions within the technical committee also focus on interoperability among missions, 'best practice' mission implementation, mass data management challenges, calibration and validation, and development of a forward work plan for improved coordination amongst member agencies.

ISIS TC Session: International Spaceborne Imaging Spectroscopy – Missions: Updates and News, Wednesday, Room 2104-AB, 08:00-12:00

ISIS TC Session: International Spaceborne Imaging Spectroscopy - Calibration and Validation and Standards in Support of Spaceborne Imaging Spectroscopy Missions, Wednesday, Room 2104-AB, 13:30-17:20

ISIS TC Meeting: Wednesday, Room 2104-AB, 17:30-18:30

NOTE: The Technical Committee meetings are open to all IGARSS participants. All are invited to learn more about their activities.

In addition, IGARSS participants are invited to attend the Technical Committees and Chapter Chairs Dinner at which there will be brief presentations by the Chairs of the Technical Committees. Pre-registration is required.

Other Meetings

ABCC Workshop

Date: Sunday, July 13
Time: 08:30 – 17:00
Location: Québec City Convention Centre, Room 202

ABCC program is originally initiated by Australia, Brazil, Canada and China in 2009, "ABCC Program" for short, the full name is "Comparative Study on Global Environmental Change Using Earth Observing Technology", The research areas include land use and land cover, environment monitoring, disaster, carbon cycle, water and energy cycle, maritime ecosystem, etc. The objectives is to develop and use earth observation to conduct the comparative study on the global changing over different environment to tackle the global change mechanism, to focus efforts and together develop new and innovative methods, mechanisms, technologies, platforms and systems to expand their collective knowledge base to address mutual problems. At present, ABCC program has extended more partners and six international workshops have been held in Beijing, Ottawa, Perth, Iguazu from 2009 to 2013. In 2014, the seventh ABCC program workshop will be held in conjonction with IGARSS and the 35 CSRS at the Quebec City Convention Center on July 13. The meeting is open.

SMOS-Aquarius Inter-Comparison Working Group Meeting

Date: Wednesday, July 16
Time: 17:30 – 18:30
Location: Québec City Convention Centre Room 206-A

This working group was formed to identify an approach for inter- comparison of SMOS and AQUARIUS data leading to a merged validated data set. The work includes development of techniques and identification of reference sites for this purpose. To accomplish the actual inter-comparison, some fundamental issues in the understanding of L-Band remote sensing need to be addressed, and each instrument needs to independently refine its methods of calibration. In the long run this working group aims toward a merged and validated data product using commonly agreed upon standards. This working group was formed at the joint SMOS-Aquarius science meeting in Brest, France in April, 2013. The meetings are open. For further information email: david.m.levine@nasa.gov.

Tutorials

Full-Day Tutorials

Sunday, July 13, 09:00 – 17:00

FD-02: The Technique of Fourier Transform Spectroscopy and its Applications in Remote Sensing
Henry Buijs, Frederic Grandmont, Louis Moreau, Florent Prel.
Location: Room 2104-B

FD-03: Thermal Hyperspectral Imaging: from basics to ground-based and airborne applications
Marc-André Gagnon, Pierre Tremblay
Location: Room 205-A

FD-04: Mining Earth Observation Big Data: methods and applications
Mihai Datcu
Location: Room 205-B

FD-05: Remote Sensing with Reflected Global Navigation Satellite System (GNSS-R) Signals
James L Garrison, Adriano Camps, Estel Cardellach
Location: Room 205-C

Half-Day Tutorials

Sunday, July 13, 09:00 – 12:00 or 13:00 – 17:00

HD-02: SAR Interferometry and Multidimensional Tomography for Advanced Imaging and Monitoring
Fabrizio Lombardini, Gianfranco Fornaro
Location: Room 206-A

HD-03: Recent Results on the Use of Information Theory in Image Understanding
Renato J. Cintra
Location: Room 207

HD-04: The New Imaging Spectrometer Data Analysis System (ISDAS2013)
H. Peter White
Location: Room 206-A

HD-05: Spectral data systems for field spectrometry
John A. Gamon, Phil Townsend, Andy Hueni
Location: Room 206-B

HD-06: Recent Advances in Registration, Integration and Fusion of Remotely Sensed Data
Wojciech Czaja, Jacqueline Le Moigne
Location: Salle 206-B

Presentation Instructions

Oral Presentations

The official language of the Symposium is English. Each oral presentation is allocated 20 minutes. Of these the last 5 minutes shall be used for questions, discussion and change over. We kindly request that session chairs adhere to the timeline and when appropriate, fill the gap resulting from an unavailable presentation with extended discussion and debate with the audience.

Presenters should be in the session room 20 minutes before the session begins to meet with the session chair, who should be near the stage/lectern. **Presentations shall be uploaded to a computer in the speaker preparation room at least two hours prior to the session start.** Presenters are advised when uploading their presentation to check if formulas/animations are shown correctly.

The speaker preparation room is located in QCCC Room 2102-B. This room will be available for all presenters to upload their presentations with the audio visual technician. This area will be staffed by a technician and will be open during the following times:

Sunday, July 13 .....17:30 – 20:00
Monday, July 14 .....08:00 – 17:30
Tuesday, July 15 .....07:30 – 17:30
Wednesday, July 16.....07:30 – 17:30
Thursday, July 17.....07:30 – 17:30
Friday, July 18 .....07:30 – 17:30

Presentations from personal laptops are not allowed, to ensure smooth running of the program and to minimize transition time between presentations.

Poster Presentations

For each paper accepted within a poster session, one poster board in portrait format is reserved with a dimension of 1 meter wide by 2 meters tall. The poster area is located in the exhibition room (200-ABC) of the QCCC. The board numbering is identified below.

Posters shall be on display during the day dedicated to the specific poster session. Authors are requested to stand by their posters during the dedicated poster session from 17:20 to 19:00 and are invited to put up their posters in the morning so that attendees may browse them during the breaks throughout the day.

Paper Identifiers

Example:	TU	4	.	01	.	4
Meaning:	**Day**	**Time Block**	**Separator**	**Track**	**Separator**	**Sequence**

Day

MO ..... Monday, July 14
TU ..... Tuesday, July 15
WE ..... Wednesday, July 16
TH ..... Thursday, July 17
FR ..... Friday, July 18

Time Block

1 ..... First Morning Session ..... 08:20 - 10:00
2 ..... Second Morning Session ..... 10:30 - 12:10
3 ..... First Afternoon Session ..... 13:30 - 15:10
4 ..... Second Afternoon Session ..... 15:40 - 17:20
P ..... Evening Poster Session ..... 17:20 - 19:00

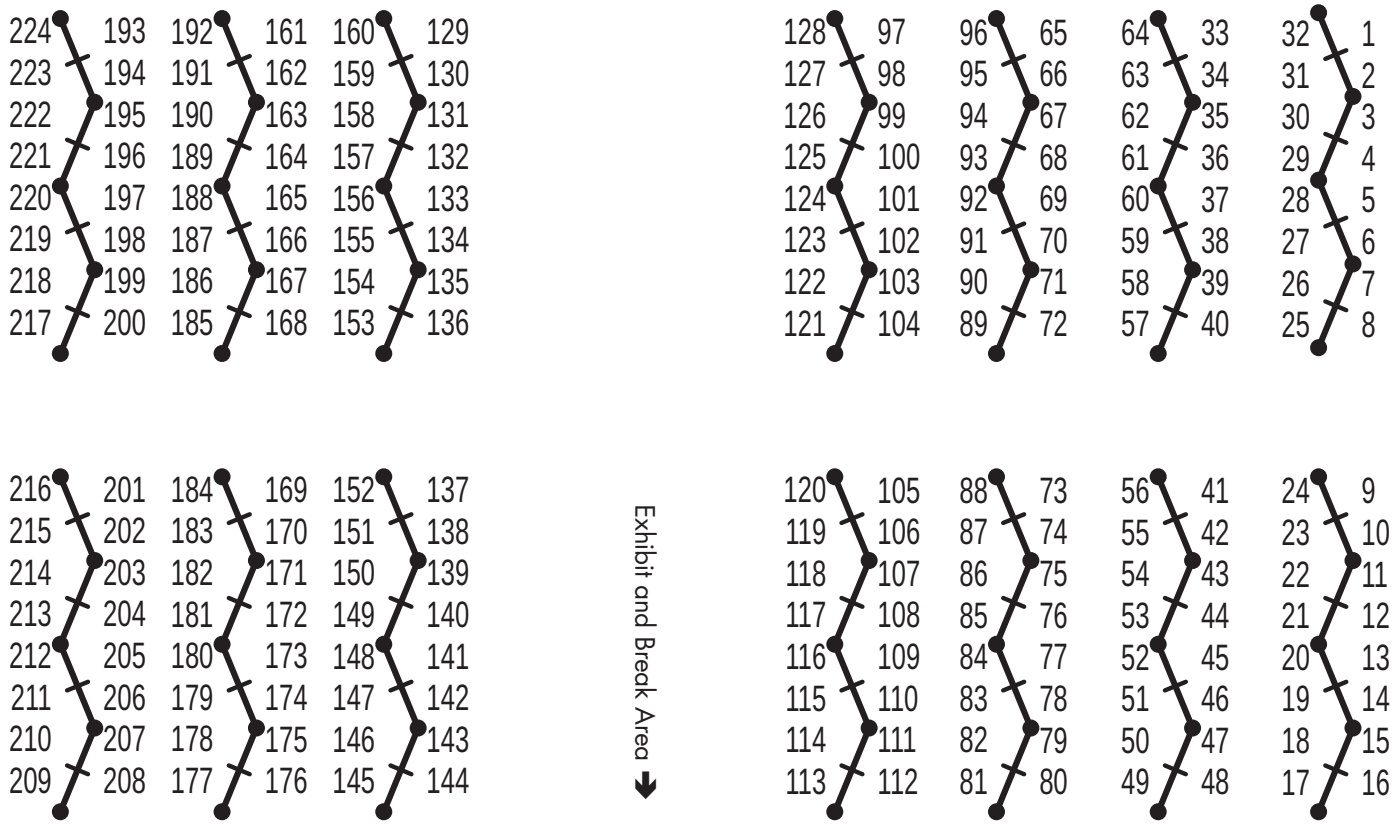
Room

All technical program events are held in the Québec City Convention Centre (QCC).

Sequence

Oral..... Order of presentation.
Poster..... Board number (Complete poster board identifier is the Track plus the Sequence.)

Poster Area Detail — Québec City Convention Centre, Room 200-ABC



Monday, July 14 | 13:30 - 15:10 | 2000-A
Session MO3.01 | Oral

INSAR Techniques I

Session Co-Chairs: Riadh Abdelfattah; Angus Calderhead, INRS-ETE

MO3.01.1 13:30 **GENERATING POINT CLOUDS OF FORESTED AREAS FROM AIRBORNE MILLIMETERWAVE INSAR DATA**
Michael Schmitt, Uwe Stilla, Technische Universität München, Germany

MO3.01.2 13:50 **PRINCIPAL SLOPE ESTIMATION AT SAR BUILDING LAYOVERS**
Cristian Rossi, Michael Eineder, Sergi Duque, Thomas Fritz, Alessandro Parizzi, German Aerospace Center (DLR), Germany

MO3.01.3 14:10 **A JOINT APPROACH FOR PHASE OFFSET ESTIMATION AND RESIDUAL MOTION ERROR COMPENSATION IN AIRBORNE SAR INTERFEROMETRY**
Stefano Perna, DI-Università degli Studi di Napoli Parthenope - IREA-CNR, Italy; Carmen Esposito, IREA-CNR; DING, Università degli Studi del Sannio, Italy; Paolo Berardino, Riccardo Lanari, Antonio Pauciullo, IREA-CNR, Italy

MO3.01.4 14:30 **JOINT SAR IMAGE COMPRESSION AND COHERENT CHANGE DETECTION**
Miriam Cha, Myra Nam, Kelly Geyer, Massachusetts Institute of Technology - Lincoln Laboratory, United States

MO3.01.5 14:50 **HIGH-RESOLUTION ESTIMATION OF IONOSPHERIC PHASE SCREENS THROUGH SEMI-FOCUSING PROCESSING**
Giorgio Gomba, Michael Eineder, Alessandro Parizzi, Richard Bamler, German Aerospace Center (DLR), Germany

Monday, July 14 | 13:30 - 15:10 | 2000-B
Session MO3.02 | Oral-Invited

Novel Approaches to Polarimetric SAR - In Honor of Jong-Sen Lee's 75th Birthday

Session Co-Chairs: Eric Pottier, Universite de Rennes 1; Tom Ainsworth, Naval Research Laboratory

MO3.02.1 13:30 **POLARIZATION DECOMPOSITION OF AQUARIUS RADAR DATA**
Jakob van Zyl, Yunjin Kim, Jet Propulsion Laboratory, United States

MO3.02.2 13:50 **X-BAND 30 CM RESOLUTION FULLY POLARIMETRIC SAR IMAGES OBTAINED BY PI-SAR2**
Yoshio Yamaguchi, Gulab Singh, Niigata University, Japan; Shinichiro Kojima, Makoto Satake, NICT, Japan; Mao Inami, Sangun Park, Yi Cui, Hiroyoshi Yamada, Ryoichi Sato, Niigata University, Japan

MO3.02.3 14:10 **VOLUME STRUCTURE APPLICATIONS BY MEANS OF POL-INSAR TECHNIQUES: ACTUAL STATUS AND NEW CHALLENGES**
Konstantinos Papathanassiou, Irena Hajnsek, German Aerospace Center (DLR), Germany

MO3.02.4 14:30 **PAST AND NEW TRENDS IN POLARIMETRIC AND MULTIDIMENSIONAL SAR DATA SPECKLE NOISE FILTERING**
Carlos López-Martínez, Alberto Alonso-González, University Politecnica Catalunya, Spain

MO3.02.5 14:50 **IMPLEMENTATION OF FULL-POL-SAR IN AGRICULTURE, FORESTRY AND AQUACULTURE AS WELL AS FOR THE DETECTION OF NATURAL HAZARDS AND NATURAL DISASTER ASSESSMENT FROM AIR AND SPACE FOR SE/PACIFIC ASIA**
Wolfgang-Martin Boerner, University of Illinois at Chicago, United States

Monday, July 14 | 15:40 - 17:20 | 2000-A
Session MO4.01 | Oral

INSAR Techniques II

Session Co-Chairs: Vito Pascazio, Università degli Studi di Napoli Parthenope; Michael Henschel, MDA Corporation

MO4.01.1 15:40 **FUSION OF ASCENDING AND DESCENDING PASS RAW TANDEM-X DEM**
Rinki Deo, Indian Institute of Technology Bombay, India; Cristian Rossi, Michael Eineder, Thomas Fritz, German Aerospace Center (DLR), Oberpfaffenhofen, Germany; Y. S. Rao, Indian Institute of Technology Bombay, Germany; Marie Lachaise, German Aerospace Center (DLR), Oberpfaffenhofen, Germany

MO4.01.2 16:00 **A ROBUST PHASE CALIBRATION ALGORITHM FOR A DUAL-CHANNEL ALONG-TRACK INTERFEROMETRIC FMCW SAR**
Huazeng Deng, Gordon Farquharson, University of Washington, United States

MO4.01.3 16:20 **RECENT ADVANCES IN HIGH RESOLUTION SAR INTERFEROMETRIC STACKING TECHNIQUES EXPLOITING DISTRIBUTED SCATTERERS**
Kanika Goel, Nico Adam, German Aerospace Center (DLR), Germany

MO4.01.4 16:40 **MRF MODEL BASED APPROACH FOR SIMULTANEOUS INSAR PHASE FILTERING AND UNWRAPPING**
Wajih Ben Abdallah, Riadh Abdelfattah, High School of Communications of Tunis, Tunisia

MO4.01.5 17:00 **A NEW PHASE UNWRAPPING APPROACH USING MUTUALLY CORRELATED MULTI-BASELINE INTERFEROGRAMS**
Fabio Baselice, Giampaolo Ferraioli, Vito Pascazio, Gilda Schirinzi, Università degli Studi di Napoli Parthenope, Italy

Monday, July 14 | 15:40 - 17:20 | 2000-B
Session MO4.02 | Oral-Invited

SAR Polarimetry: Theory and Applications

Session Co-Chairs: Carlos Lopez-Martinez, Universitat Politècnica de Catalunya; Eric Pottier, Universite de Rennes 1

MO4.02.1 15:40 **WIND DIRECTION AMBIGUITY REMOVAL BY USING RADARSAT-2 POLARIMETRIC SAR IMAGES**
Tahiana Ratsimbazafy, Monique Bernier, Institut National de la Recherche Scientifique, Canada

MO4.02.2 16:00 **POLARIMETRIC SOIL MOISTURE RETRIEVAL USING AN ITERATIVE GENERALIZED HYBRID DECOMPOSITION TECHNIQUE**
Thomas Jagdhuber, German Aerospace Center (DLR), Germany; Irena Hajnsek, ETH Zurich, Switzerland; Konstantinos Papathanassiou, German Aerospace Center (DLR), Germany

MO4.02.3 16:20 **JPL'S CONTINUING CONTRIBUTIONS TO RADAR POLARIMETRY AND ITS APPLICATIONS**
Scott Hensley, Maxim Neumann, Marco Lavalle, Razi Ahmed, Yunling Lou, Jakob Van Zyl, Thierry Michel, Ron Muellerschoen, Bruce Chapman, Brian Hawkins, Jet Propulsion Laboratory, United States

MO4.02.4 16:40 **TARGET CHARACTERIZATION BY MEANS OF POLINSAR TEMPORAL EVOLUTION**
Alberto Alonso-González, Carlos López-Martínez, Universitat Politècnica de Catalunya, Spain

MO4.02.5 17:00 **THE CHALLENGE FOR STILL UNRESOLVED DEVELOPMENT OF MULTI-BAND EQUATORIALLY ORBITING POLSAR SATELLITE SENSORS - AN INTEGRAL TASK FOR THE MAJOR SPACE-SAR TECHNOLOGY CENTERS WORLD-WIDE**
Wolfgang-Martin Boerner, University of Illinois at Chicago, United States

Monday, July 14 | 13:30 - 15:10 | 2000-C
Session MO3.03 | Oral

Forest Mapping

Session Co-Chairs: Josef Kellndorfer, The Woods Hole Research Center; Sylvain Leblanc, Natural Resources Canada

MO3.03.1 13:30
EFFECTIVE AREA INDEXES AND ANGLE DISTRIBUTIONS OF LEAFY AND WOODY COMPONENTS OF FORESTS FROM DUAL-WAVELENGTH TERRESTRIAL LIDAR SCANNING DATA
Zhan Li, Alan Strahler, Boston University, United States; Crystal Schaaf, University of Massachusetts Boston, United States; Glenn Howe, Jason Martel, Kuravi Hewawasam, University of Massachusetts Lowell, United States; Ewan Douglas, Boston University, United States; Supriya Chakrabarti, Timothy Cook, University of Massachusetts Lowell, United States; Ian Paynter, Edward Saenz, University of Massachusetts Boston, United States; Zhuosen Wang, NASA Goddard Space Flight Center, United States; Xiaoyuan Yang, University of Massachusetts Boston, United States; Curtis Woodcock, Boston University, United States; David Jupp, Michael Schaefer, Commonwealth Scientific and Industrial Research Organisation, Australia; Darius Culvenor, Environmental Sensing Systems, Australia; Glenn Newnham, Jenny Lovell, Commonwealth Scientific and Industrial Research Organisation, Australia

MO3.03.2 13:50
FOREST PARAMETERS ESTIMATION FROM SAR AND LANDSAT DATA USING LOOK-UP TABLE INVERSION
Guoqing Sun, University of Maryland, United States; Forrest Hall, NASA Goddard Space Flight Center, United States; Wenjian Ni, Kun Fang, University of Maryland, United States; Jeffery Masek, Temilola Fatoyinbo Agueh, NASA Goddard Space Flight Center, United States; Derek Peddle, University of Lethbridge, Canada; Thomas Hilker, Oregon State University, United States

MO3.03.3 14:10
MAPPING TREE SPECIES IN A BOREAL FOREST AREA USING RAPIDEYE AND LIDAR DATA
Xiaohui Yang, Nadia Rochdi, Jinkai Zhang, James Banting, David Rolfson, Chelsea King, Karl Staenz, Alberta Terrestrial Imaging Center, Canada; Shane Patterson, Alberta Environment and Sustainable Resource Development, Canada; Bertt Purdy, Alberta Innovates, Energy and Environment Solutions, Canada

MO3.03.4 14:30
GROSS PRIMARY PRODUCTIVITY ESTIMATION USING MULTI-ANGULAR MEASUREMENTS FROM SMALL SATELLITE CLUSTERS
Sreeja Nag, Massachusetts Institute of Technology, United States; Charles Gatebe, Universities Space Research Association, United States; Thomas Hilker, Oregon State University, United States; Forrest Hall, University of Maryland Baltimore County, United States; Lars Dyrud, Draper Laboratory, United States; Olivier de Weck, Massachusetts Institute of Technology, United States

MO3.03.5 14:50
MAPPING FOREST CANOPY HEIGHT USING TANDEM-X DSM AND AIRBORNE LIDAR DTM
Yaser Sadeghi, Benoît St-Onge, Université du Québec à Montréal, Canada; Brigitte Leblon, University of New Brunswick, Canada; Marc Simard, California Institute of Technology, United States; Konstantinos Papathanassiou, German Aerospace Center (DLR), Germany

Monday, July 14 | 13:30 - 15:10 | 2000-D
Session MO3.04 | Oral

SAR Missions I

Session Co-Chairs: Alberto Moreira, German Aerospace Center (DLR); Masanobu Shimada, Japan Aerospace Exploration Agency

MO3.04.1 13:30
TANDEM-L INSTRUMENT DESIGN AND SAR PERFORMANCE OVERVIEW
Marwan Younis, Sigurd Huber, Carolina Tienda Herrero, Gerhard Krieger, Alberto Moreira, German Aerospace Center (DLR), Germany; Akihisa Uematsu, Yasuo Sudo, Ryoko Nakamura, Yoshikazu Chishiki, Masanobu Shimada, Japan Aerospace Exploration Agency, Japan

MO3.04.2 13:50
TERRASAR-X, TANDEM-X & PAZ: A UNIQUE RADAR CONSTELLATION ON THE HORIZON
Sahil Suri, Katja Bach, Oliver Lang, Jürgen Janoth, Wolfgang Koppe, Airbus Defence and Space, Germany; Fernando Cereza, Hisdesat Servicios Estratégicos, Spain; Alexander Kaptein, Airbus Defence and Space, Germany; Miguel Angel Garcia Primo, Juan Ignacio Cicuendez Perez, Basilio Garrido, Miguel Angel Serrano, Hisdesat Servicios Estratégicos, Spain

MO3.04.3 14:10
TERRASAR-X NEXT GENERATION – PROGRAM OVERVIEW
Jürgen Janoth, Steffen Gantert, Alexander Kaptein, Markus Jochum, Katja Bach, Wolfgang Koppe, Oliver Lang, Airbus Defence and Space, Germany

MO3.04.4 14:30
GEOSTARE INITIAL MISSION DESIGN
Stephen Hobbs, Cranfield University, United Kingdom; Andrea Monti-Guarnieri, Politecnico di Milano, Italy; Geoff Wadge, University of Reading, United Kingdom; Detlef Schulz, SES, Luxembourg

MO3.04.5 14:50
THE COPERNICUS SENTINEL-1 C-SAR INSTRUMENT ON ITS WAY TO OPERATIONAL SERVICE
Friedhelm Rostan, Markus Huchler, Sebastian Riegger, Astrium GmbH, Germany; Antonio Bauleo, Thales Alenia Space Italia, Italy; Ramón Torres, European Space Agency (ESA) / ESTEC, Netherlands

Monday, July 14 | 15:40 - 17:20 | 2000-C
Session MO4.03 | Oral

Forest Parameter Estimation

Session Co-Chairs: Manabu Watanabe, Japan Aerospace Exploration Agency; Konrad Wessels, Council for Scientific and Industrial Research

MO4.03.1 15:40
ESTIMATING THE THREE DIMENSTIONAL STRUCTURE OF THE CANADIAN BOREAL FOREST USING MULTI-MODAL REMOTE SENSING AND SENSOR EXTRAPOLATION TECHNIQUES
Michael Benson, Leland Pierce, Kamal Sarabandi, University of Michigan, United States

MO4.03.2 16:00
HIGH-RESOLUTION PAN-TROPICAL VEGETATION HEIGHT ESTIMATION FROM SATELLITE RADAR AND LIDAR OBSERVATIONS
Josef Kellndorfer, Jesse Bishop, Oliver Cartus, Wayne Walker, Woods Hole Research Center, United States; Ake Rosenqvist, soloEO, Japan; Masanobu Shimada, Japan Earth Exploration Agency, Japan

MO4.03.3 16:20
P-BAND POLARIMETRIC MODEL OF VERTICAL TREE STEMS ON SLOPING GROUND
Erik Blomberg, Maciej Soja, Chalmers University of Technology, Sweden; Lars Ulander, Swedish Defence Research Agency, Sweden

MO4.03.4 16:40
AN AUTOMATIC MOSAICKING ALGORITHM FOR GENERATING A LARGE-SCALE FOREST STAND HEIGHT MAP USING SPACEBORNE REPEAT-PASS INSAR COHERENCE
Yang Lei, Paul Siqueira, University of Massachusetts Amherst, United States

MO4.03.5 17:00
COMPARING MAPS OF ABOVEGROUND BIOMASS IN AMAZONIA WITH INDEPENDENT LARGE FIELD PLOTS
Edward T. A. Mitchard, University of Edinburgh, United Kingdom

Monday, July 14 | 15:40 - 17:20 | 2000-D
Session MO4.04 | Oral

SAR Missions II

Session Co-Chairs: Paul Rosen, NASA Jet Propulsion Laboratory, California Institute of Technology; Malcom Davidson, European Space Agency

MO4.04.1 15:40
SCIENCE PERFORMANCE OF THE NASA-ISRO SPACEBORNE SAR MISSION CONCEPT
Scott Hensley, Scott Shaffer, Louise Veilleux, Paul Rosen, Sang-Ho Yun, Sean Buckley, Piyush Agram, Chandini Veeramachaneni, Leif Harcke, Adam Freedman, Dragana Perkovic-Martin, Eric Gurrola, Jet Propulsion Laboratory, United States; Manab Chakraborty, Tapan Misra, R. Satish, Rakesh Bhan, Deepak Petruva, Indian Space Research Organisation, India

MO4.04.2 16:00
SENTINEL-1A OBSERVATION SCENARIO SIMULATIONS - INITIAL OPERATIONS PHASE
Siegfried Schmuck, EMSA, Portugal; Johannes Roeder, Rhea Group at Esa, Italy; Pierre Potin, European Space Agency (ESA) / ESRIN, Italy

MO4.04.3 16:20
SAOCOM-CS: A PASSIVE COMPANION MISSION TO SAOCOM FOR SINGLE-PASS L-BAND SAR BISTATIC INTERFEROMETRY AND TOMOGRAPHY
Malcolm Davidson, Nicolas Gebert, Bernardo Carnicero Dominguez, Franco Fois, Pierluigi Silvestrin, European Space Agency (ESA), Netherlands

MO4.04.4 16:40
ALPHASAT LASERTERMINAL COMMISSIONING STATUS AIMING TO DEMONSTRATE GEO-RELAY FOR SENTINEL SAR AND OPTICAL SENSOR DATA
Stefan Seel, Daniel Troendle, Frank Heine, Herwig Zech, Matthias Motzigemba, Tesat-Spacecom, Germany; Uwe Sterr, ST2C, Germany

MO4.04.5 17:00
A MULTI-CHANNEL HIGH RESOLUTION SAR IMAGING CONCEPT EMPLOYING REFLECTOR ANTENNAS
Sigurd Huber, Marwan Younis, Gerhard Krieger, Alberto Moreira, German Aerospace Center (DLR), Germany

Monday, July 14 | 13:30 - 15:10 | 205-AB
Session MO3.05 | Oral-Invited

GCOM–C1/SGLI

Session Co-Chairs: Yoshiaki Honda, Chiba University; Hiroshi Murakami, EORC, JAXA

MO3.05.1 13:30 **PREPARATION OF GCOM-C1 SCIENCE MISSION**
Hiroshi Murakami, Masahiro Hori, Japan Aerospace Exploration Agency, Japan; Takashi Nakajima, Mitsuhiro Toratani, Tokai University, Japan; Teruo Aoki, Makoto Kuji, Yoshiaki Honda, Japan Meteorological Research Institute, Japan

MO3.05.2 13:50 **GCOM-C1/SGLI SNOW PRODUCTS AND VALIDATION PLANS**
Masahiro Hori, Japan Aerospace Exploration Agency, Japan; Teruo Aoki, Meteorological Research Institute, Japan; Knut Stamnes, Stevens Institute of Technology, United States; Tomonori Tanikawa, Japan Aerospace Exploration Agency, Japan; Katsuyuki Kuchiki, Meteorological Research Institute, Japan; Wei Li, Nan Chen, Stevens Institute of Technology, United States

MO3.05.3 14:10 **ABOVE GROUND BIOMASS (AGB) PRODUCT USING GCOM-C1**
Yoshiaki Honda, Koji Kajiwara, Center for Environmental Remote Sensing (CEReS), Chiba University, Japan; Yusaku Ono, Dim Rostand, Earth Observation Research Center, Japan Aerospace Exploration Agency (JAXA), Japan

MO3.05.4 14:30 **STATUS OF GCOM-C1 OCEAN GROUP**
Mitsuhiro Toratani, Tokai University, Japan; Joji Ishizaka, Nagoya University, Japan; Toru Hirawake, Takafumi Hirata, Koji Suzuki, Sei-ichi Saitoh, Hokkaido University, Japan; Hiroshi Kobayashi, University of Yamanashi, Japan; Amane Fujiwara, National Institute of Polar Research, Japan; Hiroshi Murakami, Japan Aerospace Exploration Agency, Japan

MO3.05.5 14:50 **OBSERVATION OF CLOUD AND AEROSOL WITH GCOM-C / SGLI**
Makoto Kuji, Nara Women's University, Japan; Takashi Nakajima, Tokai University, Japan; Itaru Sano, Kinki University, Japan; Toshiro Inoue, The University of Tokyo, Japan; Jerome Riedi, Universite de Lille 1, France

Monday, July 14 | 13:30 - 15:10 | 206-A
Session MO3.06 | Oral-Invited

Emerging Trends and Challenges of Remote Sensing in Mexico I

Session Chair: Ivan Villalon-Turrubiates, Universidad Jesuita de Guadalajara

MO3.06.1 13:30 **SIMPLIFIED MODEL FOR ESTIMATING THE BACKSCATTER SIGNAL AT C-BAND FROM A TROPICAL FOREST IN SOUTHERN MEXICO**
Enrique Zempoaltecatl-Ramirez, Alejandro Monsivais-Huertero, Jorge Davila, Jose C. Jimenez-Escalona, Instituto Politecnico Nacional, Mexico; Judith Ramos, Universidad Nacional Autonóma de México, Mexico

MO3.06.2 13:50 **GEOGRAPHIC METADATA AND ONTOLOGY BASED SATELLITE IMAGE MANAGEMENT**
Yolanda Margarita Fernández-Ordóñez, Colegio de Postgraduados, Mexico; Reyna Carolina Medina-Ramírez, Universidad Autónoma Metropolitana, Mexico; Jesús Soria-Ruiz, Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Mexico

MO3.06.3 14:10 **LAND USE CHANGE USING LANDAST IMAGES OVER 23 YEARS IN MUNICIPALITY OF CENTRAL MÉXICO**
Miguel Jorge Escalona-Maurice, Colegio de Postgraduados, Mexico; José Sancho Comíns, Universidad de Alcalá, Spain; Yolanda Margarita Fernández-Ordóñez, Colegio de Postgraduados, Mexico; María Josefa Jiménez Moreno, Abdul Khalil Gardezi, Campus Montecillo, Mexico

MO3.06.4 14:30 **LAND USE/COVER IN THE COMPACT AGRICULTURAL AREAS OF MEXICO**
Jesús Soria-Ruiz, National Institute of Research for Forestry, Agricultural and Livestock, Mexico; Yolanda Margarita Fernández-Ordóñez, Postgraduate College in Agricultural Sciences, Mexico

MO3.06.5 14:50 **MATHEMATICAL MODEL TO USE SOFIE´S MEASUREMENTS TO UNDERSTAND THE RELATIONSHIP BETWEEN NOCTILUCENT CLOUDS AND THE CLIMATE CHANGE**
Leslie Luna-Sanchez, Gloria Elena Faus-Landeros, Armando Daniel Amoros-Lozano, ITESM, Mexico

Monday, July 14 | 15:40 - 17:20 | 205-AB
Session MO4.05 | Oral-Invited

GCOM-W1 Status

Session Co-Chairs: Haruhisa Shimoda, Japan Aerospace Exploration Agency; Paul Chang, NOAA / NESDIS

MO4.05.1 15:40 **GCOM OVERVIEW**
Haruhisa Shimoda, Japan Aerospace Exploration Agency, Japan

MO4.05.2 16:00 **GCOM-W1 STATUS**
Norimasa Ito, Marehito Kasahara, Keiji Imaoka, Japan Aerospace Exploration Agency, Japan

MO4.05.3 16:20 **STATUS OF BRIGHTNESS TEMPERATURE PRODUCT AND CALIBRATION OF AMSR2**
Keiji Imaoka, Takashi Maeda, Arata Okuyama, Marehito Kasahara, Norimasa Ito, Japan Aerospace Exploration Agency, Japan

MO4.05.4 16:40 **STATUS OF VALIDATION OF AMSR2 ON BOARD THE GCOM-W1 SATELLITE**
Misako Kachi, Masahiro Hori, Takashi Maeda, Keiji Imaoka, Japan Aerospace Exploration Agency, Japan

MO4.05.5 17:00 **NOAA GCOM-W1/AMSR2 PRODUCT PROCESSING, VALIDATION AND UTILIZATION**
Paul Chang, Zorana Jelenak, Suleiman Alsweiss, NOAA/NESDIS/Center for Satellite Applications and Research, United States; Jun Park, University of Maryland, United States; Seubson Soisuvarn, NOAA/NESDIS/Center for Satellite Applications and Research, United States; Patrick Meyers, University of Maryland, United States; Ralph Ferraro, NOAA/NESDIS/Center for Satellite Applications and Research, United States

Monday, July 14 | 15:40 - 17:20 | 206-A
Session MO4.06 | Oral-Invited

Emerging Trends and Challenges of Remote Sensing in Mexico II

Session Co-Chairs: Alejandro Monsivais-Huertero, Instituto Politecnico Nacional; Yolanda Fernandez-Ordoñez, COLPOS, Colegio de Posgraduados

MO4.06.1 15:40 **TOWARDS SUPER-RESOLUTION RECOVERY OF MICROWAVE SENSOR IMAGERY**
Juan Yañez, Yuriy Shkvarko, Gustavo Martín del Campo, Center for Advanced Research and Education of the National Polytechnic Institute, CINVESTAV-IPN, Mexico

MO4.06.2 16:00 **PARALLEL MULTISPECTRAL REMOTE SENSING DATA ANALYSIS: A CASE STUDY OF BIOSPHERE ANALYSIS ON YUCATAN PENINSULA**
Alejandro Castillo Atoche, Universidad Autónoma de Yucatán, Mexico; Jaime Ortegón Aguilar, Javier Vázquez Castillo, Universidad de Quintana Roo, Mexico; Roberto Carrasco Alvarez, Universidad de Guadalajara, Mexico; Roberto Duarte Coello, Universidad Autónoma de Yucatán, Mexico

MO4.06.3 16:20 **BEANS (PHASEOLUS VULGARIS L.) GROWTH AFFECTED BY IRRIGATION FROM TWO SOURCES OF WATER MAPPED WITH GPS, ORGANIC MATTER, ASSOCIATED WITH GLOMUS INTRARRADICES**
Abdul Khalil Gardezi, Colegio de Postgraduados, Mexico; Sergio Roberto Márquez-Berber, Universidad Autónoma Chapingo, Mexico; Benjamín Figueroa-Sandoval, Héctor Flores-Magadaleno, Colegio de Postgraduados, Mexico; Mario Ulises Larqué-Saavedra, Universidad Autónoma Metropolitana, Mexico; Gustavo Almaguer-Vargas, Universidad Autónoma Chapingo, Mexico; Miguel Jorge Escalona-Maurice, Colegio de Postgraduados, Mexico

MO4.06.4 16:40 **AEROSOL DISTICTIONS OVER JALISCO USING SATELLITE INFORMATION AND GLOBAL MODEL (GOCART): PROSPECTIVE STUDY**
Gloria Elena Faus-Landeros, UDG Universidad de Guadalajara CUVALLES, Mexico; Ivan Esteban Villalon-Turrubiates, ITESO, Universidad Jesuita de Guadalajara, Mexico

MO4.06.5 17:00 **DYNAMICAL CHARACTERIZATION OF LAND USE CLASSIFICATION USING MULTISPECTRAL REMOTE SENSING DATA FOR GUADALAJARA REGION**
Ivan Esteban Villalon-Turrubiates, ITESO, Universidad Jesuita de Guadalajara, Mexico

Monday, July 14 | 13:30 - 15:10 | 206-B
Session MO3.07 | Oral

Renewable Energies (hydro, solar)

Session Chair: Danielle De Sève, Hydro-Québec

MO3.07.1 13:30
ICE COVER DETERMINATION OF THE VOLGA AND THE DON RIVER RESERVOIRS ON THE BASE OF JASON-2 SATTELITE OBSERVATIONS
Galina Rybushkina, Yuliya Troitskaya, Irina Soustova, Institute of Applied Physics RAS, Russian Federation

MO3.07.2 13:50
SEASONAL RIVER DISCHARGE FORECAST IN ALPINE CATCHMENTS USING SNOW MAP TIME SERIES AND SUPPORT VECTOR REGRESSION APPROACH
Mattia Callegari, University of Pavia, EURAC, Italy; Paolo Mazzoli, GECOsistema, Italy; Ludovica De Gregorio, Claudia Notarnicola, Luca Pasolli, Marcello Petitta, EURAC, Italy; Roberto Seppi, University of Pavia, Italy; Alberto Pistocchi, European Commission, Italy

MO3.07.3 14:10
USE OF SATELLITE ALTIMETRY AND IMAGERY FOR MONITORING THE VOLUME OF SMALL LAKES
Baup Frederic, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Frappart Frederic, GET/LEGOS, France; Maubant Jerome, Centre d'Études Spatiales de la Biosphère (CESBIO), France

MO3.07.4 14:30
ASSESSMENT OF BAYESIAN GAUSSIAN MIXTURE MODEL FOR MAPPING SNOW COVER EXTAND IN QUEBEC CANADA
Danielle De Sève, Hydro-Québec, Canada; Mylène Teasdale, Université de Montréal, Canada; Luc Perreault, François Vachon, Hydro-Québec, Canada

MO3.07.5 14:50
ASSESSING SURFACE SOLAR IRRADIANCE IN FRENCH GUIANA USING THE HELIOSAT-II METHOD AND GOES IMAGES
Tommy Albarelo, Isabelle Marie-Joseph, Antoine Primerose, Université des Antilles et de la Guyane, French Guiana; Franck Dolique, Frédérique Seyler, Institut de Recherche pour le Développement (IRD), French Guiana; Laurent Linguet, Université des Antilles et de la Guyane, French Guiana

Monday, July 14 | 13:30 - 15:10 | 202
Session MO3.08 | Oral-Invited

Data Fusion I

Session Co-Chairs: Gabriele Moser, University of Genoa; Devis Tuia, École Polytechnique Fédérale de Lausanne

MO3.08.1 13:30
FUSION OF HYPERSPECTRAL AND LIDAR DATA IN CLASSIFICATION OF URBAN AREAS
Pedram Ghamisi, Jón Atli Benediktsson, University of Iceland, Iceland; Stuart Phinn, University of Queensland, Australia

MO3.08.2 13:50
A SENSOR-DRIVEN DOMAIN ADAPTATION METHOD FOR THE CLASSIFICATION OF REMOTE SENSING IMAGES
Claudia Paris, Lorenzo Bruzzone, University of Trento, Italy

MO3.08.3 14:10
MEASURING THE ACCURACY OF VERY-HIGH SPATIAL RESOLUTION LARGE-AREA CLASSIFICATION MOSAICS USING MODEL PORTABILITY
Nathan Longbotham, Fabio Pacifici, Chris Padwick, DigitalGlobe, Inc., United States

MO3.08.4 14:30
MONITORING FARMLAND ABANDONMENT AND RECULTIVATION IN WESTERN UKRAINE
Jan Stefanski, Freie Universität Berlin, Germany; Tobias Kuemmerle, Humboldt-University of Berlin, Germany; Oleh Chaskovskyy, Ukrainian National Forestry University, Ukraine; Bjoern Waske, Freie Universität Berlin, Germany

MO3.08.5 14:50
MULTISPECTRAL TARGET RECOGNITION USING ADAPTIVE RADAR AND INFRARED DATA INTEGRATION
Woo-Yong Jang, Air Force Research Laboratory / National Research Council, United States; James Park, Zachariah Fuchs, Francisco Parada, Philip Hanna, John Derov, Michael Noyola, Air Force Research Laboratory, United States

Monday, July 14 | 15:40 - 17:20 | 206-B
Session MO4.07 | Oral

Lidar Signal Processing

Session Co-Chairs: John Kerekes, Rochester Institute of Technology; Michael Cathcart, Georgia Institute of Technology

MO4.07.1 15:40
MINIMUM DESCRIPTION LENGTH CONSTRAINED LIDAR WAVEFORM DECOMPOSITION
Qinghua Li, Serkan Ural, Purdue University, United States; John Anderson, U.S. Army Corps of Engineers, United States; Jie Shan, Purdue University, United States

MO4.07.2 16:00
RADIOMETRIC CORRECTION AND NORMALIZATION OF AIRBORNE LIDAR DATA
Wai Yeung Yan, Ahmed Shaker, Ryerson University, Canada

MO4.07.3 16:20
INNOVATED APPROACH FOR LIDAR INTENSITY DATA CLASSIFICATION
Nagwa El-Ashmawy, Ahmed Shaker, Ryerson University, Canada

MO4.07.4 16:40
AUTOMATIC MARKERLESS REGISTRATION OF MOBILE LIDAR POINT-CLOUDS
Min Lu, Yulan Guo, Jun Zhang, Jianwei Wan, National University of Defense Technology, China; Jonathan Li, University of Waterloo, Canada

MO4.07.5 17:00
A CLUSTERING APPROACH FOR DETECTION OF GROUND IN MICROPULSE PHOTON-COUNTING LIDAR ALTIMETER DATA
Jiashu Zhang, John Kerekes, Rochester Institute of Technology, United States; Beata Csatho, Toni Schenk, Robert Wheelwright, University at Buffalo, United States

Monday, July 14 | 15:40 - 17:20 | 202
Session MO4.08 | Oral-Invited

Data Fusion II

Session Co-Chairs: Devis Tuia, École Polytechnique Fédérale de Lausanne; Gabriele Moser, University of Genoa

MO4.08.1 15:40
A CRITICAL COMPARISON OF PANSHARPENING ALGORITHMS
Gemine Vivone, Universita' di Salerno, Italy; Luciano Alparone, Universita' di Firenze, Italy; Jocelyn Chanussot, Mauro Dalla Mura, Grenoble Institute of Technology, France; Andrea Garzelli, Universita' di Siena, Italy; Giorgio Licciardi, Grenoble Institute of Technology, France; Rocco Restaino, Universita' di Salerno, Italy; Lucien Wald, Center Observation, Impacts, Energy, MINES ParisTech, France, France

MO4.08.2 16:00
EFFICIENT MMSE PANSHARPENING BASED ON NON-LOCAL OPTIMIZATION
Andrea Garzelli, University of Siena, Italy

MO4.08.3 16:20
FUSING SAR URBAN EXTENT EXTRACTIONS AT MULTIPLE SPATIAL RESOLUTIONS
Andreas Salentinig, Paolo Gamba, University of Pavia, Italy

MO4.08.4 16:40
MULTIMODAL CLASSIFICATION WITH DEFORMABLE PART-BASED MODELS FOR URBAN CARTOGRAPHY
Hicham Randrianarivo, Bertrand Le Saux, ONERA, France; Marin Ferecatu, CNAM, France

MO4.08.5 17:00
FUSION OF MULTITEMPORAL AND MULTIRESOLUTION REMOTE SENSING DATA AND APPLICATION TO NATURAL DISASTERS
Ihsen Hedhli, Gabriele Moser, University of Genoa, Italy; Josiane Zerubia, French Institute for Research in Computer Science and Automation, France; Sebastiano Bruno Serpico, University of Genoa, Italy

Monday, July 14 | 13:30 - 15:10 | 2104-AB
Session MO3.09 | Oral-Invited

Radio Frequency Interference Management and Spectrum Allocation for Remote Sensing I

Session Co-Chairs: Sidharth Misra, NASA Jet Propulsion Laboratory, California Institute of Technology; Paolo de Matthaeis, NASA Goddard Space Flight Center; Niels Skou, Technical University of Denmark; Chris Ruf, University of Michigan

MO3.09.1 13:30 **A FLEXIBLE WIDE-BAND ON-BOARD RADIO FREQUENCY INTERFERENCE MITIGATING DIGITAL BACKEND SYSTEM**
Sidharth Misra, Robert Jarnot, Jet Propulsion Laboratory, United States; Shannon T. Brown, NASA Jet Propulsion Laboratory, United States

MO3.09.2 13:50 **DIGITAL PROCESSOR BREADBOARD FOR RFI DETECTION AND MITIGATION IN SPACEBORNE RADIOMETERS**
Steen Savstrup Kristensen, Niels Skou, Technical University of Denmark, Denmark; Arhippa Kovanen, Janne Lahtinen, Harp Technologies Ltd, Finland

MO3.09.3 14:10 **A NOVEL METHOD TO ESTIMATE THE RFI ENVIRONMENT**
David Chen, Christopher Ruf, University of Michigan, United States

MO3.09.4 14:30 **RADIO FREQUENCY INTERFERENCE OBSERVATIONS USING AN L-BAND DIRECT SAMPLING RECEIVER DURING THE SMAPVEX12 AIRBORNE CAMPAIGN**
Mustafa Aksoy, Joel T. Johnson, The Ohio State University, United States; Sidharth Misra, Jet Propulsion Laboratory, United States

MO3.09.5 14:50 **PERFORMANCE OF THE RADIO FREQUENCY INTERFERENCE (RFI) DETECTION AND MITIGATION ALGORITHMS FOR THE SOIL MOISTURE ACTIVE PASSIVE (SMAP) RADIOMETER**
Priscilla Mohammed, Jeffrey Piepmeier, NASA Goddard Space Flight Center, United States; Joel T. Johnson, Omar Salama, The Ohio State University, United States

Monday, July 14 | 13:30 - 15:10 | 205-C
Session MO3.10 | Oral

Dynamics of Earth Processes and Climate Change

Session Chair: Richard Fernandes, Natural Resources Canada

MO3.10.1 13:30 **AN IMPROVED METHOD FOR NPP ESTIMATION IN WUHAN, CHINA FROM 2001 TO 2010**
Lunche Wang, Wei Gong, Wuhan University, China; Lan Feng, Northwestern Regional Climate Center, China

MO3.10.2 13:50 **EVALUATION OF MULTIPLE DATASETS FOR SNOW COVER INDICATORS FOR CANADA**
Richard Fernandes, Fuqun Zhou, Hyungkeon Song, Government of Canada, Canada

MO3.10.3 14:10 **IMPROVING GROUND SURFACE TEMPERATURE AND HEAT FLUX SIMULATION WITH SATELLITE DERIVED EMISSIVITY IN ARID AND SEMIARID REGIONS**
Bin Peng, Jiancheng Shi, Yonghui Lei, Tianjie Zhao, Dongyang Li, Chuan Xiong, Institute of Remote Sensing and Digital Earth, CAS, China

MO3.10.4 14:30 **CHARACTERIZATION OF DESERTIFICATION INDICATORS BASED ON EARTH OBSERVATION DATA**
Maria Joao Pereira, Amilcar Soares, Instituto Superior Técnico, University of Lisbon, Portugal; Ricardo Armas, Critical Software, Portugal

MO3.10.5 14:50 **ANALYSIS OF EXTREME PRECIPITATION EVENTS IN SOUTHEAST ASIA USING TRMM DATA**
Soo Chin Liew, National University of Singapore, Singapore

Monday, July 14 | 15:40 - 17:20 | 2104-AB
Session MO4.09 | Oral-Invited

Radio Frequency Interference Management and Spectrum Allocation for Remote Sensing II

Session Co-Chairs: Paolo de Matthaeis, NASA Goddard Space Flight Center; Sidharth Misra, NASA Jet Propulsion Laboratory, California Institute of Technology; Joel Johnson, Ohio State University; Niels Skou, Technical University of Denmark

MO4.09.1 15:40 **RFI IN SMOS MEASUREMENTS: UPDATE ON DETECTION, LOCALIZATION, MITIGATION TECHNIQUES AND PRELIMINARY QUANTIFIED IMPACTS ON SOIL MOISTURE PRODUCTS**
Philippe Richaume, Yan Soldo, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Eric Anterrieu, IRAP, France; Ali Khazaal, Simone Bircher, Arnaud Mialon, Ahmad Al Bitar, Nemesio Rodriguez-Fernandez, François Cabot, Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Ali Mahmoodi, Array Systems Computing Inc., Canada

MO4.09.2 16:00 **SUPPRESSION OF NARROW-BAND INTERFERENCE IN SAR DATA**
Feng Zhou, Mingliang Tao, Zheng Bao, Xidian University, China

MO4.09.3 16:20 **RFI MITIGATION TECHNIQUES IN RADIO ASTRONOMY**
John Ford, National Radio Astronomy Observatory, United States; Kaushal Buch, Giant Metrewave Radio Telescope, India

MO4.09.4 16:40 **THE COMMITTEE ON RADIO FREQUENCIES AND THE RADIO SPECTRUM**
Todd C. Gaier, Jet Propulsion Laboratory, California Institute of Technology, United States; David DeBoer, University of California, Berkeley, United States; William Blackwell, Massachusetts Institute of Technology - Lincoln Laboratory, United States; Sandra Cruz-Pol, University of Puerto Rico-Mayagüez, United States; Jasmeet Judge, University of Florida, United States; Kenneth Kellerman, NRAO, United States; Amy Lovell, Agnes Scott College, United States; David Le Vine, NASA Goddard Space Flight Center, United States; Timothy Pearson, California Institute of Technology, United States; Paul Siqueira, University of Massachusetts Amherst, United States; Gregory Taylor, University of New Mexico, United States; Tom Wilson, NRL, United States; Liese van Zee, Indiana University, United States

MO4.09.5 17:00 **IMPROVING SPECTRAL EFFICIENCY IN ACTIVE AND PASSIVE REMOTE SENSING**
Joel T. Johnson, Christopher Baker, Huaiyi Wang, Lixin Ye, Chenglin Zhang, The Ohio State University, United States

Monday, July 14 | 15:40 - 17:20 | 205-C
Session MO4.10 | Oral

Oil, Gas, and Mineral Exploration

Session Co-Chairs: Armand LaRocque, University of New Brunswick; Mohamed Niang, Qatar Environmental & Energy Institute

MO4.10.1 15:40 **THE EARLY DETECTION OF SEMI-PERMEABLE FILTRATION BARRIERS BY USING SAR INTERFEROMETRY**
Mir Karger, TIM Energy LLP, United Kingdom; Dmitry Trofimov, Recenoil JSC, Russian Federation; Adalat Eminov, SOCAR, Aznefi PU, Azerbaijan; Ivan Myasnikov, Complex Geochemical Investigations LTD, Russian Federation; Alexander Zakharov, Institute of Radioengineering and Electronics RAS, Russian Federation

MO4.10.2 16:00 **VALIDATION OF DIFFERENT ATMOSPHERIC CORRECTION METHODS AND IMPACT ON MINERAL TARGETING FOR ASTER DATA MINERAL EXPLORATION APPLICATIONS**
Lori Wickert, Consultant, Canada

MO4.10.3 16:20 **MARINE GRAVITY FIELD FOR OIL AND MINERAL EXPLORATION - IMPROVEMENTS IN THE ARCTIC FROM CRYOSAT-2 SAR ALTIMETRY**
Ole Baltazar Andersen, Maulik Jain, Per Knudsen, DTU Space, Denmark

MO4.10.4 16:40 **DAYTIME GAS FLARE DETECTION USING LANDSAT-8 MULTISPECTRAL DATA**
Subir Chowdhury, Todd Shipman, Dennis Chao, Alberta Energy Regulator, Canada; Christopher Elvidge, NOAA National Geophysical Data Center, United States; Mikhail Zhizhin, Feng-Chi Hsu, University of Colorado, United States

MO4.10.5 17:00 **HYPERSPECTRAL REMOTE SENSING FOR COAL-BED METHANE EXPLORATION**
Cheng Ye Zhang, Qiming Qin, Li Chen, Nan Wang, Yanbing Bai, Shanshan Zhao, Peking University, China

Monday, July 14 | 13:30 - 15:10 | 207
Session MO3.11 | Oral-Invited

Remote Sensing of Icebergs

Session Co-Chairs: Desmond Power, C-Core; Matt Arkett, Environment Canada

MO3.11.1 13:30 **CANADIAN GOVERNMENT SPONSORED RESEARCH ON SATELLITE-BASED ICEBERG DETECTION, DISCRIMINATION AND MODELLING**
Desmond Power, James Youden, Bing Yue, C-CORE, Canada; Paris W. Vachon, Defence Research and Development Canada, Canada; Matt Arkett, Paul Pestieau, Tom Carrieres, Environment Canada, Canada; Greg Crocker, Ballicater Consulting Ltd., Canada; Ivana Kubat, National Research Council Canada, Canada; Tony King, C-CORE, Canada

MO3.11.2 13:50 **ICEBERG DETECTION USING ANALYSIS OF THE RECEIVED POLARIZATION ELLIPSE IN COMPACT POLARIMETRY**
Michael Denbina, Michael Collins, University of Calgary, Canada

MO3.11.3 14:10 **ICEBERG NUMBER DENSITY – REACHING A FULL PICTURE OF THE GREENLAND WATERS**
Jørgen Buus-Hinkler, Keld Qvistgaard, Klaus A. H. Krane, Danish Meteorological Institute, Denmark

MO3.11.4 14:30 **ALTIBERG, A 20-YEAR SMALL ICEBERG DATABASE**
Jean Tournadre, Mickael Accensi, Fanny Girard-Ardhuin, French Research Institute for Exploitation of the Sea, Ifremer, France

MO3.11.5 14:50 **FROM ICE SHELVES TO ICEBERGS: CLASSIFICATION OF CALVING FRONTS, ICEBERG MONITORING AND DRIFT SIMULATION**
Christine Wesche, Wolfgang Dierking, Alfred Wegener Institute, Germany

Monday, July 14 | 13:30 - 15:10 | 2101
Session MO3.12 | Oral

Active Microwave Remote Sensing Applications

Session Co-Chairs: Simon Yueh, NASA Jet Propulsion Laboratory, California Institute of Technology; Danièle Hauser, Université Versailles Saint-Quentin, CNRS

MO3.12.1 13:30 **KUROS : A NEW AIRBORNE KU-BAND DOPPLER RADAR FOR OBSERVATION OF THE OCEAN SURFACE**
Danièle Hauser, Gerard Caudal, Christophe Le Gac, René Valentin, Lauriane Delaye, Université Versailles Saint-Quentin, CNRS, université UPMC-Paris06, France; Céline Tison, Centre National d'Etudes Spatiales, France

MO3.12.2 13:50 **AQUARIUS SCATTEROMETER WIND SPEED PRODUCTS**
Alexander Fore, Simon Yueh, Wenqing Tang, Akiko Hayashi, Jet Propulsion Laboratory, United States; Gary Lagerloef, Earth and Space Research, United States

MO3.12.3 14:10 **DOPPLER PERFORMANCE ASSESSMENT OF A SPACE-BORNE CLOUD STEREO-RADAR CONCEPT FOR A HURRICANE SYSTEM**
Alessandro Battaglia, University of Leicester, United Kingdom; Pavlos Kollias, McGill University, Canada

MO3.12.4 14:30 **THE TOR VERGATA SCATTERING MODEL APPLIED TO L BAND BACKSCATTER DURING THE CORN GROWTH CYCLE**
Alicia Joseph, NASA Goddard Space Flight Center, United States; Rogier van der Velde, University of Twente (ITC), Netherlands; Paolo Ferrazzoli, University of Rome Tor Vergata, Italy; Peggy O'Neill, NASA Goddard Space Flight Center, United States; Roger Lang, George Washington University, United States

MO3.12.5 14:50 **REPRESENTATION OF VERTICAL SUBSURFACE SOIL MOISTURE PROFILE VARIATIONS AND ITS IMPACT ON RETRIEVAL ACCURACY IN VEGETATED LANDSCAPES**
Alireza Tabatabaeenejad, Mariko Burgin, Xueyang Duan, Mahta Moghaddam, University of Southern California, United States

Monday, July 14 | 15:40 - 17:20 | 207
Session MO4.11 | Oral-Invited

Hyperspectral Sensing in Support of Resource Exploration

Session Co-Chairs: Carlos de Souza Filho, University of Campinas; Benoit Rivard, University of Alberta

MO4.11.1 15:40 **THE ROLE OF REMOTE SENSING IN GEOTHERMAL EXPLORATION**
Freek Van Der Meer, Christoph Hecker, Frank van Ruitenbeek, Harald van der Werff, University of Twente (ITC), Netherlands

MO4.11.2 16:00 **MAPPING NI-CU (PGE) BEARING ULTRAMAFIC ROCKS AND ASSOCIATED GOSSANS WITH AIRBORNE AND SIMULATED ENMAP SATELLITE HYPERSPECTRAL IMAGERY, NUNAVIK, CANADA**
Derek Rogge, German Aerospace Center (DLR), Germany; Benoit Rivard, Kati Laakso, University of Alberta, Canada; Karl Segl, Helmholtz-Zentrum Potsdam, Germany

MO4.11.3 16:20 **PROXIMAL AND AIRBORNE HYPERSPECTRAL SIGNATURES OF IOGC DEPOSITS OF THE CARAJAS MINERAL PROVINCE, BRAZIL**
Carlos Souza Filho, Saeid Asadzadeh, University of Campinas, Brazil

MO4.11.4 16:40 **DISCRIMINATING SPECTRAL FEATURES OF MINERALS AND HYDROCARBONS FROM NON-PHOTOSYNTHETIC VEGETATION: EXAMINING LIMITS OF DETECTION USING AIRBORNE IMAGING SPECTROMETER DATA**
Raymond Kokaly, U.S. Geological Survey, United States

MO4.11.5 17:00 **THE HYPERSPECTRAL THERMAL EMISSION SPECTROMETER (HYTES) - LATEST RESULTS**
Simon Hook, Glynn Hulley, William Johnson, Bjorn Eng, NASA Jet Propulsion Laboratory, United States

Monday, July 14 | 15:40 - 17:20 | 2101
Session MO4.12 | Oral-Invited

Passive Microwave Remote Sensing of Vegetation Optical Depth

Session Co-Chairs: Brian Hornbuckle, Iowa State University; Jennifer Grant, Lund University

MO4.12.1 15:40 **SATELLITE MICROWAVE DETECTION OF BOREAL FOREST RECOVERY FROM LARGE-SCALE WILDFIRES**
Matthew Jones, John Kimball, Lucas Jones, University of Montana, United States

MO4.12.2 16:00 **DRIVERS OF GLOBAL VEGETATION BIOMASS TRENDS OVER THE LAST TWO DECADES**
Yi Liu, University of New South Wales, Australia; Matthew McCabe, King Abdullah University of Science and Technology, Australia; Jason Evans, University of New South Wales, Australia; Albert van Dijk, The Australian National University, Australia, Australia; Richard de Jeu, VU University Amsterdam, Australia

MO4.12.3 16:20 **SMOS RETRIEVALS OF VEGETATION OPTICAL DEPTH OVER A VARIETY OF LAND USE: TRIALS AND TRIBULATIONS**
Yann H. Kerr, Philippe Richaume, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jean-Pierre Wigneron, INRA EPHYSE, France; Ahmad Al Bitar, Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jennifer Grant, Lund University, Sweden; Heather Lawrence, CESBIO (now at ECMWF), United Kingdom; Paolo Ferrazzoli, Rachid Rahmoune, University of Rome Tor Vergata, Italy; Ali Mahmoodi, Array Systems Computing Inc., Canada

MO4.12.4 16:40 **WORKING TOWARDS A GLOBAL-SCALE VEGETATION WATER PRODUCT FROM SMOS OPTICAL DEPTH**
Jennifer Grant, Lund University, Sweden; Jean-Pierre Wigneron, INRA, France; Mathew Williams, University of Edinburgh, United Kingdom; Marko Scholze, Lund University, Sweden; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France

MO4.12.5 17:00 **ESTIMATING THE "B PARAMETER" AT THE SATELLITE SCALE USING SMOS OPTICAL THICKNESS**
Jason Patton, Brian Hornbuckle, Iowa State University, United States

Tuesday, July 15 | 08:20 - 10:00 | 2000-A
Session TU1.01 | Oral

High Resolution SAR Techniques

Session Co-Chairs: Pau Prats, German Aerospace Center (DLR); Franz Meyer, University of Alaska Fairbanks

TU1.01.1 08:20
ISAR ADD-ON FOR FOCUSING MOVING TARGETS IN VERY HIGH RESOLUTION SPACEBORNE SAR DATA
Carlo Noviello, Gianfranco Fornaro, Institute for the Electromagnetic Sensing of the Environment, Italy; Marco Martorella, University of Pisa,, Italy; Diego Reale, Institute for the Electromagnetic Sensing of the Environment, Italy

TU1.01.2 08:40
VERY HIGH RESOLUTION CIRCULAR SAR IMAGING AT X BAND
Xavier Dupuis, Philippe Martineau, ONERA, France

TU1.01.3 09:00
HIGH-RESOLUTION RADAR IMAGING OF AEROSPACE TARGETS WITH MICROMOTION
Xueru Bai, Zheng Bao, Xidian University, China

TU1.01.4 09:20
ACCOMMODATION OF SPACE-VARIANT EFFECTS IN SPACEBORNE SAR IMAGE FORMATION
Pau Prats-Iraola, Marc Rodriguez-Cassola, Rolf Scheiber, Andreas Reigber, German Aerospace Center (DLR), Germany

TU1.01.5 09:40
A STOCHASTIC MODEL FOR VERY HIGH RESOLUTION SAR AMPLITUDE IMAGES OF URBAN AREAS
Gerardo Di Martino, Antonio Iodice, Daniele Riccio, Giuseppe Ruello, Università di Napoli Federico II, Italy

Tuesday, July 15 | 10:30 - 12:10 | 2000-A
Session TU2.01 | Oral

INSAR Applications I

Session Co-Chairs: Clémence Dubois, Karlsruhe Institute of Technology; Franz Meyer, University of Alaska Fairbanks

TU2.01.1 10:30
RETRIEVING RELIABLE DEFORMATION SIGNAL FROM ACTIVE VOLCANIC AREAS USING VHR SAR IMAGES COMBINED WITH A TANDEM-X DEM – TEST SITE EL HIERRO ISLAND
XiaoYing Cong, Technische Universität München, Germany; Michael Eineder, Thomas Fritz, German Aerospace Center (DLR), Germany

TU2.01.2 10:50
POTENTIAL ATMOSPHERIC AND TERRESTRIAL APPLICATIONS OF A GEOSYNCHRONOUS RADAR
Geoff Wadge, Universityof Reading, United Kingdom; Andrea Monti-Guarnieri, Polimi, Italy; Stephen Hobbs, Cranfield University, United Kingdom; Detlef Schulz, SES, Luxembourg

TU2.01.3 11:10
THE 2004 PARKFIELD EARTHQUAKE (MW 6) POST-SEISMIC SURFACE DISPLACEMENT OBSERVED BY COUPLING ERS AND ENVISAT INSAR BETWEEN 2005 AND 2010.
Guillaume Bacques, Daniel Raucoules, Marcello de Michele, Hideo Aochi, BRGM, France; Rolandone Frédérique, Université Pierre et Marie Curie-Paris VI, France

TU2.01.4 11:30
GROUND DISPLACEMENT MEASUREMENT OF THE 2013 M7.7 AND M6.8 BALOCHISTAN EARTHQUAKE WITH TERRASAR-X SCANSAR DATA
Nestor Yague-Martinez, Technische Universität München, Germany; Eric Fielding, Jet Propulsion Laboratory, United States; Mahmud Haghshenas-Haghighi, Deutsches GeoForschungsZentrum, Germany; XiaoYing Cong, Technische Universität München, Germany; Mahdi Motagh, Deutsches GeoForschungsZentrum, Germany; Ulrich Steinbrecher, Michael Eineder, Thomas Fritz, German Aerospace Center (DLR), Germany

TU2.01.5 11:50
THERMAL DILATION MONITORING OF COMPLEX URBAN INFRASTRUCTURE USING HIGH RESOLUTION SAR DATA
Kanika Goel, Fernando Rodriguez Gonzalez, Nico Adam, German Aerospace Center (DLR), Germany; Javier Duro, Marc Gaset, Altamira Information, Spain

Tuesday, July 15 | 13:30 - 15:10 | 2000-A
Session TU3.01 | Oral

INSAR Applications II

Session Co-Chairs: Fred Kruse, Naval Postgraduate School; Ramon Hanssen, Technical University of Delft

TU3.01.1 13:30
GENERATION OF RICE CROPS TEMPORAL CHANGE MAPS WITH DIFFERENTIAL TANDEM-X INTERFEROMETRY
Cristian Rossi, German Aerospace Center (DLR), Germany; Esra Erten, Istanbul Technical University, Turkey

TU3.01.2 13:50
DETERMINATION OF SNOW DEPTH USING ELEVATION DIFFERENCES DETERMINED BY INTERFEROMETRIC SAR (INSAR)
Jack Evans, USAF, United States; Fred Kruse, Naval Postgraduate School, United States

TU3.01.3 14:10
THE IMPACT OF VEGETATION GROWTH ON DINSAR COHERENCE REGIONS AND ESTIMATED DEFORMATIONS
Simon Zwieback, Irena Hajnsek, ETH Zurich, Switzerland

TU3.01.4 14:30
INSAR MONITORING OF GROUND MOTIONS IMPACTS FOR IN-SITU SEA LEVEL MEASUREMENT: THE EXAMPLE OF DAKAR (SENEGAL)
Goneri Le Cozannet, Daniel Raucoules, BRGM, France; Guy Woppelmann, University La Rochelle, France; Marcello De Michele, Adrien Poupardin, BRGM, France

TU3.01.5 14:50
GEODETIC NETWORK DESIGN FOR INSAR USING REFLECTORS AND TRANSPONDERS
Pooja Mahapatra, Sami Samiei-Esfahany, Ramon Hanssen, Delft University of Technology, Netherlands

Tuesday, July 15 | 15:40 - 17:20 | 2000-A
Session TU4.01 | Oral

INSAR Applications III

Session Co-Chairs: Clemence Dubois, Karlsruhe Institute of Technology; Michael Henschel, MDA Corporation

TU4.01.1 15:40
SHIP DETECTORS EXPLOITING SPECTRAL ANALYSIS OF SAR IMAGES
Armando Marino, ETH Zurich, Switzerland; Maria Sanjuan-Ferrer, German Aerospace Center (DLR), Germany; Irena Hajnsek, ETH Zurich / German Aerospace Center (DLR), Germany; Kazuo Ouchi, Korea Institute of Ocean Science and Technology, Republic of Korea

TU4.01.2 16:00
SAR AZIMUTH AMBIGUITIES REMOVAL FOR SHIP DETECTION USING TIME-FREQUENCY TECHNIQUES
Canbin Hu, Boli Xiong, Jun Lu, Zhiyong Li, Lingjun Zhao, Gangyao Kuang, National University of Defense Technology, China

TU4.01.3 16:20
TARGET DETECTION AT SEA WITH THE RELATIVE PHASE OF SAR CROSS-POLARIZED CHANNELS
Yunhua Wang, Xiaoyan Liu, Huimin Li, Ocean Remote Sensing Institute, Ocean University of China, China

TU4.01.4 16:40
SURFACE DEFORMATION MONITORING USING SAR INTERFEROGRAMS AND GPS OBSERVABLES: APPLICATION TO TOKYO, JAPAN
Tamer Elgharbawi, Masayuki Tamura, Kyoto University, Japan

TU4.01.5 17:00
AUGMENTING URBAN INSAR PROCESSING WITH TEMPORARY TARGETS
Parwant Ghuman, Mateusz Gara, Aaron Zimmer, 3v Geomatics, Canada

Tuesday, July 15 | 08:20 - 10:00 | 2000-B
Session TU1.02 | Oral-Invited

RADARSAT I

Session Co-Chairs: Satish Srivastava, Canadian Space Agency; Paris Vachon, Defence Research and Development Canada

TU1.02.1 08:20 **SEVENTEEN YEARS OF ACCOMPLISHMENTS OF RADARSAT-1 SATELLITE**
Satish Srivastava, Ahmed Mahmood, Stephane Cote, Stephen Schaller, Surendra Parashar, Canadian Space Agency, Canada

TU1.02.2 08:40 **RADARSAT-2 SYSTEM OPERATIONS AND PERFORMANCE**
Marielle Chabot, Camille Decoust, Pierre Ledantec, Dan Williams, Anthony Hillman, Philippe Rolland, Rene Periard, MDA, Canada

TU1.02.3 09:00 **RADARSAT CONSTELLATION MISSION STATUS**
Steve Iris, Alain Carrier, Canadian Space Agency, Canada

TU1.02.4 09:20 **OIL DISCRIMINATION USING RADARSAT-2 QUAD-POLARIZED DATA**
Gordon Staples, MDA, Canada

TU1.02.5 09:40 **RADARSAT-2 TO SUPPORT RISK REDUCTION FOR THE AGRICULTURE SECTOR**
Heather McNairn, Jarrett Powers, Jiali Shang, Amine Merzouki, Anna Pacheco, Thierry Fisette, Agriculture and Agri-Food Canada, Canada; Grant Wiseman, Stantec, Canada; Saeid Homayouni, University of Ottawa, Canada

Tuesday, July 15 | 10:30 - 12:10 | 2000-B
Session TU2.02 | Oral-Invited

RADARSAT II

Session Co-Chairs: Satish Srivastava, Canadian Space Agency; Paris Vachon, Defence Research and Development Canada

TU2.02.1 10:30 **OPERATIONAL SHIP DETECTION IN CANADA USING RADARSAT**
Paris W. Vachon, Defence Research and Development Canada, Ottawa, Canada; Lcdr Chad Kabatoff, DG Space, National Defence Headquarters, Canada; LCdr (Ret'd) Robert Quinn, Polar Epsilon 2, Canada

TU2.02.2 10:50 **OPTIMIZATION OF THE DEGREE OF POLARIZATION FOR ENHANCED SHIP DETECTION USING RADARSAT2**
Ridha Touzi, CCRS, Canada; J. Hurley, MDA, Canada; Paris W. Vachon, Defence Research and Development Canada, Canada

TU2.02.4 11:30 **IMPACT OF BEAM MODE, MULTI-TEMPORAL, AND MULTI-ANGLE COMBINATIONS OF RADARSAT-2 DATA ON CLASS SEPARABILITY FOR THREE COASTAL SITES THROUGHOUT ARCTIC CANADA**
Sarah N. Banks, Mélanie Carrière, Anne-Marie Demers, Jason Duffe, Environment Canada, Canada

TU2.02.5 11:50 **RCM COMPACT POLARIMETRY APPLICATIONS DEVELOPMENTS OVERVIEW**
François Charbonneau, Brian Brisco, Joost van der Sanden, Thierry Toutin, Ridha Touzi, Canada Centre for Mapping and Earth Observation, Canada; Hao Chen, Canadian Forest Service, Canada; Chen Liu, Defence Research and Development Canada, Canada; Heather McNairn, Jiali Shang, Agriculture and Agri-Food Canada, Canada; Joseph Buckley, Royal Military College of Canada, Canada; Matt Arkett, Canadian Ice Service, Canada; Jean Poitevin, Park Canada Agency, Canada

Tuesday, July 15 | 13:30 - 15:10 | 2000-B
Session TU3.02 | Oral-Invited

Advanced Methods for Polarimetric Information Extraction

Session Co-Chairs: Ridha Touzi, Canada Centre for Remote Sensing; Jong-Sen Lee, Naval Research Laboratory

TU3.02.1 13:30 **ANALYSIS OF POLARIZATION ORIENTATION ANGLE BASED ON SCATTERING MECHANISMS**
Jong-Sen Lee, Thomas Ainsworth, Yanting Wang, Naval Research Laboratory, United States

TU3.02.2 13:50 **ANALYSIS OF THE POLARIZATION PROPERTIES OF AQUARIUS RADAR DATA**
Jakob van Zyl, Yunjin Kim, Simon Yueh, Jet Propulsion Laboratory, United States

TU3.02.3 14:10 **POLINSAR COHERENCE ESTIMATION BASED ON BEST NOMRAL MATRIX APPROXIMATION**
Yi Cui, Yoshio Yamaguchi, Hiroyoshi Yamada, Sang-Eun Park, Niigata University, Japan

TU3.02.4 14:30 **ANALYSIS OF SUPPLEMENTARY INFORMATION EMERGING FROM THE ICA BASED ICTD**
Nikola Besic, Grenoble INP, France; Gabriel Vasile, CNRS, France; Jocelyn Chanussot, Grenoble INP, France; Srdjan Stankovic, University of Montenegro, Yugoslavia; Alexandre Girard, Guy D'Urso, EDF, France

TU3.02.5 14:50 **COMBINATION OF TARGET SCATTERING DECOMPOSITION WITH THE OPTIMUM DEGREE OF POLARIZATION FOR IMPROVED CLASSIFICATION OF BOREAL PEATLANDS IN THE ATHABSCA REGION**
Ridha Touzi, Khalid Omari, Canada Centre for Remote Sensing, Canada; Bob Sleep, Alberta Environment and Sustainable Resource Development, Canada

Tuesday, July 15 | 15:40 - 17:20 | 2000-B
Session TU4.02 | Oral-Invited

Signal Processing Techniques for POL-SAR and POL-inSAR Applications

Session Co-Chairs: Laurent Ferro-Famil, IETR/University of Rennes 1; Eric Pottier, University of Rennes 1

TU4.02.1 15:40 **PHENOLOGICAL GROWTH STAGES OF PADDY RICE ACCORDING TO THE BBCH SCALE AND SAR IMAGES**
Esra Erten, Istanbul Technical University, Turkey; Cristian Rossi, German Aerospace Center (DLR), Germany; Onur Yuzugullu, Irena Hajnsek, ETH Zurich, Switzerland

TU4.02.2 16:00 **POLSAR IMAGE SEGMENTATION - ADVANCED STATISTICAL MODELLING VERSUS SIMPLE FEATURE EXTRACTION**
Anthony P. Doulgeris, Torbjørn Eltoft, University of Tromsø, Norway

TU4.02.3 16:20 **LOW-LEVEL PROCESSING OF POLSAR IMAGES WITH BINARY PARTITION TREES**
Philippe Salembier, Universitat Politècnica de Catalunya, Spain; Samuel Foucher, Computer Research Institute of Montreal, Canada; Carlos López-Martínez, Universitat Politècnica de Catalunya, Spain

TU4.02.4 16:40 **A CASCADED ENSEMBLE CLASSIFIER FOR OBJECT SEGMENTATION IN HIGH RESOLUTION POLARIMETRIC SAR DATA**
Marc Jaeger, Andreas Reigber, German Aerospace Center (DLR), Germany; Olaf Hellwich, Berlin University of Technology, Germany

TU4.02.5 17:00 **POLARIMETRIC TIME-FREQUENCY ANALYSIS OF VESSELS IN SPOTLIGHT SAR IMAGES**
Francesco Banda, Politecnico di Milano, Italy; Laurent Ferro-Famil, Université de Rennes 1, France; Stefano Tebaldini, Politecnico di Milano, Italy

Tuesday, July 15 | 08:20 - 10:00 | 2000-C
Session TU1.03 | Oral

Forest Biomass

Session Co-Chairs: Kostas Papathanassiou, German Aerospace Center (DLR); Kalifa Goita, Université de Sherbrooke

TU1.03.1 08:20
BIOMASS OF DENSE FOREST RELATED TO L-BAND SAR BACKSCATTER ?
Stéphane Mermoz, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Maxime Réjou-Méchain, CIRAD, France; Ludovic Villard, Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Vivien Rossi, CIRAD,MMISC, France; Sylvie Gourlet-Fleury, CIRAD, France

TU1.03.2 08:40
ASSESSING REMOTELY-SENSED ABOVEGROUND BIOMASS ESTIMATES IN THE SIERRA NATIONAL FOREST
Mark Chopping, Rocio Duchesne, Montclair State University, United States; Malcolm North, U.S. Forest Service, United States

TU1.03.3 09:00
VERTICAL FOREST STRUCTURE CHARACTERIZATION FOR THE ESTIMATION OF ABOVE GROUND BIOMASS: FIRST EXPERIMENTAL RESULTS USING SAR VERTICAL REFLECTIVITY PROFILES
Astor Toraño Caicoya, Florian Kugler, Matteo Pardini, German Aerospace Center (DLR), Germany; Irena Hajnsek, ETH Zürich, Switzerland; Konstantinos Papathanassiou, German Aerospace Center (DLR), Germany

TU1.03.4 09:20
MULTIPLE SPATIAL SCALE ANALYSIS OF L-BAND SAR BACKSCATTER RELATION TO VEGETATION COVER AND ABOVEGROUND BIOMASS
Neha P. Joshi, University of Copenhagen, Denmark; Edward T. A. Mitchard, University of Edinburgh, United Kingdom; Johannes Schumacher, University of Copenhagen, Denmark; Sassan S. Saatchi, Jet Propulsion Laboratory, United States; Rasmus Fensholt, Vivian K. Johannsen, University of Copenhagen, Denmark

TU1.03.5 09:40
MAPPING BIOMASS OF SIBERIA LARCH FOREST FROM PALSAR L-BAND RADAR AND LANDSAT VCF DATA
Jon Ranson, NASA Goddard Space Flight Center, United States; Guoqing Sun, University of Maryland, United States; Vyacheslav Kharuk, Sukachev Institute of Forest, Russian Federation; Bruce Cook, NASA Goddard Space Flight Center, United States

Tuesday, July 15 | 10:30 - 12:10 | 2000-C
Session TU2.03 | Oral

Forest Modelling

Session Co-Chairs: Jan van Aardt, Rochester Institute of Technology; Brigitte Leblon, University of New Brunswick

TU2.03.1 10:30
THE ASSESSMENT OF DATA MINING ALGORITHMS FOR MODELLING SAVANNAH WOODY COVER USING MULTI-FREQUENCY (X-, C- AND L-BAND) SYNTHETIC APERTURE RADAR (SAR) DATASETS
Laven Naidoo, Renaud Mathieu, Russell Main, Waldo Kleynhans, Konrad Wessels, Council for Scientific and Industrial Research (CSIR), South Africa; Gregory P. Asner, Carnegie Institution for Science, United States; Brigitte Leblon, University of New Brunswick, Canada

TU2.03.2 10:50
A NOVEL TOPOGRAPHIC CORRECTION FOR HIGH AND MEDIUM RESOLUTION IMAGES BY USING COMBINED SOLAR RADIATION
Claudia Notarnicola, Mattia Callegari, Ludovica De Gregorio, Ruth Sonnenschein, Ruben Remelgado, Bartolomeo Ventura, EURAC-Institute for Applied Remote Sensing, Italy

TU2.03.3 11:10
MODELLING TROPICAL DRY FOREST DECIDUOUSNESS USING SPATIALLY DOWNSCALED TRMM DATA
Nicholas Cuba, John Rogan, Clark University, United States

TU2.03.4 11:30
POLARIMETRIC-INTERFEROMETRIC BOREAL FOREST SCATTERING MODEL FOR BIOMASS END-TO-END SIMULATOR
Maciej Soja, Chalmers University of Technology, Sweden; Lars Ulander, Swedish Defence Research Agency, Sweden

TU2.03.5 11:50
SIMULATION OF CARBON FLUX OF FOREST ECOSYSTEM BY BIOME-BGC AND MODIS-PSN MODELS
Min Yan, Zengyuan Li, Xin Tian, Erxue Chen, Wangfei Zhang, Yun Guo, Chunmei Li, Chinese Academy of Forestry, China

Tuesday, July 15 | 13:30 - 15:10 | 2000-C
Session TU3.03 | Oral

Multi-temporal Analysis I

Session Chair: Marc Simard, NASA Jet Propulsion Laboratory, California Institute of Technology

TU3.03.1 13:30
ASSESSMENT OF BIOMASS CARBON STOCKS OVER PEAT SWAMP FORESTS USING MULTI-TEMPORAL AND MULTI-POLARIZATIONS SAR DATA
Arief Wijaya, Center for International Forestry Research (CIFOR), Indonesia; Veraldo Liesenberg, University of Campinas, Brazil; Ari Susanti, Oka Karyanto, Faculty of Forestry, Gadjah Mada University, Indonesia, Indonesia; Louis V Verchot, Center for International Forestry Research (CIFOR), Indonesia

TU3.03.3 14:10
SMOS AND CLIMATE DATA APPLICABILITY FOR ANALYZING FOREST DECLINE AND FOREST FIRES
David Chaparro, Universitat Politècnica de Catalunya, Spain; Jordi Vayreda, Jordi Martinez-Vilalta, Center for Ecological Research and Applied Forestry (CREAF), Spain; Mercè Vall-llossera, Universitat Politècnica de Catalunya, Spain; Mireia Banque, Center for Ecological Research and Applied Forestry (CREAF), Spain; Adriano Camps Carmona, María Piles, Universitat Politècnica de Catalunya, Spain

TU3.03.4 14:30
USE OF COSMO-SKYMED CONSTELLATION FOR MONITORING THE POST-FIRE VEGETATION REGROWTH: THE CAPO FIGARI CASE STUDY.
Ruggero G. Avezzano, University of Rome Tor Vergata, Italy; Gaia Vaglio Laurin, Valentina Bacciu, Euro-Mediterranean Centre on Climate Change, Italy; Fabio Covello, Maria Virelli, Agenzia Spaziale Italiana, Italy; Fabio Del Frate, Giovanni Schiavon, University of Rome Tor Vergata, Italy; Riccardo Valentini, Euro-Mediterranean Centre on Climate Change, Italy

TU3.03.5 14:50
MULTI-TEMPORAL VHR COVERAGE OF RIPARIAN FOREST HABITATS – CAN WE PERFORM BETTER SEGMENTATION?
Thomas Strasser, Stefan Lang, University of Salzburg, Australia

Tuesday, July 15 | 15:40 - 17:20 | 2000-C
Session TU4.03 | Oral

Biomass

Session Co-Chairs: Renaud Mathieu, CSIR - Natural Resources Environment; André Beaudoin, Canadian Forest Service

TU4.03.1 15:40
AN ANALYSIS OF UNCERTAINTY IN THE BACKSCATTER BIOMASS RELATIONSHIP
Razi Ahmed, Scott Hensley, Jet Propulsion Laboratory, United States; Paul Siqueira, University of Massachusetts, United States

TU4.03.2 16:00
AN ABOVE-GROUND BIOMASS MAP OF AFRICAN SAVANNAS AT A RESOLUTION OF 100 METERS USING ALOS PALSAR DATA
Alexandre Bouvet, Thuy Le Toan, Stéphane Mermoz, Centre d'Études Spatiales de la Biosphère (CESBIO), France

TU4.03.3 16:20
COUNTRY-LEVEL MAPPING OF FOREST ABOVEGROUND BIOMASS, UNCERTAINTY AND FOREST PROBABILITY USING SRTM, MODIS AND ALOS PALSAR
Pedro Rodriguez Veiga, University of Leicester, United Kingdom; Sassan S. Saatchi, NASA Jet Propulsion Laboratory, United States; Kevin Tansey, Heiko Balzter, University of Leicester, United Kingdom

TU4.03.4 16:40
THE FOREST BIOMASS VALIDATION SITE "RODA": DECOUPLING ANTHROPOGENIC AND NATURAL FACTORS FOR GLOBAL FOREST MONITORING – A CONTRIBUTION TO THE HELMHOLTZ ALLIANCE "REMOTE SENSING AND EARTH SYSTEM DYNAMICS" AND THE GOFC-GOLD BIOMASS WORKING GROUP
Christiane Schmullius, Carsten Pathe, Christian Thiel, Tanvir Chowdhury, Sören Hese, University Jena - Earth Observation, Germany; Jussi Baade, University Jena - Physical Geography, Germany; Irena Hajnsek, Ralf Horn, Thomas Jagdhuber, German Aerospace Center (DLR) - Microwaves and Radar Institute, Germany; Sergej Chmara, Thueringia Forest Agency, Germany; Herbert Sagischewski, Thuringia Forest Agency, Germany

TU4.03.5 17:00
A TIME SERIES ANALYSIS IN THE AEROSOL/SURFACE REMOTE SENSING FROM MODIS: ALGORITHM MAIAC
Alexei Lyapustin, NASA Goddard Space Flight Center, United States; Yujie Wang, UMBC, United States

Tuesday, July 15 | 08:20 - 10:00 | 2000-D
Session TU1.04 | Oral

Airborne SAR

Session Co-Chairs: Michael Inggs, University of Cape Town; Josaphat Tetuko Sri Sumanty, Chiba University

TU1.04.1 08:20 **PROGRESS ON DEVELOPMENT OF SYNTHETIC APERTURE RADAR ONBOARD UAV AND MICROSATELLITE**
Josaphat Tetuko Sri Sumantyo, Chiba University, Indonesia

TU1.04.2 08:40 **INTRODUCTION TO IECAS-SAR – A MULTI-FREQUENCY POLARIMETRIC AIRBORNE SAR**
Yan-lei Li, Xing-Dong Liang, Liang-jiang Zhou, Long-yong Chen, Yong-wei Dong, IECAS, China; Chibiao Ding, Institute of Electronics, Chinese Academy of Sciences, China

TU1.04.3 09:00 **ECOSAR'S PERFORMANCE ASSESSMENT AND FIRST FLIGHT CAMPAIGN RESULTS**
Rafael F. Rincon, Temilola Fatoyinbo Agueh, K. Jon Ranson, Guoqing Sun, Manohar Deshpande, Martin Perrine, Cornelis Du Toit, Quenton Bonds, Jaclyn Beck, Daniel Lu, Batuhan Osmanoglu, NASA Goddard Space Flight Center, United States

TU1.04.4 09:20 **CONFORMAL PHASED-ARRAY ANTENNA FOR A UAV-MOUNTED ALONG-TRACK INTERFEROMETRIC SAR**
Tamás Gál, University of Washington, United States; Jorge L. Salazar-Cerreno, National Center for Atmospheric Research, United States; Gordon Farquharson, Yasuo Kuga, University of Washington, United States

TU1.04.5 09:40 **DESIGN AND IMPLEMENTATION OF A LOW-POWER SYNTHETIC APERTURE RADAR**
Khalid El-Darymli, Cecilia Moloney, Eric Gill, Memorial University of Newfoundland, Canada; Peter McGuire, Desmond Power, C-CORE, Canada

Tuesday, July 15 | 10:30 - 12:10 | 2000-D
Session TU2.04 | Oral

SAR Calibration and Processing

Session Co-Chairs: Ridha Touzi, Canada Centre for Remote Sensing; Marco Scherdt, German Aerospace Center (DLR)

TU2.04.1 10:30 **A FAST APPROACH FOR ANTENNA PHASE CENTER EVALUATION**
Stefano Perna, DI-Università degli Studi di Napoli Parthenope - IREA-CNR, Italy; Carmen Esposito, IREA-CNR; DING, Università degli Studi del Sannio, Italy; Antonio Pauciullo, IREA-CNR, Italy; Pasquale Romano, Angelo Gifuni, DI-Università degli Studi di Napoli Parthenope - IREA-CNR, Italy

TU2.04.2 10:50 **INDEPENDENT VERIFICATION OF THE SENTINEL-1A SYSTEM CALIBRATION**
Marco Schwerdt, Kersten Schmidt, Nuria Tous Ramon, Gabriel Castellanos Alfonzo, Björn Döring, Manfred Zink, Pau Prats, German Aerospace Center (DLR), Germany

TU2.04.3 11:10 **QUALITY AND SEASONAL TIME DEPENDENT MODELING OF RADAR BACKSCATTER FROM TANDEM-X DATA**
Paola Rizzoli, Benjamin Bräutigam, German Aerospace Center (DLR), Germany

TU2.04.4 11:30 **PROCESSING FOR UWB LFM-CW SAR**
Craig Stringham, David G Long, Brigham Young University, United States

TU2.04.5 11:50 **REQUIREMENTS ON THE CALIBRATION OF HYBRID-COMPACT SAR**
Ridha Touzi, François Charbonneau, Canada Centre for Remote Sensing, Canada

Tuesday, July 15 | 13:30 - 15:10 | 2000-D
Session TU3.04 | Oral

SAR Instrument and Processing I

Session Chair: Paul Siqueira, University of Massachusetts Amherst

TU3.04.1 13:30 **SAR RESOLUTION DEGRADATION ESTIMATION OPERATING IN SPARSE RANDOM MEDIA AT MILLIMETER-WAVE FREQUENCIES**
Amr Ibrahim, Kamal Sarabandi, University of Michigan, United States

TU3.04.2 13:50 **IMAGE FORMATION ALGORITHM FOR HIGHLY-SQUINT STRIP-MAP SAR ONBOARD HIGH-SPEED PLATFORM USING CONTINUOUS PRF VARIATION**
Hongcheng Zeng, Jie Chen, Wei Yang, Yanqing Zhu, Pengbo Wang, BeiHang University, China

TU3.04.3 14:10 **PRECISE ESTIMATION OF FLIGHT PATH FOR AIRBORNE SAR MOTION COMPENSATION**
Jincheng Li, Pengbo Wang, Chunsheng Li, Jie Chen, Wei Yang, BeiHang University, China

TU3.04.4 14:30 **IMPROVING DOPPLER FREQUENCY ESTIMATION FROM ENVISAT DATA**
Thomas Kræmer, Camilla Brekke, University of Tromsø - The Arctic University of Norway, Norway; Harald Johnsen, Northern Research Institute (Norut), Norway

TU3.04.5 14:50 **MIMO SAR MEASUREMENTS WITH A WAVEFORM-DIVERSE 4X4 IMAGING SYSTEM**
Kyle Stewart, Joel T. Johnson, The Ohio State University, United States

Tuesday, July 15 | 15:40 - 17:20 | 2000-D
Session TU4.04 | Oral

SAR Instrument and Processing II

Session Co-Chairs: Marwan Younis, German Aerospace Center (DLR); Ishuwa Sikaneta, Defence Research and Development Canada

TU4.04.1 15:40 **ENHANCING GLOBAL MARITIME DOMAIN AWARENESS THROUGH SAR WITH MULTIPLE APERTURES**
Ishuwa Sikaneta, Christoph Gierull, Defence Research and Development Canada, Ottawa, Canada; Delphine Cerutti-Maori, FHR Fraunhofer, Germany

TU4.04.2 16:00 **MOTION MEASUREMENT WITH A MULTI-CHANNEL SAR**
Robert Jansen, Mark Sletten, Naval Research Laboratory, United States

TU4.04.3 16:20 **GPU-BASED PARALLELIZED TIME-DOMAIN BACK-PROJECTION PROCESSING FOR AGILE SAR PLATFORMS**
Othmar Frey, GAMMA Remote Sensing AG / ETH Zurich, Switzerland; Charles L. Werner, Urs Wegmüller, GAMMA Remote Sensing AG, Switzerland

TU4.04.4 16:40 **DPT-BASED DOPPLER PARAMETERS ESTIMATION FOR BISTATIC FORWARD-LOOKING SAR**
Zhiteng Ning, Shunsheng Zhang, University of Electronic Science and Technology of China, China

TU4.04.5 17:00 **BIDIRECTIONAL NOTCH FILTER FOR SUPPRESSING PULSE MODULATED RADIO-FREQUENCY-INTERFERENCE IN SAR DATA**
Nabil Hamdadou, Jie Chen, Kamel Hasni, Hui Kuang, BeiHang University, China

Tuesday, July 15 | 08:20 - 10:00 | 205-AB
Session TU1.05 | Oral-Invited

Hyper-temporal Image Analysis and Change Detection

Session Co-Chairs: Waldo Kleynhans, Council of Scientific and Industrial Research; Brian Salmon, University of Tasmania

TU1.05.1 08:20
A NOVEL CIRCULAR APPROACH TO CHANGE DETECTION IN PAIR OF IMAGES EXTRACTED FROM IMAGE TIME SERIES
Lorenzo Bruzzone, University of Trento, Italy; Francesca Bovolo, Fondazione Bruno Kessler, Italy

TU1.05.2 08:40
A MODIFIED TEMPORAL APPROACH TO META-OPTIMIZING AN EXTENDED KALMAN FILTER'S PARAMETERS
Brian Salmon, Waldo Kleynhans, Council of Scientific and Industrial Research, Australia; Jan Olivier, Willem Olding, University of Tasmania, Australia; Konrad Wessels, Frans van den Bergh, Council of Scientific and Industrial Research, South Africa

TU1.05.3 09:00
WOODY COVER ASSESSMENTS IN A SOUTHERN AFRICAN SAVANNA, USING HYPER-TEMPORAL C-BAND ASAR-WS DATA
Russell Main, Renaud Mathieu, Waldo Kleynhans, Konrad Wessels, Laven Naidoo, Council for Scientific and Industrial Research (CSIR), South Africa; Gregory P. Asner, Carnegie Institution for Science, United States

TU1.05.4 09:20
DETECTING SETTLEMENT EXPANSION USING HYPER-TEMPORAL SAR TIME-SERIES
Waldo Kleynhans, Council for Scientific and Industrial Research (CSIR), South Africa; Brian Salmon, UTAS, South Africa

TU1.05.5 09:40
A COMPARISON OF MACHINE LEARNING TECHNIQUES FOR PREDICTING DOWNSTREAM ACID MINE DRAINAGE
Terence L van Zyl, Council for Scientific and Industrial Research (CSIR), South Africa

Tuesday, July 15 | 10:30 - 12:10 | 205-AB
Session TU2.05 | Oral-Invited

Space Lidar: Missions, Technologies and Observations

Session Co-Chairs: Upendra Singh, NASA - Langley Research Center; James Abshire, NASA - Goddard Space Flight Center

TU2.05.1 10:30
MULTI-FOOTPRINT OBSERVATION LIDAR AND IMAGER (MOLI) ON THE ISS-JEM MISSION
Kazuhiro Asai, Tohoku Institute of Technology, Japan; Ryota Sato, Takashi Kobayashi, Tadashi Imai, Japan Aerospace Exploration Agency, Japan

TU2.05.2 10:50
OBSERVING METHANE FROM SPACE – THE FRENCH GERMAN LIDAR MISSION MERLIN
Christian Stephan, Matthias Alpers, Gerhard Ehret, German Aerospace Center (DLR), Germany; Pierre Flamant, Lab. de Meteorologie Dynamique, Germany; Bruno Millet, Centre National d'Etudes Spatiales, Germany

TU2.05.3 11:10
THE GANYMEDE LASER ALTIMETER (GALA): OVERVIEW AND STATUS OF THE EXPERIMENT ON ESA'S JUICE MISSION
Hauke Hussmann, Kay Lingenauber, Harald Michaelis, German Aerospace Center (DLR) - Institute of Planetary Research, Germany; Masanori Kobayashi, Noriyuki Namiki, Chiba Institute of Technology, Japan; Nicolas Thomas, Karsten Seiferlin, University of Berne, Switzerland; Luisa M. Lara, Institute of Astrophysics of Andalucia-CSIC, Spain

TU2.05.4 11:30
KEY TECHNOLOGY CHALLENGES FOR SPACEBORNE ACTIVE OPTICAL SENSING OF EARTH SCIENCE MEASUREMENTS
Parminder Ghuman, Joseph Famiglietti, Keith Murray, National Aeronautics and Space Administration (NASA), United States

TU2.05.5 11:50
ADVANCED PHOTODETECTORS FOR SPACE LIDAR
Xiaoli Sun, Michael Krainak, James Abshire, NASA Goddard Space Flight Center, United States

Tuesday, July 15 | 13:30 - 15:10 | 205-AB
Session TU3.05 | Oral-Invited

Urban Remote Sensing

Session Co-Chairs: Paolo Gamba, University of Pavia; Yifang Ban, KTH Royal Institute of Technology

TU3.05.1 13:30
IMPROVING SAR TOMOGRAPHY VIA CAESAR FOR BUILT STRUCTURES MONITORING: AN APPLICATION TO COSMO-SKYMED DATA
Gianfranco Fornaro, Antonio Pauciullo, Diego Reale, Simona Verde, Institute for Electromagnetic Sensing of the Enviromental, National Research Council, Italy

TU3.05.2 13:50
MONITORING DYNAMICS IN EPHEMERAL SETTLEMENTS - THE CASE OF TRANSFORMING REFUGEE AND IDP CAMPS
Dirk Tiede, Stefan Lang, Petra Füreder, University of Salzburg, Austria

TU3.05.3 14:10
SUPERSPECTRAL LAND-COVER CLASSIFICATION AT VERY-HIGH SPATIAL RESOLUTION WITH WORLDVIEW-3 SIMULATED DATA
Nathan Longbotham, Fabio Pacifici, Michele Kuester, DigitalGlobe, Inc., United States

TU3.05.4 14:30
A NEW MAP OF THE EUROPEAN SETTLEMENTS BY AUTOMATIC CLASSIFICATION OF 2.5-M RESOLUTION SPOT DATA
Stefano Ferri, Vasileios Syrris, Aneta Florczyk, Institute for the Protection and Security of the Citizen, Joint Research Centre, European Commission, I-21027 Ispra, Italy, Italy; Marco Scavazzon, Stamatia Halkia, Engineering Ingegneria Informatica SPA, Italy; Martino Pesaresi, Institute for the Protection and Security of the Citizen, Joint Research Centre, European Commission, I-21027 Ispra, Italy, Italy

TU3.05.5 14:50
MULTI-RISK BUILDINGS EXPOSURE AND PHYSICAL VULNERABILITY MAPPING FROM OPTICAL SATELLITE IMAGES: DEVELOPING AN INTEGRATED TOOLSET
Mostapha Harb, Fabio Dell'Acqua, Daniele De Vecchi, University of Pavia / EUCENTRE Foundation, Italy

Tuesday, July 15 | 15:40 - 17:20 | 205-AB
Session TU4.05 | Oral-Invited

Monitoring Temporal and Spatial Changes in Wetland Ecosystems with SAR

Session Chair: Brian Brisco, Natural Resources Canada

TU4.05.1 15:40
POLARIMETRIC AND COHERENT CHANGE DETECTION FOR WETLAND MONITORING
Brian Brisco, Kevin Murnaghan, Lori White, Natural Resources Canada, Canada

TU4.05.2 16:00
INSAR FOR WATER LEVEL MONITORING IN THE EVERGLADES WETLANDS, SOUTH FLORIDA
Shimon Wdowinski, University of Miami, United States; Sang-Hoon Hong, Korea Aerospace Research Institute, Republic of Korea; Brian Brisco, Canada Centre for Mapping and Earth Observation, Canada

TU4.05.3 16:20
SAR FOR SURFACE WATER MONITORING AND PUBLIC HEALTH
Valentin Poncos, Kepler Space/ University of Calgary, Canada; Stephen Molson, Molson Mapping, Canada; Andy Welch, JWRL Geomatics, Canada; Stephanie Brazeau, Serge Olivier Kotchi, Public Health Canada, Canada

TU4.05.4 16:40
POLSAR IMAGING OF WETLANDS: NEW INSIGHTS INTO BACKSCATTER PHYSICS
Frank Ahern, TerreVista Earth Imaging, Canada; Brian Brisco, Kevin Murnaghan, Lori White, Canada Centre for Mapping and Earth Observation, Canada; Shimon Wdowinski, University of Miami, United States; Sang-Hoon Hong, University of Miami and Korea Polar Research Institute, United States; Don Atwood, Michigan Tech Research Institute, United States

TU4.05.5 17:00
WATER EXTENT MONITORING AND WATER LEVEL ESTIMATION USING MULTI-FREQUENCY, MULTI-POLARIZED, AND MULTI-TEMPORAL SAR DATA
Andreas Schmitt, Anna Wendleder, Achim Roth, German Aerospace Center (DLR), Germany; Brian Brisco, Natural Resources Canada, Canada

Tuesday, July 15 | 08:20 - 10:00 | 206-A
Session TU1.06 | Oral-Invited

Joint Polar Satellite System (JPSS) Sensor Performance, Products and Progress

Session Chair: John Furgerson, Joint Polar Satellite System

TU1.06.1 08:20 **JOINT POLAR SATELLITE SYSTEM THE UNITED STATES NEXT GENERATION CIVILIAN POLAR ORBITING ENVIRONMENTAL SATELLITE SYSTEM**
Harry Cikanek, Ajay Mehta, Mitchell Goldberg, John Furgerson, NOAA/NESDIS/JPSS, United States

TU1.06.2 08:40 **JOINT POLAR SATELLITE SYSTEM (JPSS) JPSS PROVING GROUND AND APPLICATIONS**
Mitchell Goldberg, Bill Sjoberg, NOAA/NESDIS/JPSS, United States

TU1.06.3 09:00 **OVERVIEW OF SUOMI NATIONAL POLAR-ORBITING PARTNERSHIP (NPP) SATELLITE INSTRUMENT CALIBRATION, VALIDATION AND APPLICATIONS**
Fuzhong Weng, Lihang Zhou, Mitchell Goldberg, NOAA/NESDIS, United States

TU1.06.4 09:20 **SUOMI NPP EDR PERFORMANCE**
Ivan Csiszar, Lihang Zhou, NOAA/NESDIS, United States; Ray Godin, Johns Hopkins University, United States; Thomas Atkins, Murty Divakarla, Xingpin Liu, I.M. Systems Group, United States

TU1.06.5 09:40 **OCEAN COLOR PRODUCTS VALIDATION AT NOAA COASTWATCH**
Sathyadev Ramachandran, Phillip Keegstra, Ronald Vogel, Michael Soracco, Kent Hughes, NOAA/NESDIS/STAR, United States

Tuesday, July 15 | 10:30 - 12:10 | 206-A
Session TU2.06 | Oral-Invited

SOAR: SAR Imagery for Cryosphere

Session Chair: Stéphane Chalifoux, Canadian Space Agency

TU2.06.1 10:30 **UNDERSTANDING ICE PROCESSES IN A DYNAMIC RIVER SECTION USING MULTIPOLARIZATION RADARSAT-2 DATA**
Yves Gauthier, Institut National de la Recherche Scientifique, Canada; Martin Jasek, BC Hydro, Canada; Jimmy Poulin, Monique Bernier, Institut National de la Recherche Scientifique, Canada

TU2.06.2 10:50 **THE IMPORTANCE OF RADARSAT-2 IMAGERY IN MONITORING RIVER ICE COVER CHARACTERISTICS AND BEHAVIOUR**
Karl-Erich Lindenschmidt, Apurba Das, Jay Sagin, University of Saskatchewan, Canada

TU2.06.3 11:10 **TOWARDS THE RETRIEVAL OF MULTI-YEAR SEA ICE THICKNESS AND DEFORMATION STATE FROM POLARIMETRIC C- AND X-BAND SAR OBSERVATIONS**
J. Alec Casey, Justin Beckers, University of Alberta, Canada; Thomas E. Busche, German Aerospace Center (DLR), Germany; Christian Haas, York University, Canada

TU2.06.4 11:30 **MONITORING OF SUBARCTIC SHRUB VEGETATION CHARACTERISTICS USING TERRASAR-X AND RADARSAT-2 DATA**
Yannick Duguay, Monique Bernier, Institut National de la Recherche Scientifique, Canada; Esther Lévesque, Université du Québec à Trois-Rivières, Canada; Benoît Tremblay, Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques, Canada

TU2.06.5 11:50 **MODELING BIOPHYSICAL VARIABLES IN THE CANADIAN HIGH ARCTIC USING SYNTHETIC APERTURE RADAR DATA**
Adam Collingwood, Paul Treitz, Queen's University, Canada; François Charbonneau, Natural Resources Canada, Canada

Tuesday, July 15 | 13:30 - 15:10 | 206-A
Session TU3.06 | Oral-Invited

SOAR: SAR Imagery for Land Use and Land Cover and Natural Hazard

Session Co-Chairs: Stéphane Chalifoux, Canadian Space Agency; Achim Roth, German Aerospace Center (DLR)

TU3.06.1 13:30 **DIGITAL SURFACE MODEL GENERATION USING OPTIMAL RADARSAT-2 IMAGES**
Jean-Samuel Proulx-Bourque, Natural Resources Canada, Canada; Ramata Magagi, Norman O'Neill, Université de Sherbrooke, Canada; Pierre Gravel, Natural Resources Canada, Canada

TU3.06.2 13:50 **CLASSIFICATION OF GRASSLAND TYPES BY MEANS OF MULTI-SEASONAL TERRASAR-X AND RADARSAT-2 IMAGERY**
Annekatrin Metz, Mattia Marconcini, Thomas Esch, Peter Reinartz, German Aerospace Center (DLR), Germany; Manfred Ehlers, University of Osnabrueck, Germany

TU3.06.3 14:10 **CROP IDENTIFICATION AND GROWTH MONITORING ALONG THE SEASON WITH RADARSAT-2 QUAD-POLARIZED TIME SERIES IN BELGIUM**
Aline Leonard, François Waldner, Damien Jacques, Pierre Defourny, Université catholique de Louvain, Belgium

TU3.06.4 14:30 **VARIABLE IMPORTANCE AND RANDOM FOREST CLASSIFICATION USING RADARSAT-2 POLSAR DATA**
Siddharth Hariharan, Siddhesh Tirodkar, Shaunak De, Avik Bhattacharya, Indian Institute of Technology Bombay, India

TU3.06.5 14:50 **QUADPOL INSAR ANALYSIS OF EARTHQUAKE HAZARD ON THE HAYWARD FAULT, CA**
Kristy F. Tiampo, Western University, Canada; Sergey Samsonov, Natural Resources Canada, Canada; Pablo J. González, Samira Alipour, Western University, Canada

Tuesday, July 15 | 15:40 - 17:20 | 206-A
Session TU4.06 | Oral-Invited

SOAR: SAR Imagery for Ocean and Water Resources and Wetlands

Session Co-Chairs: Daniel De Lisle, Canadian Space Agency; Gordon Staples, MDA Geospatial Services, Inc.

TU4.06.1 15:40 **DETECTING AND TRACKING SMALL SCALE EDDIES IN THE BLACK SEA AND THE BALTIC SEA USING HIGH-RESOLUTION RADARSAT-2 AND TERRASAR-X IMAGERY (DTEDDIE)**
Leonie Dreschler-Fischer, University of Hamburg, Germany; Olga Lavrova, Russian Academy of Science, Russian Federation; Benjamin Seppke, Martin Gade, University of Hamburg, Germany; Tatiana Bocharova, Andrey Serebyany, Russian Academy of Science, Russian Federation; Oliver Bestmann, University of Hamburg, Germany

TU4.06.2 16:00 **THE USE OF HIGH-RESOLUTION RADARSAT-2 AND TERRASAR-X IMAGERY TO MONITOR DRY-FALLEN INTERTIDAL FLATS**
Martin Gade, Sabrina Melchionna, Universität Hamburg, Germany

TU4.06.3 16:20 **TEMPORAL AND SPATIAL SOIL MOISTURE DYNAMICS IN MOUNTAIN MEADOWS BY INTEGRATING RADARSAT2 IMAGES AND GROUND DATA**
Claudia Notarnicola, Luca Pasolli, Giovanni Cuozzo, Felix Greifeneder, EURAC-Institute for Applied Remote Sensing, Italy; Giacomo Bertoldi, Stefano Dalla Chiesa, Georg Niedrist, EURAC-Institute for Alpine Environment, Italy; Davide Castelletti, University of Trento, Italy; Ulrike Tappeiner, EURAC-Institute for Alpine Environment, Italy; Lorenzo Bruzzone, University of Trento, Italy; Marc Zebisch, EURAC-Institute for Applied Remote Sensing, Italy

TU4.06.4 16:40 **USE OF RADARSAT-2 AND ALOS-PALSAR SAR IMAGES FOR WETLAND MAPPING IN NEW BRUNSWICK**
Armand LaRocque, Brigitte Leblon, University of New Brunswick, Canada; Renata Woodward, The Nature Trust of New Brunswick, Canada; Michael Mordini, Laura Bourgeau-Chavez, Anthony Landon, Nancy French, Jessica McCarty, Michigan Technological University, United States; Thomas Huntington, U.S. Geological Survey, United States; Philip Camill, Bowdoin College, United States

TU4.06.5 17:00 **MAPPING VEGETATION COVER AND FOREST STRUCTURE IN THE AMAZON FLOODPLAIN WETLANDS USING MULTITEMPORAL POLARIMETRIC C BAND RADARSAT-2 IMAGERY**
Thiago Sanna Freire Silva, Universidade Estadual Paulista, Brazil; Luiz Felipe Almeida Furtado, Evlyn Márcia Leão de Moraes Novo, Instituto Nacional de Pesquisas Espaciais, Brazil

Tuesday, July 15 | 08:20 - 10:00 | 206-B
Session TU1.07 | Oral-Invited

Fourier-Transform Spectroscopy Applied to Remote-Sensing

Session Chair: Richard Lachance, ABB

TU1.07.1 08:20
THE UNIVERSITY OF WISCONSIN SPACE SCIENCE AND ENGINEERING CENTER ABSOLUTE RADIANCE INTERFEROMETER (ARI): PREDICTED AND DEMONSTRATED RADIOMETRIC PERFORMANCE
Joe K. Taylor, Henry Revercomb, Fred Best, Jonathan Gero, David Tobin, Robert Knuteson, Douglas Adler, Claire Pettersen, University of Wisconsin-Madison, United States; Jerome Genest, Université Laval, Canada; Henry Buijs, Frederic Grandmont, ABB-Bomem Inc, Canada

TU1.07.2 08:40
ACHIEVING 0.1% RADIOMETRIC UNCERTAINTY IN THE SOLAR BANDS USING FTS
Joseph Predina, Logistikos Engineering LLC, United States; Steven Lorentz, Allan Smith, L-1 Standards and Technology Inc., United States

TU1.07.3 09:00
POTENTIALITY OF FTIR SPECTRO-IMAGERY FOR THE STUDY OF HIGH ALTITUDE LUMINOUS EVENTS FROM A STRATOSPHERIC BALLOON
Laurence Croize, Sébastien Payan, Jérôme Bureau, UPMC Univ Paris 06, Université Versailles St-Quentin, CNRS/INSU, LATMOS-IPSL, France; Fabrice Duruisseau, Nathalie Huret, Laboratoire de Physique et Chimie de l'Environnement, CNRS and Université d'Orléans, France

TU1.07.4 09:20
THE TANSO-FTS-2 INSTRUMENT FOR THE GOSAT-2 GREENHOUSE GAS MONITORING MISSION
Ronald Glumb, Glenn Davis, Christopher Lietzke, Exelis Inc., United States

Tuesday, July 15 | 10:30 - 12:10 | 206-B
Session TU2.07 | Oral-Invited

Fusion of LiDAR and Hyperspectral Data

Session Co-Chairs: Jonathan Chan, Centre of Research & Innovation - Foundation of Edmund Mach; Wenzhi Liao, Department of Telecommunications and Information Processing (TELIN) Ghent University

TU2.07.1 10:30
COMBINING FEATURE FUSION AND DECISION FUSION FOR CLASSIFICATION OF HYPERSPECTRAL AND LIDAR DATA
Wenzhi Liao, Rik Bellens, Aleksandra Pizurica, Sidharta Gautama, Wilfried Philips, Ghent University, Belgium

TU2.07.2 10:50
AUTOMATIC FUSION AND CLASSIFICATION OF HYPERSPECTRAL AND LIDAR DATA USING RANDOM FORESTS
Andreas Merentitis, Christian Debes, Roel Heremans, Nikolaos Frangiadakis, AGT International, Germany

TU2.07.3 11:10
OPERATOR ANALYSIS AND DIFFUSION BASED EMBEDDINGS FOR HETEROGENEOUS DATA FUSION
Alexander Cloninger, Wojciech Czaja, Timothy Doster, University of Maryland College Park, United States

TU2.07.4 11:30
FUSING IMAGING SPECTROMETRY AND AIRBORNE LASER SCANNING DATA FOR TREE SPECIES DISCRIMINATION
Hossein Torabzadeh, Felix Morsdorf, Reik Leiterer, Michael Schaepman, University of Zurich, Switzerland

TU2.07.5 11:50
TREE SPECIES MAPPING BY COMBINING HYPERSPECTRAL WITH LIDAR DATA
Pieter Kempeneers, VITO, Belgium; Frieke Van Coillie, Wenzi Liao, Flore Devriendt, Kris Vandekerkhove, University Gent, Belgium

Tuesday, July 15 | 13:30 - 15:10 | 206-B
Session TU3.07 | Oral

Image Classification I

Session Co-Chairs: Gulsen Taskin Kaya, Istanbul Technical University; Fabio Pacifici, DigitalGlobe, Inc.

TU3.07.1 13:30
KERNEL-BASED CLASSIFICATION IN COMPLEX-VALUED FEATURE SPACES FOR POLARIMETRIC SAR DATA
Gabriele Moser, Sebastiano Bruno Serpico, University of Genoa, Italy

TU3.07.2 13:50
SEMI-SUPERVISED FEATURE LEARNING FOR REMOTE SENSING IMAGE CLASSIFICATION
Xiaoshuang Yin, Wen Yang, Gui-Song Xia, Lixia Dong, Wuhan University, China

TU3.07.3 14:10
A COMPARISON OF SELF-DUAL ATTRIBUTE PROFILES BASED ON DIFFERENT FILTER RULES FOR CLASSIFICATION
Gabriele Cavallaro, University of Iceland, Iceland; Mauro Dalla Mura, GIPSA-lab, Grenoble Institute of Technology, France; Jón Atli Benediktsson, University of Iceland, Iceland; Lorenzo Bruzzone, University of Trento, Italy

TU3.07.4 14:30
REMOTE SENSING IMAGE CLASSIFICATION BY NON-PARALLEL SVMS
Caglar Kucuk, Yucel Torun, Gulsen Taskin Kaya, Istanbul Technical University, Turkey

TU3.07.5 14:50
UNSUPERVISED FEATURE CODING ON LOCAL PATCH MANIFOLD FOR SATELLITE IMAGE SCENE CLASSIFICATION
Fan Hu, Gui-Song Xia, Zifeng Wang, Liangpei Zhang, Hong Sun, Wuhan University, China

Tuesday, July 15 | 15:40 - 17:20 | 206-B
Session TU4.07 | Oral

Change Detection Techniques

Session Co-Chairs: Francesca Bovolo, University of Trento; Florence Tupin, Telecom ParisTech

TU4.07.1 15:40
USING CONTEXTUAL INFORMATION TO IMPROVE SAR CCD: BAYESIAN CONTEXTUAL COHERENT CHANGE DETECTION (BC CCD)
Bea Yu, Massachusetts Institute of Technology - Lincoln Laboratory, United States; Rhonda Phillips, Microsoft, United States

TU4.07.2 16:00
CHANGE DETECTION FOR HIGH RESOLUTION SATELLITE IMAGES, BASED ON SIFT DESCRIPTORS AND AN A CONTRARIO APPROACH
Flora Dellinger, Telecom ParisTech, France; Julie Delon, Université Paris Descartes, France; Yann Gousseau, Telecom ParisTech, France; Julien Michel, CNES, France; Florence Tupin, Telecom ParisTech, France

TU4.07.3 16:20
DETECTION OF SPECIFIC CHANGES IN IMAGE TIME SERIES BY AN ADAPTIVE CHANGE VECTOR ANALYSIS
Daniel C. Zanotta, National Institute for Science, Education and Technology - IFRS - Brazil, Brazil; Lorenzo Bruzzone, University of Trento, Italy; Francesca Bovolo, Fondazione Bruno Kessler, Italy

TU4.07.4 16:40
UNSUPERVISED CHANGE DETECTION OF REMOTE SENSING IMAGES BASED ON SEMI-NONNEGATIVE MATRIX FACTORIZATION
Heng-Chao Li, University of Colorado at Boulder, United States; Nathan Longbotham, DigitalGlobe, Inc., United States; William J. Emery, University of Colorado at Boulder, United States

TU4.07.5 17:00
SPARSE REPRESENTATION FOR REMOTE SENSING IMAGES OF LONG TIME SEQUENCES
Jing Wen, Beijing University of Technology, China; Peng Liu, Lajiao Chen, Lizhe Wang, Chinese Academy of Sciences, China

Tuesday, July 15 | 08:20 - 10:00 | 202
Session TU1.08 | Oral

Tomography and 3D Mapping I

Session Co-Chairs: Scott Hensley, NASA Jet Propulsion Laboratory, California Institute of Technology; Ahmad Shaker, Ryerson University

TU1.08.1 08:20 **MULTIPLE SCATTERERS DETECTION IN CS-BASED SAR TOMOGRAPHY**
Alessandra Budillon, Gilda Schirinzi, University of Naples Parthenope, Italy

TU1.08.2 08:40 **COMPRESSIVE SENSING BASED 3D SAR IMAGING WITH MULTI-PRF BASELINES**
Dehong Liu, Petros T. Boufounos, Mitsubishi Electric Research Labs, United States

TU1.08.3 09:00 **EXTRACTION OF BUILDING PARAMETERS BY SAR RADARGRAMMETRIC ANALYSIS OF LAYOVER AREAS**
Clémence Dubois, Antje Thiele, Stefan Hinz, Karlsruhe Institute of Technology - KIT, Germany

TU1.08.4 09:20 **LP NORM SAR TOMOGRAPHY BY ITERATIVELY REWEIGHTED LEAST SQUARE: FIRST RESULTS**
Simone Mancon, Stefano Tebaldini, Andrea Monti-Guarnieri, Politecnico di Milano, Italy

TU1.08.5 09:40 **SAR TOMOGRAPHY BASED 3-D POINT CLOUD EXTRACTION OF POINT-LIKE SCATTERERS IN URBAN AREAS**
Othmar Frey, ETH Zurich / GAMMA Remote Sensing, Switzerland; Irena Hajnsek, ETH Zurich / German Aerospace Center (DLR), Switzerland; Urs Wegmüller, Charles L. Werner, GAMMA Remote Sensing AG, Switzerland

Tuesday, July 15 | 10:30 - 12:10 | 202
Session TU2.08 | Oral

Tomography and 3D Mapping II

Session Co-Chairs: Scott Hensley, NASA Jet Propulsion Laboratory, California Institute of Technology; Gianfranco Fornaro, Consiglio Nazionale delle Ricerche

TU2.08.1 10:30 **GEODETIC TOMOSAR – FUSION OF SAR IMAGING GEODESY AND TOMOSAR FOR 3D ABSOLUTE SCATTERER POSITIONING**
Xiao Xiang Zhu, German Aerospace Center (DLR) / Technische Universität München (TUM), Germany; Sina Montazeri, German Aerospace Center (DLR) / Delft University of Technology, Germany; Christoph Gisinger, Technische Universität München, Germany; Ramon Hanssen, Delft University of Technology, Netherlands; Richard Bamler, German Aerospace Center (DLR) / Technische Universität München (TUM), Germany

TU2.08.2 10:50 **ASSESSING SAR TOMOGRAPHY BIOMASS RETRIEVAL METHOD AT A MOUNTAINOUS TROPICAL FOREST**
Dinh Ho Tong Minh, Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Fabio Rocca, Stefano Tebaldini, POLIMI, Italy; Ludovic Villard, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Maxime Réjou-Méchain, Jérôme Chave, EDB, France; Klaus Scipal, European Space Agency (ESA) / ESTEC, Netherlands

TU2.08.3 11:10 **SAR TOMOGRAPHY VIA SPARSE REPRESENTATION OF MULTIPLE SNAPSHOTS AND BACKSCATTERING SIGNALS—THE L1-SVD APPROACH**
Ziwei Wang, Chao Wang, Hong Zhang, Yixian Tang, Meng Liu, Key Laboratory of Digital Earth Sciences, Institute of Remote Sensing and Digital Earth, CAS, China

TU2.08.4 11:30 **3-D IMAGING OF SEA ICE USING GROUND-BASED TOMOGRAPHIC SAR DATA AND COMPARISON OF THE MEASUREMENTS WITH TERRASAR-X DATA**
Temesgen Gebrie Yitayew, University of Tromsø, Norway; Laurent Ferro-Famil, University of Rennes1, France; Torbjørn Eltoft, University of Tromsø, Norway

TU2.08.5 11:50 **ON SHAPE FROM SHADING AND SAR IMAGES: AN OVERVIEW AND A NEW PERSPECTIVE**
Gerardo Di Martino, Alessio Di Simone, Antonio Iodice, Daniele Riccio, Giuseppe Ruello, Università di Napoli Federico II, Italy

Tuesday, July 15 | 13:30 - 15:10 | 202
Session TU3.08 | Oral

Lidar-based Vegetation Assessment I

Session Co-Chairs: Jan van Aardt, Rochester Institute of Technology; Baoxin Hue, York University

TU3.08.1 13:30 **CANOPY HEIGHT ESTIMATION IN FRENCH GUIANA USING LIDAR ICESAT/GLAS DATA**
Ibrahim Fayad, Nicolas Baghdadi, IRSTEA, France; Jean-Stéphane Bailly, AgroParisTech, France; Nicolas Barbier, IRD, France; Valery Gond, CIRAD, France; Mahmoud El Hajj, NOVELTIS, France; Frédéric Fabre, EADS, France

TU3.08.2 13:50 **SHALLOW WATER SEAGRASS OBSERVED BY HIGH RESOLUTION FULL WAVEFORM BATHYMETRIC LIDAR**
Zhigang Pan, Juan Fernandez-Diaz, Craig Glennie, University of Houston, United States; Michael Starek, Texas A&M University at Corpus Christi, United States

TU3.08.3 14:10 **COMPARISON OF SYNTHETIC IMAGES GENERATED FROM LIDAR INTENSITY AND PASSIVE HYPERSPECTRAL IMAGERY**
Preston Hartzell, Juan Fernandez-Diaz, Xiao Wang, Craig Glennie, William Carter, Ramesh Shrestha, Abhinav Singhania, Michael Sartori, National Center for Airborne Laser Mapping (NCALM), United States

TU3.08.4 14:30 **LEAF AREA INDEX RETRIEVAL STUDY WITH A MODELLING FRAMEWORK, HEMISPHERICAL PHOTOGRAPHY AND LIDARS**
Sylvain Leblanc, Natural Resources Canada, Canada; Richard Fournier, Université de Sherbrooke, Canada

TU3.08.5 14:50 **A TWO-STAGE ALGORITHM FOR EXTRACTION OF GROUND AND TOP OF CANOPY IN PHOTON-COUNTING PROFILING-LIDAR DATA IN PREPARATION FOR THE ICESAT-2 MISSION**
Mahmoud Awadallah, Sherin Ghannam, Lynn Abbott, Bradley Department of Electrical and Computer Engineering, Virginia Polytechnic Institute and State University, United States; Ahmed Ghanem, Electrical Engineering Department, Suez Canal University, Egypt

Tuesday, July 15 | 15:40 - 17:20 | 202
Session TU4.08 | Oral

Lidar-based Vegetation Assessment II

Session Chair: Monica Moskal, University of Washington

TU4.08.1 15:40 **A NEW PROCEDURE FOR IDENTIFYING SINGLE TREES IN UNDERSTORY LAYER USING DISCRETE LIDAR DATA**
Kaja Kandare, Foxlab, Norwegian University of Life Sciences, Italy; Michele Dalponte, Department of Sustainable Agro-ecosystems and Bioresources, Research and Innovation Centre, Italy; Damiano Gianelle, Foxlab, Department of Sustainable Agro-ecosystems and Bioresources, Research and Innovation Centre, Italy; Jonathan Cheung-Wai Chan, Foxlab, Italy

TU4.08.2 16:00 **AN UV FULL-WAVEFORM AIRBORNE LIDAR AS A DEMONSTRATOR FOR FUTURE SPACE MISSIONS DEDICATED TO FOREST STUDIES**
Xiaoxia Shang, Patrick Chazette, Laboratoire des sciences du climat et de l'environnement, France

TU4.08.3 16:20 **AUGMENTING FULL-WAVEFORM DUAL-WAVELENGTH ECHIDNA® LIDAR (DWEL) WITH HIGHLY-PORTABLE CANOPY BIOMASS LIDAR (CBL) FOR FORESTRY ASSESSMENT AND SATELLITE VALIDATION**
Ian Paynter, University of Massachusetts Boston, United States; Zhan Li, Boston University, United States; Crystal Schaaf, University of Massachusetts Boston, United States; Alan Strahler, Boston University, United States; Edward Saenz, Francesco Peri, University of Massachusetts Boston, United States; Glenn Howe, Kuravi Hewawasam, Jason Martel, Ewan Douglas, Supriya Chakrabarti, Timothy Cook, University of Massachusetts Lowell, United States; Zhousen Wang, NASA Goddard Space Flight Center, United States; Yan Liu, Shabnam Rouhani, Angela Erb, University of Massachusetts Boston, United States; Michael Schaefer, Glenn Newnham, David Jupp, Commonwealth Scientific and Industrial Research Organisation, Australia; Jan van Aardt, David Kelbe, Paul Romanczyk, Kerry Cawse-Nicholson, Jason Faulring, Rochester Institute of Technology, United States; Thomas Kampe, Keith Krause, Nathan Leisso, National Earth Observatory Network, United States; John Armston, Stuart Phinn, Jasmine Muir, University of Queensland, Australia; Darius Culvenor, Environmental Sensing Systems, Australia

TU4.08.4 16:40 **TREE SPECIES IDENTIFCATION AND SUBSEQUENT HEALTH DETERMINATION FROM MOBILE LIDAR DATA**
Henry Mak, Baoxin Hu, York University, Canada

TU4.08.5 17:00 **COMPARISON OF DIAMETER RETRIEVAL ALGORITHMS FOR SINGLE-SCAN TERRESTRIAL LIDAR**
David Kelbe, Paul Romanczyk, Jan van Aardt, Kerry Cawse-Nicholson, Rochester Institute of Technology, United States

Tuesday, July 15 | 08:20 - 10:00 | 2104-AB
Session TU1.09 | Oral

Thermal Infrared Sensing

Session Chair: John Kerekes, Rochester Institute of Technology

TU1.09.1 08:20 **AIRBORNE THERMAL HYPERSPECTRAL IMAGING OF URBAN AND RURAL AREAS**
Marc-André Gagnon, Pierre Tremblay, Simon Savary, Vincent Farley, Philippe Lagueux, Martin Chamberland, Telops, Canada

TU1.09.2 08:40 **INFRARED HYPERSPECTRAL POLARIZATION SENSING WITH MODDIFS**
Jean-Marc Thériault, Defence Research and Development Canada, Valcartier, Canada; Gilles Fortin, AEREX Avionics, Canada; Francois Bouffard, Hugo Lavoie, Defence Research and Development Canada, Valcartier, Canada; Paul Lacasse, AEREX Avionics, Canada

TU1.09.3 09:00 **SPACEBORNE CLIMATE TREND OBSERVATORY: IR INSTRUMENTATION PROGRESS**
Henry Revercomb, Fred Best, Robert Knuteson, David Tobin, Joe K. Taylor, Jonathan Gero, Douglas Adler, Claire Pettersen, Mark Mulligan, University of Wisconsin-Madison, United States

TU1.09.4 09:20 **IASI-NG PROGRAM: A NEW GENERATION OF INFRARED ATMOSPHERIC SOUNDING INTERFEROMETER**
Francois Bermudo, Stephane Rousseau, Eric Pequignot, Frederic Bernard, Centre National d'Etudes Spatiales, France

TU1.09.5 09:40 **GIMBALED, HIGH RESOLUTION, CITY-LEVEL, THERMAL INFRARED MAPPING FROM AN AIRSHIP PLATFORM**
Xiuhong Sun, NextGen Imaging Technologies, Inc, United States; James Eichholz, U.S. Army Geospatial Center, United States; Robert Fischer, Geospatial Intelligence and Analysis, United States; Peter Shu, Murzy Jhabvala, NASA Goddard Space Flight Center, United States

Tuesday, July 15 | 10:30 - 12:10 | 2104-AB
Session TU2.09 | Oral

Optical Sensor Calibration

Session Co-Chairs: Kurt Thome, National Aeronautics and Space Administration; Cindy Ong, Commonwealth Scientific and Industrial Research Organisation (CSIRO)

TU2.09.1 10:30 **APEX: RADIOMETRY UNDER SPECTRAL SHIFT CONDITIONS**
Andreas Hueni, University of Zurich, Switzerland; Daniel Schlaepfer, ReSe Applications, Switzerland; Michael Jehle, University of Zurich, Switzerland

TU2.09.2 10:50 **MODIS INSTRUMENT OPERATION AND CALIBRATION IMPROVMENTS**
Xiaoxiong (Jack) Xiong, Code 618.0, NASA/GSFC, United States; Amit Angal, Sriharsha Madhavan, SSAI, United States; Daniel Link, Xu Geng, Brian Wenny, Aisheng Wu, Hongda Chen, Sigma Space Corporation, United States; Vince Salomonson, University of Utah, United States

TU2.09.3 11:10 **VIIRS ON-ORBIT CALIBRATION AND PERFORMANCE UPDATE**
Xiaoxiong (Jack) Xiong, James Butler, National Aeronautics and Space Administration (NASA), United States; Kwofu Chiang, Boryana Efremova, Jon Fulbright, Ning Lei, Jeff McIntire, Zhipeng Wang, Sigma Space Corporation, United States

TU2.09.4 11:30 **VICARIOUS CALIBRATION OF LARGE FIELD OF VIEW SENSORS, AVHRR, MODIS AND VIIRS USING INVARIANT SITES**
Eric Vermote, NASA Goddard Space Flight Center Code 619, United States

TU2.09.5 11:50 **EVALUATING RADIOMETRIC SENSITIVITY OF LANDSAT 8 OVER COASTAL/INLAND WATERS**
Nima Pahlevan, NASA Goddard Space Flight Center / Sigma Space Co., United States; Jianwei Wei, Crystal Schaaf, University of Massachusetts Boston, United States; John Schott, Rochester Institute of Technology, United States

Tuesday, July 15 | 13:30 - 15:10 | 2104-AB
Session TU3.09 | Oral-Invited

Advancing Science through Management of the Geospatial Data Lifecycle

Session Co-Chairs: Siri Jodha Khalsa, University of Colorado; Rahul Ramachandran, NASA Marshall Space Flight Center

TU3.09.1 13:30 **GEOSPATIAL STANDARDS AND THE KNOWLEDGE GENERATION LIFECYCLE**
Siri Jodha Khalsa, University of Colorado, United States; Rahul Ramachandran, National Aeronautics and Space Administration (NASA), United States

TU3.09.2 13:50 **THE SEMANTICS OF GEOSPATIAL INFORMATION**
Jean Brodeur, Natural Resources Canada, Canada

TU3.09.3 14:10 **IMPROVING INFORMATION STANDARDS AND REMOTE SENSING SUPPORT FOR DISASTER MANAGEMENT**
John Evans, Global Science & Technology, Inc., United States; Patrice Cappelaere, Vightel Corporation, United States; Karen Moe, National Aeronautics and Space Administration (NASA), United States; Stuart Frye, Stinger Ghaffarian Technologies, Inc. (SGT), United States; Daniel Mandl, National Aeronautics and Space Administration (NASA), United States

TU3.09.4 14:30 **DISCRETE GLOBAL GRID: A STANDARD FRAMEWORK FOR GEOSPATIAL DATA INTEGRATION**
Perry Peterson, Loyalist College | the PYXIS innovation, Canada; Matthew Purss, Geoscience Australia, Australia; George Percivall, Open Geospatial Consortium, United States; Michael F. Goodchild, University of Washington, United States; Robert Gibb, Landcare Research, New Zealand

TU3.09.5 14:50 **SENSOR WEB EVENT DETECTION AND GEOPROCESSING OVER BIG DATA**
Peng Yue, Chenxiao Zhang, Mingda Zhang, Liangcun Jiang, Wuhan University, China

Tuesday, July 15 | 15:40 - 17:20 | 2104-AB
Session TU4.09 | Oral-Invited

Implications of Big Data to Remote Sensing

Session Co-Chairs: Rahul Ramachandran, NASA Marshall Space Flight Center; Peng Yue, Wuhan University

TU4.09.1 15:40 **TOWARD HIGHLY PRODUCTIVE EARTH SCIENCE RESEARCH ECOSYSTEMS**
Michael Seablom, National Aeronautics and Space Administration (NASA), United States

TU4.09.2 16:00 **IDENTIFYING EPISODES OF EARTH SCIENCE PHENOMENA USING A BIG-DATA TECHNOLOGY**
Kwo-Sen Kuo, Amidu Oloso, NASA Goddard Space Flight Center, United States; John Rushing, Amy Lin, University of Alabama in Huntsville, United States; Gyorgy Fekete, NASA Goddard Space Flight Center, United States; Rahul Ramachandran, NASA Marshall Space Flight Cetner, United States; Thomas Clune, Daniel Duffy, NASA Goddard Space Flight Center, United States

TU4.09.3 16:20 **24 HOUR NEAR REAL TIME PROCESSING AND COMPUTATION FOR THE JPL AIRBORNE SNOW OBSERVATORY**
Chris Mattmann, Thomas Painter, Paul Ramirez, Cameron Goodale, Andrew Hart, Paul Zimdars, Maziyar Boustani, Shakeh Khudikyan, Rishi Verma, Felix Seidel Caprez, NASA Jet Propulsion Laboratory, United States; Jeff Deems, NSIDC, United States; Amy Trangsrud, NASA Jet Propulsion Laboratory, United States; Joseph Boardman, AIG, LLC, United States

TU4.09.4 16:40 **SMART DATA ANALYTICS METHODS FOR REMOTE SENSING APPLICATIONS**
Gabriele Cavallaro, University of Iceland, Iceland; Morris Riedel, Forschungszentrum Jülich GmbH, Germany; Jón Atli Benediktsson, University of Iceland, Iceland; Markus Goetz, Forschungszentrum Jülich GmbH, Germany; Tomas Runarsson, Kristjan Jonasson, University of Iceland, Iceland; Thomas Lippert, Forschungszentrum Jülich GmbH, Germany

TU4.09.5 17:00 **SAMPLING BASED IMAGE SPLITTING IN LARGE SCALE DISTRIBUTED COMPUTING OF EARTH OBSERVATION DATA**
Jin Xing, Renée Sieber, McGill University, Canada

Tuesday, July 15 | 08:20 - 10:00 | 205-C
Session TU1.10 | Oral-Invited

Biomass: ESA's Future Earth Explorer to Measure Global Forests

Session Co-Chairs: Klaus Scipal, European Space Agency; Thuy Le Toan, Centre D'Etudes Spatiales de la Biosphère (CESBIO)

TU1.10.1 08:20 **THE BIOMASS MISSION, STATUS OF THE SATELLITE SYSTEM**
Marco Arcioni, Paolo Bensi, Michael Fehringer, Franco Fois, Florance Heliere, Chung-Chi Lin, Klaus Scipal, European Space Agency (ESA) / ESTEC, Netherlands

TU1.10.2 08:40 **BIOMASS RETRIEVAL FROM P-BAND POLARIMETRIC AND INTERFEROMETRIC SAR DATA, CHALLENGES AND RECENT RESULTS**
Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Lars Ulander, FOI, Sweden; Konstantinos Papathanassiou, German Aerospace Center (DLR), Germany; Ludovic Villard, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Klaus Scipal, European Space Agency (ESA) / ESTEC, Netherlands

TU1.10.3 09:00 **BIOMASS TOMOGRAPHY: A NEW OPPORTUNITY TO OBSERVE THE EARTH FORESTS**
Fabio Rocca, Politecnico di Milano, Italy; Dinh Ho Tong Minh, Thuy Le Toan, Ludovic Villard, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Stefano Tebaldini, Mauro Mariotti d'Alessandro, Politecnico di Milano, Italy; Klaus Scipal, European Space Agency (ESA), Netherlands

TU1.10.4 09:20 **THE BIOMASS MISSION: SECONDARY OBJECTIVES**
Philippe Paillou, University Bordeaux, France; Jorgen Dall, Technical University of Denmark, Denmark; Klaus Scipal, European Space Agency (ESA) / ESTEC, Netherlands

TU1.10.5 09:40 **CAMPAIGNS IN SUPPORT OF THE ESA BIOMASS MISSION**
Malcolm Davidson, European Space Agency (ESA), Netherlands; Pascale Dubois-Fernandez, ONERA, France; Irena Hajnsek, German Aerospace Center (DLR), Germany; Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Klaus Scipal, European Space Agency (ESA), Netherlands

Tuesday, July 15 | 10:30 - 12:10 | 205-C
Session TU2.10 | Oral

Temporal Analysis Techniques and Applications I

Session Chair: Feng Gao, United States Department of Agriculture

TU2.10.1 10:30 **ITERATIVE SUMMARIZATION OF SATELLITE IMAGE TIME SERIES**
Felicity Lodge, Nicolas Meger, Universite de Savoie / LISTIC, France; Christophe Rigotti, INSA-Lyon / LIRIS, France; Catherine Pothier, INSA-Lyon / LGCIE, France; Marie-Pierre Doin, Universite Joseph Fourrier / IsTerre, France

TU2.10.2 10:50 **AN ADAPTIVE RANK FILTER FOR ESTIMATING CLEAR-SKY PROBABILITY OF SATELLITE IMAGERY TIME SERIES SAMPLES**
Sivasathivel Kandasamy, Richard Fernandes, Government of Canada, Canada

TU2.10.3 11:10 **A BEST AVAILABLE PIXEL APPROACH FOR PROCESSING A DECADE OF LANDSAT DATA FOR LAND COVER MONITORING**
Txomin Hermosilla, Nicholas C. Coops, University of British Columbia, Canada; Michael A. Wulder, Joanne C. White, Canadian Forest Service, Canada

TU2.10.4 11:30 **EVALUATION OF FUSION METHODS FOR CROP MONITORING PURPOSES**
Mar Bisquert, University Montpellier 2 - IRSTEA, France; Agnès Bégué, CIRAD, France; Pascal Poncelet, University Montpellier 2, France; Maguelonne Teisseire, IRSTEA, France

TU2.10.5 11:50 **MONITORING CROP GROWTH STAGES AND CONDITIONS BY INTEGRATING MULTIPLE REMOTE SENSING DATA**
Feng Gao, Martha Anderson, USDA ARS, United States

Tuesday, July 15 | 13:30 - 15:10 | 205-C
Session TU3.10 | Oral

Temporal Analysis Techniques and Applications II

Session Chair: Claire Gosselin, Effigis

TU3.10.1 13:30 **MTINSAR DISPLACEMENT TIME SERIES WITH ERROR ESTIMATION: THE MTIANPAC METHOD**
Pablo J. González, Kristy F. Tiampo, University of Western Ontario, Canada

TU3.10.2 13:50 **CHANGE DETECTION AND CLASSIFICATION OF MULTI-TEMPORAL SAR SERIES BASED ON GENERALIZED LIKELIHOOD RATIO COMPARING-AND-RECOGNIZING**
Xin Su, Telecom ParisTech, France; Charles-Alban Deledalle, Université Bordeaux 1, France; Florence Tupin, Telecom ParisTech, France; Hong Sun, Wuhan University, China

TU3.10.3 14:10 **A NOVEL NEURAL APPROACH FOR UNSUPERVISED CHANGE DETECTION USING SOM CLUSTERING FOR PSEUDO-TRAINING SET SELECTION FOLLOWED BY CSOM CLASSIFIER**
Victor-Emil Neagoe, Alexandru-Ioan Ciurea, Polytechnic University of Bucharest, Romania; Lorenzo Bruzzone, Francesca Bovolo, University of Trento, Italy

TU3.10.4 14:30 **COMPRESSION BASED ANALYSIS OF PLEIADES VIDEO SEQUENCES**
Alain Giros, Centre National d'Etudes Spatiales, France; David Youssefi, CS-SI, France

TU3.10.5 14:50 **MODELING TIME SERIES OF SOLAR IRRADIANCE FROM SATELLITE DATA THROUGHT PARTICLE FILTER AND JOINT PROBABILITY DISTRIBUTION**
Laurent Linguet, University of Antilles and Guyane, French Guiana; Jamal Atif, University of Paris-Sud Orsay, France

Tuesday, July 15 | 15:40 - 17:20 | 205-C
Session TU4.10 | Oral

Environmental Remediation and Assessment I

Session Co-Chairs: Peter White, Natural Resources Canada; Josée Lévesque, Defence Research and Development Canada

TU4.10.1 15:40 **SPATIOTEMPORAL ANALYSIS OF ECOLOGICAL CAPACITY OF LI RIVER BASIN , CHINA 1991–2013**
Cong Lin, Qiming Qin, Ruofeng Xu, Yuan Zhang, Jun Li, Peking University, China

TU4.10.2 16:00 **ESTIMATION OF MOISTURE CONTENT AND ACTIVITY OF OILSANDS TAILINGS USING HYPERSPECTRAL TECHNIQUES**
Iman Entezari, Benoit Rivard, Michael Lipsett, Gordon W. Wilson, University of Alberta, Canada

TU4.10.3 16:20 **THE USE OF HYPERSPECTRAL REMOTE SENSING TO MONITOR LANDFILLS AREAS OF REMEDIATED SITES IN THE 0.35 TO 14 MICRON SPECTRAL RANGE**
Josée Lévesque, Eldon Puckrin, Defence Research and Development Canada, Valcartier, Canada

TU4.10.4 16:40 **LAND DEGRADATION ASSESSMENT BY APPLYING RELATIVE RUE IN INNER MONGOLIA,CHINA, 2001-2010**
Zhihai Gao, Bin Sun, Institute of Forest Resource Information Techniques, Chinese Academy of Forestry, China; Gabriel del Barrio, Estacion Experimental de zonas Aridas, Spain, Spain; Xiaosong Li, Hongyan Wang, Institute of Remote Sensing and Digital Earth, CAS, China; Lina Bai, Bengyu Wang, Institute of Forest Resource Information Techniques, Chinese Academy of Forestry, China; Wangfei Zhang, Southwest Forestry University, China

TU4.10.5 17:00 **DETECTION OF OIL POLLUTION IN THE ARABIAN GULF USING OPTICAL REMOTE SENSING IMAGERY**
Jun Zhao, Hosni Ghedira, Marouane Temimi, Masdar Institute of Science and Technology, United Arab Emirates

Tuesday, July 15 | 08:20 - 10:00 | 207
Session TU1.11 | Oral-Invited

The Copernicus Sentinel-1 Mission

Session Co-Chairs: Ramon Torres, European Space Agency; Pierre Potin, European Space Agency

TU1.11.1 08:20
SENTINEL-1 SYSTEM CAPABILITIES AND APPLICATIONS
Dirk Geudtner, Ramón Torres, Paul Snoeij, Malcolm Davidson, Björn Rommen, European Space Agency (ESA), Netherlands

TU1.11.2 08:40
COPERNICUS SENTINEL-1 SATELLITE AND C-SAR INSTRUMENT
Aniceto Panetti, Thales Alenia Space Italia, Italy; Friedhelm Rostan, Airbus Defence and Space, Germany; Michelangelo L'Abbate, Claudio Bruno, Antonio Bauleo, Toni Catalano, Marco Cotogni, Luigi Galvagni, Andrea Pietropaolo, Giacomo Taini, Paolo Venditti, Thales Alenia Space Italia, Italy; Markus Huchler, Airbus Defence and Space, Germany; Ramón Torres, Svein Løkås, David Bibby, Dirk Geudtner, European Space Agency (ESA), Netherlands

TU1.11.3 09:00
SENTINEL-1 GROUND SEGMENT OPERATIONS AND DATA PRODUCTS
Betlem Rosich, Nuno Miranda, European Space Agency (ESA), Italy; Gianluca Sabella, Cosimo Putignano, Fabio Lo Zito, Gian Piero Izzo, Serco SpA, Italy; Pierre Potin, Patrick Grimont, Eric Doyle, Nigel Houghton, Stefano Badessi, Olivier Barois, Pierre Femenias, Gioacchino Buscemi, Eric Monjoux, European Space Agency (ESA), Italy

TU1.11.4 09:20
SENTINEL-1 MISSION OPERATIONS CONCEPT
Pierre Potin, Betlem Rosich, Johannes Roeder, Pier Bargellini, European Space Agency (ESA), Italy

TU1.11.5 09:40
SENTINEL-1A LEOP AND COMMISSIONING
Ramón Torres, Svein Løkås, Dirk Geudtner, Betlem Rosich, European Space Agency (ESA), Netherlands

Tuesday, July 15 | 10:30 - 12:10 | 207
Session TU2.11 | Oral-Invited

Global Information Extraction from HR Imagery: Achievements and Challenges

Session Co-Chairs: Martino Pesaresi, Joint Research Centre - European Commissio; Nathan Longbotham, Digital Globe

TU2.11.1 10:30
HUMAN SETTLEMENTS FROM LANDSAT DATA USING GOOGLE EARTH ENGINE
Giovanna Trianni, University of Pavia, Italy; Emanuele Angiuli, JRC, Italy; Gianni Lisini, IUSS, Italy; Paolo Gamba, University of Pavia, Italy

TU2.11.2 10:50
GLOBAL URBAN GROWTH MONITORING BY MEANS OF SAR DATA
Mattia Marconcini, Annekatrin Metz, Thomas Esch, Julian Zeidler, German Aerospace Center (DLR), Germany

TU2.11.3 11:10
ADVANCES IN VERY HIGH RESOLUTION SATELLITE IMAGERY ANALYSIS FOR MONITORING HUMAN SETTLLEMENTS
Ranga Raju Vatsavai, Anil Cheriyadat, Budhendra Bhaduri, Oak Ridge National Laboratory, United States

TU2.11.4 11:30
INTERSCALE LEARNING AND CLASSIFICATION FOR GLOBAL HR/VHR IMAGE INFORMATION EXTRACTION
Lionel Gueguen, DigitalGlobe, Inc., United States; Martino Pesaresi, Joint Research Centre of the European Commission, Italy

TU2.11.5 11:50
AUTOMATIC SATELLITE IMAGE MOSAICKING DRIVEN BY EVALUATIONS AGAINST LOW RESOLUTION REFERENCE DATA
Vasileios Syrris, Martino Pesaresi, Joint Research Centre, Institute for the Protection and Security of the Citizen, Italy

Tuesday, July 15 | 13:30 - 15:10 | 207
Session TU3.11 | Oral

Agricultural Applications using Radar and Optical Remote Sensing I

Session Co-Chairs: Kim Hoang, National Institute for Scientific Research; Pang-Wei Liu, University of Florida

TU3.11.1 13:30
INTEGRATION OF OPTICAL AND POLARIMETRIC SAR IMAGERY FOR LOCALLY ACCURATE CROP CLASSIFICATION
Cheng Qiao, Bahram Daneshfar, Andrew M. Davidson, Ian Jarvis, Tianyu Liu, Thierry Fisette, Agriculture and Agri-Food Canada, Canada

TU3.11.2 13:50
RADARSAT-2 FOR NATIVE GRASSLAND MAPPING.
Anne Smith, Agriculture and Agri-Food Canada, Canada; Joseph Buckley, Royal Military College of Canada, Canada

TU3.11.3 14:10
AGRICULTURAL CROP MAPPING USING OPTICAL AND SAR MULTI-TEMPORAL SEASONAL DATA: A CASE STUDY IN LOMBARDY REGION, ITALY
Giacomo Fontanelli, Alberto Crema, Ramin Azar, Daniela Stroppiana, Paolo Villa, Mirco Boschetti, IREA-CNR, Italy

TU3.11.4 14:30
MULTI-TEMPORAL OPTICAL AND RADAR DATA FUSION FOR CROP MONITORING: APPLICATION TO AN INTENSIVE AGRICULTURAL AREA IN BRITTANY (FRANCE)
Julie Betbeder, Marianne Laslier, Thomas Corpetti, LETG Rennes COSTEL, France; Eric Pottier, IETR, France; Samuel Corgne, Laurence Hubert-Moy, LETG Rennes COSTEL, France

TU3.11.5 14:50
THE USE OF SATELLITE SAR IMAGERY TO CROP CLASSIFICATION IN UKRAINE WITHIN JECAM PROJECT
Nataliia Kussul, Sergii Skakun, Space Research Institute National Academy of Sciences of Ukraine and State Space Agency of Ukraine, Ukraine; Andrii Shelestov, National University of Life and Environmental Sciences of Ukraine, Ukraine; Olga Kussul, National Technical University of Ukraine (Kyiv Polytechnic Institute), Ukraine

Tuesday, July 15 | 15:40 - 17:20 | 207
Session TU4.11 | Oral

Agricultural Applications using Radar and Optical Remote Sensing II

Session Co-Chairs: Anne Smith, Agriculture and Agri-Food Canada; Heather McNairn, Agriculture and Agri-Food Canada

TU4.11.1 15:40
CLASSIFICATION OF RICE FIELDS IN A COMPLEX LAND-USE WATERSHED IN NORTHERN VIETNAM USING RADARSAT-2 DATA
Kim Huong Hoang, Monique Bernier, Sophie Duchesne, National Institute of Scientific Research (INRS), Canada; Minh Y Tran, Space Technology Institute, Viet Nam

TU4.11.2 16:00
ESTIMATION OF AGRICULTURAL AND BIOPHYSICAL PARAMETERS OF RICE FIELDS IN VIETNAM USING X-BAND DUAL-POLARIZATION SAR
Alexandre Bouvet, Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Nguyen Lam Dao, Vietnam Academy of Science and Technology, Viet Nam

TU4.11.3 16:20
A NEURAL NETWORK ARCHITECTURE COMBINING VHR SAR AND MULTISPECTRAL DATA FOR PRECISION FARMING IN VITICULTURE
Fabio Del Frate, University of Rome Tor Vergata, Italy; Daniele Latini, Matteo Picchiani, GEO-K Srl, Italy; Giovanni Schiavon, Cristina Vittucci, University of Rome Tor Vergata, Italy

TU4.11.4 16:40
OPTICAL AND RADAR TEMPORAL SIGNATURES OF SUNFLOWER USING SYNCHRONOUS SATELLITE IMAGES – MULTI-FREQUENCIES AND MULTI-POLARIZATIONS ANALYSES
Rémy Fieuzal, Frédéric Baup, Centre d'Études Spatiales de la Biosphère (CESBIO), France

TU4.11.5 17:00
ESTIMATION OF SOIL MOISTURE AND DEBRIS PILE VOLUME FROM PI-SAR2X AND PI-SAR-L2 SQUARE-FLIGHT DATA
Christian Koyama, Motoyuki Sato, Tohoku University, Japan

Tuesday, July 15 | 08:20 - 10:00 | 2101
Session TU1.12 | Oral

Student Paper Contest Finalists I

Session Chair: Martti Hallikainen, Aalto University

TU1.12.1 08:20 **EXTENDED RANDOM WALKERS FOR HYPERSPECTRAL IMAGE CLASSIFICATION**
Xudong Kang, Shutao Li, Meixiu Li, Hunan University, China; Jón Atli Benediktsson, University of Iceland, Iceland

TU1.12.2 08:40 **POST CALIBRATION OF CHANNEL 1 OF NOAA-14 AVHRR: IMPLICATIONS ON AEROSOL OPTICAL DEPTH RETRIEVAL**
Chi Li, Yong Xue, Institute of Remote Sensing and Digital Earth, CAS, China; Quanhua Liu, University of Maryland College Park, United States; Jie Guang, Xingwei He, Aojie Di, Lu She, Institute of Remote Sensing and Digital Earth, CAS, China

TU1.12.3 09:00 **BACKGROUND JOINT SPARSE REPRESENTATION FOR HYPERSPECTRAL IMAGE SUB-PIXEL ANOMALY DETECTION**
Jiayi Li, Hongyan Zhang, Liangpei Zhang, Wuhan University, China

TU1.12.4 09:20 **MODEL BASED PCA/WAVELET FUSION OF MULTISPECTRAL AND HYPERSPECTRAL IMAGES**
Frosti Palsson, Johannes R. Sveinsson, Magnus O. Ulfarsson, Jón Atli Benediktsson, University of Iceland, Iceland

TU1.12.5 09:40 **A NOISE-ADJUSTED ITERATIVE RANDOMIZED SINGULAR VALUE DECOMPOSITION METHOD FOR HYPERSPECTRAL IMAGE DENOISING**
Wei He, Hongyan Zhang, Liangpei Zhang, The State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing, Wuhan University, China; Huanfeng Shen, The School of Resource and Environmental Science, Wuhan University, China

Tuesday, July 15 | 10:30 - 12:10 | 2101
Session TU2.12 | Oral

Student Paper Contest Finalists II

Session Chair: Martti Hallikainen, Aalto University

TU2.12.1 10:30 **ADAPTIVE SPECTRAL AND TEXTURE MATCHING FOR ROAD EXTRACTION IN VHR FUSED IMAGERY**
K.Sreekanth Reddy, KS Rajan, International Institute of Information Technology-Hyderabad, India

TU2.12.2 10:50 **GPS SBAS L1/L5 BISTATIC RADAR ALTIMETER**
Sara Powell, Dennis Akos, University of Colorado, United States; Valery Zavorotny, NOAA, United States

TU2.12.3 11:10 **AUTOMATIC LARGE AREA RECONSTRUCTION OF BUILDING FAÇADES FROM SPACEBORNE TOMOSAR POINT CLOUDS**
Muhammad Shahzad, Technische Universität München, Germany; Xiao Xiang Zhu, Technische Universität München; German Aerospace Center (DLR), Oberpfaffenhofen, Germany

TU2.12.4 11:30 **SUPER-MINIATURIZED BOREHOLE ANTENNA DESIGN AND RADIO-WAVE ESTIMATION OF SUB-SURFACE HYDRAULIC FRACTURES AT MF BAND**
Jiangfeng Wu, Kamal Sarabandi, University of Michigan, United States

TU2.12.5 11:50 **INTERPRETING THE REMOTELY SENSED MICROWAVE RADIANCE FROM SNOW COVERED MOUNTAINS VIA A HIGH-RESOLUTION MODELING FRAMEWORK**
Dongyue Li, Michael Durand, The Ohio State University, United States; Steven Margulis, University of California, Los Angeles, United States

Tuesday, July 15 | 13:30 - 15:10 | 2101
Session TU3.12 | Oral-Invited

Canadian Preparation for Radarsat Constellation Mission (RCM) Compact Polarimetry (CP)

Session Co-Chairs: Francois Charbonneau, Canada Centre for Mapping and Earth Observation; Joost van der Sanden, Canada Centre for Mapping and Earth Observation

TU3.12.1 13:30 **RCM COMPACT POLARIMETRY SURFACE MODEL**
François Charbonneau, Canada Centre for Mapping and Remote Sensing, Canada; Shems-Eddine Zidane, Vincent Decker, Canada Centre for Mapping and Earth Observation, Canada; Heather McNairn, Agriculture and Agri-Food Canada, Canada

TU3.12.2 13:50 **ALL SEASON ASSESSMENT OF RADARSAT CONSTELLATION MISSION COMPACT POLARIMETRY MODES FOR CANADIAN ICE SERVICE OPERATIONAL IMPLEMENTATION**
Torsten Geldsetzer, Torsten Geldsetzer, Canada; Matt Arkett, Thomas Zagon, Canadian Ice Service, Canada

TU3.12.3 14:10 **ON THE ANTICIPATED UTILITY OF RCM CP DATA FOR FRESHWATER ICE MAPPING AND MONITORING**
J.J. van der Sanden, Natural Resources Canada, Canada; Torsten Geldsetzer, Independent Contractor, Canada; H. Drouin, A. Deschamps, Natural Resources Canada, Canada

TU3.12.4 14:30 **MAPPING AND MONITORING FLOODED VEGETATION AND SOIL MOISTURE USING SIMULATED COMPACT POLARIMETRY**
Lori White, Natural Resources Canada, Canada; Anthony Landon, Michigan Tech Research Institute, United States; Mohammed Dabboor, Environment Canada, Canada; Andrew Pratt, Ducks Unlimited Canada, Canada; Brian Brisco, Canada Centre for Mapping and Earth Observation, Canada

TU3.12.5 14:50 **MAPPING FOREST FIRE SCARS WITH SIMULATED RCM COMPACT-POL DATA**
Hao Chen, Natural Resources Canada, Canada; David Goodenough, University of Victoria, Canada; Shane Cloude, AEL Consultants, United Kingdom

Tuesday, July 15 | 15:40 - 17:20 | 2101
Session TU4.12 | Oral-Invited

Challenges and Opportunities in Remote Sensing Education and Training

Session Chair: Brigitte Leblon, University of New Brunswick

TU4.12.1 15:40 **TAUGHT MASTERS COURSE STRUCTURE FOR GEOSCIENCE AND REMOTE SENSING TRAINING**
Michael Inggs, University of Cape Town, South Africa

TU4.12.2 16:00 **NEW WAYS OF TEACHING REMOTE SENSING AND HIGH SCHOOL CURRICULA: ONLINE DELIVERY OF COURSES**
Brigitte Leblon, Armand LaRocque, University of New Brunswick, Canada; Maria de la Luz Gil Docampo, Universitad de Santiago de Compostela, Spain

TU4.12.3 16:20 **SO, YOU WANT TO BE EMPLOYED? SOME ADVICE FOR GRADUATE STUDENTS IN REMOTE SENSING**
Robert A. Ryerson, Kim Geomatics Corporation, Canada

TU4.12.4 16:40 **INSPIRE: LINKING GRADUATE STUDENTS WITH K12 TEACHERS TO ADDRESS REMOTE SENSING EDUCATIONAL NEEDS**
Lori Mann Bruce, Mississippi State University, United States; Karen McNeal, North Carolina State University, United States; Sarah Radencic, Donna Pierce, Darrel Schmitz, Mississippi State University, United States

TU4.12.5 17:00 **GEOEDUC3D: DESIGNING AND IMPLEMENTING MOBILE EDUCATIONAL GAMES TO RAISE GEOMATICS AWARENESS**
Sylvie Daniel, Université Laval, Canada; Rob Harrap, Queen's University, Canada; Nicholas Hedley, Simon Fraser University, Canada

Wednesday, July 16 08:20 - 10:00 2000-A

Session WE1.01 Oral

Persistent Scatterer Interferometry

Session Chair: Homa Ansari, DLR

WE1.01.1 08:20 **ANALYZING THE SPATIAL DISTRIBUTION OF COHERENT POINTS IN SAR INTERFEROGRAMS**
Robin Falge, Antje Thiele, Karlsruhe Institute of Technology - KIT, Germany; Wenyu Gong, University of Alaska Fairbanks, United States; Stefan Hinz, Karlsruhe Institute of Technology - KIT, Germany; Franz J. Meyer, University of Alaska Fairbanks, United States

WE1.01.2 08:40 **AMPLITUDE TIME SERIES ANALYSIS IN DETECTION OF PERSISTENT AND TEMPORAL COHERENT SCATTERERS**
Homa Ansari, Nico Adam, Ramon Brcic, German Aerospace Center (DLR), Germany

WE1.01.3 09:00 **ON THE USE OF PERSISTENT SCATTERERS INTERFEROMETRY (PSI) IN HIGHLY VEGETATED / AGRICULTURAL AREAS FOR LONG TERM CO2 STORAGE MONITORING**
Rohmer Jérémy, Loschetter Annick, Daniel Raucoules, de Michele Marcello, BRGM, France; Yann Le Gallo, GEOGREEN, France; Damien Raffard, BRGM, France

WE1.01.4 09:20 **ESTIMATION OF SURFACE DISPLACEMENT USING POLARIMETRIC SAR INTERFEROGRAMS BASED ON ANALYSIS OF PERSISTENT SCATTERERS**
Kazuya Ishitsuka, Masayuki Tamura, Toshifumi Matsuoka, Kyoto University, Japan

WE1.01.5 09:40 **IMPROVEMENT OF PS-INSAR ATMOSPHERIC PHASE ESTIMATION BY USING WRF MODEL**
Siting Xiong, Qiming Zeng, Jian Jiao, Sheng Gao, Xiaojie Zhang, Peking University, China

Wednesday, July 16 10:30 - 12:10 2000-A

Session WE2.01 Oral

Interferometric Phase Unwrapping

Session Co-Chairs: Micheal Eineder, DLR; Batuhan Osmanoglu, NASA

WE2.01.1 10:30 **INSAR PROCESSING AND DUAL-BASELINE PHASE UNWRAPPING FOR GLOBAL TANDEM-X DEM GENERATION**
Marie Lachaise, Thomas Fritz, Helko Breit, German Aerospace Center (DLR), Germany

WE2.01.2 10:50 **3-D INSAR PHASE UNWRAPPING WITH EXTENDED KALMAN FILTERS**
Batuhan Osmanoglu, USRA - NASA GSFC, United States; Shimon Wdowinski, RSMAS - University of Miami, United States; Timothy H. Dixon, University of South Florida, United States

WE2.01.3 11:10 **A STUDY OF COST FUNCTIONS FOR PHASE UNWRAPPING WITH REDUNDANT INTEGRATION OF FINITE DIFFERENCES**
Markus Even, Karsten Schulz, Fraunhofer Institute of Optronics, System Technologies and Image Exploitation, Germany

WE2.01.4 11:30 **FUSION OF MULTI-FREQUENCY INTERFEROMETRIC RESULTS BY USING KALMAN FILTER TO GENERATE HIGH QUALITY DEM**
Xiaojie Zhang, Qiming Zeng, Jian Jiao, Siting Xiong, Peking University, China

WE2.01.5 11:50 **COMBINATION OF REPEAT AND SINGLE-PASS DUAL-FREQUENCY AIRBORNE INSAR DATA FOR ACCURATE HEIGHT ESTIMATION**
Muriel Pinheiro, Rolf Scheiber, Andreas Reigber, German Aerospace Center (DLR), Germany

Wednesday, July 16 13:30 - 15:10 2000-A

Session WE3.01 Oral

INSAR Systems

Session Chair: Paul Siqueira, University of Massachusetts Amherst

WE3.01.1 13:30 **A UNIVERSITY-DEVELOPED 35 GHZ AIRBORNE CROSS-TRACK SAR INTERFEROMETER: MOTION COMPENSATION AND AMBIGUITY REDUCTION**
Kan Fu, Paul Siqueira, Rockwell Schrock, University of Massachusetts Amherst, United States

WE3.01.2 13:50 **TELAER AIRBORNE SAR SYSTEM UPGRADED TO THE INTERFEROMETRIC MODE: FLIGHT-TEST RESULTS**
Stefano Perna, DI-Università degli Studi di Napoli Parthenope - IREA-CNR, Italy; Tiago Amaral, Orbisat Remote Sensing, Brazil; Paolo Berardino, Carmen Esposito, Antonio Pauciullo, IREA-CNR, Italy; Eurico Vaz Junior, Christian Wimmer, Orbisat Remote Sensing, Brazil; Riccardo Lanari, IREA-CNR, Italy

WE3.01.3 14:10 **AIRBORNE SYNTHETIC APERTURE RADAR PING-PONG MODE MULTI-BASELINE INTERFEROMETRY PROCESSING AND ACTIVE PHASED ARRAR ANTENNA FAILURE ANALYSIS**
Yunfeng Shao, Robert Wang, Yunkai Deng, Yue Liu, Gang Liu, Runpu Chen, Jing Wang, Institute of Electronics, Chinese Academy of Sciences, China

WE3.01.4 14:30 **RAPID RESPONSES TO TROPICAL CYCLONES BY ADVANCED RAPID IMAGING AND ANALYSIS (ARIA) PROJECT**
Sang-Ho Yun, Jet Propulsion Laboratory, United States; Pietro Milillo, University of Basilicata, United States; Susan Owen, Frank Webb, Hook Hua, Jet Propulsion Laboratory, United States; Mark Simons, California institute of Technology, United States; Giovanni Milillo, Alessandro Coletta, Italian Space Agency, Italy; Paul Rosen, Eric Fielding, Jet Propulsion Laboratory, United States; Luigi Dini, Italian Space Agency, Italy; Jennifer Cruz, Angelyn Moore, Jet Propulsion Laboratory, United States; Jascha Polet, California State Polytechnic University, Pomona, United States; Zhen Liu, Piyush Agram, Paul Lundgren, Jet Propulsion Laboratory, United States

WE3.01.5 14:50 **AIRBORNE RADAR INTERFEROMETRY USING NASA'S DBSAR AND ECOSAR IMAGERY**
Batuhan Osmanoglu, Seung-Kuk Lee, USRA - NASA GSFC, United States; Rafael Rincon, Guoqing Sun, Temilola Fatoyinbo Agueh, NASA Goddard Space Flight Center, United States

Wednesday, July 16 15:40 - 17:20 2000-A

Session WE4.01 Oral

High Resolution SAR Applications

Session Chair: Andrea Recchia, Milan Polytechnic

WE4.01.1 15:40 **HIGH RESOLUTION SAR DATA FOR EMERGENCY RESPONSE**
Alfio Fumagalli, Fabrizio Novali, Alessio Rucci, Alessandro Ferretti, Tele-Rilevamento Europa – T.R.E., Italy; Claudio Prati, Politecnico di Milano, Italy

WE4.01.2 16:00 **ASSESMENT OF ATMOSPHERIC PHASE SCREEN IMPACT ON GEOSYNCHRONOUS SAR**
Andrea Recchia, Andrea Monti-Guarnieri, Politecnico di Milano, Italy; Antoni Broquetas, Josep Ruiz-Rodon, Universitat Politècnica de Catalunya, Spain

WE4.01.3 16:20 **ROAD EXTRACTION FOR SAR IMAGERY BASED ON THE COMBINATION OF BEAMLET AND A SELECTED KERNEL**
Chu He, Bo Shi, Yu Zhang, Xin Xu, Mingsheng Liao, Wuhan University, China

WE4.01.4 16:40 **THE BENEFIT OF COMBINING HIGH-RESOLUTION SAR DATA AND OBLIQUE OPTICAL IMAGERY FOR PATTERN RECOGNITION TASKS**
Lukas Schack, Leibniz Universität Hannover, Germany; Uwe Soergel, TU Darmstadt, Germany

WE4.01.5 17:00 **DAMAGE INVESTIGATION FOR THE 2013 TYPHOON HAIYAN IN THE PHILIPPINES USING MULTI-TEMPORAL COSMO-SKYMED IMAGES**
Pisut Nakmuenwai, Fumio Yamazaki, Chiba University, Japan

Wednesday, July 16 08:20 - 10:00 2000-B
Session WE1.02 Oral-Invited

SMOS: Continuing to Provide Global Soil Moisture and Ocean Salinity Data I

Session Co-Chairs: Susanne Mecklenburg, European Space Agency; Yann Kerr, Centre D'Etudes Spatiales de la Biosphère (CESBIO)

WE1.02.1 08:20 **ESA'S SOIL MOISTURE AND OCEAN SALINITY MISSION - AN OVERVIEW ON THE MISSION'S PERFORMANCE AND SCIENTIFIC RESULTS**
Susanne Mecklenburg, European Space Agency (ESA), Italy; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jordi Font, CMIMA - CSIC, Spain; Manuel Martín-Neira, Steven Delwart, Raffaele Crapolicchio, Matthias Drusch, Jorge Fauste, Elena Daganzo-Eusebio, Antonio de la Fuente, European Space Agency (ESA), Netherlands

WE1.02.2 08:40 **SMOS INSTRUMENT PERFORMANCE AND CALIBRATION AFTER 4 YEARS AND 9 MONTHS IN ORBIT**
Manuel Martín-Neira, European Space Agency (ESA), Netherlands; Ignasi Corbella, Francesc Torres, Universitat Politècnica de Catalunya, Spain; Juha Kainulainen, Aalto University, Finland; Roger Oliva, European Space Agency (ESA), Spain; Josep Closa, EADS-CASA Espacio, Spain; François Cabot, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Ali Khazaal, Aalto University, France; Eric Anterrieu, IRAP, France; Jose Barbosa, Antonio Gutierrez, Sofia Freitas, DEIMOS ENGENHARIA, Portugal; Joe Tenerelli, Collecte Localisation Satellites (CLS), France; Fernando Martin-Porqueras, IDEAS, Spain; Raul Diez-Garcia, Jorge Fauste, Steven Delwart, Raffaele Crapolicchio, Martin Suess, European Space Agency (ESA), Spain

WE1.02.3 09:00 **SMOS: AN OVERVIEW OF LEVEL 2 SOIL MOISTURE RETRIEVAL**
Yann H. Kerr, Philippe Richaume, Arnaud Mialon, Ahmad Al Bitar, Simone Bircher, Delphine Leroux, François Cabot, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Thierry Pellarin, LTHE, France; Ali Mahmoodi, Array Systems Computing Inc., Canada; Steven Delwart, European Space Agency (ESA), Italy; Jean-Pierre Wigneron, INRA EPHYSE, France; Paolo Ferrazzoli, University of Rome Tor Vergata, Italy; Susanne Mecklenburg, European Space Agency (ESA), Italy

WE1.02.4 09:20 **SEA SURFACE SALINITY IN SMOS VERSION 5 AND FUTURE LEVEL 2 REPROCESSING**
Jacqueline Boutin, UPMC/CNRS, France; Xiaobin Yin, ACRI-st, France; Nicolas Martin, UPMC/CNRS, France; Jean-Luc Vergely, ACRI-st, France; Philippe Waldteufel, LATMOS, France; Gilles Reverdin, Olga Hernandez, Simon Morisset, UPMC/CNRS, France; Paul Spurgeon, ARGANS, United Kingdom

WE1.02.5 09:40 **IMPACT OF SMOS DATA IN THE FORECAST OF SURFACE AND NEAR-SURFACE ATMOSPHERIC VARIABLES; SENSITIVITY TO KEY COMPONENTS OF THE ASSIMILATION SYSTEM**
Joaquin Muñoz-Sabater, Patricia de Rosnay, Clement Albergel, Lars Isaksen, ECMWF, United Kingdom; Matthias Drusch, European Space Agency (ESA) / ESTEC, Netherlands

Wednesday, July 16 10:30 - 12:10 2000-B
Session WE2.02 Oral-Invited

SMOS: Continuing to Provide Global Soil Moisture and Ocean Salinity Data II

Session Co-Chairs: Susanne Mecklenburg, European Space Agency; Yann Kerr, Centre D'Etudes Spatiales de la Biosphère (CESBIO)

WE2.02.1 10:30 **SEA SURFACE SALINITY STRUCTURE OF THE MEANDERING GULF STREAM REVEALED BY SMOS SENSOR**
Nicolas Reul, Bertrand Chapron, French Research Institute for Exploitation of the Sea, Ifremer, France; Tony Lee, Jet Propulsion Laboratory, United States; Craig Donlon, European Space Agency (ESA), Netherlands; Jacqueline Boutin, LOCEAN, France; Gael Alory, LEGOS, France

WE2.02.2 10:50 **EXTENDED ANALYSIS OF SMOS SALINITY RETRIEVAL BY USING SUPPORT VECTOR REGRESSION (SVR)**
Dominik Rains, Roberto Sabia, Diego Fernández-Prieto, European Space Agency (ESA), Italy; Mattia Marconcini, German Aerospace Center (DLR), Germany; Thomas Katagis, Aristotle University of Thessaloniki, Greece

WE2.02.3 11:10 **MERGING TWO PASSIVE MICROWAVE REMOTE SENSING (SMOS AND AMSR_E) DATASETS TO PRODUCE A LONG TERM RECORD OF SOIL MOISTURE**
Amen Alyaari, Jean-Pierre Wigneron, INRA, France; Agnes Ducharne, CNRS, UMR Sisyphe, France; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Patricia de Rosnay, ECMWF, United Kingdom; Richard de Jeu, VU University, Netherlands; Ajit Govind, INRA, France; Ahmad Al Bitar, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Clement Albergel, Joaquin Muñoz-Sabater, ECMWF, United Kingdom; Philippe Richaume, Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France

WE2.02.4 11:30 **DOWNSCALING SMOS BRIGHTNESS TEMPERATURES TO PRODUCE HIGHER-RESOLUTION SOIL MOISTURE ANALYSES**
Marco Carrera, Dorothee Charpentier, Stéphane Bélair, Shunli Zhang, Bernard Bilodeau, Environment Canada, Canada

WE2.02.5 11:50 **L-BAND BRIGHTNESS TEMPERATURE AT DOME-C ANTARCTICA: INTERCOMPARISON BETWEEN DOMEX-3, SMOS AND AQUARIUS DATA**
Giovanni Macelloni, Marco Brogioni, IFAC-CNR, Italy

Wednesday, July 16 13:30 - 15:10 2000-B
Session WE3.02 Oral

High Resolution Optical Image Analysis

Session Chair: Gregoire Mercier, Telecom Bretagne

WE3.02.1 13:30 **WAVELETS ON GRAPHS FOR VERY HIGH RESOLUTION MULTISPECTRAL IMAGE TEXTURE SEGMENTATION**
Minh-Tan Pham, Grégoire Mercier, Télécom Bretagne, France; Julien Michel, French National Centre for Space Studies, France

WE3.02.2 13:50 **WATER DEPTH INVERSION FROM SATELLITE DATASET**
Adrien Poupardin, Marcello de Michele, Daniel Raucoules, Deborah Idier, BRGM, France

WE3.02.3 14:10 **ORTHORECTIFICATION OF SICH-2 SATELLITE IMAGES USING ELASTIC MODELS**
Oleksii Kravchenko, Space Research Institute National Academy of Sciences of Ukraine and State Space Agency of Ukraine, Ukraine; Mykola Lavrenyuk, Taras Shevchenko National University of Kyiv, Ukraine; Nataliia Kussul, Space Research Institute National Academy of Sciences of Ukraine and State Space Agency of Ukraine, Ukraine

WE3.02.4 14:30 **ASSESSING PAVED ROAD SURFACE CONDITION WITH HIGH-RESOLUTION SATELLITE IMAGERY**
William J. Emery, University of Colorado at Boulder, United States; Ashwin Yerasi, University of Colorado, United States; Nathan Longbotham, Fabio Pacifici, DigitalGlobe, Inc., United States

WE3.02.5 14:50 **INTRODUCTION TO THE WORLDVIEW-3 VERY-HIGH SPATIAL-RESOLUTION SUPER-SPECTRAL BANDS**
Fabio Pacifici, Nathan Longbotham, Bill Baugh, DigitalGlobe, Inc., United States

Wednesday, July 16 15:40 - 17:20 2000-B
Session WE4.02 Oral

Object Detection in High Resolution Optical Images

Session Co-Chairs: Devis Tuia, École Polytechnique Fédérale de Lausanne; Gianni Lisini, University of Pavia

WE4.02.1 15:40 **COMPARISON OF ESTIMATED BUILDING STORY NUMBER FOR EXPOSURE MAPPING FROM HIGH RESOLUTION SPACE-BORNE IMAGES**
Gholam Reza Dini, Leibniz Universität Hannover, Germany; Gianni Lisini, IUSS, Italy; Mostapha Harb, Paolo Gamba, University of Pavia, Italy

WE4.02.2 16:00 **MULTISCALE ALGORITHM FOR SHIP DETECTION IN MID, HIGH AND VERY HIGH RESOLUTION OPTICAL IMAGERY**
Guillaume Jubelin, Ali Khenchaf, Ecoles Nationales Supérieures de Techniques Avancées Bretagne, France

WE4.02.3 16:20 **OBJECT LOCALIZATION BASED ON SPARSE REPRESENTATION FOR REMOTE SENSING IMAGERY**
Naoto Yokoya, Akira Iwasaki, University of Tokyo, Japan

WE4.02.4 16:40 **TOWARDS EFFICIENT SIMULATION OF MARKED POINT PROCESS MODELS FOR BOAT EXTRACTION FROM HIGH RESOLUTION OPTICAL REMOTELY SENSED IMAGES**
Paula Craciun, Josiane Zerubia, INRIA, France

WE4.02.5 17:00 **STEREO-BASED BUILDING DETECTION IN VERY HIGH RESOLUTION SATELLITE IMAGERY USING IHS COLOR SYSTEM**
Shabnam Jabari, Yun Zhang, Alaeldin Suliman, University of New Brunswick, Canada

Wednesday, July 16 08:20 - 10:00 2000-C
Session WE1.03 Oral

Carbon in the Forests

Session Co-Chairs: David Goodenough, University of Victoria; Thuy Le Toan, Centre D'Etudes Spatiales de la Biosphère (CESBIO)

WE1.03.1 08:20 **CARBON AND FOREST PRODUCTIVITY LOSS FROM MOUNTAIN PINE BEETLE DISTURBANCE USING LANDSAT TIME SERIES, BIOPHYSICAL, HYDROLOGICAL AND METEOROLOGICAL INPUTS TO A CARBON MODEL**
Shiyong Xu, Derek Peddle, Sarah Boon, Craig Coburn, University of Lethbridge, Canada

WE1.03.2 08:40 **ICESAT-GLAS BASED ESTIMATES OF ABOVEGROUND CARBON STOCKS AND THEIR UNCERTAINTY FOR THE NORTH AMERICAN BOREAL FOREST**
Hank Margolis, Université Laval, Canada; Ross Nelson, NASA Goddard Space Flight Center, United States

WE1.03.3 09:00 **COMPARISON OF OPTICAL AND SAR DATA FOR FOREST COVER MAPPING: REDD+ MAY BE HELPED BY SAR DATA**
Thuy Le Toan, Stéphane Mermoz, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Louis-Vincent Fichet, Christophe Sannier, SIRS, France; Alexandre Bouvet, Centre d'Études Spatiales de la Biosphère (CESBIO), France

WE1.03.4 09:20 **ABOVEGROUND BIOMASS AND CARBON ESTIMATION IN TROPICAL FORESTS IN GABON**
Kalifa Goïta, Université de Sherbrooke, Canada; Jacques Mouloungou, Ministère des eaux et forêts, BP. 199, Libreville, Gabon, Gabon; Goze Bertin Benie, Université de Sherbrooke, Canada

Wednesday, July 16 10:30 - 12:10 2000-C
Session WE2.03 Oral

Multi-temporal Analysis II

Session Co-Chairs: Paul Siqueira, University of Massachusetts Amherst; Christiane Schmullius, Friedrich-Schiller University

WE2.03.1 10:30 **FOREST STEM VOLUME AND STORM DAMAGE MAPPING IN FINLAND AND RUSSIA**
Heikki Astola, Matthieu Molinier, Magnus Simons, VTT Technical Research Centre of Finland, Finland; Paula Susila, Stora Enso Oyj, Finland

WE2.03.2 10:50 **REGIONAL MAPPING OF FOREST GROWING STOCK VOLUME WITH MULTI-TEMPORAL ALOS PALSAR BACKSCATTER**
Maurizio Santoro, Urs Wegmüller, GAMMA Remote Sensing AG, Switzerland; Johan Fransson, Swedish University of Agricultural Sciences, Sweden; Christiane Schmullius, Friedrich Schiller University Jena, Germany

WE2.03.3 11:10 **OVERVIEW OF THREE GROUND RADAR EXPERIMENTS FOR THE MONITORING OF TEMPORAL AND SPATIAL VARIABILITY OF P-BAND RADAR BACKSCATTERING OVER TEMPERATE AND TROPICAL FORESTS**
Clément Albinet, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Pierre Borderies, ONERA, France; Thuy Le Toan, Alia Hamadi, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Thierry Koleck, CNES, France; Benoit Burban, EcoFog, France; Eric Pottier, IETR, France; Pascale Dubois-Fernandez, ONERA, France

WE2.03.4 11:30 **SPATIO-TEMPORAL WAVELET STATISTICS OF SAR BACKSCATTER FOR THE CHARACTERIZATION OF FOREST DEGRADATION IN CAMEROON**
Elsa Carla De Grandi, Edward T. A. Mitchard, Iain Woodhouse, University of Edinburgh, United Kingdom

WE2.03.5 11:50 **MONITORING THE DYNAMIC ALBEDO WITH THE V006 DAILY MODIS BRDF/ALBEDO PRODUCT**
Zhuosen Wang, National Aeronautics and Space Administration (NASA), United States; Crystal Schaaf, University of Massachusetts Boston, United States; Yanmin Shuai, National Aeronautics and Space Administration (NASA), United States; Alan Strahler, Qingsong Sun, Boston University, United States; Yan Liu, University of Massachusetts Boston, United States; Miguel Roman, National Aeronautics and Space Administration (NASA), United States; Yun Yang, University of Massachusetts Boston, United States

Wednesday, July 16 13:30 - 15:10 2000-C
Session WE3.03 Oral

Classification I

Session Co-Chairs: Hao Chen, Natural Resources Canada; Derek Peddle, University of Lethbridge

WE3.03.1 13:30 **TREE GENERA CLASSIFICATION WITH UNKNOWN CLASS USING HIGH DENSITY LIDAR DATA BY ENSEMBLE CLASSIFICATION MODELS**
Connie Ko, Gunho Sohn, Tarmo K. Remmel, John R. Miller, York University, Canada

WE3.03.2 13:50 **INFLUENCE OF SPECTRAL ENDMEMBER VARIABILITY AND MODELLED BACKGROUND HETEROGENEITY ON LEADING TREE SPECIES CLASSIFICATIONS OF NORTHERN BOREAL FORESTS, NWT CANADA**
Jurjen van der Sluijs, University of Lethbridge, Canada; Ronald Hall, National Resources Canada - Canadian Forest Service, Canada; Derek Peddle, University of Lethbridge, Canada; Steve Schwarz, Government of Northwest Territories, Canada

WE3.03.3 14:10 **CLASSIFICATION OF FOREST STRUCTURE USING VERY HIGH RESOLUTION PLEIADES IMAGE TEXTURE**
Benoit Beguet, IPB/University of Bordeaux, France; Nesrine Chehata, IPB/University of Bordeaux, IRD, France; Samia Boukir, IPB/University of Bordeaux, France; Dominique Guyon, INRA, France

WE3.03.4 14:30 **MAPPING THE FOREST/WETLAND MOSAIC OF THE GAMBA COMPLEX, GABON, USING MUTI-TEMPORAL L-BAND RADAR**
Edward T. A. Mitchard, University of Edinburgh, United Kingdom; Hadrien Vanthomme, Smithsonian Conservation Biology Institute, United States

WE3.03.5 14:50 **USING TEXTURE FROM HIGH RESOLUTION TERRASAR-X IMAGES FOR TROPICAL FOREST MAPPING**
Hajar Benelcadi, University Paris EST Marne La Vallée, France; Pierre-Louis Frison, Université Paris-Est Marne-la-Vallée, France; Cédric Lardeux, ONF International, France; Grégoire Mercier, Télécom Bretagne, France; Jean-Paul Rudant, University Paris EST Marne La Vallée, France

Wednesday, July 16 15:40 - 17:20 2000-C
Session WE4.03 Oral

Classification II

Session Co-Chairs: Renaud Mathieu, Council for Scientific and Industrial Research; Kalifa Goita, Université de Sherbrooke

WE4.03.1 15:40 **FOREST AGE MAPPING WITH MULTI-FREQUENCY SYNTHETIC APERTURE RADAR**
Naiara Pinto, Marc Simard, NASA / Caltech Jet Propulsion Laboratory, United States; Temilola Fatoyinbo Agueh, NASA Goddard Space Flight Center, United States

WE4.03.2 16:00 **MULTISCALE INFORMATION FUSION BASED ON DEMPSTER-SHAFER THEORY TO IDENTIFY TREE SPECIES COMPOSITIONS IN ONTARIO FORESTS**
Jili Li, Baoxin Hu, York University, Canada

WE4.03.3 16:20 **NEW GLOBAL FOREST/NON-FOREST MAPS FROM ALOS PALSAR DATA (2007-2010)**
Masanobu Shimada, Japan Aerospace Exploration Agency, Japan; Takuya Itoh, Remote Sensing Technology Center of Japan, Japan; Takeshi Motooka, Manabu Watanabe, Tomohiro Shiraishi, Rajesh Thapa, Japan Aerospace Exploration Agency, Japan; Richard Lucas, Aberystwyth University, United Kingdom

WE4.03.4 16:40 **FOREST STAND LEVEL CORRELATION ANALYSIS OF ALOS-1 PALSAR SIGNATURES**
Wangfei Zhang, David Goodenough, Ashlin Richardson, University of Victoria, Canada; Erxue Chen, Zengyuan Li, Chinese Academy of Forestry, China

WE4.03.5 17:00 **MAPPING DRY FOREST IN CENTRAL AFRICAN REPUBLIC USING OPTICAL AND RADAR DATA**
Louis-Vincent Fichet, Christophe Sannier, Système d'Information à Référence Spatiale, France; Stéphane Mermoz, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Alexandre Pennec, Système d'Information à Référence Spatiale, France; Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France

Wednesday, July 16 08:20 - 10:00 2000-D
Session WE1.04 Oral

Ionospheric Effects and Calibration

Session Chair: Tom Ainsworth, Naval Research Laboratory

WE1.04.1 08:20 **ACCURACY IMPROVEMENT OF L-BAND MULTI-TEMPORAL SAR INTERFEROMETRY BY IONOSPHERIC CORRECTION IN SOUTHERN CALIFORNIA**
Won-Jin Lee, Hyung-Sup Jung, University of Seoul, Republic of Korea

WE1.04.2 08:40 **MITIGATION OF FARADAY ROTATION EFFECT FOR LONG-WAVELENGTH SYNTHETIC SPACEBORNE RADAR DATA**
Mariko Burgin, Jet Propulsion Laboratory, United States; Mahta Moghaddam, University of Southern California, United States

WE1.04.3 09:00 **EFFECT OF THE POLARIZATION LEAKAGE ON THE IMAGE RECONSTRUCTION ALGORITHM IN SMOS LEVEL 1 DATA PROCESSOR**
Ali Khazaal, François Cabot, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Eric Anterrieu, Reserach Institute of Astrophysics and Planetology, France

WE1.04.4 09:20 **INTERNAL CLUTTER MOTION IMPACT ON THE LONG INTEGRATION GEOSAR ACQUISITION**
Josep Ruiz-Rodon, Antoni Broquetas, Eduardo Makhoul, Universitat Politècnica de Catalunya, Spain; Andrea Monti-Guarnieri, Andrea Recchia, Politecnico di Milano, Italy

WE1.04.5 09:40 **STUDYING THE INFLUENCE OF EQUATORIAL TEC SCINTILLATION ON LOW-FREQUENCY SAR DATA**
Franz J. Meyer, University of Alaska Fairbanks, United States; Kancham Chotoo, Susan Chotoo, Barton D Huxtable, User Systems, Inc., United States; Charles Carrano, Boston College, United States

Wednesday, July 16 10:30 - 12:10 2000-D
Session WE2.04 Oral-Invited

EO Response to Major Disasters

Session Co-Chairs: David Dubois, École de technologie supérieure; Richard Lepage, École de technologie supérieure

WE2.04.1 10:30 **THE INTERNATIONAL CHARTER "SPACE AND MAJOR DISASTERS" : THE UNIVERSAL ACCESS AND THE FRENCH COORDINATION**
Claire Tinel, Catherine Proy, Hélène de Boissezon, CNES, France; Pierre Chastanet, Samuel Gesret, DGSCGC, France; Stephen Clandillon, Hervé Yesou, SERTIT, France

WE2.04.2 10:50 **ONTOLOGY-BASED SEMANTIC CLASSIFICATION OF SATELLITE IMAGES: CASE OF MAJOR DISASTERS**
Hafidha Bouyerbou, University of Blida, Algeria; Kamal Bechkoum, University of Northampton, United Kingdom; Nadjia Benblidia, University of Blida, Algeria; Richard Lepage, École de Technologie Supérieure, Canada

WE2.04.3 11:10 **A NOVEL APPROACH TOWARD RAPID ROAD MAPPING BASED ON BEAMLET TRANSFORM**
Moslem Ouled Sghaier, Idrissa Coulibaly, Richard Lepage, École de Technologie Supérieure, Canada

WE2.04.4 11:30 **TOWARDS A GLOBAL SAR-BASED FLOOD MAPPING SERVICE**
Sandro Martinis, André Twele, Stefan Voigt, Guenter Strunz, German Aerospace Center (DLR), Germany

WE2.04.5 11:50 **RAPID AND ACCURATE DAMAGE DETECTION IN BUILT-UP AREAS COMBINING STRIPMAP AND SPOTLIGHT SAR IMAGES**
Carlo Marin, Univeristy of Trento, Italy; Francesca Bovolo, FBK, Italy; Lorenzo Bruzzone, Univeristy of Trento, Italy

Wednesday, July 16 13:30 - 15:10 2000-D
Session WE3.04 Oral

Optical and Infrared Monitoring I

Session Co-Chairs: Ryuei Nishii, Kyushu University; Jose Moreno, University of Valencia

WE3.04.1 13:30 **FUSION OF SPACE-BASED CO2 PRODUCTS AND ITS COMPARISON WITH OTHER AVAILABLE CO2 ESTIMATES**
Yingying Jing, Jiancheng Shi, Tianxing Wang, Institute of Remote Sensing and Digital Earth, CAS, China

WE3.04.2 13:50 **ESTIMATION OF ACTUAL IRRIGATION AREA USING REMOTE SENSING MONITORING METHOD IN HETAO IRRIGATION DISTRICT**
Liangliang Tao, Jing Li, Xi Chen, Yongrong Su, Yunfei Zhang, Wei Wang, Beijing Normal University, China; Xiaoxia Shi, Beijing Wuzi University, China

WE3.04.3 14:10 **SUBMESOSCALE STRUCTURES MONITORING AND DETECTION BY SATELLITE IMAGERY: EL HIERRO ISLAND SUBMARINE VOLCANO**
Francisco Eugenio-González, Francisco Javier Marcello-Ruiz, Javier Martin, Universidad de Las Palmas de Gran Canaria, Spain

WE3.04.4 14:30 **PROBABILITY THEORY FOR 3-LAYER REMOTE SENSING IN IDEAL GAS LAW ENVIRONMENT**
Avishai Ben-David, Edgewood Chemical Biological Center, United States; Charles Davidson, Science and Technology Corporation, United States

WE3.04.5 14:50 **QUANTIFYING UNCERTAINTIES IN LAND SURFACE TEMPERATURE DUE TO ATMOSPHERIC CORRECTION: APPLICATION TO LANDSAT-7 DATA OVER A MEDITERRANEAN AGRICULTURAL REGION**
Maria Mira, Albert Olioso, Institut National de la Recherche Agronomique, France; Vincent Rivalland, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Dominique Courault, Olivier Marloie, Institut National de la Recherche Agronomique, France; Pierre Guillevic, Jet Propulsion Laboratory, United States

Wednesday, July 16 15:40 - 17:20 2000-D
Session WE4.04 Oral

Optical and Infrared Monitoring II

Session Co-Chairs: Michael Cathcart, Georgia Institute of Technology; Jose Moreno, University of Valencia

WE4.04.1 15:40 **CALCULATING RADIANT FLUX FROM THERMALLY HETEROGENEOUS TARGETS**
Samuel William Murphy, University of Campinas, Brazil; Clive Oppenheimer, Cambridge University, United Kingdom; Carlos Roberto de Souza Filho, University of Campinas, Brazil

WE4.04.2 16:00 **NEAR-SURFACE REMOTE SENSING OBSERVATIONS FOR MONITORING DECIDUOUS BROADLEAF FOREST SPECIES PHENOLOGY**
Dominique Guyon, Sylvia Dayau, Alain Kruszewski, Benoit Beguet, Jean-Charles Samalens, Jean-Pierre Wigneron, Alexis Ducousso, Jean-Marc Louvet, Sylvain Delzon, Fabrice Bonne, Frédéric Baret, INRA, France

WE4.04.3 16:20 **RADIOMETRIC VALIDATION OF SATELLITE VEGETATION INDICES USING FLUX TOWER MEASUREMENTS**
Jiao Wang, Tomoaki Miura, Anna Kato, University of Hawaii at Manoa, United States; Peter Blanken, University of Colorado at Boulder, United States; Nathaniel Brunsell, University of Kansas, United States; Margaret Torn, Lawrence Berkeley National Laboratory, United States

WE4.04.4 16:40 **AIRBORNE SPACE-TIME EO/IR IMAGING FOR MEASURING RIVERINE/ESTUARINE/COASTAL CURRENTS**
John Dugan, Steven Anderson, Cindy Piotrowski, Seth Zuckerman, Arete Associates, United States

WE4.04.5 17:00 **OBSERVATIONS OF ALONG-WIND ORIENTED STREAKS ON THE WATER MOVING AT THE WIND SPEED**
John Dugan, Cindy Piotrowski, Seth Zuckerman, Arete Associates, United States

Wednesday, July 16 08:20 - 10:00 205-AB
Session WE1.05 Oral-Invited

Optical, Laser, and Radar Remote Sensing Applied to Natural Hazards I

Session Co-Chairs: Pablo J. Gonzalez, University of Western Ontario; Sergey V. Samsonov, Canada Centre for Mapping and Earth Observation, Natural Resources Canada, Ottawa, ON, Canada

WE1.05.1 08:20 **TRACKING 3D GROUND CHANGES USING MUTLI-TEMPORAL HIGH-RESOLUTION STEREO SATELLITE IMAGERY**
Sebastien Leprince, Jiao Lin, Francois Ayoub, Bruno Conejo, Jean-Philippe Avouac, California Institute of Technology, United States

WE1.05.2 08:40 **FLOOD HAZARD MAPPING COMBINING HIGH RESOLUTION MULTI-TEMPORAL SAR DATA AND COARSE RESOLUTION GLOBAL HYDRODYNAMIC MODELLING**
Marco Chini, Laura Giustarini, Patrick Matgen, Renaud Hostache, Centre de Recherche Public - Gabriel Lippmann, Luxembourg; Florian Pappenberger, European Centre for Medium-Range Weather Forecasts, United Kingdom; Philippe Bally, European Space Agency (ESA), Italy

WE1.05.3 09:00 **A POSSIBILE BREACHED RELAY RAMP CAUSING THE 2013 LUNIGIANA EARTHQUAKE (NORTHERN ITALY**
Marco Polcari, Salvatore Stramondo, Paola Vannoli, Valentina Cannelli, Daniele Melini, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Sergey Samsonov, Natural Resources Canada, Canada; Marco Moro, Christian Bignami, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Michele Saroli, DICeM - Dept. of Civil and Mechanical Eng., University of Cassino and Southern Lazio, Cassino, Italy, Italy

WE1.05.4 09:20 **GROUND AND SPACE STUDY AND CONTROL OF THE LEINTZ-GATZAGA (GUIPÚZCOA, SPAIN) LANDSLIDE**
José Fernández, Instituto de Geociencias, CSIC, Spain; Miguel Avellaneda, Euroestudios, S.L., Spain; Guadalupe Brú, Instituto de Geociencias, CSIC, Spain; Rubén Iglesias, Jordi J. Mallorquí, Universitat Politècnica de Catalunya, Departament de Teoria del Senyal i Comunicacions., Spain; Eugenio Sansosti, Istituto per il Rilevamento Elettromagnetico dell'Ambiente, National Research Council of Italy Naples, Italy; Antonio Morales, Euroestudios, S.L., Spain

WE1.05.5 09:40 **ADVANCED DINSAR TIME SERIES ANALYSIS OF NATURAL AND ANTHROPOGENIC HAZARDS**
Kristy F. Tiampo, Western University, Canada; Sergey Samsonov, Natural Resources Canada, Canada; Pablo J. González, Western University, Canada; Nicolas d'Oreye, European Center for Geodynamics and Seismology, Luxembourg; José Fernández, Antonio Camacho, Universidad Complutense de Madrid, Spain

Wednesday, July 16 10:30 - 12:10 205-AB
Session WE2.05 Oral-Invited

Optical, Laser, and Radar Remote Sensing Applied to Natural Hazards II

Session Co-Chairs: Pablo J. Gonzalez, University of Western Ontario; Sergey V. Samsonov, Canada Centre for Mapping and Earth Observation, Natural Resources Canada, Ottawa, ON, Canada

WE2.05.1 10:30 **EXPERIMENT: CAN WE ESTIMATE 3D DISPLACEMENTS AND INSAR TROPOSPHERIC ERRORS FROM THE INTERFEROGRAM'S SAR DATA?**
Noah Bechor, Massachusetts Institute of Technology, United States

WE2.05.2 10:50 **THREE-DIMENSIONAL GROUND DISPLACEMENTS RETRIEVED FROM SAR DATA IN A LANDSLIDE EMERGENCY SCENARIO**
Stefano Elefante, CNR-IREA, Italy; Andrea Manconi, CNR-IRPI, Italy; Manuela Bonano, Claudio De Luca, Francesco Casu, CNR-IREA, Italy

WE2.05.3 11:10 **A NEW WAVELET BASED INSAR TIME SERIES APPROACH**
Manoochehr Shirzaei, Arizona State University, United States

WE2.05.4 11:30 **THE HAWAI'I SUPERSITE: IMPROVED UNDERSTANDING OF HAWAIIAN VOLCANISM MADE POSSIBLE BY INCREASED DATA ACCESSIBILITY**
Michael P. Poland, U.S. Geological Survey, United States

WE2.05.5 11:50 **INSAR FOR NEAR REAL-TIME DEFORMATION MONITORING**
Andrew Hooper, University of Leeds, United Kingdom; Parwant Ghuman, 3v Geomatics, Canada; Karsten Spaans, University of Leeds, United Kingdom

Wednesday, July 16 13:30 - 15:10 205-AB
Session WE3.05 Oral-Invited

Microwave Remote Sensing of Terrestrial Snow

Session Co-Chairs: Jiancheng Shi, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences; Leung Tsang, University of Washington

WE3.05.1 13:30 **KU- AND X-BAND BACKSCATTER ANALYSIS AND SWE RETRIEVAL FOR ALPINE SNOW**
Helmut Rott, Thomas Nagler, Elisabeth Ripper, Karl Voglmeier, ENVEO IT GmbH, Austria; Rainer Prinz, University of Innsbruck, Austria; Reinhard Fomm, BFW, Austria; Alex Coccia, Adriano Meta, METASENSING, Netherlands; Daniela Di Leo, MetaSensing, Netherlands; Dirk Schüttemeyer, European Space Agency (ESA) / ESTEC, Netherlands

WE3.05.2 13:50 **BRIGHTNESS TEMPERATURE BEHAVIOR OF SNOW ON LAKE ICE OVER A WIDE FREQUENCY RANGE**
Martti Hallikainen, Matti Vaaja, Jaakko Seppänen, Anssi Hakkarainen, Aalto University, Finland; Juha Kainulainen, Harp Technologies Ltd, Finland

WE3.05.3 14:10 **DMRT MODELS OF BICONTINUOUS MEDIA AND QCA MULTIPLE-SIZES FOR APPLICATIONS TO MICROWAVE REMOTE SENSING OF SNOWPACKS**
Xiaolan Xu, Jet Propulsion Laboratory, United States; Leung Tsang, Wenmo Chang, University of Washington, United States; Simon Yueh, NASA Jet propulsion Laboratory, United States

WE3.05.4 14:30 **MODEL INVESTIGATIONS OF BACKSCATTER FOR SNOW PROFILES RELATED TO AVALANCHE RISK**
Marco Bragioni, Institute of Applied Physics-National Research Council, Italy; Anselmo Cagnati, Andrea Crepaz, ARPA Veneto, Italy; Simonetta Paloscia, Paolo Pampaloni, Simone Pettinato, Emanuele Santi, Institute of Applied Physics-National Research Council, Italy; Chuan Xiong, Jiancheng Shi, Institute of Remote Sensing and Digital Earth, CAS, China

WE3.05.5 14:50 **REFINEMENT OF THE X AND KU BAND DUAL-POLARIZATION SCATTEROMETER SNOW WATER EQUIVALENT RETRIEVAL ALGORITHM**
Chuan Xiong, Jiancheng Shi, Institute of Remote Sensing and Digital Earth, CAS, China; Juha Lemmetyinen, Finnish Meteorological Institute, Finland

Wednesday, July 16 15:40 - 17:20 205-AB
Session WE4.05 Oral-Invited

Multi-Sensor Remote Sensing of Terrestrial Snow

Session Co-Chairs: Kari Luojus, Finnish Meteorological Institute; David Small, University of Zurich

WE4.05.1 15:40 **REMOTE SENSING OF GLOBAL SNOW ACCUMULATION FROM MULTI-SENSOR OBSERVATIONS: SIMPLICITY AND COMPLEXITY IN A MULTI-RESOLUTION PROBLEM**
Richard Kelly, University of Waterloo, Canada

WE4.05.2 16:00 **RETRIEVAL OF HEMISPHERICAL SNOW COVER INFORMATION BY COMBINING PASSIVE MICROWAVE AND OPTICAL SATELLITE DATA**
Kari Luojus, Jouni Pulliainen, Matias Takala, Juha Lemmetyinen, Tuomo Smolander, Jaakko Ikonen, Juval Cohen, Finnish Meteorological Institute, Finland; Sari Metsämäki, Finnish Environment Institute, Finland; Chris Derksen, Environment Canada, Canada; Simon Pinnock, European Space Agency (ESA), Italy

WE4.05.3 16:20 **CONSISTENT LONG-TERM SNOW COVER DATA FROM THE MULTI-SENSOR AVHRR SUITE: VALUABLE INFORMATION FOR CLIMATE RESEARCH**
Fabia Hüsler, Stefan Wunderle, University of Bern, Switzerland

WE4.05.4 16:40 **MULTI-SENSOR FUSION OF RADARSAT-2 AND MODIS DATA FOR SNOW COVER MAPPING IN NORWAY**
Eirik Malnes, Heidi Hindberg, Northern Research Institute (Norut), Norway; Rune Solberg, Norwegian Computing Centre (NR), Norway; Hans Eilif Larsen, KSAT, Norway

WE4.05.5 17:00 **COORDINATED SAR ACQUISITION PLANNING FOR MULTI-SENSOR MULTI-ASPECT SNOW RETRIEVALS**
David Small, University of Zurich, Switzerland; Kari Luojus, Finnish Meteorological Institute, Finland; Chris Derksen, Environment Canada, Canada; Eirik Malnes, Northern Research Institute (Norut), Norway

Wednesday, July 16 08:20 - 10:00 206-A
Session WE1.06 Oral

Soil Moisture-SMAP Mission

Session Co-Chairs: Maria Piles, Universitat Politècnica de Catalunya; Ramata Magagi, University of Sherbrooke; Simon Yueh, NASA Jet Propulsion Laboratory, California Institute of Technology

WE1.06.1 08:20 **NASA SOIL MOISTURE ACTIVE PASSIVE MISSION DEVELOPMENT**
Simon Yueh, Kent Kellogg, Eni Njoku, Jet Propulsion Laboratory, California Institute of Technology, United States; Dara Entekhabi, Massachusetts Institute of Technology, United States; Peggy O'Neill, NASA Goddard Space Flight Center, United States

WE1.06.2 08:40 **PRE-LAUNCH PHASE 2 REHEARSAL OF THE CALIBRATION AND VALIDATION OF SOIL MOISTURE ACTIVE PASSIVE (SMAP) GEOPHYSICAL DATA PRODUCTS**
Andreas Colliander, Jet Propulsion Laboratory, California Institute of Technology, United States; Thomas Jackson, Agriculture Research Service, U.S. Department of Agriculture, United States; Scott Dunbar, Steven Chan, Narendra Das, Seung-Bum Kim, Jet Propulsion Laboratory, California Institute of Technology, United States; Rolf Reichle, Gabrielle de Lannoy, Qing Liu, NASA Goddard Space Flight Center, United States; John Kimball, Yonghong Yi, University of Montana, United States; Natasha Stavros, Jet Propulsion Laboratory, California Institute of Technology, United States; Chris Derksen, Climate Research Division, Environment Canada, Canada; Xiaolan Xu, Jet Propulsion Laboratory, California Institute of Technology, United States; Michael Cosh, Rajat Bindlish, Wade Crow, Fan Chen, Agriculture Research Service, U.S. Department of Agriculture, United States; Lan Dang, Michael Spencer, Simon Yueh, Eni Njoku, Jet Propulsion Laboratory, California Institute of Technology, United States

WE1.06.3 09:00 **EVALUATION OF SMAP RADIOMETER LEVEL 2 SOIL MOISTURE ALGORITHMS USING FOUR YEARS OF SMOS DATA**
Rajat Bindlish, Thomas Jackson, USDA ARS HRSL, United States; Steven Chan, Jet Propulsion Laboratory, United States; Tianjie Zhao, Michael Cosh, USDA ARS HRSL, United States; Peggy O'Neill, NASA Goddard Space Flight Center, United States; Andreas Colliander, Eni Njoku, Jet Propulsion Laboratory, United States; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France

WE1.06.4 09:20 **SEASONAL PARAMETERIZATIONS OF THE TAU-OMEGA MODEL USING THE COMRAD GROUND-BASED SMAP SIMULATOR**
Peggy O'Neill, Alicia Joseph, Prashant Srivastava, National Aeronautics and Space Administration (NASA), United States; Michael Cosh, USDA, United States; Roger Lang, George Washington University, United States

WE1.06.5 09:40 **ACTIVE AND PASSIVE L-BAND MICROWAVE REMOTE SENSING FOR SOIL MOISTURE – A TEST-BED FOR SMAP FUSION ALGORITHMS**
Carsten Montzka, Heye Bogena, Research Centre Juelich, Germany; Thomas Jagdhuber, Irena Hajnsek, Ralf Horn, Andreas Reigber, German Aerospace Center (DLR), Germany; Sayeh Hasan, Research Centre Juelich, Germany; Christoph Rüdiger, Monash University, Australia; Marc Jaeger, German Aerospace Center (DLR), Germany; Harry Vereecken, Research Centre Juelich, Germany

Wednesday, July 16 10:30 - 12:10 206-A
Session WE2.06 Oral

Soil Moisture-SMOS

Session Co-Chairs: Rajat Bindlish, United States Department of Agriculture; Philippe Richaume, Centre D'Etudes Spatiales de la Biosphère (CESBIO)

WE2.06.1 10:30 **SOIL MOISTURE RETRIEVAL FROM SMOS OBSERVATIONS USING NEURAL NETWORKS**
Nemesio Rodriguez-Fernandez, Philippe Richaume, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Filipe Aires, Catherine Prigent, ESTELLUS / LERMA, France; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jana Kolassa, Carlos Jimenez, ESTELLUS / LERMA, France; François Cabot, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Ali Mahmoodi, Array Systems Computing Inc., Canada

WE2.06.2 10:50 **ENHANCEMENTS OF SMOS LEVEL 2 SOIL MOISTURE PRODUCTS OVER CANADA**
Catherine Champagne, Agriculture and Agri-Food Canada, Canada; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Ali Mahmoodi, Array Systems Computing Inc., Canada; Philippe Richaume, Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Heather McNairn, Anna Pacheco, Agriculture and Agri-Food Canada, Canada; Stéphane Bélair, Marco Carrera, Environment Canada, Canada

WE2.06.3 11:10 **ANALYSIS AND PARAMETERIZATION OF L-BAND MICROWAVE EMISSION FROM EXPONENTIALLY CORRELATED ROUGH SURFACE**
Tianjie Zhao, Jiancheng Shi, Dongyang Li, State Key Laboratory of Remote Sensing Science, China; Arnaud Mialon, Yann H. Kerr, Center for the Study of the Biosphere from Space, France; Dabin Ji, Tianxing Wang, Chuan Xiong, State Key Laboratory of Remote Sensing Science, China

WE2.06.4 11:30 **SOIL MOISTURE DYNAMICS OBSERVED BY SMOS AND THE SOUTH FORK IN–SITU SOIL MOISTURE NETWORK**
Wesley Rondinelli, Jason Patton, Brian Hornbuckle, Iowa State University, United States; Michael Cosh, USDA ARS, United States

WE2.06.5 11:50 **SMOS LEVEL 3 DATABASE**
Arnaud Mialon, François Cabot, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Sarah Guibert, CNES, France; Ahmad Al Bitar, Philippe Richaume, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jean-Pierre Wigneron, INRA, France; Thierry Pellarin, LTHE, France; Stéphane Tarot, French Research Institute for Exploitation of the Sea, Ifremer, France; Simone Bircher, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jennifer Grant, INES, Sweden; Nemesio Rodriguez-Fernandez, Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France

Wednesday, July 16 13:30 - 15:10 206-A
Session WE3.06 Oral

Soil Moisture-Aquarius

Session Co-Chairs: Peggy O'Neill, National Aeronautics and Space Administration; Rajat Bindlish, United States Department of Agriculture; Jasmeet Judge, University of Florida

WE3.06.1 13:30 **EVALUATION OF AQUARIUS LEVEL 2 SOIL MOISTURE PRODUCTS OVER CENTRAL TIBETAN PLATEAU AND CONTINENTAL U.S.**
Dongyang Li, Tianjie Zhao, Jiancheng Shi, Institute of Remote Sensing and Digital Earth, CAS, China; Rajat Bindlish, Thomas Jackson, USDA-ARS Hydrology and Remote Sensing Lab, United States; Bin Peng, Qiang Liu, Institute of Remote Sensing and Digital Earth, CAS, China

WE3.06.2 13:50 **SAC-D/AQUARIUS SOIL MOISTURE PRODUCT DEVELOPMENT AND EVALUATION FOR PAMPAS PLAINS (ARGENTINA)**
Cintia Bruscantini, Francisco Grings, Federico Carballo, Matias Barber, Pablo Perna, Haydee Karszenbaum, Institute Of Astronomy and Space Physics (IAFE), Argentina

WE3.06.3 14:10 **INTEGRATION OF MICROWAVE OBSERVATIONS FROM SMOS AND AQUARIUS WITH CROP GROWING MODEL FOR DATA ASSIMILATION IN AGRICULTURAL REGION**
Pang-Wei Liu, Tara Bongiovanni, University of Florida, United States; Alejandro Monsivais-Huertero, National Polytechnic Institute, Mexico; Susan Steele-Dunne, Delft University of Technology, Netherlands; Jasmeet Judge, University of Florida, United States; Rajat Bindlish, USDA, United States

WE3.06.4 14:30 **A CONCEPT FOR INTRODUCING SI-TRACEABILITY INTO L-BAND OBSERVATIONS OF ANTARCTICA FOR INTER-CALIBRATION APPLICATIONS INVOLVING SMOS, AQUARIUS, AND SMAP**
Edward Kim, National Aeronautics and Space Administration (NASA), United States; David Walker, NIST, United States

WE3.06.5 14:50 **SOIL MOISTURE COMPARISON THROUGH TRIPLE AND QUADRUPLE COLLOCATION BETWEEN: METOP, ERA, SMOS AND IN-SITU DATA**
Fabio Fascetti, Nazzareno Pierdicca, Luca Pulvirenti, La Sapienza University, Italy; Raffaele Crapolicchio, Serco SpA, Italy; Joaquin Muñoz-Sabater, European Centre for Medium-Range Weather Forecasts, United Kingdom

Wednesday, July 16 15:40 - 17:20 206-A
Session WE4.06 Oral

Soil Moisture-Product Intercomparisons

Session Co-Chairs: Delphine Leroux, Centre D'Etudes Spatiales de la Biosphère (CESBIO) / NASA Jet Propulsion Laboratory, California Institute of Technology; Jiancheng Shi, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences; Maria Piles, Universitat Politècnica de Catalunya

WE4.06.1 15:40 **PERFORMANCE INTER-COMPARISON OF SOIL MOISTURE RETRIEVAL MODELS FOR THE METOP-A ASCAT INSTRUMENT**
Alexander Gruber, Vienna University of Technology, Austria; Simonetta Paloscia, Emanuele Santi, CNR-IFAC, Italy; Claudia Notarnicola, Luca Pasolli, EURAC-Research Viale Druso, Italy; Tuomo Smolander, Jouni Pulliainen, Finnish Meteorological Institute, Finland; Heidi Mittelbach, ETH Zurich, Switzerland; Wouter Dorigo, Wolfgang Wagner, Vienna University of Technology, Austria

WE4.06.2 16:00 **MULTITEMPORAL SOIL MOISTURE RETRIEVAL FROM 3-DAYS ERS-2 DATA: COMPARISON WITH ASCAT, SMOS AND IN SITU MEASUREMENTS**
Nazzareno Pierdicca, La Sapienza University, Italy; Luca Pulvirenti, CIMA Research Foundation, Italy; Fabio Fascetti, La Sapienza University, Italy

WE4.06.3 16:20 **COMPARED PERFORMANCES OF MICROWAVE PASSIVE SOIL MOISTURE RETRIEVALS (SMOS) AND ACTIVE SOIL MOISTURE RETRIEVALS (ASCAT) USING LAND SURFACE MODEL ESTIMATES (MERRA-LAND)**
*Amen Alyaari, Jean-Pierre Wigneron, INRA, France; Agnes Ducharne, CNRS, UMR Sisyphe, France; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Wolfgang Wagner, Vienna University of Technology, Austria; Rolf Reichle, Gabrielle De Lannoy, NASA Goddard Space Flight Center (GESTAR
), United States; Ahmad Al Bitar, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Wouter Dorigo, Vienna University of Technology, Austria; Marie Parrens, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Roberto Fernández-Morán, INRA, France; Philippe Richaume, Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France*

WE4.06.4 16:40 **AMSR-E-BASED SOIL MOISTURE RETRIEVAL ALGORITHMS AND TRANSFERABILITY TO AMSR2**
Iliana Mladenova, Thomas Jackson, USDA-ARS HRSL, United States; Eni Njoku, Jet Propulsion Laboratory, United States; Rajat Bindlish, Michael Cosh, USDA-ARS HRSL, United States; Steven Chan, Jet Propulsion Laboratory, United States

WE4.06.5 17:00 **A SEMI-EMPIRICAL MODEL TO LINK PASSIVE MICROWAVE L-BAND, VISIBLE AND INFRARED OBSERVATIONS TO SOIL MOISTURE ACROSS SPATIAL SCALES**
María Piles, Mercè Vall-llossera, Adriano Camps Carmona, Universitat Politècnica de Catalunya, Spain; Nilda Sánchez, José Martínez-Fernández, Universidad de Salamanca, Spain; Miriam Pablos, Universitat Politècnica de Catalunya, Spain; Garett Pignotti, Purdue University, United States

Wednesday, July 16 08:20 - 10:00 206-B
Session WE1.07 Oral

Parallel and Scalable Image Processing Techniques

Session Co-Chairs: Antonio Plaza, University of Extremadura; Qian Du, Mississippi State University

WE1.07.1 08:20 **MULTI-GPU BASED NEAR REAL-TIME PREPROCESSING AND RELEASING SYSTEM OF OPTICAL SATELLITE IMAGES**
Liuyang Fang, Mi Wang, Wuhan University, China; Hexiang Ying, Geomatics Center of Zhejiang Province, China; Fen Hu, National Administration of Surveying, Mapping and Geoinformation, China

WE1.07.2 08:40 **PARALLEL APPROACH TO EXPEDITE MORPHOLOGICAL FEATURE EXTRACTION OF REMOTE SENSING IMAGES FOR CBIR SYSTEM**
Sandeep Kumar, Swati Jain, Tanish Zaveri, Institute of Technology, Nirma University, India

WE1.07.3 09:00 **A MULTILEVEL PARALLEL AND SCALABLE SINGLE-HOST GPU CLUSTER FRAMEWORK FOR LARGE-SCALE GEOSPATIAL DATA PROCESSING**
Grant Scott, Kirk Backus, University of Missouri, United States; Derek Anderson, Mississippi State University, United States

WE1.07.4 09:20 **SCALABLE MULTI-CLASS GEOSPATIAL OBJECT DETECTION IN HIGH-SPATIAL-RESOLUTION REMOTE SENSING IMAGES**
Gong Cheng, Junwei Han, Peicheng Zhou, Lei Guo, Northwestern Polytechnical University, China

WE1.07.5 09:40 **AERIAL REMOTE SENSING IMAGE PROCESSING SOFTWARE SYSTEM**
Gaojin Wen, Chunxiao Zhang, Zhaorong Lin, Zhiming Shang, Hongmin Wang, Qian Zhang, Beijing Institute of Space Mechanics and Electricity, China

Wednesday, July 16 10:30 - 12:10 206-B
Session WE2.07 Oral

Image Restoration, Compression, and Fusion

Session Chair: Andrea Garzelli, University of Siena

WE2.07.1 10:30 **SMOS IMAGES RESTORATION FROM L1A DATA: A SPARSITY-BASED VARIATIONAL APPROACH**
Javier Preciozzi, Pablo Musé, Facultad de Ingeniería, Uruguay; Andrés Almansa, Telecom ParisTech, France; Sylvain Durand, Université Paris Descartes, France; Ali Khazaal, Bernard Rougé, Centre d'Études Spatiales de la Biosphère (CESBIO), France

WE2.07.2 10:50 **ANALYSIS MODEL BASED RECOVERY OF REMOTE SENSING DATA**
Xinghua Li, Huanfeng Shen, Huifang Li, Liangpei Zhang, Wuhan University, China

WE2.07.3 11:10 **AN EDGE PRESERVING MULTI-RESOLUTION IMAGE FUSION: USE OF JOINT BILATERAL FILTER**
Kishor Upla, Sharad Joshi, S.V. National Institute of Technology, India; Mehul Patel, SVNIT, Surat, India

WE2.07.4 11:30 **COMPRESSED SENSING BASED REMOTE SENSING IMAGE RECONSTRUCTION USING AN AUXILIARY IMAGE AS PRIORS**
Hao Geng, University of Science and Technology of China, China; Peng Liu, Lizhe Wang, Lajiao Chen, Chinese Academy of Sciences, China

WE2.07.5 11:50 **A PYRAMID APPROACH TO LOSSLESS DATA COMPRESSION OF GRID-BASED DIGITAL ELEVATION MODELS**
Gabriel Scarmana, Kevin McDougall, University of Southern Queensland, Australia

Wednesday, July 16 13:30 - 15:10 206-B
Session WE3.07 Oral

Image Processing and Analysis I

Session Chair: Jacqueline Le Moigne, NASA Goddard Space Flight Center

WE3.07.1 13:30 **A FLOOD MAPPING ALGORITHM FROM CLOUD CONTAMINATED MODIS TIME-SERIES DATA USING A MARKOV RANDOM FIELD MODEL**
Teerasit Kasetkasem, Ponlapak Phuhinkong, Kasetsart University, Thailand; Preesan Rakwatin, Geo-Informatics and Space Technology Development Agency (Public Organization), Thailand; Thitiporn Chanwimaluang, National Electronics and Computer Technology Center, Thailand; Itsuo Kumazawa, Tokyo Institute of Technology, Japan

WE3.07.2 13:50 **AUTOMATIC CLOUD REMOVAL FOR LANDSAT 8 OLI IMAGES USING CIRRUS BAND**
Meng Xu, Xiuping Jia, Mark Pickering, University of New South Wales, Australia

WE3.07.3 14:10 **THE EFFECT OF CLOUD AND SOLAR ZENITH ANGLE ON SPECTRAL REFLECTANCE DATA COLLECTED IN THE FIELD**
Patrick Bell, Joseph Piwowar, University of Regina, Canada

WE3.07.4 14:30 **GEOREGISTRATION OF EARTH OBSERVING-1 (EO-1) DATA USING GLOBAL LAND SURVEY (GLS) MAPS**
Jacqueline Le Moigne, NASA Goddard Space Flight Center, United States; Patricia Sazama, University of Maryland, United States; Stephen Swanson, Princeton University, United States; Vuong Ly, Daniel Mandl, NASA Goddard Space Flight Center, United States

Wednesday, July 16 15:40 - 17:20 206-B
Session WE4.07 Oral

Pan-sharpening and Image Fusion

Session Co-Chairs: Jon Atli Benediktsson, University of Iceland; Ahmed Shaker, Ryerson University

WE4.07.1 15:40 **CONSISTENT PAN-SHARPENING BASED ON MULTISTAGE JOINT AND DUAL BILATERAL FILTERS**
Sharad Joshi, Kishor Upla, Prashant Shah, S.V. National Institute of Technology, India

WE4.07.2 16:00 **QUALITY ASSESSMENT OF PAN-SHARPENING METHODS**
Gintautas Palubinskas, German Aerospace Center (DLR), Germany

WE4.07.3 16:20 **PANCHROMATIC AND MULTISPECTRAL IMAGES FUSION BASED ON MODIFIED GS-SWT**
Xiaochen Lu, Junping Zhang, Harbin Institute of Technology, China

WE4.07.4 16:40 **A METHOD FOR IMPROVING THE CONSISTENCY PROPERTY OF PANSHARPENING ALGORITHMS**
Maria Rosaria Vicinanza, Rocco Restaino, Gemine Vivone, University of Salerno, Italy; Mauro Dalla Mura, Giorgio Licciardi, Jocelyn Chanussot, Grenoble Institute of Technology, France

WE4.07.5 17:00 **SPATIAL AND TEMPORAL IMAGE FUSION FOR TIME SERIES MODIS DATA AND MULTI-SENSORS MEDIUM RESOULTION DATA**
Xiaoqin Wang, Xiangan Chen, Lu Li, Fuzhou University, China

Wednesday, July 16 08:20 - 10:00 202
Session WE1.08 Oral

Radiometer Calibration Techniques and Technologies

Session Co-Chairs: Sidharth Misra, NASA Jet Propulsion Laboratory, California Institute of Technology; Darren McKague, University of Michigan

WE1.08.1 08:20 **TOWARDS A FULLY INTERNALLY CALIBRATED AQUARIUS BRIGHTNESS TEMPERATURE MEASUREMENT**
Sidharth Misra, Jet Propulsion Laboratory, United States; Shannon T. Brown, NASA Jet Propulsion Laboratory, United States

WE1.08.2 08:40 **CORRECTING THE ANTENNA TEMPERATURE OF EARTH-OBSERVING MICROWAVE INSTRUMENT FOR EXTRA-TERRESTRIAL CONTAMINATION**
Giovanni De Amici, National Aeronautics and Space Administration (NASA), United States

WE1.08.3 09:00 **APPLICATION OF A MICROWAVE RADIOMETER LAND CONTAMINATION CORRECTION ALGORITHM: WIND CLIMATOLOGY OVER THE GREAT LAKES FROM SSM/I**
John Xun Yang, Darren McKague, University of Michigan, United States

WE1.08.4 09:20 **RESIDUAL CALIBRATION ERROR IMPACT ON SMOS SLL PERFORMANCE**
Francesc Torres, Ignasi Corbella, Israel Durán, Lin Wu, Nuria Duffo, Universitat Politècnica de Catalunya, Spain; Manuel Martín-Neira, European Space Agency (ESA), Netherlands

WE1.08.5 09:40 **DESIGN AND MODELING OF A WIDEBAND AUTOCORRELATION RADIOMETER (WIBAR) AS SNOWPACK THICKNESS SENSOR**
Hamid Nejati, Roger De Roo, Lin van Nieuwstadt, Kamal Sarabandi, Anthony England, University of Michigan, United States

Wednesday, July 16 10:30 - 12:10 202
Session WE2.08 Oral

Advanced Microwave Radiometer Concepts

Session Co-Chairs: Roger de Roo, University of Michigan; Niels Skou, Technical University of Denmark; Francesc Torres, Universitat Politècnica de Catalunya

WE2.08.1 10:30 **SCANNING L-BAND ACTIVE PASSIVE (SLAP): A NEW AIRBORNE SIMULATOR FOR SMAP**
Edward Kim, National Aeronautics and Space Administration (NASA), United States; Tammy Faulkner, Arctic Slope Regional Corporation, United States; Albert Wu, Hemanshu Patel, Emergent Space Technologies, United States

WE2.08.2 10:50 **FUTURE SPACEBORNE OCEAN MISSIONS USING HIGH SENSITIVITY MULTIPLE-BEAM RADIOMETERS**
Niels Skou, Sten Schmidl Søbjærg, Steen Savstrup Kristensen, Technical University of Denmark, Denmark; Cecilia Cappellin, Knud Pontoppidan, Ticra, Denmark; Marianna Ivashina, Chalmers University of Technology, Sweden; Alexander Ihle, HPS Gmbh, Germany; Kees vt Klooster, ESTEC, Netherlands

WE2.08.3 11:10 **A DUAL-MODE MICROWAVE RADIOMETER CONCEPT FOR GEOSTATIONARY ATMOSPHERIC SOUNDING**
Hao Liu, Ji Wu, Lijie Niu, Cheng Zhang, Bin Li, National Space Science Center, Chinese Academy of Sciences, China

WE2.08.4 11:30 **CORRELATOR TECHNOLOGIES FOR THE PATH MISSION-ACCOMPLISHMENTS AND UPDATES FROM A SYSTEMS VIEWPOINT**
Alan B. Tanner, Todd C. Gaier, Pekka Kangaslahti, Bjorn Lambrigtsen, Isaac Ramos, Jet Propulsion Laboratory, California Institute of Technology, United States; Darren McKague, Mike Flynn, Phil Knag, Zhengya Zhang, University of Michigan, United States; Erik Ryman, Anders Emrich, Omnisys Instruments, Sweden

WE2.08.5 11:50 **AIRBORNE DEMONSTRATION OF MICROWAVE AND WIDEBAND MILLIMETER-WAVE RADIOMETERS FOR HIGH-RESOLUTION TROPOSPHERIC WET-PATH DELAY CORRECTIONS FOR ALTIMETRY IN COASTAL AREAS AND OVER INLAND WATER**
Steven C. Reising, Colorado State University, United States; Pekka Kangaslahti, Alan B. Tanner, Sharmila Padmanabhan, Oliver Montes, Chaitali Parashare, Jet Propulsion Laboratory, California Institute of Technology, United States; Xavier Bosch-Lluis, Thaddeus Johnson, Victoria Hadel, Colorado State University, United States; Shannon T. Brown, Behrouz Khayatian, Douglas E. Dawson, Todd C. Gaier, Jet Propulsion Laboratory, California Institute of Technology, United States; Behzad Razavi, University of California, Los Angeles, United States

Wednesday, July 16 13:30 - 15:10 202
Session WE3.08 Oral

Microwave Radiometry: Modeling And Applications

Session Chair: Brian Hornbuckle, Iowa State University

WE3.08.1 13:30 **SMOSHILAT - MICROWAVE L-BAND EMISSION FROM ORGANIC-RICH SOILS IN THE NORTHERN COLD CLIMATE ZONE IN THE FRAMEWORK OF THE SMOS MISSION**
Simone Bircher, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jean-Pierre Wigneron, Institut National de la Recherche Agronomique, France; François Demontoux, Bordeaux University, France; Mike Schwank, Swiss Federal Institute for Forest, Snow and Landscape Research, Switzerland; François Jonard, Forschungszentrum Jülich GmbH, Germany; Stephen Razafindratsima, Bordeaux University, France; Valery L. Mironov, Siberian Branch of the Russian Academy of Science, Russian Federation; Philippe Richaume, Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Lutz Weihermüller, Forschungszentrum Jülich GmbH, Germany; Kimmo Rautiainen, Jouni Pulliainen, Finnish Meteorological Institute, Finland; Mie Andreasen, Karsten Høgh Jensen, University of Copenhagen, Denmark; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France

WE3.08.2 13:50 **EFFECT OF LAND SURFACE HETEORGENEITY ON SIMULATED AND OBSERVED BRIGHTNESS TEMPERATURE**
Swapan Roy, Tracy Rowlandson, Aaron Berg, University of Guelph, Canada; Catherine Champagne, Agriculture and Agri-Food Canada, Canada; Justin Adams, University of Guelph, Canada

WE3.08.3 14:10 **USING AVAILABLE TIME SERIES OF PASSIVE AND ACTIVE MICROWAVE TO DEVELOP SMAP FREEZE/THAW ALGORITHMS ADAPTED FOR THE CANADIAN SUBARCTIC.**
Parvin Kalantari, Monique Bernier, INRS, Centre Eau Terre Environnement, Canada; Kyle C. McDonald, CUNY Environmental Crossroads Initiative and CREST Institute, United States; Jimmy Poulin, INRS, Centre Eau Terre Environnement, Canada

WE3.08.4 14:30 **COMPARISON OF SMOS-RETRIEVED AND NDVI CLIMATOLOGY-DERIVED VEGETATION OPTICAL THICKNESS**
Jason Patton, Brian Hornbuckle, Iowa State University, United States

WE3.08.5 14:50 **LAND SURFACE TEMPERATURE ESTIMATES IN THE TIBETAN PLATEAU FROM PASSIVE MICROWAVE OBSERVATIONS**
Jiangyuan Zeng, Zhen Li, Quan Chen, Haiyun Bi, Pengfei Zou, Institute of Remote Sensing and Digital Earth, CAS, China

Wednesday, July 16 15:40 - 17:20 202
Session WE4.08 Oral

Microwave Radiometer Intercalibration

Session Co-Chairs: Shannon Brown, NASA Jet Propulsion Laboratory, California Institute of Technology; Sidharth Misra, NASA Jet Propulsion Laboratory, California Institute of Technology

WE4.08.1 15:40 **GPM MICROWAVE IMAGER ON-ORBIT RADIOMETRIC CALIBRATION USING A SATELLITE DEEP SPACE CALIBRATION MANEUVER**
Spencer Farrar, Linwood Jones, University of Central Florida, United States

WE4.08.2 16:00 **RADIOMETRIC INTER-CALIBRATION OF SATELLITE MICROWAVE HUMIDITY SOUNDERS USING THE GPM MICROWAVE IMAGER**
Hamideh Ebrahimi, Saswati Datta, Linwood Jones, University of Central Florida, United States

WE4.08.3 16:20 **RADIATIVE TRANSFER BASED CROSS-CALIBRATION OF PASSIVE MICROWAVE MEASUREMENTS OBTAINED FROM SATELLITES**
Keshava P Singh, Indian Institute of Technology BHU, India; D N Piyush, A K Varma, Indian Space Research Organisation, India; N S Rajput, Indian Institute of Technology BHU, India

WE4.08.4 16:40 **COMPARISON OF SSMIS, AMSR-E AND MWRI BRIGHTNESS TEMPERATURE DATA**
Juntao Yang, Beijing Normal University and Finnish Meteorological Institute, China; Kari Luojus, Juha Lemmetyinen, Finnish Meteorological Institute, Finland; Lingmei Jiang, Beijing Normal University, China; Jouni Pulliainen, Finnish Meteorological Institute, Finland

WE4.08.5 17:00 **INTERCOMPARISON OF BRIGHTNESS TEMPERATURE MEASUREMENTS FROM AQUARIUS AND SMOS RADIOMETERS**
Chun Sik Chae, Shannon T. Brown, Andreas Colliander, Sidharth Misra, Xiaolan Xu, Simon Yueh, NASA Jet Propulsion Laboratory, United States; Emmanuel Dinnat, NASA Goddard Space Flight Center, United States

Wednesday, July 16 08:20 - 10:00 2104-AB
Session WE1.09 Oral-Invited

International Spaceborne Imaging Spectroscopy Missions: Updates and News I

Session Co-Chairs: Andreas Mueller, German Aerospace Center (DLR); Robert Green, National Aeronautics and Space Administration

WE1.09.1 08:20 **CONCEPT STUDY OF CANADIAN HYPERSPECTRAL MISSION**
Shen-En Qian, Martin Bergeron, Ralph Girard, Guennadi Kroupnik, Canadian Space Agency, Canada

WE1.09.2 08:40 **EO-1/HYPERION: NEARING FOURTEEN YEARS OF SUCCESSFUL MISSION SCIENCE OPERATION AND END OF MISSION PLANS**
Elizabeth Middleton, Daniel Mandl, Stuart Frye, Lawrence Ong, National Aeronautics and Space Administration (NASA), United States; Petya Campbell, University of Maryland Baltimore County, United States; David Landis, Stephen Ungar, Karl Huemmrich, Qingyuan Zhang, Yen-Ben Cheng, Christopher Neigh, Nathan Pollack, National Aeronautics and Space Administration (NASA), United States

WE1.09.3 09:00 **THE ENMAP MISSION - UPDATE**
Hermann Kaufmann, German Research Centre for Geosciences GFZ, Germany

WE1.09.4 09:20 **CURRENT STATUS OF HYPERSPECTRAL IMAGER SUITE (HISUI)**
Tsuneo Matsunaga, National Institute for Environmental Studies, Japan; Akira Iwasaki, The University of Tokoyo, Japan; Satoshi Tsuchida, National Institute of Advanced Industrial Science and Technology, Japan; Jun Tanii, Osamu Kashimura, Japan Space Systems, Japan; Ryosuke Nakamura, Hirokazu Yamamoto, National Institute of Advanced Industrial Science and Technology, Japan; Tetsushi Tachikawa, Japan Space Systems, Japan; Shuichi Rokugawa, The University of Tokoyo, Japan

WE1.09.5 09:40 **EARLY RESULTS OF PRISMA PAYLOAD TEST CAMPAIGN**
Alessandro Bini, Marco Molina, SELEX ES, Italy; Laura Candela, Roberto Formaro, Francesco Longo, ASI, Italy; Giampaolo Preti, SELEX ES, Italy; Giancarlo Varacalli, ASI, Italy

Wednesday, July 16 10:30 - 12:10 2104-AB
Session WE2.09 Oral-Invited

International Spaceborne Imaging Spectroscopy Missions: Updates and News II

Session Co-Chairs: Uta Heiden, German Aerospace Center (DLR); Elizabeth Middleton, National Aeronautics and Space Administration

WE2.09.1 10:30 **PROGRESS IN CHINESE SATELLITE HYPERSPECTRAL MISSIONS**
Lifu Zhang, Institute of Remote Sensing and Digital Earth, CAS, China

WE2.09.2 10:50 **SHALOM: AN ITALIAN- ISRAELI HYPERSPECTRAL ORBITAL MISSION - UPDATE**
Eyal Dor, Tel Aviv University, Israel; Avia Kafri, Israel Space Agency, Israel; Giancarlo Varacalli, Italian Space Agency, Italy

WE2.09.3 11:10 **THE FRENCH EO HIGH SPATIAL RESOLUTION HYPERSPECTRAL DUAL MISSION HYPXIM – AN UPDATE**
Veronique Carrere, Laboratoire de Planétologie et Géodynamique de Nantes, France; Xavier Briottet, ONERA, France; Stephane Jacquemoud, IPGP, France; Rodolphe Marion, CEA, DAM, DIF, France; Anne Bourguignon, BRGM, France; Malik Chami, Université Pierre et Marie Curie, France; Jocelyn Chanussot, GIPSA-Lab, France; Stéphane Chevrel, BRGM, France; Philippe Deliot, ONERA, France; Marie Dumont, Météo-France – CNRS, France; Pierre Yves Foucher, Laboratoire de Planétologie et Géodynamique de Nantes, France; Audrey Minghelli-Roman, Université du Sud Toulon Var, France; David Sheeren, DYNAFOR, France; Christiane Weber, LIVE, France; Marie-José Lefevre-Fonollosa, Mioara Mandea, CNES, France

WE2.09.4 11:30 **HYSPIRI UPDATE: MISSION STATUS, PREPARATORY AIRBORNE CAMPAIGN, AND SYNERGIES WITH FUTURE LAND AND AQUATIC IMAGING**
Robert Green, Simon Hook, Jet Propulsion Laboratory, United States; Elizabeth Middleton, NASA Goddard Space Flight Center, United States; Woody Turner, NASA Headquarters, United States

WE2.09.5 11:50 **GLOBAL MAPPING OF TERRESTRIAL VEGETATION PHOTOSYNTHESIS: THE FLUORESCENCE EXPLORER (FLEX) MISSION**
Jose Moreno, University of Valencia, Spain

Wednesday, July 16 13:30 - 15:10 2104-AB
Session WE3.09 Oral-Invited

Calibration and Validation and standards in support of Spaceborne Imaging Spectroscopy Missions I

Session Co-Chairs: Cindy Ong, Commonwealth Scientific and Industrial Research Organisation (CSIRO); Stephen Ungar, National Aeronautics and Space Administration

WE3.09.2 13:50 **CALIBRATION DEMONSTRATION SYSTEM FOR AN IMAGING SPECTROMETER TO PROVIDE CLIMATE-QUALITY REFLECTANCE**
Kurtis Thome, Joel Mccorkel, Jason Hair, Brendan McAndrew, Adrian Daw, Donald Jennings, Douglas Rabin, NASA Goddard Space Flight Center, United States

WE3.09.3 14:10 **HISUI VICARIOUS CALIBRATION AND CAL/VAL ACTIVITIES**
Hirokazu Yamamoto, Kenta Obata, GSJ/AIST, Japan; Toru Kouyama, ITRI/AIST, Japan; Satoshi Tsuchida, GSJ/AIST, Japan

WE3.09.4 14:30 **ENMAP RADIOMETRIC INFLIGHT CALIBRATION**
Harald Krawczyk, Birgit Gerasch, Thomas Walzel, Tobias Storch, Rupert Müller, German Aerospace Center (DLR), Germany; Bernhard Sang, Kayser-Threde GmbH, Germany; Christian Chlebek, German Aerospace Center (DLR), Germany

WE3.09.5 14:50 **CONTAMINATION OF GROUND SPECTRAL MEASUREMENTS DUE TO OPERATOR PROXIMITY**
Raymond Soffer, National Research Council Canada, Canada

Wednesday, July 16 15:40 - 17:20 2104-AB
Session WE4.09 Oral-Invited

Calibration and Validation and standards in support of Spaceborne Imaging Spectroscopy Missions II

Session Co-Chairs: Hirokazu Yamamoto, National Institute of Advanced Industrial Science and Technology; Cindy Ong, Commonwealth Scientific and Industrial Research Organisation (CSIRO)

WE4.09.1 15:40 **LESSONS LEARNED FROM EO-1 CALIBRATION ACTIVITIES ADVANCED LAND IMAGER (ALI) BAND MISREGISTRATION IMPACT ON SPECTRAL INDICES RADIOMETRIC STABILITY OF LUNAR TEST SITES BASED ON HYPERION OBSERVATIONS**
Stephen Ungar, Kurtis Thome, NASA Goddard Space Flight Center, United States; Lawrence Ong, Science Systems and Applications, Inc., United States

WE4.09.2 16:00 **CALIBRATION AND VALIDATION FOR INTERNATIONAL SATELLITE IMAGING SPECTROSCOPY MISSIONS: AUSTRALIA'S CONTRIBUTION**
Cindy Ong, Tim Malthus, Ian Lau, Nandika Thapar, Mike Caccetta, Guy Byrne, CSIRO, Australia

WE4.09.3 16:20 **CONCEPT FOR ENMAP POST-LAUNCH PRODUCT VALIDATION AND INSTRUMENT CHARACTERISATION ACTIVITIES**
Christian Rogass, Karl Segl, Maximilian Brell, Helmholtz-Centre Potsdam - GFZ German Research Centre for Geosciences German Research, Germany; Luis Guanter, Freie Universität Berlin, Germany; Hermann Kaufmann, Helmholtz-Centre Potsdam - GFZ German Research Centre for Geosciences German Research, Germany

WE4.09.4 16:40 **ENMAP DATA PRODUCT STANDARDS**
Tobias Storch, Martin Bachmann, German Aerospace Center (DLR), Germany; Hans-Peter Honold, Kayser-Threde GmbH, Germany; Hermann Kaufmann, German Research Centre for Geosciences GFZ, Germany; Harald Krawczyk, Rupert Müller, German Aerospace Center (DLR), Germany; Bernhard Sang, Kayser-Threde GmbH, Germany; Mathias Schneider, German Aerospace Center (DLR), Germany; Karl Segl, German Research Centre for Geosciences GFZ, Germany; Christian Chlebek, German Aerospace Center (DLR), Germany

WE4.09.5 17:00 **IMAGING SPECTROSCOPY VALIDATION ACTIVITIES UNDER THE AUSTRALIAN TERRESTRIAL ECOSYSTEM RESEARCH NETWORK – TERN**
Alex Held, CSIRO, Australia

Wednesday, July 16 08:20 - 10:00 205-C
Session WE1.10 Oral

Remote Sensing in Developing Countries

Session Co-Chairs: Riadh Abdelfattah, Ecole Superieure des Communications; Andres Jacome, INRS_ETE

WE1.10.1 08:20 **SVM CLASSIFICATION WITH MULTI-SOURCE DATA OF ZY-1 02C IMAGE**
Fenling Li, Qingrui Chang, Northwest Agriculture and Forestry University, China

WE1.10.2 08:40 **ESTIMATION OF LEAF AREA INDEX (LAI) OF SOUTH AFRICA FROM MODIS IMAGERY BY INVERSION OF PROSAILH RADIATIVE TRANSFER MODEL**
Moses Azong Cho, Abel Ramoelo, Renaud Mathieu, Council for Scientific and Industrial Research (CSIR), South Africa

WE1.10.3 09:00 **50 YEARS – THEN AND NOW: GEOLOGICAL APPLICATIONS OF REMOTE SENSING AT THE GEOLOGICAL SURVEY OF NAMIBIA**
Kombada Mhopjeni, Anna-Karren Nguno, Geological Survey of Namibia, Namibia

WE1.10.4 09:20 **RURAL LANDHOLDING MAPPING AND DEFORESTATION DETECTION USING RAPIDEYE IMAGES AND NDVI**
Leonardo Zandonadi Moura, Aline Brignol Menke, Ministry of the Environment of Brazil - MMA, Brazil

WE1.10.5 09:40 **GROUNDWATER DEFICIT AND LAND SUBSIDENCE IN CENTRAL MEXICO MONITORED BY GRACE AND RADARSAT-2**
Pascal Castellazzi, Richard Martel, Institut National de la Recherche Scientifique, Canada; Jaime Garfias, Centro Interamericano de Recursos del Agua, Mexico; Angus Calderhead, Natural Resources Canada, Canada; Javier Salas-Garcia, Centro Interamericano de Recursos del Agua, Mexico; Jianliang Huang, Alfonso Rivera, Natural Resources Canada, Canada

Wednesday, July 16 10:30 - 12:10 205-C
Session WE2.10 Oral

Ground Penetrating Radar

Session Co-Chairs: Motoyuki Sato, Tohoku University; Waymond Scott, Georgia Institute of Technology

WE2.10.1 10:30 **VIRTUAL BANDWIDTH SAR (VB-SAR) FOR SUB-SURFACE IMAGING**
Keith Morrison, Cranfield University, United Kingdom; John Bennett, Consultant, United Kingdom

WE2.10.2 10:50 **INVESTIGATION ON NEAR RANGE SAR FOR INSPECTING INNER STRUCTURE OF BUILDINGS**
Motoyuki Sato, Kazunori Takahashi, Hai Liu, Christian Koyama, Tohoku University, Japan

WE2.10.3 11:10 **ESTIMATION OF TIME DELAY AND ROUGHNESS PARAMETERS BY GPR USING ESPRIT METHOD**
Meng Sun, Polytech Nantes, France; Cédric Le Bastard, Laboratoire Régional des Ponts et Chaussées d'Angers, France; Nicolas Pinel, Alyotech, France; Yide Wang, Polytech Nantes, France

WE2.10.4 11:30 **COMPUTING THE MAGNETIC POLARIZABILITY OF THIN CONDUCTING SHEETS USING AN EIGENVALUE DECOMPOSITION**
Jonathan Gabbay, Waymond Scott, Georgia Institute of Technology, United States

WE2.10.5 11:50 **OPTIMIZATION OF PLANAR COILS FOR ELECTROMAGNETIC INDUCTION SYSTEMS**
Mark Reed, Waymond Scott, Georgia Institute of Technology, United States

Wednesday, July 16 13:30 - 15:10 205-C
Session WE3.10 Oral

Manned and Unmanned Airborne Remote Sensing

Session Chair: Karem Chokmani, INRS, Centre Eau Terre Environnement

WE3.10.1 13:30 **ENABLING EARTH SCIENCE CONTINUITY MEASUREMENTS WITH ADVANCED AIRBORNE CAPABILITIES**
Susan Schoenung, Longitude 122 West, Inc., United States; Bruce Tagg, NASA Airborne Science Program, United States; Matthew Fladeland, Randal Albertson, NASA Ames Research Center, United States

WE3.10.2 13:50 **DEVELOPMENT OF A COMPACT S-BAND SAR FOR EARTH RESOURCE MONITORING**
Yee-Kit Chan, Voon-Chet Koo, Multimedia University, Malaysia; Hong-Tat Ewe, Hean-Teik Chuah, Universiti Tunku Abdul Rahman, Malaysia

WE3.10.3 14:10 **CALIBRATION OF THE NATIONAL ECOLOGICAL OBSERVATORY NETWORK'S AIRBORNE IMAGING SPECTROMETERS**
Nathan Leisso, Thomas Kampe, Bryan Karpowicz, National Ecological Observatory Network, United States

WE3.10.4 14:30 **PROCEDURES FOR PROCESSING THERMAL IMAGES USING LOW-COST MICROBOLOMETER CAMERAS FOR SMALL UNMANNED AERIAL SYSTEMS**
Austin Jensen, Mac McKee, Utah State University, United States; Yangquan Chen, University of California, Merced, United States

WE3.10.5 14:50 **AUTOMATED MOSAICKING OF UAV IMAGES BASED ON SFM METHOD**
Hui Wang, Jonathan Li, University of Waterloo, Canada; Liyong Wang, Zhengzhou Institute of Surveying & Mapping, China; Haiyan Guan, University of Waterloo, Canada; Zexun Geng, Zhengzhou Institute of Surveying & Mapping, China

Wednesday, July 16 15:40 - 17:20 205-C
Session WE4.10 Oral-Invited

Remote Sensing Applications in Groundwater Science

Session Co-Chairs: Angus I. Calderhead, Hydrogeologist - Natural Resources Canada; Pascal Castellazzi, Institut National de la Recherche Scientifique

WE4.10.1 15:40 **IMPROVING WATER RESOURCES MANAGEMENT USING INSAR**
Howard Zebker, Rosemary Knight, Jingyi Chen, Jessica Reeves, Stanford University, United States

WE4.10.2 16:00 **RETROSPECTIVE OF INSAR/DINSAR CONTRIBUTIONS TO HYDROGEOLOGY BY WAY OF BIBLIOGRAPHIC SEARCH**
Devin Galloway, U.S. Geological Survey, United States

WE4.10.3 16:20 **UNDERSTANDING AQUIFER'S DYNAMIC AND SALINITY USING SOUNDING AND IMAGING RADARS IN HYPER-ARID REGIONS**
Essam Heggy, NASA Jet Propulsion Laboratory, United States; Yasir Moheieldeen, Qatar Energy and Environment Research Institute, Qatar; Jean-Philippe Avouac, California Institute of Technology, United States

WE4.10.4 16:40 **ASSIMILATING GRACE TERRESTRIAL WATER STORAGE FOR IMPROVING GROUNDWATER STORAGE ESTIMATION AND DROUGHT MONITORING**
Bailing Li, ESSIC, University of Maryland, United States; Matthew Rodell, NASA Goddard Space Flight Center, United States

WE4.10.5 17:00 **THE USE OF GRACE FOR EVALUATING GROUNDWATER STORAGE CHANGES AND RECHARGE AT THE CONTINENTAL SCALE IN CANADA**
Rivera Alfonso, Geological Survey of Canada, Canada; Jianliang Huang, 2Geodetic Survey Division, Natural Resources Canada, Canada; Wang Shusen, Earth Observation and GeoSolutions Division, CCMEO, Natural Resources Canada, Canada; Goran Pavlic, Canadian Geodetic Survey, Natural Resources Canada, Canada

Wednesday, July 16 08:20 - 10:00 207
Session WE1.11 Oral-Invited

Superresolution Reconstruction and Mapping for Hyperspectral Imagery

Session Co-Chairs: Jonathan Chan, Centre of Research & Innovation - Foundation of Edmund Mach; Yongqiang Zhao, School of Automation, Northwestern Polytechnical University

WE1.11.1 08:20 **COUPLED HYPERSPECTRAL SUPER-RESOLUTION AND UNMIXING**
Yongqiang Zhao, Chen Yi, Jingxiang Yang, Northwestern Polytechnical University, China; Jonathan Cheung-Wai Chan, Vrije Universiteit Brussel (VUB), Belgium

WE1.11.2 08:40 **SPARSITY BASED SPECTRAL SUPER-RESOLUTION AND APPLICATIONS TO OCEAN WATER COLOR**
Adam Charles, Christopher Rozell, Nicholas Tufillaro, Georgia Institute of Technology, United States

WE1.11.3 09:00 **HYPERSPECTRAL IMAGE RESOLUTION ENHANCEMENT BASED ON JOINT SPARSITY SPECTRAL UNMIXING**
Jakub Bieniarz, Rupert Müller, Xiao Xiang Zhu, Peter Reinartz, German Aerospace Center (DLR), Germany

WE1.11.4 09:20 **MULTIRESOLUTION ANALYSIS AND COMPONENT SUBSTITUTION TECHNIQUES FOR HYPERSPECTRAL PANSHARPENING**
Gemine Vivone, Rocco Restaino, University of Salerno, Italy; Giorgio Licciardi, Mauro Dalla Mura, Jocelyn Chanussot, Grenoble Institute of Technology, France

WE1.11.5 09:40 **AIRBORNE UNMIXING-BASED HYPERSPECTRAL SUPER-RESOLUTION USING RGB IMAGERY**
Naoto Yokoya, Akira Iwasaki, University of Tokyo, Japan

Wednesday, July 16 13:30 - 15:10 207
Session WE3.11 Oral-Invited

Special Topics in Microwave Ocean Observations: A Tribute to William J. Plant I

Session Co-Chairs: Andrew Jessup, University of Washington; Gordon Farquharson, University of Washington

WE3.11.1 13:30 **HYDRODYNAMIC MODULATION OF THE SHORT-SCALE SEA SURFACE ROUGHNESS – A KEY ISSUE IN SAR OCEANOGRAPHY**
Werner Alpers, University of Hamburg, Germany

WE3.11.2 13:50 **DUAL-BEAM ATI SAR MEASUREMENTS OF SURFACE CURRENTS IN THE NEARSHORE OCEAN**
Gordon Farquharson, Huazeng Deng, University of Washington, United States; Yuriy Goncharenko, Institute of Radiophysics and Electronics NAS of Ukraine, Ukraine; John Mower, University of Washington, United States

WE3.11.3 14:10 **RETRIEVAL OF SIGNIFICANT WAVE HEIGHTS FROM LOW-RESOLUTION C-BAND SCANSAR IMAGES**
Roland Romeiser, Hans Graber, Michael Caruso, University of Miami, United States

WE3.11.4 14:30 **HYDROGRAPHIC PARAMETERS RETRIEVED FROM GRAZING INCIDENCE COHERENT RADARS**
Jochen Horstmann, Joerg Seemann, Marius Cysewski, Ruben Carrasco, Michael Stresser, Li-Chu Wu, Friedwart Ziemer, Helmholtz-Zentrum Geesthacht, Germany

WE3.11.5 14:50 **MODELING MICROWAVE BACKSCATTER FROM THE OCEAN: FROM BRAGG TO BREAKING WAVES**
William Plant, University of Washington, United States

Wednesday, July 16 10:30 - 12:10 207
Session WE2.11 Oral-Invited

Ocean Surfactants and Surface Features from Spaceborne SAR

Session Chair: Alexander Soloviev, Nova Southeastern University Oceanographic Center

WE2.11.1 10:30 **AN ANALYSIS OF THE DIFFERENCES BETWEEN OIL ON THE OCEAN SURFACE AND BOUNDARY LAYER CONVECTION RELATED TO LOW SPEEDS AS SEEN BY HYBRID POLARIMETRIC SAR**
Haiyan Li, Key Laboratory of Computational Geodynamics, Chinese Academy of Sciences / Earth college, CAS/ Fisheries and Oceans Canada, Bedford Institute of Oceanography, Canada; William Perrie, Fisheries and Oceans Canada, Bedford Institute of Oceanography, Canada

WE2.11.2 10:50 **FINE-SCALE FEATURES ON THE SEA SURFACE IN TERRASAR-X SATELLITE IMAGERY**
Susanne Lehner, Domenico Velotto, German Aerospace Center (DLR), Germany; Alexander Soloviev, Nova Southeastern University Oceanographic Center, United States

WE2.11.3 11:10 **STATISTICAL ANALYSIS OF POLARIMETRIC CHARACTERISTICS FOR OIL SPILL CLASSIFICATION: THE SPECIAL CASE OF DWH**
Maurizio Migliaccio, Ferdinando Nunziata, Università degli Studi di Napoli Parthenope, Italy; Yu Li, Hui Lin, Yuanzhi Zhang, The Chinese University of Hong Kong, Hong Kong SAR of China

WE2.11.4 11:30 **FINE SCALE OCEANIC FEATURES DETECTED BY RADARSAT-2 SPOTLIGHT SAR IMAGES**
Hui Shen, Bedford Institute of Oceanography, Canada; William Perrie, Bedford Institute of Oceanography, Fisheries and Oceans Canada, Canada

WE2.11.5 11:50 **SURFACTANTS AND SURFACTANT ASSOCIATED BACTERIA IN THE SEA SURFACE MICROLAYER**
Bryan Hamilton, Cayla Dean, Naoko Kurata, Kate Vella, Alexander Soloviev, Aurelien Tartar, Mahmood Shivji, Nova Southeastern University, United States; William Perrie, Bedford Institute of Oceanography, Canada; Susanne Lehner, German Aerospace Center (DLR) Remote Sensing Technology Institute, Germany

Wednesday, July 16 15:40 - 17:20 207
Session WE4.11 Oral-Invited

Special Topics in Microwave Ocean Observations: A Tribute to William J. Plant II

Session Co-Chairs: Andrew Jessup, University of Washington; Gordon Farquharson, University of Washington

WE4.11.1 15:40 **THE INFLUENCE OF WILLIAM PLANT ON JHU/APL RESEARCH INTO RADAR PROBING OF THE OCEAN SURFACE**
R. D. Chapman, B. L. Gotwols, Johns Hopkins University Applied Physics Laboratory, United States

WE4.11.2 16:00 **ON THE WIND SENSITIVITY OF CAPILLARY-GRAVITY SURFACE WATER WAVES.**
Mark Donelan, Mark Donelan, University of Miami, United States

WE4.11.3 16:20 **MULTI-POLARIZATION SCATTEROMETER MEASUREMENTS OF LONG SURFACE GRAVITY WAVE BREAKING**
Martin Gade, Thomas Alexander Grobelny, Detlef Stammer, Universität Hamburg, Germany

WE4.11.4 16:40 **MODEL OF WAVE BREAKING AND MICROWAVE EMISSIVITY OF SEA SURFACE**
Vladimir Irisov, Zel Technologies/NOAA, United States

WE4.11.5 17:00 **MODELING THE EFFECT OF RAIN ON THE PERFORMANCE OF BOTH PASSIVE AND ACTIVE L-BAND OCEAN SENSORS**
David Weissman, Hofstra University, United States; Vladimir Irisov, NOAA/Environmental Research Laboratories, United States; William Plant, Applied Physics Laboratory, United States

Wednesday, July 16 08:20 - 10:00 2101
Session WE1.12 Oral-Invited

Accurate SAR Geolocalization: Techniques and Applications

Session Co-Chairs: Michael Eineder, German Aerospace Center (DLR); Ramon Hanssen, Technical University of Delft

WE1.12.1 08:20 **3D GEOLOCATION CAPABILITY OF MEDIUM RESOLUTION SAR SENSORS**
Prabu Dheenathayalan, Delft University of Technology, Netherlands; David Small, University of Zurich, Switzerland; Ramon Hanssen, Delft University of Technology, Netherlands

WE1.12.2 08:40 **TERRASAR-X PIXEL LOCALIZATION ACCURACY: APPROACHING THE CENTIMETER LEVEL**
Michael Eineder, Ulrich Balss, German Aerospace Center (DLR), Germany; Christoph Gisinger, Technische Universität München, Germany; Stefan Hackel, German Aerospace Center (DLR), Germany; XiaoYing Cong, Technische Universität München, Germany; Franz Georg Ulmer, Thomas Fritz, German Aerospace Center (DLR), Germany

WE1.12.3 09:00 **ANALYSIS OF INTERNAL TIMINGS AND CLOCK RATES OF TERRASAR-X**
Ulrich Balss, Helko Breit, Thomas Fritz, Ulrich Steinbrecher, German Aerospace Center (DLR), Germany; Christoph Gisinger, Technische Universität München, Germany; Michael Eineder, German Aerospace Center (DLR), Germany

WE1.12.4 09:20 **SPACEBORNE SAR PRODUCT GEOLOCATION ACCURACY: A SENTINEL-1 UPDATE**
Adrian Schubert, David Small, Erich Meier, Remote Sensing Laboratories, University of Zurich, Switzerland; Nuno Miranda, European Space Agency (ESA) / ESRIN, Italy; Dirk Geudtner, European Space Agency (ESA) / ESTEC, Netherlands

WE1.12.5 09:40 **ACCURATE MEASUREMENTS USING TERRASAR-X AND TANDEM-X DATA WITHOUT ANY REFERENCE**
Sergi Duque, Ulrich Balss, German Aerospace Center (DLR), Germany; XiaoYing Cong, Technische Universität München, Germany; Christian Minet, Thomas Fritz, German Aerospace Center (DLR), Germany

Wednesday, July 16 10:30 - 12:10 2101
Session WE2.12 Oral-Invited

High-resolution Ocean Winds, Waves and Currents with Spacebourne Synthetic Aperture Radar (SAR)

Session Co-Chairs: William Perrie, Bedford Institute of Oceanography; Susanne Lehner, German Aerospace Center (DLR)

WE2.12.1 10:30 **A NEW SEMI-EMPIRICAL SEA SURFACE MICROWAVE BACKSCATTER MODEL COUPLED WITH THE RAIN EFFECT**
Biao Zhang, Guosheng Zhang, Nanjing University of Information Science and Technology, China; William Perrie, Bedford Institute of Oceanography, Canada; Yijun He, Nanjing University of Information Science and Technology, China

WE2.12.2 10:50 **WIND VELOCITY AND CROSS POLARIZATION RADAR BACKSCATTER**
Paul Hwang, Naval Research Laboratory, United States; William Perrie, Bedford Institute of Oceanography, Canada; Biao Zhang, Nanjing University of Information Science and Technology, China

WE2.12.3 11:10 **INTERACTIONS BETWEEN SURFACE WAVES AND NONLINEAR EKMAN CURRENTS IN GULF STREAM FRONTS AS SHOWN BY SAR IMAGES**
Guoqiang Liu, William Perrie, Bedford Institute of Oceanography, Canada; Vladimir Kudryavtsev, Russian State Hydrometeorological University, Russian Federation

WE2.12.4 11:30 **MODELING OF WIND STRESS EFFECT ON FAR WAKES OF SHIPS IN SAR IMAGES**
Atsushi Fujimura, University of Miami, United States; Alexander Soloviev, Nova Southeastern University, United States; Shin Rhee, Seoul National University, Republic of Korea; Roland Romeiser, University of Miami, United States

WE2.12.5 11:50 **ON DUAL CO-POLARIZED SAR MEASUREMENTS OF THE OCEAN SURFACE**
Vladimir Kudryavtsev, Russian State Hydrometeorological University, Russian Federation; Bertrand Chapron, Institute Francais de Recherche pour l'Exploitation de la Mer, France; Alexander Myasoedov, Igor Kozlov, Russian State Hydrometeorological University, Russian Federation; Johnny Johannessen, Nansen Environmental and Remote Sensing Center, Norway; Fabrice Collard, OceanDataLab, France

Wednesday, July 16 13:30 - 15:10 2101
Session WE3.12 Oral-Invited

Imaging Spectrometry and LiDAR Algorithms for the National Ecological Observatory Network (NEON)

Session Chair: John Kerekes, Rochester Institute of Technology

WE3.12.1 13:30 **AIRBORNE IMAGING SPECTROMETERS AS A SPECTRAL RESOURCE FOR MAPPING PLANT SPECIES AND SURFACE COMPOSITION**
Dar Roberts, University of California, Santa Barbara, United States

WE3.12.2 13:50 **EVALUATING SIMILARITY MEASURES FOR HYPERSPECTRAL CLASSIFICATION OF TREE SPECIES AT ORDWAY-SWISHER BIOLOGICAL STATION**
Leila Kalantari, Paul Gader, Sarah Graves, Stephanie Bohlman, University of Florida, United States

WE3.12.3 14:10 **TOWARDS EXTRACTION OF VEGETATION BIOPHYSICAL PARAMETERS FROM THE NEON AIRBORNE OBSERVATION PLATFORM (AOP) WAVEFORM LIDAR**
Jan van Aardt, David Kelbe, Paul Romanczyk, Kerry Cawse-Nicholson, Rochester Institute of Technology, United States; Keith Krause, Tanya Ramond, Thomas Kampe, National Ecological Observatory Network, United States

WE3.12.4 14:30 **A SYNERGISTIC APPROACH TO ATMOSPHERIC CORRECTION OF NEON'S AIRBORNE HYPERSPECTRAL DATA UTILIZING AIRBORNE SOLAR SPECTRAL FLUX RADIOMETERS, GROUND BASED RADIOMETERS, AND AIRBORNE HYPERSPECTRAL IMAGERS**
Bryan Karpowicz, Nathan Leisso, Thomas Kampe, National Ecological Observatory Network, United States

WE3.12.5 14:50 **SEAGRASS MAPPING VIA ACTIVE LEARNING USING AIRBORNE HYPERSPECTRAL AND LIDAR MEASUREMENTS**
Xiong Zhou, Yuhang Zhang, University of Houston, United States; H. Lexie Yang, Purdue University, United States; Saurabh Prasad, University of Houston, United States; Jinha Jung, Melba Crawford, Purdue University, United States; Michael Starek, Texas A&M University at Corpus Christi, United States; Abhinav Singhania, Juan Fernandez-Diaz, University of Houston, United States; Alistair Lord, Texas A&M University at Corpus Christi, United States

Wednesday, July 16 15:40 - 17:20 2101
Session WE4.12 Oral-Invited

Lidar Applications in Aquatic Ecosystems

Session Co-Chairs: Martin Montes-Hugo, Université du Québec à Rimouski; Jean-Stephane Bailly, AgroParisTech

WE4.12.1 15:40 **LIDAR AS A QUANTITATIVE OBSERVATIONAL TOOL: PAST, PRESENT AND FUTURE APPROACHES**
Charles Trees, Centre for Maritime Research & Experimentation, Italy; Robert Arnone, University of Southern Mississippi, United States; Viktor Feygels, Optech, Inc., United States; Georges Fournier, Defence Research and Development Canada, Canada; Gary Gilbert, Advanced Coherent Tech., United States

WE4.12.2 16:00 **LIDARS FOR AUTONOMOUS IMAGING AND CHARACTERIZATION OF THE UNDERWATER ENVIRONMENT**
Georges Fournier, Defence Research and Development Canada, Valcartier, Canada; Charles Trees, CMRE, United States

WE4.12.3 16:20 **ECOSYSTEM STUDIES USING PROFILING POLARIZATION LIDAR**
James Churnside, National Oceanic and Atmospheric Administration, United States

WE4.12.4 16:40 **QUALIFICATION TESTING OF THE AGILENT M9703A DIGITIZER FOR USE IN A BATHYMETRIC LIDAR**
Grady Tuell, Ryan James, Robert Ortman, Christopher Valenta, Domenic Carr, Jason Zutty, Georgia Tech Research Institute, United States

WE4.12.5 17:00 **MODELING THE EFFECTS OF SURFACE AND BOTTOM GEOMETRIES ON LIDAR BATHYMETRIC WAVEFORMS**
Martin Alejandro Montes-Hugo, UQAR-ISMER, Canada; Jean-Stéphane Bailly, AgroParisTech, France; Nicolas Baghdadi, IRSTEA, France; Anis Bouhdaoui, Ecole Polytechnique, France

Thursday, July 17 | 08:20 - 10:00 | 2000-A
Session TH1.01 | Oral-Invited

3D and 4D SAR Tomography

Session Co-Chairs: Fabrizio Lombardini, University of Pisa / CNIT-RaSS; Laurent Ferro-Famil, IETR/University of Rennes 1

TH1.01.1 08:20
FOREST HEIGHT ESTIMATION USING SINGLE-PASS POLARIMETRIC SAR TOMOGRAPHY AT L BAND
Yue Huang, Qiaoping Zhang, Marcus Schwaebisch, Ming Wei, Intermap Technologies Corp., Canada; Bryan Mercer, University of Calgary, Canada

TH1.01.2 08:40
NEW DEVELOPMENTS OF 4D+ DIFFERENTIAL SAR TOMOGRAPHY TO PROBE COMPLEX DYNAMIC SCENES
Fabrizio Lombardini, Federico Viviani, University of Pisa / CNIT RaSS, Italy

TH1.01.3 09:00
INFORMATION RETRIEVAL FROM UAVSAR REPEAT-PASS MULTI-BASELINE DATA
Maxim Neumann, Scott Hensley, Razi Ahmed, Thierry Michel, Jet Propulsion Laboratory, California Institute of Technology, United States

TH1.01.4 09:20
MONITORING DYNAMICS IN TIME OF FOREST VERTICAL STRUCTURE WITH MULTIBASELINE POLINSAR DATA
Matteo Pardini, German Aerospace Center (DLR), Germany; Andrea Cantini, University of Pisa, Italy; Florian Kugler, Konstantinos Papathanassiou, German Aerospace Center (DLR), Germany; Fabrizio Lombardini, University of Pisa, Italy

TH1.01.5 09:40
3D SAR IMAGING OF THE SNOWPACK IN PRESENCE OF PROPAGATION VELOCITY CHANGES: RESULTS FROM THE ALPSAR CAMPAIGN
Laurent Ferro-Famil, Stefano Tebaldini, Matthieu Davy, Frédéric Boute, Université de Rennes 1, France

Thursday, July 17 | 10:30 - 12:10 | 2000-A
Session TH2.01 | Oral-Invited

SAR Images for Land Surface Characterization in Agricultural Areas

Session Co-Chairs: Mehrez Zribi, Centre D'Etudes Spatiales de la Biosphère (CESBIO); Nicolas Baghdadi, IRSTEA

TH2.01.1 10:30
SPATIAL AND TEMPORAL SOIL MOISTURE ESTIMATION FROM RADARSAT-2 IMAGERY OVER FLEVOLAND, THE NETHERLANDS
Niko Verhoest, Hans Lievens, Ghent University, Belgium

TH2.01.2 10:50
MONITORING VOLUMETRIC SURFACE SOIL MOISTURE CONTENT FROM C-BAND SAR POLARIMETRIC PARAMETERS AT THE FIELD PLOT LEVEL
Andres Jacome, Monique Bernier, Karem Chokmani, INRS, Canada; Michel Nolin, Agriculture and Agri-Food Canada, Canada; Simon Perreault, INRS, Canada; Mohamed Niang, Agriculture and Agri-Food Canada, Canada

TH2.01.3 11:10
MODELLING THE IMPACT OF MOISTURE CHANGES IN A HETEROGENEOUS SOIL ON DIFFERENTIAL INTERFEROMETRY
Simon Zwieback, Irena Hajnsek, ETH Zurich, Switzerland; Scott Hensley, Jet Propulsion Laboratory, United States

TH2.01.4 11:30
A NEW SOIL ROUGHNESS PARAMETER FOR THE MODELLING OF RADAR BACKSCATTERING OVER BARE SOIL
Mehrez Zribi, CNRS, France; Azza Gorrab, INAT, France; Nicolas Baghdadi, IRSTEA, France

TH2.01.5 11:50
A GROUND NETWORK FOR SAR-DERIVED SOIL MOISTURE PRODUCT CALIBRATION, VALIDATION AND EXPLOITATION IN SOUTHERN ITALY
Anna Balenzano, Giuseppe Satalino, Consiglio Nazionale delle Ricerche (CNR), Italy; Vito Iacobellis, Andrea Gioia, Politecnico di Bari (PoliBa), Italy; Salvatore Manfreda, Università degli Studi della Basilicata (Unibas), Italy; Michele Rinaldi, Pasquale De Vita, Consiglio per la Ricerca e la Sperimentazione in Agricoltura (CRA), Italy; Franco Miglietta, Piero Toscano, Consiglio Nazionale delle Ricerche (CNR), Italy; Giovanni Annicchiarico, Consiglio per la Ricerca e la Sperimentazione in Agricoltura (CRA), Italy; Francesco Mattia, Consiglio Nazionale delle Ricerche (CNR), Italy

Thursday, July 17 | 13:30 - 15:10 | 2000-A
Session TH3.01 | Oral-Invited

TanDEM-X: Mission Status

Session Chair: Irena Hajnsek, ETH / German Aerospace Center (DLR)

TH3.01.1 13:30
TANDEM-X MISSION STATUS: THE NEW TOPOGRAPHY OF THE EARTH TAKES SHAPE
Manfred Zink, Alberto Moreira, German Aerospace Center (DLR), Germany

TH3.01.2 13:50
TANDEM-X: SCIENCE ACTIVITIES
Irena Hajnsek, ETH Zurich / German Aerospace Center (DLR), Germany; Thomas E. Busche, German Aerospace Center (DLR), Germany

TH3.01.3 14:10
TANDEM-X GLOBAL DEM QUALITY STATUS AND ACQUISITION COMPLETION
Benjamin Bräutigam, Markus Bachmann, Daniel Schulze, Daniela Borla Tridon, Paola Rizzoli, Michele Martone, Carolina Gonzalez, Manfred Zink, Gerhard Krieger, German Aerospace Center (DLR), Germany

TH3.01.4 14:30
VALIDATION OF THE ABSOLUTE HEIGHT ACCURACY OF TANDEM-X DEM FOR MODERATE TERRAIN
Birgit Wessel, Astrid Gruber, Martin Huber, Markus Breunig, Susanne Wagenbrenner, Anna Wendleder, Achim Roth, German Aerospace Center (DLR), Germany

TH3.01.5 14:50
TANDEM-X: APPLICATION OF THE DIGITAL ELEVATION MODEL
Irena Hajnsek, ETH Zurich / German Aerospace Center (DLR), Germany; Thomas E. Busche, German Aerospace Center (DLR), Germany

Thursday, July 17 | 15:40 - 17:20 | 2000-A
Session TH4.01 | Oral-Invited

TanDEM-X: Science Activities

Session Chair: Irena Hajnsek, ETH / German Aerospace Center (DLR)

TH4.01.1 15:40
ESTIMATION OF BOREAL FOREST BIOMASS FROM TWO-LEVEL MODEL INVERSION OF INTERFEROMETRIC TANDEM-X DATA
Maciej Soja, Chalmers University of Technology, Sweden; Henrik Persson, Swedish University of Agricultural Sciences, Sweden; Lars Ulander, Swedish Defence Research Agency, Sweden

TH4.01.2 16:00
TROPICAL-FOREST BIOMASS ESTIMATION WITH TANDEM-X INTERFEROMETRY
Robert Treuhaft, Jet Propulsion Laboratory, California Institute of Technology, United States; Fabio Goncalves, Woods Hole Research Center, Brazil; Soren Madsen, Jet Propulsion Laboratory, California Institute of Technology, United States; Joao Roberto dos Santos, INPE, Brazil; Michael Keller, USDA Forest Service, Brazil; Michael Palace, Franklin Sullivan, University of New Hampshire, United States; Paulo Maurício Lima De Alencastro Graca, INPA, Brazil

TH4.01.3 16:20
LAVA DISCHARGE RATES DETERMINED FROM TANDEM-X IMAGERY FROM KĪLAUEA VOLCANO, HAWAI'I
Michael P. Poland, U.S. Geological Survey, United States

TH4.01.4 16:40
SAMPLING OF THE X-BAND OCEAN BACKSCATTER AUTOCORRELATION FUNCTION WITH TANDEM-X
Roland Romeiser, University of Miami, United States; Hartmut Runge, German Aerospace Center (DLR), Germany

TH4.01.5 17:00
A 2008-2013 TIME SERIES OF TANDEM-X & WORLDVIEW-1/2 STEREO DEMS FOR JAKOBSHAVN ISBRAE, GREENLAND
David Shean, Ian Joughin, University of Washington, United States; Dana Floricioiu, German Aerospace Center (DLR), Germany; Ben Smith, University of Washington, United States; Zachary Moratto, Oleg Alexandrov, NASA Ames Research Center, United States; Paul Morin, Claire Porter, University of Minnesota, United States

Thursday, July 17 | 08:20 - 10:00 | 2000-B
Session TH1.02 | Oral-Invited

ALOS-2 / ALOS

Session Chair: Masanobu Shimada, Japan Aerospace Exploration Agency

TH1.02.1 08:20 **ALOS-2 LAUNCH AND EARLY ORBIT OPERATION RESULT**
Yoshihisa Arikawa, Hideki Saruwatari, Yasushi Hatooka, Shinichi Suzuki, Japan Aerospace Exploration Agency, Japan

TH1.02.2 08:40 **PALSAR-2 LAUNCH AND EARLY ORBIT STATUS**
Yukihiro Kankaku, Masakazu Sagisaka, Shinichi Suzuki, Japan Aerospace Exploration Agency, Japan

TH1.02.3 09:00 **PALSAR-2 INITIAL MISSION CHECK**
Y. Yokota, Yu Okada, S. Nakamura, K. Iribe, M. Tsuji, K. Hariu, Mitsubishi Electric, Japan; Yukihiro Kankaku, S. Suzuki, Masanobu Shimada, Japan Aerospace Exploration Agency, Japan

TH1.02.4 09:20 **ALOS-2 ORBIT CONTROL AND DETERMINATION**
Yoshihisa Arikawa, Toru Yamamoto, Yoshinori Kondoh, Kyohei Akiyama, Hiroyuki Itoh, Shinichi Suzuki, Japan Aerospace Exploration Agency, Japan

TH1.02.5 09:40 **CALIBRATION AND VALIDATION OF PI-SAR-L2 AND CROSS-CALIBRATION WITH ALOS-2/PALSAR-2**
Masanobu Shimada, Manabu Watanabe, Takeshi Motooka, Masato Ohki, Japan Aerospace Exploration Agency, Japan

Thursday, July 17 | 10:30 - 12:10 | 2000-B
Session TH2.02 | Oral

Classification of Hyperspectral Data I

Session Co-Chairs: Jon Atli Benediktsson, University of Iceland; Karl Staenz, University of Lethbridge

TH2.02.1 10:30 **GRAPH-CUT-BASED MODEL FOR SPECTRAL-SPATIAL CLASSIFICATION OF HYPERSPECTRAL IMAGES**
Yuliya Tarabalka, Aakanksha Rana, Inria Sophia-Antipolis Méditerranée, France

TH2.02.2 10:50 **REGULARIZED COLLABORATIVE REPRESENTATION WITH DIFFERFENT SIMILARITY MEASURES FOR HYPERSPECTRAL IMAGE CLASSIFICATION**
Mingming Xiong, Wei Li, Beijing University of Chemical Technology, China; Qian Du, Mississippi State University, United States

TH2.02.3 11:10 **NON-PARAMETRIC FUNCTIONAL METHODS FOR HYPERSPECTRAL IMAGE CLASSIFICATION**
Anthony Zullo, INRA, France; Mathieu Fauvel, INP TOULOUSE, France; Frédéric Ferraty, University of Toulouse, France; Michel Goulard, INRA, France; Philippe Vieu, University of Toulouse, France

TH2.02.4 11:30 **MARKOV RANDOM FIELD WITH HOMOGENEOUS AREAS PRIORS FOR HYPERSPECTRAL IMAGE CLASSIFICATION**
Yang Xu, Zebin Wu, Zhihui Wei, Nanjing University of Science and Technology, China

TH2.02.5 11:50 **SPECTRAL-SPATIAL HYPERSPECTRAL CLASSIFICATION VIA SHAPE-ADAPTIVE SPARSE REPRESENTATION**
Wei Fu, Shutao Li, Leyuan Fang, Xudong Kang, Hunan University, China; Jón Atli Benediktsson, University of Iceland, Iceland

Thursday, July 17 | 13:30 - 15:10 | 2000-B
Session TH3.02 | Oral

Classification of Hyperspectral Data II

Session Chair: Derek Peddle, University of Lethbridge

TH3.02.1 13:30 **SPECTRAL PARTITIONING FOR HYPERSPECTRAL REMOTE SENSING IMAGE CLASSIFICATION**
Yi Liu, University of Extremadura, Spain; Jun Li, Sun Yat-Sen University, China; Antonio Plaza, University of Extremadura, Spain; Jose Bioucas-Dias, Universidade Técnica de Lisboa, Portugal; Aurora Cuartero, Pablo Garcia Rodriguez, University of Extremadura, Spain

TH3.02.2 13:50 **COMPARATIVE STUDY OF FEATURE SPACE PROJECTION METHODS FOR HYPERSPECTRAL IMAGE CLASSIFICATION**
Fan Li, Alexander Wong, David Clausi, University of Waterloo, Canada

TH3.02.3 14:10 **APPLYING AUTOMATIC KERNEL PARAMETER SELECTION METHOD TO THE FULL BANDWIDTH RBF KERNEL FUNCTION FOR HYPERSPECTRAL IMAGE CLASSIFICATION**
Kai-Ching Chen, Cheng-Hsuan Li, Bor-Chen Kuo, Min-Shian Wang, National Taichung University of Education, Taiwan

TH3.02.4 14:30 **COALITION GAME THEORY BASED FEATURE SUBSET SELECTION FOR HYPERSPECTRAL IMAGE CLASSIFICATION**
Prudhvi Gurram, Heesung Kwon, U.S. Army Research Laboratory, United States

TH3.02.5 14:50 **HYPERSPECTRAL IMAGE CLASSIFICATION USING SPARSE REPRESENTATION-BASED CLASSIFIER**
Yufang Tang, Xueming Li, Beijing University of Posts and Telecommunications, China; Yan Xu, Shandong Normal University, China; Yang Liu, Jizhe Wang, Chenyu Liu, Beijing University of Posts and Telecommunications, China; Shuchang Liu, Chenyu Liu, Beijing University of Posts and Telecommunications, China

Thursday, July 17 | 15:40 - 17:20 | 2000-B
Session TH4.02 | Oral

Spectral Unmixing and Feature Extraction in Hyperspectral Images

Session Co-Chairs: Mario Parente, University of Massachusetts Amherst; Josée Lévesque, Defense R&D Canada

TH4.02.1 15:40 **MULTIPLE ENDMEMBER SPECTRAL UNMIXING WITHIN A MULTI-TASK FRAMEWORK**
Tatsumi Uezato, Richard J. Murphy, Arman Melkumyan, Anna Chlingaryan, Sven Schneider, The University of Sydney, Australia

TH4.02.2 16:00 **SEMI-SUPERVISED HYPERSPECTRAL UNMIXING**
Jakob Sigurdsson, Magnus O. Ulfarsson, Johannes R. Sveinsson, University of Iceland, Iceland

TH4.02.3 16:20 **RECURSIVE UNSUPERVISED FULLY CONSTRAINED LEAST SQUARES METHODS**
Shih-Yu Chen, University of Maryland Baltimore County, United States; Yen-Chieh Ouyang, National Chung Hsing University, Taiwan; Chein-I Chang, University of Maryland Baltimore County, United States

TH4.02.4 16:40 **ENDMEMBER-SPECIFIED VIRTUAL DIMENSIONALITY IN HYPERSPECTRAL IMAGERY**
Liaoying Zhao, Hangzhou Dianzi University, China; Chein-I Chang, Shih-Yu Chen, University of Maryland Baltimore County, United States; Chao-Cheng Wu, National Taipei University of Technology, Taiwan; Mingyang Fan, Hangzhou Dianzi University, China

TH4.02.5 17:00 **AN ICA BASED APPROACH TO HYPERSPECTRAL IMAGE FEATURE REDUCTION**
Nicola Falco, University of Iceland / University of Trento, Iceland; Lorenzo Bruzzone, University of Trento, Italy; Jón Atli Benediktsson, University of Iceland, Iceland

Thursday, July 17 08:20 - 10:00 2000-C
Session TH1.03 Oral

PolSAR Decomposition and Classification

Session Co-Chairs: Yoshio Yamaguchi, Niigata University; Jong-Sen Lee, Naval Research Laboratory

TH1.03.1 08:20 **ORIENTATION ANGLE ESTIMATION FROM POLSAR DATA USING A STOCHASTIC DISTANCE**
Avik Bhattacharya, Arnab Muhuri, Shaunak De, Indian Institute of Technology Bombay, India; Alejandro C. Frery, Universidade Federal de Alagoas, Brazil

TH1.03.2 08:40 **AN IMPROVED CLASSIFICATION METHOD FOR POLARIMETRIC SAR IMAGE BASED ON SCATTERING MODEL AND POLARIZATION ORIENTATION ANGLE FEATURE**
Jianbo Wang, Hong Zhang, Chao Wang, Fan Wu, Bo Zhang, Meng Liu, Key Laboratory of Digital Earth Sciences, Institute of Remote Sensing and Digital Earth, CAS, China

TH1.03.3 09:00 **FRACTAL DIMENSION ESTIMATION FROM FULLY POLARIMETRIC SAR DATA**
Gerardo Di Martino, Giorgio Franceschetti, Antonio Iodice, Daniele Riccio, Giuseppe Ruello, Università di Napoli Federico II, Italy; Ivana Zinno, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (IREA), Italy

TH1.03.4 09:20 **APPLYING THE FREEMAN-DURDEN DECOMPOSITION TO COMPACT POLARIMETRIC SAR INTERFEROMETRY**
Shenglong Guo, Yang Li, Qiang Yin, Institute of Electronics, Chinese Academy of Sciences, China; Hao Chen, Ashlin Richardson, Pacific Forestry Centre, Canadian Forest Service, Canada; Wen Hong, Institute of Electronics, Chinese Academy of Sciences, China

TH1.03.5 09:40 **ANALYSIS OF POLARIMETRIC FEATURES FROM CTLR COMPACT POLARIMETRIC SAR DATA FOR DISCRIMINATING OIL SLICK DAMPING STATUS**
Yu Li, Hui Lin, Yuanzhi Zhang, The Chinese University of Hong Kong, Hong Kong SAR of China; Jie Chen, BeiHang University, Hong Kong SAR of China

Thursday, July 17 10:30 - 12:10 2000-C
Session TH2.03 Oral

Physiological State/Foliar Chemistry

Session Chair: Dar Roberts, University of California, Santa Barbara

TH2.03.1 10:30 **ACTUAL EVAPOTRANSPIRATION AND ITS RELATION WITH FLORISTIC COMPOSITION AND TOPOGRAPHICAL FEATURES IN AN ARID WATERSHED**
Mauricio Galleguillos, Javiera Ulloa-Pino, Nicolás Muñoz-Toro, Jorge F. Pérez-Quezada, Universidad de Chile, Chile

TH2.03.2 10:50 **OPTIMAL SEGMENTATION OF CLASSIFICATION AND PREDICTION MAPS FOR MONITORING FOREST CONDITION WITH SPECTRAL AND SPATIAL INFORMATION FROM HYPERSPECTRAL DATA**
Taichi Takayama, Akira Iwasaki, The University of Tokyo, Japan; Osamu Kashimura, Japan Space Systems, Japan

TH2.03.3 11:10 **SOIL MOISTURE AND VEGETATION WATER CONTENT RETRIEVAL USING QUIKSCAT DATA**
Shadi Oveisgharan, Ziad Haddad, Joe Turk, Ernesto Rodriguez, Jet Propulsion Laboratory, United States; Li Li, Naval Research Laboratory, United States

TH2.03.4 11:30 **A POLARIMETRIC RADAR CLIMATOLOGY OF PRAIRIE VEGETATION**
Joseph Buckley, Royal Military College of Canada, Canada

TH2.03.5 11:50 **IMPROVED WINTER LEAF AREA INDEX ESTIMATION OF EVERGREEN CONIFEROUS FORESTS OVER CANADA AND ITS IMPACT ON LAND SURFACE ALBEDO**
Rong Wang, Jing Ming Chen, University of Toronto, Canada

Thursday, July 17 13:30 - 15:10 2000-C
Session TH3.03 Oral

Land Use and Land Cover Change I

Session Chair: Miguel Roman, NASA Goddard Space Flight Center

TH3.03.1 13:30 **RE-EVALUATION OF TOPOGRAPHIC ATTRIBUTES WITH HUMAN POPULATION IN DEFORESTATION FRAMEWORK WITH SPATIAL DEPENDENCY**
Shojiro Tanaka, Shimane University, Japan; Ryuei Nishii, Kyushu University, Japan

TH3.03.2 13:50 **QUANTITATIVE FLOOD ASSESSMENT: CASE STUDY OF FLOODS IN GERMANY**
Corneliu Octavian Dumitru, Shiyong Cui, Mihai Datcu, German Aerospace Center (DLR), Germany

TH3.03.3 14:10 **WETLAND LANDSCAPE ANALYSIS USING POLARIMETRIC RADARSAT-2 DATA**
Guozhuang Shen, Jingjuan Liao, Lu Zhang, Xinwu Li, Institute of Remote Sensing and Digital Earth, CAS, China

TH3.03.4 14:30 **EXTRACTION OF EXPOSED CARBONATITE IN KARST DESERTIFICATION AREA USING CO-LOCATION DECISION TREE**
Guoqing Zhou, Rongting Zhang, Yujun Shi, Chengjie Su, Yilong Liu, Hongbo Yan, Guilin University of Technology, China

TH3.03.5 14:50 **THE IMPACT OF LAND COVER CHANGE ON PATTERNS OF ZOOGEOMORPHOLOGICAL INFLUENCE: CASE STUDY OF ZOOGEOMORPHIC ACTIVITY OF MICROTUS BRANDTI AND ITS ROLE IN DEGRADATION OF MONGOLIAN STEPPE**
Buho Hoshino, Ganzorig Sumiya, Rakuno Gakuen University, Japan; Marie Sawamukai, VisionTech Inc, Tsukuba, Japan; Kenji Kawashima, Zukosha Co. Ltd, Obihiro, Japan, Japan; Kenji Baba, Rakuno Gakuen University, Japan; Kenji Kai, Nagoya University, Japan; Nurtazin Sabyr, Al-Farabi Kazakh National University, Kazakhstan

Thursday, July 17 15:40 - 17:20 2000-C
Session TH4.03 Oral

Land Use and Land Cover Change II

Session Co-Chairs: Richard Fernandes, Natural Resources Canada; Rene Colditz, National Commission for the Knowledge and Use of Biodiversity

TH4.03.1 15:40 **ASSESSMENT OF SATELLITE BASED VEGETATION LAND SURFACE PHENOLOGY ALGORITHMS WITH APPLICATION TO A 20 YEAR NOAA AVHRR RECORD OVER CANADA AND NORTHERN USA.**
Sivasathivel Kandasamy, Postdoctoral Researcher, Canada; Richard Fernandes, Research Scientist, Canada

TH4.03.2 16:00 **MONITORING RANGELAND DEGRADATION ON THE "THREE RIVER HEADWATERS" REGION IN 1990 AND 2004, QINGHAI, CHINA**
Ru An, Zhe Wang, Hohai University, China; Huilin Wang, Nanjing University, China; Hong Wu, Jonathan Arthur Quaye-Ballard, Hohai University, China

TH4.03.3 16:20 **LAND, CRYOSPHERE, AND NIGHTTIME ENVIRONMENTAL PRODUCTS FROM SUOMI NPP VIIRS: OVERVIEW AND STATUS**
Miguel Roman, NASA Goddard Space Flight Center, United States; Chris Justice, University of Maryland, United States; Ivan Csiszar, NOAA/NESDIS/STAR, United States

TH4.03.4 16:40 **UPDATING THE NEW FRENCH NATIONAL LAND COVER DATABASE**
Adrien Gressin, Clément Mallet, Nicole Vincent, Nicolas Paparoditis, IGN, France

TH4.03.5 17:00 **ADVANCED INTERFEROMETRY AND SURFACE RECONSTRUCTION TECHNIQUES FOR URBAN DSM FROM HIGH RESOLUTION SATELLITE SAR ACQUISITIONS**
Mario Costantini, Salvatore Falco, Fabio Malvarosa, Claudio Mammone, Federico Minati, Francesco Trillo, Francesco Vecchioli, e-GEOS - an ASI/Telespazio Company, Italy

Thursday, July 17 | 08:20 - 10:00 | 2000-D
Session TH1.04 | Oral

Data Mining and Classification

Session Co-Chairs: Lorenzo Bruzzone, University of Trento; Devis Tuia, École Polytechnique Fédérale de Lausanne

TH1.04.1 08:20 **KNOWLEDGE-DRIVEN IMAGE MINING SYSTEM FOR BIG EARTH OBSERVATION DATA FUSION: GIS MAPS INCLUSION IN ACTIVE LEARNING STAGE**
Kevin Alonso, Mihai Datcu, German Aerospace Center (DLR), Germany

TH1.04.2 08:40 **KERNEL-BASED HASHING FOR CONTENT-BASED IMAGE RETRIEVAL IN LARGE REMOTE SENSING DATA ARCHIVES**
Begüm Demir, Lorenzo Bruzzone, University of Trento, Italy

TH1.04.3 09:00 **WEAKLY SUPERVISED ALIGNMENT OF IMAGE MANIFOLDS WITH SEMANTIC TIES**
Devis Tuia, Lausanne EPFL, Switzerland

TH1.04.4 09:20 **MANIFOLD REGRESSION FOR SUBSURFACE CONTAMINANT CHARACTERIZATION BASED ON SPARSE CONCENTRATION DATA**
Hao Zhang, Eric Miller, Linda Abriola, Tufts University, United States

TH1.04.5 09:40 **A NOVEL RELEARNING APPROACH FOR REMOTE SENSING IMAGE CLASSIFICATION POST-PROCESSING**
Xin Huang, Qikai Lu, Wuhan University, China

Thursday, July 17 | 10:30 - 12:10 | 2000-D
Session TH2.04 | Oral

Feature Selection and Classification

Session Chair: Melba Crawford, Purdue University

TH2.04.1 10:30 **RECURSIVE FEATURE SELECTION BASED ON NON-PARALLEL SVMS AND ITS APPLICATION TO HYPERSPECTRAL IMAGE CLASSIFICATION**
Gulsen Taskin Kaya, Yucel Torun, Caglar Kucuk, Istanbul Technical University, Turkey

TH2.04.2 10:50 **RELEVANT AND INVARIANT FEATURE SELECTION OF HYPERSPECTRAL IMAGES FOR DOMAIN GENERALIZATION**
Claudio Persello, Lorenzo Bruzzone, University of Trento, Italy

TH2.04.3 11:10 **WAVELET DOMAIN ACTIVE LEARNING FOR ROBUST CLASSIFICATION OF FULL-WAVEFORM LIDAR DATA**
Xiong Zhou, Saurabh Prasad, University of Houston, United States; Melba Crawford, Purdue University, United States

TH2.04.4 11:30 **SVDD-BASED ONE-CLASS LAND-COVER MAPPING USING OPTIMAL TRAINING SAMPLES**
Muyi Li, Xiufang Zhu, Jianyu Gu, Guanyuan Shuai, Anzhou Zhao, Tong Zhou, Yaozhong Pan, Beijing Normal University, China

TH2.04.5 11:50 **HIGH PERFORMANCE SIFT FEATURE CLASSIFICATION OF VHR SATELLITE IMAGERY FOR DISASTER MANAGEMENT**
Ujwala Bhangale Chaudhari, Surya Durbha, Indian Institute of Technology Bombay, India

Thursday, July 17 | 13:30 - 15:10 | 2000-D
Session TH3.04 | Oral

Feature Extraction

Session Chair: Mario Parente, University of Massachusetts Amherst

TH3.04.1 13:30 **RETRIEVAL OF LAND SURFACE TEMPERATURE FROM LANDSAT 8 DATA USING SPLIT WINDOW ALGORITHM**
Chen Du, Huazhong Ren, Qiming Qin, Jinjie Meng, Jing Li, Peking University, China

TH3.04.2 13:50 **URBAN AREA MONITORING BY SEQUENTIAL PATTERNS EXTRACTED FROM MULTI-TEMPORAL SATELLITE DATA USING CONNECTIVITY MEASURES**
Andreea Julea, European Commission, Joint Research Centre, Institute for the Protection and Security of the Citizen, Italy; Teodor Julea, Cristian Ionescu, Institute of Space Science, Romania; Delia Teleaga, Valentin Poncos, Advanced Studies and Research Center, Romania

TH3.04.3 14:10 **TO DERIVE BRDF ARCHETYPES FROM POLDER-3 BRDF DATABASE**
Ziti Jiao, Yadong Dong, Hu Zhang, Xiaowen Li, Beijing Normal University, China

TH3.04.4 14:30 **NDVI DIGITAL CAMERA FOR MONITORING ARCTIC VEGETATION**
Sylvain Leblanc, Wenjun Chen, Matthew Maloley, Natural Resources Canada, Canada; Elyn Humphreys, Claire Elliott, Carleton University, Canada

TH3.04.5 14:50 **GRAPH CENTRALITY FOR HYPERSPECTRAL IMAGE UNMIXING: A NEW LOOK**
Neda Rohani, Mario Parente, University of Massachusetts Amherst, United States

Thursday, July 17 | 15:40 - 17:20 | 2000-D
Session TH4.04 | Oral

Object Detection and Recognition

Session Co-Chairs: Sebastiano Serpico, University of Genoa; Alberto Refice, ISSIA CNR

TH4.04.1 15:40 **FOREST ROAD EXTRACTION FROM THE COMBINED LIDAR AND OPTICAL IMAGERY**
Baoxin Hu, Jili Li, Xinqu Chen, York University, Canada; Lauren Quist, Hearst Forest management Inc, Canada

TH4.04.2 16:00 **DETECTING FLOODS ACCURATELY IN SAR IMAGES WITHOUT THE INTERFERENCE OF THE REFERENCE IMAGE**
Jun Lu, National University of Defense Technology, China; Jonathan Li, University of Waterloo, Canada; Min Lu, Zhiyong Li, Boli Xiong, Gangyao Kuang, National University of Defense Technology, China

TH4.04.3 16:20 **A BAYESIAN NETWORK FOR FLOOD DETECTION**
Annarita D'Addabbo, Alberto Refice, Guido Pasquariello, Fabio Bovenga, ISSIA CNR, Italy; Maria Teresa Chiaradia, University of Bari, Italy; Davide Oscar Nitti, GAP University of Bari, Italy

TH4.04.4 16:40 **RECURSIVE AUTOMATIC TARGET GENERATION PROCESS FOR UNSUPERVISED HYPERSPECTRAL TARGET DETECTION**
Cheng Gao, Chein-I Chang, University of Maryland Baltimore County, United States

TH4.04.5 17:00 **CONTEXT BASED MULTIPLE RAILWAY OBJECT RECOGNITION FROM MOBILE LASER SCANNING DATA**
Chao Luo, Yoonseok Jwa, Gunho Sohn, York University, Canada

Thursday, July 17 | 08:20 - 10:00 | 205-AB
Session TH1.05 | Oral-Invited

L-band Remote Sensing of the Cryosphere using SMOS, Aquarius, and SMAP Radiometers I

Session Co-Chairs: Ludovic Brucker, NASA Goddard Space Flight Center; Edward Kim, NASA

TH1.05.1 08:20
UNDERSTANDING SMOS DATA IN ANTARCTICA
Giovanni Macelloni, Marco Brogioni, IFAC-CNR, Italy; Mustafa Aksoy, Joel T. Johnson, Kenneth C. Jezek, The Ohio State University, United States; Mark R. Drinkwater, European Space Agency (ESA) / ESTEC, Netherlands

TH1.05.2 08:40
L-BAND BRIGHTNESS TEMPERATURE VARIATIONS AT DOME C AND SNOW METAMORPHISM AT THE SURFACE
Ludovic Brucker, NASA Goddard Space Flight Center / USRA GESTAR, United States; Emmanuel Dinnat, NASA Goddard Space Flight Center / Chapman University, United States; Ghislain Picard, Nicolas Champollion, Uni. Grenoble Alpes/CNRS, LGGE, France

TH1.05.3 09:00
MAPPING OF THE DOME-C AREA IN ANTARCTICA BY AN AIRBORNE L-BAND RADIOMETER
Niels Skou, Steen Savstrup Kristensen, Sten Schmidl Søbjærg, Jan E. Balling, Technical University of Denmark, Denmark

TH1.05.4 09:20
AN EXAMINATION OF MULTI-FREQUENCY MICROWAVE RADIOMETRY FOR PROBING SUBSURFACE ICE SHEET TEMPERATURES
Mustafa Aksoy, Joel T. Johnson, Kenneth C. Jezek, Michael Durand, The Ohio State University, United States; Mark R. Drinkwater, European Space Agency (ESA), Netherlands; Giovanni Macelloni, Institute of Applied Physics RAS, Italy; Leung Tsang, University of Washington, United States

TH1.05.5 09:40
AQUARIUS RADIOMETER AND SCATTEROMETER WEEKLY-POLAR-GRIDDED PRODUCTS TO MONITOR ICE SHEETS, SEA ICE, AND FROZEN SOIL
Ludovic Brucker, NASA Goddard Space Flight Center / USRA GESTAR, United States; Emmanuel Dinnat, NASA Goddard Space Flight Center / Chapman University, United States; Lora Koenig, NASA Goddard Space Flight Center, United States

Thursday, July 17 | 10:30 - 12:10 | 205-AB
Session TH2.05 | Oral-Invited

L-band Remote Sensing of the Cryosphere using SMOS, Aquarius, and SMAP Radiometers II

Session Chair: Ludovic Brucker, NASA Goddard Space Flight Center

TH2.05.1 10:30
SOIL FREEZE/THAW DETECTION ALGORITHM FOR GLOBAL L-BAND RADIOMETER DATA
Kimmo Rautiainen, Juha Lemmetyinen, Jaakko Ikonen, Finnish Meteorological Institute, Finland; Mike Schwank, Christian Mätzler, Andreas Wiesmann, GAMMA Remote Sensing AG, Switzerland; Tuomo Smolander, Kari Luojus, Jouni Pulliainen, Finnish Meteorological Institute, Finland

TH2.05.2 10:50
L-BAND BRIGHTNESS TEMPERATURE ANALYSIS FROM SMOS AND AQUARIUS DATA FOR SOIL FREEZING AND THAWING PROCESS STUDY OVER NORTHERN CANADA
Alexandre Roy, Université de Sherbrooke, Canada; Ludovic Brucker, NASA Goddard Space Flight Center, United States; Alain Royer, Benoit Montpetit, Université de Sherbrooke, Canada; Arnaud Mialon, CESBIO / CNES, France; Alexandre Langlois, Université de Sherbrooke, Canada; Chris Derksen, Environment Canada, Canada; Yann H. Kerr, CESBIO / CNES, France

TH2.05.3 11:10
FREEZE/THAW DETECTION BASED ON AQUARIUS' L-BAND PASSIVE/ACTIVE DATA
Xiaolan Xu, Simon Yueh, Jet Propulsion Laboratory, United States

TH2.05.4 11:30
SEA ICE THICKNESS RETRIEVAL USING AQUARIUS DATA
Paolo de Matthaeis, NASA Goddard Space Flight Center, United States; Alexis Moyer, University of British Columbia, Canada; Cuneyt Utku, NASA Goddard Space Flight Center, United States

TH2.05.5 11:50
RESPONSE OF PASSIVE MICROWAVE SEA ICE CONCENTRATION ALGORITHMS TO THIN ICE
Georg Heygster, Marcus Huntemann, University of Bremen, Germany; Natalia Ivanova, Nansen Environmental Resarch Center, Norway; Roberto Saldo, Leif Toudal Pedersen, Danish Meteorological Institute, Denmark

Thursday, July 17 | 13:30 - 15:10 | 205-AB
Session TH3.05 | Oral-Invited

Earth Remote Sensing with Small Satellites: Missions

Session Co-Chairs: Boon Lim, Jet Propulsion Laboratory; William Blackwell, MIT Lincoln Laboratory

TH3.05.1 13:30
THE RADIOMETER ATMOSPHERIC CUBESAT EXPERIMENT PRELAUNCH TESTING RESULTS
Boon Lim, Jessica Clark, Kenneth Donahue, Alexander Kadesch, Jet Propulsion Laboratory, United States; Glenn Lightsey, UT Austin, United States; Sidharth Misra, Shannon Statham, Joel Steinkraus, Jet Propulsion Laboratory, United States

TH3.05.2 13:50
THE MICROMAS CUBESAT MISSION: A PATHFINDER FOR ATMOSPHERIC CONSTELLATION SENSING
William Blackwell, Greg Allen, Chris Galbraith, R. Vincent Leslie, Idahosa Osaretin, Michael Scarito, Michael Shields, Erik Thompson, David Toher, David Townzen, Anne Vogel, Massachusetts Institute of Technology - Lincoln Laboratory, United States; Kerri Cahoy, Massachusetts Institute of Technology - Space Systems Laboratory, United States; Neal Erickson, University of Massachusetts Amherst, United States

TH3.05.3 14:10
THE CYGNSS MICROSATELLITE CONSTELLATION EARTH VENTURE MISSION
Randall Rose, Southwest Research Institute, United States; Christopher Ruf, University of Michigan, United States; William Wells, Debra Rose, Southwest Research Institute, United States; Kyle Nave, Applied Defense Solutions, United States; Jeremy Pruitt, John Dickinson, Southwest Research Institute, United States

TH3.05.4 14:30
THE COMPACT OCEAN WIND VECTOR RADIOMETER: A NEW CLASS OF LOW-COST CONICALLY SCANNING SATELLITE MICROWAVE RADIOMETER SYSTEM
Shannon T. Brown, NASA Jet Propulsion Laboratory, United States; Paolo Focardi, Amarit Kitiyakara, Frank Maiwald, Oliver Montes, Sharmila Padmanabhan, Richard Redick, Damon Russell, James Wincentsen, Jet Propulsion Laboratory, United States

TH3.05.5 14:50
THE NEMO-AM MISSION: EARTH OBSERVATION AND AEROSOL MONITORING ON A NANOSATELLITE PLATFORM
Simon Grocott, Najmus Ibrahim, Dumitru Diaconu, Mark Dwyer, Jennifer Elliott, Daniel Kekez, Imran Majid, Freddy Pranajaya, Mirela Stan, Robert Zee, Space Flight Laboratory, Canada

Thursday, July 17 | 15:40 - 17:20 | 205-AB
Session TH4.05 | Oral-Invited

Earth Remote Sensing with Small Satellites: Technology Developments

Session Co-Chairs: William Blackwell, MIT Lincoln Laboratory; Boon Lim, Jet Propulsion Laboratory

TH4.05.1 15:40
FOREST FIRES, SUNGLINT, AND A SOLAR ECLIPSE: RESPONSIVE REMOTE SENSING WITH AEROCUBE-4
Joseph Gangestad, Darren Rowen, Brian Hardy, The Aerospace Corporation, United States

TH4.05.2 16:00
RECENT ADVANCES IN MILLIMETER-WAVE SIGE RADIOMETER COMPONENTS FOR SMALL SATELLITES
Christopher T. Coen, Peter Song, A. ?agri Ulusoy, John D. Cressler, Georgia Institute of Technology, United States

TH4.05.3 16:20
A STRATOSPHERIC BALLOON GNSS-R EXPERIMENT: THE 3CAT-2 PROJECT IN DLR/SNSB BEXUS
Hugo Carreno-Luengo, Adriano Camps Carmona, Jorge Querol, Giuseppe F. Forte Veliz, Raúl Onrubia Ibáñez, Raúl Díez, Universitat Politècnica de Catalunya/Institut d'Estudis Espacials de Catalunya, Spain

TH4.05.4 16:40
OVERVIEW OF HODOYOSHI MICROSATELLITES FOR REMOTE SENSING AND ITS FUTURE PROSPECT
Korehiro Maeda, Chiba University, Japan; Shinichi Nakasuka, The University of Tokyo, Japan

TH4.05.5 17:00
MILLIMETER AND SUBMILLIMETER WAVE REMOTE SENSING USING SMALL SATELLITES
Negar Ehsan, Jaime Esper, Jeffrey Piepmeier, Paul Racette, Dong Wu, NASA Goddard Space Flight Center, United States

Thursday, July 17 08:20 - 10:00 206-A
Session TH1.06 Oral

Soil Moisture Algorithms

Session Co-Chairs: Tianjie Zhao, Chinese Academy of Sciences and Beijing Normal University; Ruzbeh Akbar, University of Southern California; Delphine Leroux, Centre D'Etudes Spatiales de la Biosphère (CESBIO) / NASA Jet Propulsion Laboratory, California Institute of Technology

TH1.06.1 08:20 **DISAGGREGATION OF BRIGHTNESS TEMPERATURES USING RADAR OBSERVATIONS DURING THE SMAPVEX12 CAMPAIGN**
Delphine Leroux, Jet Propulsion Laboratory / CESBIO, France; Narendra Das, Jet Propulsion Laboratory, United States; Dara Entekhabi, Massachusetts Institute of Technology, United States; Eni Njoku, Jet Propulsion Laboratory, United States

TH1.06.2 08:40 **RADAR-RADIOMETER SOIL MOISTURE ESTIMATION WITH JOINT PHYSICS AND ADAPTIVE REGULARIZATION IN SUPPORT OF SMAP**
Ruzbeh Akbar, Mahta Moghaddam, University of Southern California, United States

TH1.06.3 09:00 **ANALYSIS OF ERRORS AND NOISE IN THE DIAGGREGATED BRIGHTNESS TEMPERATURE OF L2_SM_AP PRODUCT FROM THE SOIL MOISTURE ACTIVE PASSIVE (SMAP) MISSION**
Narendra Das, Jet Propulsion Laboratory, United States; Dara Entekhabi, Massachusetts Institute of Technology, United States; Eni Njoku, Simon Yueh, Jet Propulsion Laboratory, United States

TH1.06.4 09:20 **SOIL MOISTURE AND SOIL FREEZE RETRIEVAL USING MICROWAVE RADARS**
Tuomo Smolander, Jouni Pulliainen, Juha Lemmetyinen, Kimmo Rautiainen, Finnish Meteorological Institute, Finland

TH1.06.5 09:40 **SOIL MOISTURE RETRIEVAL OVER GRASSLAND USING X-BAND SAR DATA**
Mohamad El-Hajj, Nicolas Baghdadi, UMR TETIS/IRSTEA, France; Gilles Belaud, UMR G-EAU/SupAgro, France; Mehrez Zribi, CESBIO / CNRS-UPS-IRD-CNES, France; Bruno Cheviron, UMR G-EAU/IRSTEA, France; Dominique Courault, UMR 1114 EMMAH/INRA, France; François Charron, UMR G-EAU/SupAgro, France

THU 17

Thursday, July 17 10:30 - 12:10 206-A
Session TH2.06 Oral

Soil Moisture Experiments

Session Co-Chairs: Seungbum Kim, NASA Jet Propulsion Laboratory, California Institute of Technology; Jasmeet Judge, University of Florida

TH2.06.1 10:30 **SENSITIVITY OF L-BAND PASSIVE MICROWAVE AIRBORNE DATA TO SOIL MOISTURE OVER CANADIAN BOREAL FOREST: INFLUENCE OF LITTER AND UNDERSTORY LAYERS**
Amirouche Benchallal, Ramata Magagi, Kalifa Goïta, Université de Sherbrooke, Canada

TH2.06.2 10:50 **IMPACTS OF SOIL MOISTURE DISTRIBUTION AND DYNAMIC VEGETATION PARAMETERS ON ACTIVE AND PASSIVE SIGNATURES AT L-BAND FOR GROWING CORN**
Pang-Wei Liu, University of Florida, United States; Alejandro Monsivais-Huertero, National Polytechnic Institute, Mexico; Roger DeRoo, Anthony England, University of Michigan, United States; Jasmeet Judge, Tara Bongiovanni, Subit Chakrabarti, University of Florida, United States

TH2.06.3 11:10 **FEASIBILITY OF INTER-COMPARING AIRBORNE AND SPACEBORNE OBSERVA-TIONS OF RADAR BACKSCATTERING COEFFICIENTS**
Seung-Bum Kim, Jet Propulsion Laboratory, California Institute of Technology, United States; Thomas Jackson, USDA ARS, United States; Simon Yueh, Richard West, Jet Propulsion Laboratory, United States

TH2.06.4 11:30 **SPECTRAL REFLECTANCE OF DRYING, SANDY SOILS**
William Philpot, Cornell University, United States

TH2.06.5 11:50 **A SYSTEM FOR HIGH RESOLUTION SUAS-BASED PASSIVE MICROWAVE L-BAND IMAGING OF SOIL MOISTURE AND SALINITY**
Albin Gasiewski, University of Colorado at Boulder, United States; Maciej Stachura, Jack Elston, Black Swift Technologies, United States; Eryan Dai, Eric McIntyre, University of Colorado at Boulder, United States

Thursday, July 17 13:30 - 15:10 206-A
Session TH3.06 Oral

Soil Moisture-Global and Regional

Session Chair: Brian Hornbuckle, Iowa State University

TH3.06.1 13:30 **WCOM: THE SCIENCE SCENARIO AND OBJECTIVES OF A GLOBAL WATER CYCLE OBSERVATION MISSION**
Jiancheng Shi, State Key Laboratory of Remote Sensing Science, China; Xiaolong Dong, CAS Key Laboratory of Microwave Remote Sensing, National Space Science Center, China; Tianjie Zhao, Jinyang Du, State Key Laboratory of Remote Sensing Science, China; Lingmei Jiang, School of Geography, Beijing Normal University, China; Yang Du, Zhejiang University, China; Hao Liu, Zhenzhan Wang, CAS Key Laboratory of Microwave Remote Sensing, National Space Science Center, China; Dabin Ji, Chuan Xiong, State Key Laboratory of Remote Sensing Science, China

TH3.06.2 13:50 **MONITORING MULTI-DECADAL SATELLITE EARTH OBSERVATION OF SOIL MOISTURE USING ERA-LAND GLOBAL LAND WATER RESOURCES DATASET**
Clement Albergel, ECMWF, United Kingdom; Wouter Dorigo, Vienna University of Technology, United States; Rolf Reichle, National Aeronautics and Space Administration (NASA), United States; Gianpaolo Balsamo, Patricia de Rosnay, Joaquin Muñoz-Sabater, Lars Isaksen, ECMWF, United Kingdom; Luca Brocca, National Research Council, Italy; Richard de Jeu, VU University Amsterdam, Netherlands; Wolfgang Wagner, Vienna University of Technology, Austria

TH3.06.3 14:10 **SMOS SOIL MOISTURE PRODUCT EVALUATION OVER WEST-AFRICA FROM LOCAL TO REGIONAL SCALE**
Thierry Pellarin, Samuel Louvet, Guillaume Quantin, University of Grenoble - LTHE, France; Bernard Cappelaere, University of Montpellier - HSM, France; Sylvie Galle, University of Grenoble - LTHE, France; Manuela Grippa, University of Toulouse - GET, France; Claire Gruhier, Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Eric Mougin, University of Toulouse - GET, France; Philippe Richaume, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Patricia de Rosnay, ECMWF, United Kingdom; Ahmad Al Bitar, Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France

TH3.06.4 14:30 **A MULTI-PLATFORM ASSESSMENT OF SOIL MOISTURE DYNAMICS ACROSS CONTINENTAL AUSTRALIA**
Christoph Rüdiger, Monash University, Australia; Rajat Bindlish, USDA, United States; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Toshio Koike, University of Tokyo, Japan; Wolfgang Wagner, Vienna University of Technology, Austria; Jeffrey P. Walker, Monash University, Australia

TH3.06.5 14:50 **EVALUATION OF L-BAND PASSIVE MICROWAVE SOIL MOISTURE FOR CANADA**
Catherine Champagne, Agriculture and Agri-Food Canada, Canada; Tracy Rowlandson, Aaron Berg, Travis Burns, University of Guelph, Canada; Jessika L'Heureux, Agriculture and Agri-Food Canada, Canada; Justin Adams, University of Guelph, Canada; Heather McNairn, Agriculture and Agri-Food Canada, Canada; Brenda Toth, Environment Canada, Canada

Thursday, July 17 15:40 - 17:20 206-A
Session TH4.06 Oral

Snow Cover I

Session Co-Chairs: Monique Bernier, INRS, Centre Eau Terre Environnement; Helmut Rott, University of Innsbruck

TH4.06.1 15:40 **THE USE OF COSMO-SKYMED IMAGES FOR RETRIEVING SNOW DEPTH AND SOIL MOISTURE IN MOUNTAINOUS AREAS**
Simonetta Paloscia, Emanuele Santi, Simone Pettinato, CNR-IFAC, Italy; Claudia Notarnicola, Giovanni Cuozzo, Felix Greifeneder, Giacomo Bertoldi, EURAC, Italy

TH4.06.2 16:00 **DRY SNOW ANALYSIS IN ALPINE REGIONS USING RADARSAT-2 FULL POLARIMETRY DATA. COMPARISON WITH IN SITU MEASUREMENTS**
Jean-Pierre Dedieu, Nikola Besic, Gabriel Vasile, Julien Mathieu, CNRS, France; Yves Durand, Météo-France, France; Frederic Gottardi, EDF, France

TH4.06.3 16:20 **MONITORING OF DYNAMIC CHANGES IN ALPINE SNOW WITH TERRESTRIAL RADAR IMAGERY**
Andreas Wiesmann, Rafael Caduff, Tazio Strozzi, Jessica Papke, Christian Mätzler, GAMMA Remote Sensing AG, Switzerland

TH4.06.4 16:40 **GROUND-BASED SCATTEROMETER OBSERVATIONS OF SNOW-COVERED FRESHWATER LAKE ICE USING UW-SCAT (9.6/17.2 GHZ)**
Grant Gunn, Claude R. Duguay, University of Waterloo, Canada; Giovanni Macelloni, Marco Brogioni, National Council of Research, Italy

TH4.06.5 17:00 **SNOW WATER EQUIVALENT ESTIMATION FOR A SLIGHTLY TILTED SNOW-COVERED PRAIRIE GRASS FIELD BY GPS INTERFEROMETRIC REFLECTOMETRY**
Mark Jacobson, Montana State University Billings, United States

Thursday, July 17 | 08:20 - 10:00 | 206-B
Session TH1.07 | Oral

Analysis of Hyperspectral Images

Session Co-Chairs: Nasser M. Nasrabadi, U.S. Army Research Laboratory; Björn Waske, Freie Universität Berlin

TH1.07.1 08:20 **HYPERSPECTRAL IMAGE DENOISING USING A SPARSE LOW RANK MODEL AND DUAL-TREE COMPLEX WAVELET TRANSFORM**
Frosti Palsson, Magnus O. Ulfarsson, Johannes R. Sveinsson, University of Iceland, Iceland

TH1.07.2 08:40 **HYPERSPECTRAL IMAGE CLASSIFICATION VIA TASK-DRIVEN DICTIONARY LEARNING WITH JOINT SPARSITY PRIOR**
Xiaoxia Sun, The Johns Hopkins University, United States; Nasser M. Nasrabadi, U.S. Army Research Laboratory, Adelphi, United States; Trac D. Tran, The Johns Hopkins University, United States

TH1.07.3 09:00 **SUPERPIXEL-BASED CLASSIFICATION OF HYPERSPECTRAL DATA USING SPARSE REPRESENTATION AND CONDITIONAL RANDOM FIELDS**
Ribana Roscher, Björn Waske, Freie Universität Berlin, Germany

TH1.07.4 09:20 **SPECTRAL UNMIXING USING LASSO SCREENING RULES**
Chaomin Shen, East China Normal university, China; Xiaoliang Shi, Yingying Xu, East China Normal University, China; Yaxin Peng, Shanghai University, China

TH1.07.5 09:40 **FINDING ANALYTICAL SOLUTIONS TO ABUNDANCE FULLY-CONSTRAINED LINEAR SPECTRAL MIXTURE ANALYSIS**
Hsiao-Chi Li, University of Maryland Baltimore County, United States; Meiping Song, Dalian Maritime University, United States; Chein-I Chang, University of Maryland Baltimore County, United States

Thursday, July 17 | 10:30 - 12:10 | 206-B
Session TH2.07 | Oral

Analysis of SAR Images

Session Co-Chairs: Mihai Datcu, German Aerospace Center (DLR); Antonio Iodice, Università di Napoli Federico II

TH2.07.1 10:30 **A METHOD TO IMPLEMENT SAR SLOW-TIME STAP IN BEAMFORMING STAGE OF FAST BACKPROJECTION ALGORITHM**
Viet Thuy Vu, Mats Pettersson, Blekinge Institute of Technology, Sweden; Svante Björklund, Swedish Defence Research Agency, Sweden

TH2.07.2 10:50 **SHIP DETECTION IN SAR MEDIUM RESOLUTION IMAGERY FOR MARITIME SURVEILLANCE: ALGORITHM VALIDATION USING AIS DATA**
Ramona Pelich, Télécom Bretagne; CLS, France; Nicolas Longepe, Collecte Localisation Satellites (CLS), France; Grégoire Mercier, Institut Telecom; Telecom Bretagne, France; Guillaume Hajduch, Collecte Localisation Satellites (CLS), France; Rene Garello, Télécom Bretagne, France

TH2.07.3 11:10 **A METHOD FOR THE REDUCTION OF SHIP-DETECTION FALSE ALARMS DUE TO SAR AZIMUTH AMBIGUITY**
Corrado Avolio, Mario Costantini, e-GEOS - an ASI/Telespazio Company, Italy; Gerardo Di Martino, Antonio Iodice, Università di Napoli Federico II, Italy; Flavia Macina, e-GEOS - an ASI/Telespazio Company, Italy; Giuseppe Ruello, Daniele Riccio, Università di Napoli Federico II, Italy; Massimo Zavagli, e-GEOS - an ASI/Telespazio Company, Italy

TH2.07.4 11:30 **SAR DESPECKLING GUIDED BY AN OPTICAL IMAGE**
Luisa Verdoliva, Donato Amitrano, Raffaele Gaetano, Giuseppe Ruello, Giovanni Poggi, Università di Napoli Federico II, Italy

TH2.07.5 11:50 **ANISOTROPIC DIFFUSION ON COMPLEX TENSOR FIELDS FOR POLSAR IMAGE FILTERING**
Nan Xue, Gui-Song Xia, Liangpei Zhang, Wuhan University, China

Thursday, July 17 | 13:30 - 15:10 | 206-B
Session TH3.07 | Oral

Image Classification II

Session Co-Chairs: Lorenzo Bruzzone, University of Trento; Gregoire Mercier, Telecom Bretagne

TH3.07.1 13:30 **THE KOHONEN MAP FOR CREDAL CLASSIFICATION OF LARGE MULTISPECTRAL IMAGES**
Imen Hammami, Grégoire Mercier, Télécom Bretagne, France; Atef Hamouda, Faculte des Sciences de Tunis, Tunisia

TH3.07.2 13:50 **SUPERVISED LINEAR MANIFOLD LEARNING FEATURE EXTRACTION FOR HYPERSPECTRAL IMAGE CLASSIFICATION**
Jinhuan Wen, Weidong Yan, Wei Lin, Northwestern Polytechnical University, China

TH3.07.3 14:10 **DOMAIN ADAPTATION IN REMOTE SENSING THROUGH CROSS-IMAGE SYNTHESIS WITH DICTIONARIES**
Giona Matasci, University of Lausanne, Switzerland; Frank de Morsier, École Polytechnique Fédérale de Lausanne, Switzerland; Mikhail Kanevski, University of Lausanne, Switzerland; Devis Tuia, École Polytechnique Fédérale de Lausanne, Switzerland

TH3.07.4 14:30 **A NOVEL INTERVAL TYPE-2 FUZZY K-NEAREST NEIGHBOR CLASSIFIER FOR REMOTELY SENSED HYPERSPECTRAL IMAGE CLASSIFICATION**
Jinn-Min Yang, National Taichung University of Education, Taiwan

TH3.07.5 14:50 **CONTEXTUAL REMOTE-SENSING IMAGE CLASSIFICATION THROUGH SUPPORT VECTOR MACHINES, MARKOV RANDOM FIELDS, AND GRAPH CUTS**
Andrea De Giorgi, Gabriele Moser, Sebastiano Bruno Serpico, University of Genoa, Italy

Thursday, July 17 | 15:40 - 17:20 | 206-B
Session TH4.07 | Oral

Image Segmentation I

Session Co-Chairs: Florence Tupin, Telecom ParisTech; Gianni Poggi, University of Naples

TH4.07.1 15:40 **SAR IMAGE SEGMENTATION BASED ON RANDOM PROJECTION AND SIGNATURE FRAME**
Biao Hou, Na Li, Shuang Wang, Xiangrong Zhang, Xidian University, China

TH4.07.2 16:00 **SAR IMAGE SEGMENTATION VIA NON-LOCAL ACTIVE CONTOURS**
Gang Liu, Gui-Song Xia, Wen Yang, Nan Xue, Wuhan University, China

TH4.07.3 16:20 **INTERACTIVE SEGMENTATION OF HIGH RESOLUTION SYNTHETIC APERTURE RADAR DATA BY TREE-STRUCTURED MRF**
Raffaele Gaetano, Donato Amitrano, Giuseppe Masi, Giovanni Poggi, Giuseppe Ruello, Luisa Verdoliva, Giuseppe Scarpa, Università di Napoli Federico II, Italy

TH4.07.4 16:40 **SAR TARGET SEGMENTATION BASED ON SHAPE PRIOR**
Yun Han, Yuanxiang Li, Wenxian Yu, Shanghai Jiao Tong University, China

TH4.07.5 17:00 **PROPOSAL OF A WEIGHTED INDEX FOR SEGMENTATION EVALUATION**
Mariane Souza Reis, Eliana Pantaleão, Sidnei J. S. Sant'Anna, Luciano Dutra, Brazilian National Institute for Space Research, Brazil

Thursday, July 17 | 08:20 - 10:00 | 202
Session TH1.08 | Oral-Invited

Global Precipitation Measurement Instrumentation Status Five Months After Launch

Session Co-Chairs: Chandrasekar V Chandra, Colorado State University; Gail Skofronick-Jackson, NASA Goddard Space Flight Center

TH1.08.1 08:20 **JAXA GPM MISSION OPERATION SYSTEM OVERVIEW AND GPM DATA DISTRIBUTION**
Tomomi Nio, Toshiaki Takeshima, Mitsuhiko Fuda, Yoko Fujita, Norio Saito, Toshiyuki Konishi, Japan Aerospace Exploration Agency, Japan

TH1.08.2 08:40 **THE ORBITAL CHECKOUT STATUS OF THE DUAL-FREQUENCY PRECIPITATION RADAR ON THE GLOBAL PRECIPITATION MEASUREMENT CORE SPACECRAFT**
Kinji Furukawa, Masahiro Kojima, Takeshi Miura, Yasutoshi Hyakusoku, Hiroki Kai, Takayuki Ishikiri, Japan Aerospace Exploration Agency, Japan; Toshio Iguchi, Hiroshi Hanado, Katsuhiro Nakagawa, NICT, Japan; Minoru Okumura, NTT DATA Corporation, Japan

TH1.08.3 09:00 **GPM MICROWAVE IMAGER KEY PERFORMANCE AND CALIBRATION RESULTS**
David Newell, David Draper, Don Figgins, Barry Berdanier, Michael Kubitschek, David Holshouser, Adam Sexton, Ball Aerospace & Technologies Corp., United States; Sergey Krimchansky, NASA Goddard Space Flight Center, United States; Frank Wentz, Thomas Meissner, Remote Sensing Systems, United States

TH1.08.4 09:20 **GROUND VALIDATION EXPERIMENT OF GPM/DPR IN JAPAN**
Katsuhiro Nakagawa, National Institute of Information and Communications Technology, Japan; Yuki Kaneko, Earth Observation Research Center, Japan Aerospace Exploration Agency (JAXA), Japan; Masanori Nishikawa, Institute of Low Temperature Science, Hokkaido University, Japan; Kenji Nakamura, Dokkyo University, Japan; Riko Oki, Earth Observation Research Center, Japan Aerospace Exploration Agency (JAXA), Japan

TH1.08.5 09:40 **AIRCRAFT MEASUREMENTS IN THE GPM OBSERVATIONAL SYSTEM OF SYSTEMS**
Stephen Nesbitt, University of Illinois at Urbana-Champaign, United States; Venkatachalam Chandrasekar, Colorado State University, United States; Walter Petersen, NASA Wallops Flight Facility, United States; Mathew Schwaller, NASA Goddard Space Flight Center, United States

Thursday, July 17 | 10:30 - 12:10 | 202
Session TH2.08 | Oral-Invited

Global Precipitation Measurement Science and Retrievals

Session Co-Chairs: Gail Skofronick-Jackson, NASA Goddard Space Flight Center; Toshio Iguchi, National Institute of Information and Communications Technology

TH2.08.1 10:30 **GPM MISSION OVERVIEW AND U.S. SCIENCE STATUS**
Gail Skofronick-Jackson, NASA Goddard Space Flight Center, United States

TH2.08.2 10:50 **PERFORMANCE OF THE RAIN RETRIEVAL ALGORITHM FOR THE DUAL-FREQUENCY PRECIPITATION RADAR ON THE GPM CORE SATELLITE**
Toshio Iguchi, National Institute of Information and Communications Technology, Japan; Shinta Seto, Nagasaki University, Japan; Jun Awaka, Tokai University, Japan; Robert Meneghini, National Aeronautics and Space Administration (NASA), United States; Takuji Kubota, Japan Aerospace Exploration Agency, Japan; Venkatachalam Chandrasekar, Colorado State University, United States; Naofumi Yoshida, Shinji Urita, Remote Sensing Technology Center of Japan, Japan; John Kwiatkowski, George Mason University, United States; Hiroshi Hanado, National Institute of Information and Communications Technology, Japan

TH2.08.3 11:10 **VERTICAL PROFILE CLASSIFICATION ALGORITHM FOR GPM**
Venkatachalam Chandrasekar, Minda Le, Colorado State University, United States; Jun Awaka, Hokkaido Tokai University, Japan

TH2.08.4 11:30 **PRECIPITATION ESTIMATION USING COMBINED RADAR AND MICROWAVE RADIOMETER OBSERVATIONS FROM GPM- EARLY RESULTS**
William S. Olson, University of Maryland Baltimore County, United States; Mircea Grecu, Morgan State University, United States; Toshihisa Matsui, University of Maryland College Park, United States; Steven McLaughlin, Science Systems and Applications, Inc., United States

TH2.08.5 11:50 **USE OF TRMM AND GPM DATA FOR HYDROMETEOROLOGICAL HAZARD APPLICATIONS**
Dalia Kirschbaum, National Aeronautics and Space Administration (NASA), United States

Thursday, July 17 | 13:30 - 15:10 | 202
Session TH3.08 | Oral-Invited

Tropical Rainfall Measuring Mission

Session Co-Chairs: Tomoo Ushio, Osaka University; Chandrasekar V Chandra, Colorado State University

TH3.08.1 13:30 **EVOLUTION OF SURFACE-DERIVED ATTENUATION ESTIMATES FROM TRMM TO GPM**
Robert Meneghini, NASA Goddard Space Flight Center, United States; Liang Liao, Hyokyung Kim, GESTAR/Morgan State University, United States; Jeffrey Jones, Wyle Science Technology and Engineering, United States

TH3.08.2 13:50 **GAUGE ADJUSTED GLOBAL SATELLITE MAPPING OF PRECIPITATION (GSMAP_GAUGE)**
Tomoo Ushio, Tomoaki Mega, Osaka University, Japan; Takuji Kubota, Misako Kachi, Japan Aerospace Exploration Agency, Japan; Kazumasa Aonashi, MRI, Japan; Shoichi Shige, Kyoto University, Japan

TH3.08.3 14:10 **A REVIEW OF THE MINIMUM DETECTABLE RAINFALL RATES OF THE TRMM PRECIPITATION RADAR AND THE GPM DUAL-FREQUENCY PRECIPITATION RADAR**
Toshio Iguchi, National Institute of Information and Communications Technology, Japan

TH3.08.4 14:30 **RECENT IMPROVEMENTS IN THE GLOBAL SATELLITE MAPPING OF PRECIPITATION (GSMAP)**
Misako Kachi, Takuji Kubota, Japan Aerospace Exploration Agency, Japan; Kazumasa Aonashi, Japan Meteorological Agency, Japan; Tomoo Ushio, Osaka University, Japan; Shoichi Shige, Munehisa Yamamoto, Kyoto University, Japan; Tomoaki Mega, Osaka University, Japan; Riko Oki, Japan Aerospace Exploration Agency, Japan

TH3.08.5 14:50 **GROUND VALIDATION OF TRMM/PR WITH PHASED-ARRAY WEATHER RADAR IN OSAKA AREA, JAPAN**
Eiichi Yoshikawa, Japan Aerospace Exploration Agency, Japan; Tomoo Ushio, Osaka University, Japan; Venkatachalam Chandrasekar, Colorado State University, United States

Thursday, July 17 | 15:40 - 17:20 | 202
Session TH4.08 | Oral

Numerical Weather Prediction and Data Assimilation

Session Co-Chairs: Albin Gasiewski, University of Colorado; Fuzhong Weng, NOAA / NESDIS

TH4.08.1 15:40 **ASSIMILATION OF SMOS SOIL MOISTURE IN THE MESH MODEL WITH THE ENSEMBLE KALMAN FILTER**
Xiaoyong Xu, Jonathan Li, Bryan Tolson, University of Waterloo, Canada; Ralf Staebler, Frank Seglenieks, Bruce Davison, Environment Canada, Canada; Amin Haghnegahdar, Eric Soulis, University of Waterloo, Canada

TH4.08.2 16:00 **SOIL MOISTURE ESTIMATION USING AN IMPROVED PARTICLE FILTER ASSIMILATION ALGORITHM**
Haiyun Bi, Jianwen Ma, Fangjian Wang, Chinese Academy of Sciences, China

TH4.08.3 16:20 **HYBRID MODEL FOR WEATHER FORECASTING USING ENSEMBLE OF NEURAL NETWORKS AND MUTUAL INFORMATION**
Abbas Ahmadi, Amirkabir University of Technology, Iran; Zahra Zargaran, University of Economic Science, Iran; Azadeh Mohebi, Iranian Research Institute for Information Science and Technology, Iran; Farahnaz Taghavi, University of Tehran, Iran

TH4.08.4 16:40 **EVALUATION OF THE IMPACT OF A NEW QUALITY CONTROL METHOD ON ASSIMILATION OF CRIS DATA IN HWRF-GSI**
Ding Liang, IMSG, United States; Fuzhong Weng, NOAA, United States

TH4.08.5 17:00 **IMPACT OF STRATOSPHERIC OZONE DISTRIBUTION ON WEATHER PATTERNS AND SHORT-TERM REGIONAL CLIMATE**
Siarhei Barodka, Aliaksandr Krasouski, Belarusian State University, Belarus; Arkady Shalamyansky, Voeikov Main Geophysical Observatory, Russian Federation

Thursday, July 17 | 08:20 - 10:00 | 2104-AB
Session TH1.09 | Oral

GNSS+R Remote Sensing I

Session Co-Chairs: Valery Zavorotny, National Oceanic and Atmospheric Administration (NOAA); Manuel Martin-Neira, European Space Agency; Chris Ruf, University of Michigan

TH1.09.1 08:20
OCEAN REMOTE SENSING USING SIGNALS OF OPPORTUNITY (SOOP) IN L, S AND KU BANDS
Rashmi Shah, James Garrison, Purdue University, United States; Alejandro Egido, Starlab Barcelona, Spain

TH1.09.2 08:40
THE MICROWAVE INTERFEROMETRIC REFLECTOMETER. PART II: BACK-END AND PROCESSOR DESCRIPTIONS
Daniel Pascual, Raúl Onrubia Ibáñez, Alberto Alonso-Arroyo, Hyuk Park, Adriano Camps Carmona, Universitat Politècnica de Catalunya, Spain

TH1.09.3 09:00
UNDERSTANDING GNSS REFLECTOMETRY OVER LAND: THE SAVERS SOFTWARE
Leila Guerriero, University of Rome Tor Vergata, Italy; Nazzareno Pierdicca, Roberto Giusto, Sapienza University of Rome, Italy; Alejandro Egido, Starlab, Spain; Marco Brogioni, IFAC-CNR, Italy

TH1.09.4 09:20
AIRBORNE GNSS REFLECTOMETRY USING CROSSOVER REFERENCE POINTS FOR CARRIER PHASE ALTIMETRY
Maximilian Semmling, Georg Beyerle, Jamila Beckheinrich, Maorong Ge, Jens Wickert, GeoForschungsZentrum Potsdam (GFZ), Germany

TH1.09.5 09:40
TYPHOON OBSERVATIONS USING THE INTERFEROMETRIC GNSS-R TECHNIQUE
Francisco Martín, Adriano Camps Carmona, Hyuk Park, Universitat Politècnica de Catalunya, Spain; Fran Fabra, Antonio Rius, IEEC/ICE-CSIC, Spain; Manuel Martín-Neira, Salvatore D'Addio, European Space Agency (ESA), Netherlands; Weiqiang Li, Dongkai Yang, SEI, China

Thursday, July 17 | 10:30 - 12:10 | 2104-AB
Session TH2.09 | Oral

GNSS+R Remote Sensing II

Session Co-Chairs: Valery Zavorotny, National Oceanic and Atmospheric Administration (NOAA); Chris Ruf, University of Michigan

TH2.09.1 10:30
SIMULATION OF STOCHASTIC GNSS-R WAVEFORMS BASED ON A NOVEL TIME-VARYING SEA SCATTERING MODEL
Pia Addabbo, Università degli Studi Del Sannio, Italy; Salvatore D'Addio, European Space Agency (ESA), Netherlands; Maurizio Di Bisceglie, Carmela Galdi, Generoso Giangregorio, Università degli Studi Del Sannio, Italy

TH2.09.2 10:50
WATER LEVEL MONITORING OF THE MEKONG DELTA USING GNSS REFLECTOMETRY TECHNIQUE
Jamila Beckheinrich, GFZ German Research Centre for Geosciences, Germany; Angelika Hirrle, Dresden University of Technology, Germany; Steffen Schön, Leibniz Universität Hannover, Germany; Georg Beyerle, Maximilian Semmling, Jens Wickert, GFZ German Research Centre for Geosciences, Germany

TH2.09.3 11:10
A SIMULATOR FOR GNSS-R POLARIMETRIC OBSERVATION OVER THE OCEAN
Domenico Schiavulli, Università degli studi di Napoli, Italy; Ali Ghavidel, Adriano Camps Carmona, Universitat Politècnica de Catalunya, Spain; Maurizio Migliaccio, Università degli studi di Napoli, Italy

TH2.09.4 11:30
A STUDY OF THE ELECTROMAGNETIC BIAS IN GNSS-R ALTIMETRY
Jeonghwan Park, Joel T. Johnson, The Ohio State University, United States; Stephen T. Lowe, California Institute of Technology, United States

TH2.09.5 11:50
OCEAN SURFACE TARGET DETECTION AND POSITIONING USING THE SPACEBORNE GNSS-R DELAY-DOPPLER MAPS
Wenxing Ji, Chundi Xiu, Weiqiang Li, Lijun Wang, BeiHang University, China

Thursday, July 17 | 13:30 - 15:10 | 2104-AB
Session TH3.09 | Oral-Invited

Recent Advances in Reflectometry using GNSS and other Opportunity Signals I

Session Co-Chairs: Jens Wickert, GFZ; Adriano Camps, Universitat Politècnica de Catalunya

TH3.09.1 13:30
THE NASA CYGNSS MISSION: DESIGN AND PREDICTED PERFORMANCE
Christopher Ruf, Aaron Ridley, Maria-Paola Clarizia, University of Michigan, United States; Scott Gleason, Randall Rose, John Scherrer, Southwest Research Institute, United States

TH3.09.2 13:50
A GENERALIZED LINEAR OBSERVABLE FOR GNSS-R WIND SPEED RETRIEVALS OVER THE OCEAN
Nereida Rodriguez-Alvarez, James Garrison, Purdue University, United States

TH3.09.3 14:10
THE TECHDEMOSAT-1 GNSS REFLECTOMETRY EXPERIMENT: OVERVIEW AND STATUS
Martin Unwin, Mark Brenchley, Surrey Satellite Technology Ltd, United Kingdom; Christine Gommenginger, National Oceanographic Centre, United Kingdom; Josep Rosello, European Space Agency (ESA), Netherlands

TH3.09.4 14:30
SYSTEM REQUIREMENTS FOR THE GEROS-ISS PAYLOAD
Manuel Martín-Neira, Jason Hatton, Michael Kern, Josep Rosello, Salvatore D'Addio, Nicolas Floury, European Space Agency (ESA), Netherlands

TH3.09.5 14:50
INNOVATIVE REMOTE SENSING USING THE INTERNATIONAL SPACE STATION: GNSS REFLECTOMETRY WITH GEROS
Jens Wickert, German Research Centre for Geosciences GFZ, Germany; Ole Baltazar Andersen, Technical University of Denmark, Denmark; Georg Beyerle, German Research Centre for Geosciences GFZ, Germany; Estel Cardellach, IEEC/ICE-CSIC, Institute of Space Sciences, Spain; Bertrand Chapron, French Research Institute for Exploitation of the Sea, Ifremer, France; Christine Gommenginger, National Oceanography Center, United Kingdom; Jason Hatton, European Space Agency (ESA), Germany; Per Hoeg, Technical University of Denmark, Denmark; Adrian Jäggi, University Bern, Switzerland; Norbert Jakowski, German Aerospace Center (DLR), Germany; Michael Kern, European Space Agency (ESA), Netherlands; Tong Lee, Jet Propulsion Laboratory, California Institute of Technology, United States; Manuel Martín-Neira, European Space Agency (ESA), Netherlands; Oliver Montenbruck, German Aerospace Center (DLR), Germany; Nazzareno Pierdicca, Antonio Rius, IEEC/ICE-CSIC, Institute of Space Sciences, Italy; C.K. Shum, The Ohio State University, United States; Cinzia Zuffada, Jet Propulsion Laboratory, California Institute of Technology, United States

Thursday, July 17 | 15:40 - 17:20 | 2104-AB
Session TH4.09 | Oral-Invited

Recent Advances in Reflectometry using GNSS and other Opportunity Signals II

Session Co-Chairs: Adriano Camps, Universitat Politècnica de Catalunya; Jens Wickert, GFZ

TH4.09.1 15:40
RECENT PROGRESS ON FORWARD SCATTERING MODELING FOR GNSS REFLECTOMETRY
Valery Zavorotny, Alexander Voronovich, NOAA/Earth System Research Laboratory, United States

TH4.09.2 16:00
SPACE-TIME STATISTICS FOR THE NUMBER OF SPECULAR POINTS IN SEA SURFACE GNSS REFLECTOMETRY
Tiziana Beltramonte, Maurizio Di Bisceglie, Carmela Galdi, Silvia Ullo, Università degli Studi Del Sannio, Italy

TH4.09.3 16:20
GPS GROUND NETWORKS FOR WATER CYCLE SENSING
Kristine Larson, Eric Small, University of Colorado, United States

TH4.09.4 16:40
NEW MULTI-TECHNIQUE AND MULTI-CONSTELLATION SYNOPTIC GNSS-R RECEIVER AND CAMPAIGNS
Estel Cardellach, Juan Carlos Arco, Fran Fabra, Oleguer Nogues-Correig, Santiago Oliveras, Serni Ribo, Antonio Rius, Institute for Space Sciences ICE-CSIC/IEEC, Spain; Manuel Martín-Neira, European Space Research and Technology Centre ESTEC/ESA, Netherlands

TH4.09.5 17:00
REVIEW OF GNSS-R INSTRUMENTS AND TOOLS DEVELOPED AT THE UNIVERSITAT POLITECNICA DE CATALUNYA-BARCELONA TECH
Adriano Camps Carmona, Juan Fernando Marchan-Hernandez, Xavier Bosch-Lluis, Nereida Rodriguez-Alvarez, Isaac Ramos-Perez, Enric Valencia, Jose Miguel Tarongi, Hyuk Park, Hugo Carreno-Luengo, Alberto Alonso-Arroyo, Daniel Pascual, Raúl Onrubia Ibáñez, Giuseppe F. Forte Veliz, Jorge Querol, Universitat Politècnica de Catalunya - BarcelonaTech and IEEC/CTE-UPC, Spain

Thursday, July 17 | 08:20 - 10:00 | 205-C
Session TH1.10 | Oral-Invited

Digital Beamforming SAR Systems and MIMO Techniques

Session Co-Chairs: Alberto Moreira, German Aerospace Center (DLR); Marwan Younis, German Aerospace Center (DLR)

TH1.10.1 08:20
TECHNOLOGY DEVELOPMENT FOR HRWS SAR IN C- AND X-BAND
Christian Fischer, Grzegorz Adamiuk, Christoph Schaefer, Christoph Heer, Airbus Defence and Space, Germany

TH1.10.2 08:40
HIGH-RESOLUTION WIDE-SWATH SAR PROCESSING WITH COMPRESSED SENSING
Delphine Cerutti-Maori, Ludger Prünte, Fraunhofer FHR, Germany; Ishuwa Sikaneta, Defence Research and Development Canada, Ottawa, Canada; Joachim Ender, Fraunhofer FHR, Germany

TH1.10.3 09:00
COMPARISON OF MULTI-CHANNEL HIGH-RESOLUTION WIDE-SWATH SAR PROCESSING METHODS
Ishuwa Sikaneta, Defence Research and Development Canada, Ottawa, Canada; Delphine Cerutti-Maori, Jens Klare, Fraunhofer FHR, Germany; Christoph Gierull, Defence Research and Development Canada, Ottawa, Canada

TH1.10.4 09:20
X-BAND MULTICANNEL SAR WITH DIGITAL BEAMFORMING (DBF)
Robert Wang, Yunkai Deng, Zhimin Zhang, Pei Wang, Institute of Electronics, Chinese Academy of Sciences, China

TH1.10.5 09:40
ONBOARD DIGITAL BEAMFORMING: ALGORITHM AND RESULTS
Hirad Ghaemi, Scott Shaffer, Scott Hensley, Jet Propulsion Laboratory, United States

Thursday, July 17 | 10:30 - 12:10 | 205-C
Session TH2.10 | Oral

Wetland

Session Co-Chairs: Douglas King, Carleton University; Brigitte Leblon, University of New Brunswick

TH2.10.1 10:30
WETLAND MAPPING IN ETHIOPIA USING RANDOM FORESTS
Pierre Dubeau, Dr. Douglas J. King, Carleton University, Canada; Dikaso Unbushe, Arba Minch University, Ethiopia; Lisa-Maria Rebelo, International Water Management Institute (IWMI), Ethiopia

TH2.10.2 10:50
MONITORING OF CRITICAL WATER AND VEGETATION ANOMALIES OF SUB-SAHARAN WEST-AFRICAN WETLANDS
Linda Moser, Stefan Voigt, Elisabeth Schoepfer, German Aerospace Center (DLR), Germany

TH2.10.3 11:10
DECADAL CHANGES IN THE TYPE AND EXTENT OF WETLANDS IN ALASKA USING L-BAND SAR DATA - A PRELIMINARY ANALYSIS
Daniel Clewley, Jane Whitcomb, Mahta Moghaddam, University of Southern California, United States; Kyle C. McDonald, The City University of New York, United States; Peter Bunting, Aberystwyth University, United Kingdom

TH2.10.4 11:30
PROGRESS IN MAPPING WETLANDS OF CENTRAL CANADA USING L-BAND SAR IMAGERY
Jane Whitcomb, Daniel Clewley, Mahta Moghaddam, University of Southern California, United States; Kyle C. McDonald, City University of New York, United States; Erika Podest, Bruce Chapman, Jet Propulsion Laboratory, United States; Peter Bunting, Aberystwyth University, United Kingdom

TH2.10.5 11:50
VARIABILITY OF WETLAND TYPE, AND WETLAND TYPE VEGETATION EVALUATED WITH RADARSAT-2 IMAGERY IN EASTERN ONTARIO.
Laura Dingle Robertson, Dr. Douglas J. King, Carleton University, Canada; Dr. Chris Davies, Ontario Ministry of Natural Resources, Canada

Thursday, July 17 | 13:30 - 15:10 | 205-C
Session TH3.10 | Oral

Flood Land

Session Co-Chairs: Marc Simard, NASA Jet Propulsion Laboratory, California Institute of Technology; Yves Gauthier, INRS, Centre Eau Terre Environnement

TH3.10.1 13:30
FLOOD MAPPING BY SAR: POSSIBLE APPROACHES TO MITIGATE ERRORS DUE TO AMBIGUOUS RADAR SIGNATURES
Nazzareno Pierdicca, Sapienza University of Rome, Italy; Luca Pulvirenti, CIMA Research Foundation, Italy; Marco Chini, Centre de Recherche Public - Gabriel Lippmann, Luxembourg; Giorgio Boni, Giuseppe Squicciarino, CIMA Research Foundation, Italy; Laura Candela, ASI, Italy

TH3.10.2 13:50
FLOOD EXTENT DEPICTION BY PHYSICAL DOWNSCALING OF FLOODED FRACTION ESTIMATES FROM MICROWAVE REMOTE SENSING
John Galantowicz, Jeff Picton, Atmospheric and Environmental Research, Inc. (AER), United States

TH3.10.3 14:10
IMPACT OF LIDAR-DERIVED SURFACE PROPERTIES ON SAR BACKSCATTER FROM FLOODED AREAS
Stefan Schlaffer, Vienna University of Technology, Austria; Laura Giustarini, Centre de Recherche Public - Gabriel Lippmann, Luxembourg; Wolfgang Wagner, Vienna University of Technology, Austria

TH3.10.4 14:30
VALIDATION OF FORESTED INUNDATION EXTENT REVEALED BY L-BAND POLARIMETRIC AND INTERFEROMETRIC SAR DATA
Bruce Chapman, Jet Propulsion Laboratory, United States; Jorge Celi, Stephen Hamilton, Michigan State University, United States; Kyle C. McDonald, City College New York, United States

TH3.10.5 14:50
BLUE CARBON DISTRIBUTION IN MANGROVE FORESTS OF THE WORLD
Marc Simard, NASA Jet Propulsion Laboratory, United States; Victor H. Rivera-Monroy, Lousiana State University, United States; Temilola Fatoyinbo Agueh, National Aeronautics and Space Administration (NASA), United States; Jennifer Corcoran, NASA Jet Propulsion Laboratory, United States; Rinku Roy Chowdhury, Indiana University, United States

Thursday, July 17 | 15:40 - 17:20 | 205-C
Session TH4.10 | Oral

Water Quality

Session Co-Chairs: Claude Duguay, University of Waterloo; Karem Chokmani, INRS, Centre Eau Terre Environnement

TH4.10.1 15:40
SATELLITE-BASED STUDY OF WATER QUALITY OF CHILKO LAKE (BRITISH COLUMBIA, CANADA): IMPACT ON SOCKEYE SALMON
Eduardo Loos, Leslie Brown, Kaan Ersahin, Gary Borstad, ASL Environmental Sciences, Inc., Canada; Daniel Selbie, James Irvine, Fisheries and Oceans Canada, Canada; Maycira Costa, University of Victoria, Canada

TH4.10.2 16:00
REMOTE SENSING INVESTIGATIONS OF LAKE PHENOLOGY: MERIS-DERIVED ECOLOGICAL INDICATORS
Stephanie Palmer, Balaton Limnological Institute, Hungarian Academy of Sciences Centre for Ecological Research, Hungary; Daniel Odermatt, Brockmann Consult GmbH, Germany; Peter Hunter, Biological and Environmental Sciences, School of Natural Sciences, University of Stirling, United Kingdom; Carsten Brockmann, Brockmann Consult GmbH, Germany; Heiko Balzter, Centre for Landscape and Climate Research, University of Leicester, United Kingdom; Viktor R. Toth, Balaton Limnological Institute, Hungarian Academy of Sciences Centre for Ecological Research, Hungary

TH4.10.3 16:20
EVALUATION OF EARTH OBSERVATION SYSTEMS FOR ESTIMATING ENVIRONMENTAL DETERMINANTS OF MICROBIAL CONTAMINATION RISKS IN RECREATIONAL WATERS
Serge Olivier Kotchi, Stephanie Brazeau, Patricia Turgeon, Yann Pelcat, Martin-Pierre Lavigne, Laboratory for Foodborne Zoonoses (PHAC), Public Health Agency of Canada (PHAC), Canada; Francine Nzang Essono, Richard Fournier, Université de Sherbrooke, Canada; Pascal Michel, Laboratory for Foodborne Zoonoses (PHAC), Public Health Agency of Canada (PHAC), Canada

TH4.10.4 16:40
DEVELOPMENT OF A FILTER FOR PHYCOCYANIN BIO-OPTICAL ESTIMATION
Igor Ogashawara, Marcelo Curtarelli, National Institute for Space Research, Brazil; Deepak Mishra, University of Georgia, United States; Enner Alcântara, São Paulo State University, Brazil; José Stech, National Institute for Space Research, Brazil

TH4.10.5 17:00
ESTIMATION OF CODMN IN TAI LAKE BASIN USING LANDSAT-8 SATELLITE
Yiting Tao, Miaozhong Xu, Wuhan University, China; Jianwei Ma, China Institute of Water Resources and Hydropower Research, China

Thursday, July 17 | 08:20 - 10:00 | 207
Session TH1.11 | Oral

Sensing the Biology and Quality of Ocean and Inland Waters

Session Chair: Claude Duguay, University of Waterloo

TH1.11.1 08:20
REMOTE SENSING OF RED TIDE IN THE ARABIAN GULF
Jun Zhao, Hosni Ghedira, Marouane Temimi, Masdar Institute of Science and Technology, United Arab Emirates

TH1.11.2 08:40
INVESTIGATIONS OF THE SEASONAL AND INTER-ANNUAL VARIATIONS OF PHYTOPLANKTON BLOOMS IN THE ARABIAN GULF USING SATELLITE DATA
Abdelgadir Abuelgasim, Naeema Alhosani, United Arab Emirates University, United Arab Emirates

TH1.11.3 09:00
AN ENSEMBLE BASED SYSTEM FOR CHLOROPHYLL-A ESTIMATION USING MODIS IMAGERY OVER SOUTHERN QUEBEC INLAND WATERS
Anas El-Alem, Karem Chokmani, Isabelle Laurion, Institut National de la Recherche Scientifique, Canada; Salah-eddine El-Adlouni, Moncton University, Canada

TH1.11.4 09:20
SECCHI DISK DEPTH ESTIMATES USING MERIS SATELLITE DATA AND A LINEAR MIXED EFFECT MODEL OVER LAKE SIMCOE, CANADA
Kiana Zolfaghari, Claude R. Duguay, University of Waterloo, Canada

TH1.11.5 09:40
DUE GLOBWETLAND II PROJECT RESULTS - MONITORING WETLANDS FOR SUSTAINABLE WATER MANAGEMENT
Kathrin Weise, Bert Wolf, Michael Schwarz, Jena-Optronik GmbH (JOP), Germany; Marc Paganini, European Space Agency (ESA), Italy

Thursday, July 17 | 10:30 - 12:10 | 207
Session TH2.11 | Oral

Satellite Radar Sensing of High Winds

Session Co-Chairs: Ad Stoffelen, Koninklijk Nederlands Meteorologisch Instituut (KNMI); Simon Yueh, NASA Jet Propulsion Laboratory, California Institute of Technology

TH2.11.1 10:30
FUTURE OCEAN SCATTEROMETRY AT VERY STRONG WINDS
Franco Fois, Peter Hoogeboom, Francois Le Chevalier, Delft University of Technology, Netherlands; Ad Stoffelen, KNMI - Koninklijk Nederlands Meteorologisch Instituut, Netherlands

TH2.11.2 10:50
HURRICANE TANGENTIAL WIND PROFILE FROM SYNTHETIC APERTURE RADAR OBSERVATIONS
Biao Zhang, Nanjing University of Information Science and Technology, China; William Perrie, Bedford Institute of Oceanography, Canada; Yijun He, Nanjing University of Information Science and Technology, China

TH2.11.3 11:10
LABORATORY MODELLING OF CROSS-POLARIZED RADAR RETURN AT SEVERE WIND CONDITIONS
Yuliya Troitskaya, Victor Abramov, Alexey Ermoshkin, Emma Zuikova, Vasiliy Kazakov, Daniil Sergeev, Alexander Kandaurov, Institute of Applied Physics RAS, Russian Federation

TH2.11.4 11:30
WIND RETRIEVAL AT C-BAND CROSS POLARIZATION
Jochen Horstmann, Helmholtz-Zentrum Geesthacht, Germany; Silvia Falchetti, Center for Maritime Research and Experimentation, Italy; Christopher Wackerman, General Dynamics Advanced Information Systems, United States; Michael Caruso, Hans Graber, Center for Southeastern Tropical Advanced Remote Sensing, United States

TH2.11.5 11:50
RETRIEVING EXTREME WIND SPEEDS USING C-BAND INSTRUMENTS
Gerd-Jan van Zadelhoff, Ad Stoffelen, Royal Netherlands Meteorological Institute (KNMI), Netherlands; Paris W. Vachon, John Wolfe, Defence Research and Development Canada, Canada; Jochen Horstmann, Institute of Coastal Research, Helmholtz-Zentrum Geesthacht, Germany; Maria Belmonte Rivas, TU Delft, Netherlands; Franco Fois, European Space Agency (ESA), Netherlands

Thursday, July 17 | 13:30 - 15:10 | 207
Session TH3.11 | Oral

Satellite Techniques of Wind Retrieval and Climatologies

Session Co-Chairs: Zorana Jelenak, NOAA / NESDIS; Paul Chang, NOAA / NESDIS

TH3.11.1 13:30
TOWARD AN IMPROVED AMBIGUITY REMOVAL FOR ASCAT-DERIVED WINDS
Wenming Lin, Marcos Portabella, Institut de Ciències del Mar (ICM-CSIC), Spain; Ad Stoffelen, Jur Vogelzang, Anton Verhoef, Royal Netherlands Meteorological Institute (KNMI), Netherlands; Antonio Turiel, Verónica González-Gambau, Institut de Ciències del Mar (ICM-CSIC), Spain

TH3.11.2 13:50
EVALUATION OF WIND SPEED GLOBALLY OBSERVED BY AMSR2 ON GCOM-W1
Naoto Ebuchi, Hokkaido University, Japan

TH3.11.3 14:10
ASSESSMENT OF NEURAL NETWORK RETRIEVAL OF OUTER CORE SURFACE WIND STRUCTURE AND INTENSITY FROM QUIKSCAT'S TROPICAL CYCLONE OVERPASSES
Rick Danielson, Nansen Environmental and Remote Sensing Center, Norway; Mike Brennan, National Hurricane Center, United States; Bryan Stiles, Lee Poulsen, Svetla Hristova-Veleva, Jet Propulsion Laboratory, United States

TH3.11.4 14:30
COMPARISON OF WIND RETRIEVAL ALGORITHMS FOR GNSS-R
Maria-Paola Clarizia, Christopher Ruf, University of Michigan, United States; Andrew O'Brien, The Ohio State University, United States; Philip Jales, Surrey Satellite Technology Ltd, United Kingdom; Scott Gleason, Southwest Research Institute, United States

TH3.11.5 14:50
ON WORLD-WIDE SATELLITE OCEAN WIND CLIMATOLOGIES
Ad Stoffelen, Jos de Kloe, Tilly Driesenaar, KNMI - Koninklijk Nederlands Meteorologisch Instituut, Netherlands; Gregory van Beek, Fontys, Netherlands

Thursday, July 17 | 15:40 - 17:20 | 207
Session TH4.11 | Oral

High Resolution Sensing of Ocean Winds and Currents

Session Co-Chairs: David Weissman, Hofstra University; William Perrie, Bedford Institute of Oceanography

TH4.11.1 15:40
ADVANCES IN PASSIVE REMOTE SENSING OF OCEAN CURRENTS AND DEPTHS
Seth Zuckerman, Steven Anderson, Arete Associates, United States

TH4.11.2 16:00
MAPPING OF SEA SURFACE WIND FIELD IN THE NORTH SEA AND CHINA SEAS USING TERRASAR-X DATA
XiaoMing Li, Institute of Remote Sensing and Digital Earth, CAS, China; Susanne Lehner, Domenico Velotto, German Aerospace Center (DLR), Germany

TH4.11.3 16:20
ANALYSIS OF SURFACE WIND RETRIEVAL IN COASTAL AREAS FROM SAR
Gisela K. Carvajal Cortez, Leif E. B. Eriksson, Chalmers University of Technology, Sweden

TH4.11.4 16:40
STATISTICAL EMULATION OF HIGH RESOLUTION SAR WIND FIELDS FROM LOW-RESOLUTION MODEL PREDICTIONS
Liyun He, Bertrand Chapron, Jean Tournadre, French Research Institute for Exploitation of the Sea, Ifremer, France; Ronan Fablet, Télécom Bretagne, France

TH4.11.5 17:00
ANALYSIS OF OCEAN SURFACE CURRENTS WITH TANDEM-X ATI: A CASE STUDY IN THE BALTIC SEA
Steffen Suchandt, German Aerospace Center (DLR), Germany; Andreas Lehmann, GEOMAR Helmholtz Center for Ocean Research, Germany; Hartmut Runge, German Aerospace Center (DLR), Germany

Thursday, July 17 | 08:20 - 10:00 | 2101
Session TH1.12 | Oral-Invited

Sentinel-2: ESA's High Resolution Multispectral Land Mapping Mission

Session Chair: Klaus Scipal, European Space Agency

TH1.12.1 08:20 **SENTINEL-2 SATELLITE: THE SYSTEM AND THE MULTI-SPECTRAL INSTRUMENT PERFORMANCE**
Valerie Fernandez, European Space Agency (ESA), Netherlands

TH1.12.2 08:40 **SENTINEL-2 MISSION OPERATIONS AND DATA ACCESS**
Bianca Hoersch, European Space Agency (ESA), Italy

TH1.12.3 09:00 **SENTINEL-2 CALIBRATION AND VALIDATION DURING IN-ORBIT COMMISSIONING AND OPERATIONAL PHASES**
Ferran Gascon, European Space Agency (ESA), Italy

TH1.12.4 09:20 **OVERVIEW OF ATMOSPHERIC CORRECTION METHODS FOR SENTINEL-2 DATA**
Luis Guanter, Freie Universität Berlin, Germany; Karl Segl, GFZ German Research Centre for Geosciences, Germany; Olivier Hagolle, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Rudolf Richter, German Aerospace Center (DLR), Germany

TH1.12.5 09:40 **DEVELOPMENT AND ASSESSMENT OF LEAF AREA INDEX ALGORITHMS FOR THE SENTINEL-2 MULTISPECTRAL IMAGER**
Richard Fernandes, Government of Canada, Canada; Marie Weiss, INRA, France; Fernando Camacho, EOLAB, Spain; Beatrice Berthelot, Magellium, France; Frédéric Baret, INRA, France; Riccardo Duca, European Space Agency (ESA), Netherlands

Thursday, July 17 | 10:30 - 12:10 | 2101
Session TH2.12 | Oral-Invited

Inter-Calibration of Spaceborne Microwave Radiometers

Session Co-Chairs: Andreas Colliander, NASA Jet Propulsion Laboratory, California Institute of Technology; Darren McKague, University of Michigan

TH2.12.1 10:30 **CROSS-CALIBRATION OF ATMS AND AMSU-A FOR CLIMATE CHANGE STUDIES**
Fuzhong Weng, NOAA/NESDIS, United States; Xiaolei Zou, Florida State University, United States; Hu Yang, University of Maryland, United States

TH2.12.2 10:50 **INTERCALIBRATION OF MICROWAVE RADIOMETERS FOR GPM**
Thomas Wilheit, Texas A&M University, United States; Wesley Berg, Colorado State University, United States; Linwood Jones, University of Central Florida, United States; Darren McKague, University of Michigan, United States; Vivienne Payne, NASA Jet Propulsion Laboratory, United States; James Wang, System Sciences & Applications, Inc., United States

TH2.12.3 11:10 **POST-LAUNCH INTERCALIBRATION AMONG SPACEBORNE MICROWAVE RADIOMETERS INCLUDING AMSR2 AND GMI**
Arata Okuyama, Misako Kachi, Keiji Imaoka, Japan Aerospace Exploration Agency, Japan

TH2.12.4 11:30 **INTERCALIBRATION OF AQURIUS AND SMOS THIRD STOKES PARAMETER MEASUREMENTS**
Chun Sik Chae, Shannon T. Brown, Andreas Colliander, Sidharth Misra, Xiaolan Xu, Simon Yueh, NASA Jet Propulsion Laboratory, United States; Emmanuel Dinnat, NASA Goddard Space Flight Center, United States

TH2.12.5 11:50 **THE IMPACT OF DIELECTRIC CONSTANT MODEL AND SURFACE REFERENCE ON DIFFERENCES BETWEEN SMOS AND AQUARIUS SEA SURFACE SALINITY**
Emmanuel Dinnat, NASA Goddard Space Flight Center / Chapman University, United States; Jacqueline Boutin, Xiaobin Yin, LOCEAN/UPMC, France; David Le Vine, NASA Goddard Space Flight Center, United States

Thursday, July 17 | 13:30 - 15:10 | 2101
Session TH3.12 | Oral-Invited

Multi-temporal Remote Sensing for Detecting and Describing Biodiversity

Session Co-Chairs: Michael Förster, Technical University of Berlin; Ben Somers, Katholieke Universiteit Leuven

TH3.12.1 13:30 **MONITORING PLANT INVASIONS IN HAWAIIAN RAINFORESTS THROUGH MULTI-TEMPORAL UNMIXING**
Ben Somers, KULeuven, Belgium; Gregory P. Asner, Carnegie Institution for Science, United States

TH3.12.2 13:50 **EXPLORING HIGH REPETITIVITY REMOTE SENSING TIME SERIES FOR MAPPING AND MONITORING NATURAL HABITATS – A NEW APPROACH COMBINING OBIA AND K-PARTITE GRAPHS**
Fabio Güttler, Samuel Alleaume, Christina Corbane, Dino Ienco, IRSTEA, France; Jordi Nin, Universitat Politècnica de Catalunya, Spain; Pascal Poncelet, LIRMM, France; Maguelonne Teisseire, IRSTEA, France

TH3.12.3 14:10 **MONITORING THE PHENOLOGY OF MEDITERRANEAN NATURAL HABITATS WITH MULTISPECTRAL SENSORS- AN ANALYSIS BASED ON MULTISEASONAL FIELD SPECTRA**
Christina Corbane, Fabio Güttler, Samuel Alleaume, Dino Ienco, Maguelonne Teisseire, IRSTEA, UMR TETIS, France

TH3.12.4 14:30 **LINKING NDVI AND CLIMATE-BASED ECOSYSTEM STABILITY WITH LAND COVER IN EUROPE**
Wanda De Keersmaecker, Stef Lhermitte, Laurent Tits, Olivier Honnay, Ben Somers, Pol Coppin, KULeuven, Belgium

TH3.12.5 14:50 **TIMESPEC – A SOFTWARE TOOL FOR ANALYZING TIME-SERIES OF SPECTRAL DATA**
Michael Foerster, Bjoern A. Welle, Tobias Schmidt, Simon Nieland, Birgit Kleinschmit, Technische Universität Berlin, Germany

Thursday, July 17 | 15:40 - 17:20 | 2101
Session TH4.12 | Oral

Bistatic SAR

Session Co-Chairs: Marc Rodriguez-Cassola, German Aerospace Center (DLR); Ishuwa Sikaneta, Defence Research and Development Canada; Hubert Cantalloube, ONERA

TH4.12.1 15:40 **BISTATIC SAR IMAGE FORMATION: A SYSTEMATIC APPROACH**
Marc Rodriguez-Cassola, Pau Prats-Iraola, Gerhard Krieger, Andreas Reigber, Alberto Moreira, German Aerospace Center (DLR), Germany

TH4.12.2 16:00 **RIVER CURRENT ESTIMATION WITH SPACE-BORNE BISTATIC INSAR DATA**
Xavier Banqué, Javier Duro, Altamira Information, Spain; Damien Desroches, Nadine Pourthie, Roger Fjørtoft, CNES, France

TH4.12.3 16:20 **BISTATIC SAR AZIMUTH MULTI-CHANNEL EXPERIMENT: THE CASE STUDY OF BEIJING**
Yunfeng Shao, Robert Wang, Yunkai Deng, Yue Liu, Jiangwen Tang, Gang Liu, Runpu Chen, Teng Tian, Institute of Electronics, Chinese Academy of Sciences, China

TH4.12.4 16:40 **ON BISTATIC FORWARD-LOOKING SAR IMAGING**
Viet Thuy Vu, Mats Pettersson, Blekinge Institute of Technology, Sweden

TH4.12.5 17:00 **ONE-STATIONARY BISTATIC FORWARD-LOOKING SAR FOR MOVING TARGET DETECTION AND IMAGING WITH A LINEAR ANTENNA ARRAY**
Zhongyu Li, Junjie Wu, Yulin Huang, Zhichao Sun, Jianyu Yang, University of Electronic Science and Technology of China, China

Friday, July 18 | 08:20 - 10:00 | 2000-A
Session FR1.01 | Oral

POLSAR Techniques I

Session Chair: Ridha Touzi, Canada Centre for Remote Sensing

FR1.01.1 08:20
CHANGE DETECTION IN POLARIMETRIC SAR DATA OVER SEVERAL TIME POINTS
Knut Conradsen, Allan A. Nielsen, Henning Skriver, Technical University of Denmark, Denmark

FR1.01.2 08:40
TENSOR BASED MEAN-SHIFT POLSAR IMAGE ENHANCEMENT
Jean-Marie Beaulieu, Vision Azur Jean-Marie Beaulieu, Canada

FR1.01.3 09:00
RISK BASED PARAMETER SELECTION FOR POLARIMETRIC SAR SPECKLE REDUCTION
Olivier D'Hondt, Stéphane Guillaso, Olaf Hellwich, Technische Universität Berlin, Germany

FR1.01.4 09:20
COHERENT POLARIMETRIC SAR CHANGE ANALYSIS
Thomas Ainsworth, Naval Research Laboratory, United States; Ramin Sabry, Defence Research and Development Canada, Canada

FR1.01.5 09:40
UNDERSTANDING AND VALIDATION OF THE POLARIMETRIC SCATTERING OF A FOREST FOR BISTATIC P-BAND SAR MEASUREMENTS
Etienne Everaere, Elise Colin-Koeniguer, Laetitia Thirion-Lefevre, Antonello De Martino, ONERA, France

Friday, July 18 | 10:30 - 12:10 | 2000-A
Session FR2.01 | Oral

POLSAR Techniques II

Session Co-Chairs: Emmanuel Trouve, Université de Savoie; Tom Lukowski, Canada

FR2.01.1 10:30
ADAPTIVE MULTI-TEMPORAL FILTERING OF POLARIMETRIC SAR IMAGES
Thu Trang Le, Abdourrahmane Atto, Emmanuel Trouvé, LISTIC / Université de Svaoie, France

FR2.01.2 10:50
MIXTURE DESCRIPTION OF POLARIMETRIC SAR IMAGES AND IMPROVED NON-LOCAL SPECKLE FILTERING
Yanting Wang, Thomas Ainsworth, Jong-Sen Lee, Naval Research Laboratory, United States

FR2.01.3 11:10
EFFICIENT POLSAR IMAGE SEGMENTATION WITH INFORMATION THEORY AND GRAPH PARTITIONING
Leonardo Torres, Corina C. Freitas, INPE, Brazil; Rian G. S. Pinheiro, UFF, Brazil; Sidnei J. S. Sant'Anna, Brazilian National Institute for Space Research, Brazil; Alejandro C. Frery, Universidade Federal de Alagoas, Brazil

FR2.01.4 11:30
SALIENCY DETECTION BASED ON DISTANCE BETWEEN PATCHES IN POLARIMETRIC SAR IMAGES
Xiaojing Huang, Wuhan University, China; Pingping Huang, Inner Mongolia University of Technology, China; Lixia Dong, Hui Song, Wen Yang, Wuhan University, China

FR2.01.5 11:50
THE APPLICATION OF THE WISHART-CHERNOFF DISTANCE FOR MULTITEMPORAL CHANGE DETECTION USING FULL AND COMPACT POLARIMETRIC SAR DATA
Mohammed Dabboor, Environment Canada, Canada; Lori White, Brian Brisco, François Charbonneau, Natural Resources Canada, Canada

Friday, July 18 | 13:30 - 15:10 | 2000-A
Session FR3.01 | Oral

POLSAR Applications

Session Co-Chairs: Tom Lukowski, Canada; Tom Ainsworth, Naval Research Laboratory

FR3.01.1 13:30
EXPERIMENTAL STUDY ON EFFECTS OF FOREST MOISTURE ON POLARIMETRIC RADAR BACKSCATTER
Takuma Watanabe, Hiroyoshi Yamada, Niigata University, Japan; Motofumi Arii, Mitsubishi Space Software Co., Ltd., Japan; Ryoichi Sato, Sang-Eun Park, Yoshio Yamaguchi, Niigata University, Japan

FR3.01.2 13:50
CONSIDERATIONS ON C/T MATRIX-BASED POLSAR LAND CLASSIFICATION AND EXPLORATIONS ON STOKES VECTOR-BASED METHOD
Fang Shang, Akira Hirose, The University of Tokyo, Japan

FR3.01.3 14:10
ON THE USE OF FOREST TEST PLOTS FOR BIOMASS MISSION RETRIEVAL ALGORITHM ON TROPICAL FORESTS
Ludovic Villard, Thuy Le Toan, Dinh Ho Tong Minh, Centre d'Études Spatiales de la Biosphère (CESBIO), France

FR3.01.4 14:30
NATURAL OIL SEEP DETECTION IN CANADIAN ARCTIC OFFSHORE BASINS IDENTIFIED FROM A SURVEY OF RADARSAT-2 DATA AND RCM COMPACT POLARIMETRY
Vincent Decker, Paul Budkewitsch, François Charbonneau, Government of Canada, Canada

FR3.01.5 14:50
SUBSURFACE DEPOSITS DETECTION AND SHORELINE FEATURE INTERPRETATION OF A VANISHED LOP NUR LAKE USING MULTI-SOURCE SAR DATA
Yun Shao, Huaze Gong, Institute of Remote Sensing and Digital Earth, CAS, China; Zhihong Gao, National Geomatics Center of China, China; Li Liu, Tingting Zhang, Institute of Remote Sensing and Digital Earth, CAS, China; Lin Li, Indiana University / Purdue University, United States; Longfei Wang, Institute of Remote Sensing and Digital Earth, CAS, China

Friday, July 18 | 15:40 - 17:20 | 2000-A
Session FR4.01 | Oral

Pol INSAR

Session Co-Chairs: Kostas Papathanassiou, German Aerospace Center (DLR); Marco Lavalle, NASA Jet Propulsion Laboratory, California Institute of Technology

FR4.01.1 15:40
POLARIMETRIC SAR INTERFEROMETRY EVALUATION IN MANGROVES
Seung-Kuk Lee, Temilola Fatoyinbo Agueh, Batuhan Osmanoglu, Guoqing Sun, NASA Goddard Space Flight Center, United States

FR4.01.2 16:00
RADARSAT-2 POLINSAR COHERENCE OPTIMIZATION FOR AGRICULTURE CROP CHANGE DETECTION
Yifeng Li, Ting Liu, George Lampropoulos, AUG Signals Ltd, Canada; Heather McNairn, Jiali Shang, Agriculture and Agri-Food Canada, Canada; Ridha Touzi, Canada Centre for Remote Sensing, Natural Resources Canada, Canada

FR4.01.3 16:20
COMBINING DUAL-BAND CAPABILITY AND POLINSAR TECHNIQUE FOR FOREST GROUND AND CANOPY ESTIMATION
Gustavo Hiroshi Xavier Shiroma, Instituto Tecnológico de Aeronáutica (ITA) & Bradar Indústria S/A, Brazil; Karlus Alexander Camara de Macedo, Christian Wimmer, Bradar Indústria S/A, Brazil; David Fernandes, Instituto Tecnológico de Aeronáutica (ITA), Brazil; Thiago Luiz Morais Barreto, Bradar Indústria S/A, Brazil

FR4.01.4 16:40
A NOVEL LOCALLY ACTIVE LEARNING METHOD FOR SAR IMAGE CLASSIFICATION
Tengchuan Wang, Yuanxiang Li, Huilin Xiong, Shanghai Jiao Tong University, China

FR4.01.5 17:00
TROPICAL AND BOREAL FOREST HEIGHT EXTRACTION FROM L– AND P–BAND THREE-BASELINE POLINSAR STACK
Marco Lavalle, Jet Propulsion Laboratory, California Institute of Technology, United States; Kosal Khun, University of Montreal, Canada

Friday, July 18 | 08:20 - 10:00 | 2000-B
Session FR1.02 | Oral

Anomaly Detection in Hyperspectral Images

Session Co-Chairs: Qian Du, Mississippi State University; Jean-Pierre Ardouin, DRDC Valcartier

FR1.02.1 08:20 **ANOMALY DETECTION USING SLIDING CAUSAL WINDOWS**
Yulei Wang, Chunhui Zhao, Harbin Engineering University, China; Chein-I Chang, University of Maryland Baltimore County, United States

FR1.02.2 08:40 **ROBUST ANOMALY DETECTION IN HYPERSPECTRAL IMAGING**
Joana Frontera-Pons, SONDRA/Supélec, France; Miguel Angel Veganzones, GIPSA-lab, Grenoble-INP, France; Santiago Velasco-Forero, National University of Singapore, Singapore; Frédéric Pascal, SONDRA/Supélec, France; Jean-Philippe Ovarlez, DEMR/ONERA, France; Jocelyn Chanussot, GIPSA-lab, Grenoble-INP, France

FR1.02.3 09:00 **ROBUST PRINCIPAL COMPONENT ANALYSIS FOR HYPERSPECTRAL ANOMALY DETECTION**
Alex Sumarsono, Qian Du, Mississippi State University, United States

FR1.02.4 09:20 **BENEFICIARY OF HIGH ORDER DERIVATIVE SPECTRUM IN TARGET DETECTION**
Sahar Dehnavi, Yasser Maghsoudi, Mohammad Javad Valadan Zoej, K.N.Toosi University of Technology, Iran; Fariborz BaniAdam, Geolgical survey of Iran, Iran

FR1.02.5 09:40 **RARE EARTH ELEMENT ORE GRADE ESTIMATION OF MINERALIZED DRILL CORE FROM HYPERSPECTRAL IMAGING SPECTROSCOPY**
David Turner, UBC / UofA, Canada; Benoit Rivard, University of Alberta, Canada; Lee Groat, University of British Columbia, Canada

Friday, July 18 | 13:30 - 15:10 | 2000-B
Session FR3.02 | Oral

Classification of Hyperspectral Data II

Session Co-Chairs: Jose Bioucas-Dias, Telecommunications Institute, Instituto Superior Tecnico; Jeff Harris, Geological Survey of Canada

FR3.02.1 13:30 **A NEW FRAMEWORK FOR HYPERSPECTRAL IMAGE CLASSIFICATION USING MULTIPLE SPECTRAL AND SPATIAL FEATURES**
Mahdi Khodadadzadeh, Hyperspectral Computing Laboratory, Spain; Jun Li, Sun Yat-Sen University, China; Antonio Plaza, Hyperspectral Computing Laboratory, Spain; Paolo Gamba, University of Pavia, Italy; Jón Atli Benediktsson, University of Iceland, Iceland; Jose Bioucas-Dias, Instituto de Telecomunicacoes and Instituto Superior Tecnico, Universidade de Lisboa, Portugal

FR3.02.2 13:50 **NON-LOCAL EUCLIDEAN MEDIANS SPARSE UNMIXING FOR HYPERSPECTRAL REMOTE SENSING IMAGERY**
Ruyi Feng, Yanfei Zhong, Liangpei Zhang, State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing, Wuhan University, China

FR3.02.3 14:10 **KERNEL PRINCIPAL COMPONENTS ENSEMBLES FOR EFFICIENT CLASSIFICATION OF LARGE DIMENSIONAL DATA**
Prashanth Reddy Marpu, Masdar Institute of Science and Technology, United Arab Emirates

FR3.02.4 14:30 **SURE BASED MODEL SELECTION FOR HYPERSPECTRAL IMAGING**
Behnood Rasti, Magnus O. Ulfarsson, Johannes R. Sveinsson, University of Iceland, Iceland

FR3.02.5 14:50 **MULTIVARIATE PROBABILITY MODEL FOR 3-LAYER REMOTE SENSING**
Charles Davidson, Science and Technology Corporation, United States; Avishai Ben-David, Edgewood Chemical Biological Center, United States

Friday, July 18 | 10:30 - 12:10 | 2000-B
Session FR2.02 | Oral

Noise Reduction and Enhancement of Hyperspectral Images

Session Co-Chairs: Richard Bamler, German Aerospace Center (DLR); Liangpei Zhang, Wuhan University

FR2.02.1 10:30 **ADAPTIVE TENSOR MATRIX BASED KERNEL REGRESSION FOR HYPERSPECTRAL IMAGE DENOISING**
Hongyi Liu, Zhengrong Zhang, Liang Xiao, Zhihui Wei, Nanjing University of Science and Technology, China

FR2.02.2 10:50 **UNMIXING-BASED DENOISING FOR DESTRIPING AND INPAINTING OF HYPERSPECTRAL IMAGES**
Daniele Cerra, Rupert Müller, Peter Reinartz, German Aerospace Center (DLR), Germany

FR2.02.3 11:10 **MUSIC: A NEW HYBRID ATMOSPHERIC CORRECTION TECHNIQUE FOR SOLAR REFLECTIVE HYPERSPECTRAL IMAGERY**
Vincent Ross, AEREX Avionique Inc, Canada; Jean-Pierre Ardouin, Defence Research and Development Canada, Valcartier, Canada

FR2.02.5 11:50 **A BIDIRECTIONAL GRADIENT PREDICTION BASED METHOD FOR HYPERSPECTRAL DATA JUNK BANDS RESTORATION**
Yidan Teng, Ye Zhang, Yushi Chen, Harbin Institute of Technology University, China

Friday, July 18 | 15:40 - 17:20 | 2000-B
Session FR4.02 | Oral

Advanced Data Processing for the Analysis of Hyperspectral Images II

Session Co-Chairs: Peter White, Natural Resources Canada; Josée Lévesque, Defense R&D Canada

FR4.02.1 15:40 **TOTAL VARIATION BASED HYPERSPECTRAL FEATURE EXTRACTION**
Behnood Rasti, Johannes R. Sveinsson, Magnus O. Ulfarsson, University of Iceland, Iceland

FR4.02.2 16:00 **NON-LINEAR LOW-RANK AND SPARSE REPRESENTATION FOR HYPERSPECTRAL IMAGE ANALYSIS**
Frank de Morsier, Devis Tuia, École Polytechnique Fédérale de Lausanne, Switzerland; Maurice Borgeaud, European Space Agency (ESA), Italy; Volker Gass, Jean-Philippe Thiran, École Polytechnique Fédérale de Lausanne, Switzerland

FR4.02.3 16:20 **HYPERSPECTRAL SUBSPACE LEARNING OF FOREST PHENOLOGY UNDER ORDER CONSTRAINTS**
Kuniaki Uto, Yukio Kosugi, Genya Saito, Tokyo Institute of Technology, Japan

FR4.02.4 16:40 **A NOVEL SEQUENTIAL SPECTRAL CHANGE VECTOR ANALYSIS FOR REPRESENTING AND DETECTING MULTIPLE CHANGES IN HYPERSPECTRAL IMAGES**
Sicong Liu, Lorenzo Bruzzone, Francesca Bovolo, University of Trento, Italy; Peijun Du, Nanjing University, China

FR4.02.5 17:00 **COMBINING ROTATION FORESTS AND ADABOOST FOR HYPERSPECTRAL IMAGERY CLASSIFICATION USING FEW LABELED SAMPLES**
Fan Li, Alexander Wong, David Clausi, University of Waterloo, Canada

Friday, July 18 | 08:20 - 10:00 | 2000-C
Session FR1.03 | Oral

Land Use and Land Cover Change III

Session Chair: Sivasathivel Kandasamy, Natural Resources Canada

FR1.03.1 08:20
ANNUAL LAND COVER MONITORING USING 250M MODIS DATA FOR MEXICO
Rene R. Colditz, Ricardo M. Llamas, Rainer A. Ressl, National Commission for the Knowledge and Use of Biodiversity, Mexico

FR1.03.2 08:40
SHORT TERM CHANGE DETECTION IN TUNDRA VEGETATION NEAR UMIUJAQ, SUBARCTIC QUEBEC, CANADA
Laurence Provencher-Nolet, Monique Bernier, Institut National de la Recherche Scientifique, Canada; Esther Lévesque, Université du Québec à Trois-Rivières, Canada

FR1.03.3 09:00
VISUALIZING AND QUANTIFYING LANDSCAPE CHANGE AT BROAD SPATIO-TEMPORAL SCALES WITH THE CAT TRANSFORM
Guillermo Castilla, Jennifer Hird, Gregory Mcdermid, University of Calgary, Canada

FR1.03.4 09:20
IMPROVING LAND OCCUPATION IN BRAZIL: LAND COVER DISCRIMINATION AND EVALUATION BASED ON THE ASSESSMENT OF FUNCTIONAL BEHAVIOR AND RESPONSES IN THE TEMPORAL DOMAIN
Arielle Arantes, Laerte Ferreira, Federal University of Goiás - UFG, Brazil; Michael Coe, The Woods Hole Research Center, United States

FR1.03.5 09:40
DEFORESTATION MONITORING IN CANADA
Andrew Dyk, Stephanie Ortlepp, Sally Tinis, Don Leckie, Natural Resources Canada, Canada

Friday, July 18 | 10:30 - 12:10 | 2000-C
Session FR2.03 | Oral

Land Use and Land Cover Change IV

Session Chair: Marie Parrens, Centre D'Etudes Spatiales de la Biosphère (CESBIO)

FR2.03.1 10:30
A NOVEL METHOD FOR POTENTIAL CALCULATION IN MARKOV RANDOM FIELD BY INCORPORATING SPATIAL DEPENDENCE IN SPECTRAL FEATURE
Bo Hu, Peijun Li, Peking University, China; Jun Li, Sun Yat-Sen University, China

FR2.03.2 10:50
GLOBAL MAPS OF ROUGHNESS PARAMETERS FROM L-BAND SMOS OBSERVATIONS
Marie Parrens, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jean-Pierre Wigneron, INRA, France; Philippe Richaume, Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Shu Wang, Amen Alyaari, Roberto Fernández-Morán, INRA, France; Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Maria-Jose Escorihuela, isardSAT, Spain; Jennifer Grant, Lund University, Sweden

FR2.03.3 11:10
DETECTING TROPICAL DEFORESTATION AND DEGRADATION USING LANDSAT TIME SERIES
Ben DeVries, Jan Verbesselt, Lammert Kooistra, Martin Herold, Wageningen University, Netherlands

FR2.03.4 11:30
CLASSIFICATION OF LAND COVER BASED ON DEEP BELIEF NETWORKS USING POLARIMETRIC RADARSAT-2 DATA
Qi Lv, Yong Dou, Xin Niu, Jiaqing Xu, Baoliang Li, National University of Defense Technology, China

FR2.03.5 11:50
LAND COVER TO HABITAT MAP CONVERSION USING REMOTE SENSING DATA: A SUPERVISED LEARNING APPROACH
Zisis Petrou, Tania Stathaki, Imperial College London, United Kingdom; Ioannis Manakos, Centre for Research and Technology Hellas, Greece; Maria Adamo, Cristina Tarantino, Palma Blonda, National Research Council (CNR), Italy

Friday, July 18 | 13:30 - 15:10 | 2000-C
Session FR3.03 | Oral

Land Use and Land Cover Change V

Session Chair: Giovanni Laneve, Sapienza University of Rome

FR3.03.1 13:30
CROP IDENTIFICATION BY ASSIMILATION OF DENSE OPTICAL AND C-BAND SAR TIME-SERIES IN VIEW OF THE SENTINEL MISSION
Lorenzo Iannini, Ramses Molijn, Alijafar Mousivand, Ramon Hanssen, Delft University of Technology, Netherlands

FR3.03.2 13:50
OPTICAL AND SAR DATA SYNERGISTIC USE FOR LANDFILL DETECTION AND MONITORING. THE SIMDEO PROJECT: METHODS, PRODUCTS AND RESULTS.
Enrico Giuseppe Cadau, Cosimo Putignano, Serco SpA, Italy; Giovanni Laneve, Sapienza University of Rome, Italy; Renato Aurigemma, Valerio Pisacane, Salvatore Muto, Euro Soft S.r.l., Italy; Andrea Tesseri, Serco SpA, Italy; Fabrizio Battazza, Italian Space Agency, Italy

FR3.03.3 14:10
SAR AND OPTICAL DATA FUSION FOR LAND USE AND COVER CHANGE DETECTION
Bhogendra Mishra, Junichi Susaki, Kyoto University, Japan

FR3.03.4 14:30
RECONSTRUCTING DAILY VEGETATIVE TRAJECTORY OF VEGETATION INDEX FROM AVHRR, MODIS AND VIIRS DATA
Xiaoyang Zhang, South Dakota State University, United States

FR3.03.5 14:50
A NEW PERSPECTIVE FOR MULTITEMPORAL SAR DATA ANALYSIS
Donato Amitrano, Gerardo Di Martino, Antonio Iodice, Daniele Riccio, Giuseppe Ruello, Università di Napoli Federico II, Italy

Friday, July 18 | 15:40 - 17:20 | 2000-C
Session FR4.03 | Oral

Land Use and Land Cover Change VI

Session Chair: Andres Jacome, INRS-ETE

FR4.03.1 15:40
SIFT-ELM APPROACH FOR UNSUPERVISED CHANGE DETECTION IN VHR IMAGES
Haikel Alhichri, King Saud University, Saudi Arabia

FR4.03.2 16:00
WATERSHED SCALE ANALYSES OF LAND COVER CHANGE IN THE CONTRIBUTING UPLAND AREA OF MANGROVE ECOSYSTEMS
Jennifer Corcoran, Marc Simard, NASA Jet Propulsion Laboratory, United States; Temilola Fatoyinbo Agueh, NASA Goddard Space Flight Center, United States; Melanie Rosenberg, University of Maryland, United States

FR4.03.3 16:20
GLACIER RETREAT AND SNOW COVER STUDIES USING AWIFS & LISS III DATA OF IRS – A CASE STUDY FROM HAMTAH GLACIER, LAHUL & SPITI, H.P, INDIA
Laxmi Sharma, PEC University of Technology, India

FR4.03.4 16:40
SOME RESULTS OF SATTELITE MONITORING OF VEGETATION COVER OF ARID AREAS OF KAZAKHSTAN
Madina Batyrbayeva, JSC NCSRT, Kazakhstan; Svetlana Dolgikh, NGMSKazhydromet, Kazakhstan; Azamat Kauazov, Nadya Muratova, JSC NCSRT, Kazakhstan; Vitaliy Salnikov, Al-Farabi Kazakh National University, Kazakhstan; Lev Spivak, Irina Vitkovskaya, JSC NCSRT, Kazakhstan

FR4.03.5 17:00
USING EXISTING LARGE-AREA LAND-COVER MAPS TO CLASSIFY SPATIALLY HIGH RESOLUTION IMAGES
Peter Kennedy, Jinkai Zhang, Karl Staenz, Craig Coburn, University of Lethbridge, Canada

Friday, July 18 | 08:20 - 10:00 | 2000-D
Session FR1.04 | Oral

Information Extraction in Radar Data

Session Co-Chairs: Laurent Ferro-Famil, IETR/University of Rennes 1; Gottfried Schwarz, German Aerospace Center (DLR)

FR1.04.1 08:20 **CHARACTERIZATION OF SCATTERERS BY THEIR ENERGETIC DISPERSIVE AND ANISOTROPIC BEHAVIORS IN HIGH-RESOLUTION LABORATORY RADAR IMAGERY**
Mickaël Duquenoy, IETR/University of Rennes 1, France; Jean-Philippe Ovarlez, ONERA, France; Laurent Ferro-Famil, Eric Pottier, IETR/University of Rennes 1, France

FR1.04.2 08:40 **VALIDATION OF A NEW METHOD TO RETRIEVE OCEAN WAVE PARAMETERS FROM X-BAND MARINE RADAR IMAGE SEQUENCE**
Zhongbiao Chen, Yijun He, Biao Zhang, Zhongfeng Qiu, Nanjing University of Information Science and Technology, China

FR1.04.3 09:00 **RECOGNITION OF NONLINEAR DISPERSIVE SCATTERING IN SAR IMAGERY**
Khalid El-Darymli, Cecilia Moloney, Eric Gill, Memorial University of Newfoundland, Canada; Peter McGuire, Desmond Power, C-CORE, Canada

FR1.04.4 09:20 **ON THE STATISTICAL SIMILARITY OF SYNTHETIC APERTURE RADAR IMAGES FROM COSMO-SKYMED AND TERRASAR-X**
Jagmal Singh, Daniela Espinoza-Molina, Gottfried Schwarz, Mihai Datcu, German Aerospace Center (DLR), Germany

FR1.04.5 09:40 **HIERARCHICAL UNSUPERVISED NONPARAMETRIC CLASSIFICATION OF POLARIMETRIC SAR TIME SERIES DATA**
Ashlin Richardson, David Goodenough, University of Victoria, Canada; Hao Chen, National Resources Canada, Canada

Friday, July 18 | 10:30 - 12:10 | 2000-D
Session FR2.04 | Oral

Information Extraction I

Session Co-Chairs: Grant Scott, University of Missouri; Rene R. Colditz, National Commission for the Knowledge and Use of Biodiversity

FR2.04.1 10:30 **CALCULATING VEGETATION INDEX BASED ON THE UNIVERSAL PATTERN DECOMPOSITION METHOD (VIUPD) USING LANDSAT 8**
Xiaojun She, Lifu Zhang, Muhammad Hasan Ali Baig, Yao Li, Institute of Remote Sensing and Digital Earth, CAS, China

FR2.04.2 10:50 **EVALUATION OF BRDF ARCHETYPES FROM MODIS MULTI-ANGULAR OBSERVATIONS**
Hu Zhang, Ziti Jiao, Yadong Dong, Xiaowen Li, Beijing Normal University, China

FR2.04.3 11:10 **INTEGRATION OF OFF-NADIR VHR IMAGERY AND ELEVATION DATA FOR ADVANCED INFORMATION EXTRACTION**
Alaeldin Suliman, Yun Zhang, University of New Brunswick, Canada

FR2.04.4 11:30 **URBAN BUILDING EXTRACTION VIA VISUAL TOPIC GRAPHICAL MODEL**
Yansheng Li, Yihua Tan, Jinwen Tian, Huazhong University of Science and Technology, China

FR2.04.5 11:50 **AREA ESTIMATION FROM DISCRETE AND CONTINUOUS LAND COVER MAPS**
Rene R. Colditz, Julian Equihua, National Commission for the Knowledge and Use of Biodiversity, Mexico

Friday, July 18 | 13:30 - 15:10 | 2000-D
Session FR3.04 | Oral

Information Extraction II

Session Chair: Fabio Dell'Acqua, University of Pavia

FR3.04.1 13:30 **EXPLORING VARIOUS SPECTRAL REGIONS FOR ESTIMATING CHLOROPHYLL FROM ASD LEAF REFLECTANCE USING PROSPECT RADIATIVE TRANSFER MODEL**
Moses Azong Cho, Abel Ramoelo, Council for Scientific and Industrial Research (CSIR), South Africa; Andrew K. Skidmore, University of Twente (ITC), Netherlands

FR3.04.2 13:50 **WATER MAPPING THROUGH UNIVERSAL PATTERN DECOMPOSITION METHOD AND TASSELED CAP TRANSFORMATION**
Muhammad Hasan Ali Baig, Lifu Zhang, Jiefu Dong, Yao Li, Xiaojun She, Qingxi Tong, Institute of Remote Sensing and Digital Earth, CAS, China

FR3.04.3 14:10 **A CASE STUDY ON FUSION OF SEISMIC DAMAGE INFORMATION FROM SPACE-BORNE AND GROUND-BASED IMAGING OF L'AQUILA, 2009 EARTHQUAKE**
Daniele De Vecchi, Fabio Dell'Acqua, University of Pavia / EUCENTRE Foundation, Italy

FR3.04.4 14:30 **EXTRACTION OF DAMAGED BUILDING'S GEOMETRIC FEATURES FROM MULTI-SOURCE POINT CLOUDS**
Zhihua Xu, Beijing Normal University, China; Lixin Wu, China University of Mining and Technology, China; Yonglin Shen, China University of Geosciences, China; Qiuling Wang, Beijing Normal University, China; Ran Wang, Fashuai Li, China University of Mining and Technology, Beijing, China

FR3.04.5 14:50 **INFERRING INTERNAL WAVE PHASE SPEED FROM MULTI-SATELLITE OBSERVATIONS**
Hong Yang, Bingqing Liu, Shanghai Ocean University, China; Zhongxiang Zhao, University of Washington, United States; Xiaofeng Li, National Oceanic and Atmospheric Administration, United States

Friday, July 18 | 15:40 - 17:20 | 2000-D
Session FR4.04 | Oral

Geographic Information Science

Session Co-Chairs: Liping Di, George Mason University; Lacina Coulibaly, Université de Moncton

FR4.04.1 15:40 **BOUNDING THE ROLE OF DOMESTIC HEATING IN HAZE POLLUTION OF BEIJING BASED ON SATELLITE AND SURFACE OBSERVATIONS**
Xiao Feng, Qi Li, Yajie Zhu, Peking University, China

FR4.04.2 16:00 **GEOLOCATION OF HJ-1C SATELLITE IMAGE USING ONE GCP**
Jiayin Liu, Xiaolan Qiu, Yuxin Hu, Wen Hong, Institude of Electronics, Chinese Academy of Sciences, China

FR4.04.3 16:20 **A REMOTE-SENSING-BASED FLOOD CROP LOSS ASSESSMENT SERVICE SYSTEM FOR SUPPORTING USDA CROP STATISTICS AND INSURANCE DECISION-MAKING**
Liping Di, Genong Yu, Lingjun Kang, Yuanzheng Shao, Ranjay Shresta, Bei Zhang, Meixia Deng, George Mason University, United States; Zhengwei Yang, James Hipple, United States Department of Agriculture, United States; Robert G. Brakenridge, University of Colorado at Boulder, United States

FR4.04.4 16:40 **ACCURACY ASSESSMENT OF GAME-BASED CROWDSOURCED LAND-USE/ LAND COVER IMAGE CLASSIFICATION**
Theo Pistorius, Nitesh Poona, Stellenbosch University, South Africa

FR4.04.5 17:00 **SPATIAL MODELING OF THE IROQUOIS / BLANCHETTE WATERSHED USING LIDAR AND RAPIDEYE SATELLITE IMAGE DATA**
Lacina Coulibaly, Alaa Maaref, Richard Barry, Université de Moncton, Canada

Friday, July 18 | 08:20 - 10:00 | 205-AB
Session FR1.05 | Oral

Geology and Topographic Applications I

Session Co-Chairs: Jussi Baade, Friedrich-Schiller University; Jeff Harris, Geological Survey of Canada

FR1.05.1 08:20
ALGORITHM DEVELOPMENT OF HIGH RESOLUTION GLOBAL DSM GENERATION BY ALOS PRISM
Junichi Takaku, Remote Sensing Technology Center of Japan, Japan; Takeo Tadono, Japan Aerospace Exploration Agency, Japan; Ken Tsutsui, NTT DATA Corporation, Japan

FR1.05.2 08:40
PERFORMANCE EVALUATION OF UAV PHOTOGRAMMETRIC 3D RECONSTRUCTION
Salvatore Esposito, Paolo Fallavollita, Università degli Studi di Roma La Sapienza / Oben srl, Sassari, Italy; Wissam Wahbeh, Carla Nardinocchi, Università degli Studi di Roma La Sapienza, Italy; Marco Balsi, Università degli Studi di Roma La Sapienza / Oben srl, Sassari, Italy

FR1.05.3 09:00
GROUND DEFORMATION OF ZAKYNTHOS ISLAND (WESTERN GREECE) OBSERVED BY PSI AND DGPS
Vassilis Sakkas, National & Kapodistrian University of Athens, Greece; Fabrizio Novali, Tele-Rilevamento Europa s.r.l., Italy; Evangelos Lagios, Spyridoula Vassilopoulou, National & Kapodistrian University of Athens, Greece; Brian Neal Damiata, University of California, Los Angeles, United States; Alfio Fumagalli, Tele-Rilevamento Europa s.r.l., Italy

FR1.05.4 09:20
APPLICATION OF HIGH-RESOLUTION STEREO IMAGERY ON LANDSLIDE EARTHWORK VOLUME ESTIMATION
Kun Fang, China University of Geosciences, United States; Wenjian Ni, Guoqing Sun, University of Maryland, United States

FR1.05.5 09:40
PYROCLASTIC FLOW DEPOSITS AND INSAR: ANALYSIS OF LONG TERM SUBSIDENCE AT AUGUSTINE VOLCANO, ALASKA
David McAlpin, Franz J. Meyer, University of Alaska Fairbanks, United States; Zhong Lu, Southern Methodist University, United States; James Begét, University of Alaska Fairbanks, United States

Friday, July 18 | 10:30 - 12:10 | 205-AB
Session FR2.05 | Oral

Geology and Topographic Applications II

Session Chair: Jussi Baade, Friedrich-Schiller University

FR2.05.1 10:30
INSAR MONITORING OF SURFACE DEFORMATION INDUCED BY STEAM INJECTION IN THE ATHABASCA OIL SANDS, CANADA.
Vern Singhroy, Junhua Li, Sergey Samsonov, Canada Centre for Remote Sensing, Canada; Luyi Shen, Alberta Geological Survey, Canada; Jill Pearse, Universidad de Los Andes, Colombia

FR2.05.2 10:50
ENHANCED MAPPING AND MONITORING OF MINE TAILINGS BASED ON LANDSAT ETM+ AND SPOT 5 FUSION IN NORTH OF TUNISIA
Nouha Mezned, Nada Mechrgui, Saadi Abdeljaouad, LaboratoireLaboratoire de Ressources Minérales et Environnement, Tunisia

FR2.05.3 11:10
NEW GLOBAL DSM DATASET GENERATION BY ALOS PRISM
Takeo Tadono, Haruyuki Ishida, Fumiko Oda, Shino Naito, Japan Aerospace Exploration Agency, Japan; Junichi Takaku, Remote Sensing Technology Center of Japan, Japan; Ken Tsutsui, NTT DATA Corporation, Japan

FR2.05.4 11:30
REMOTE SENSING TECHNIQUES FOR UNDERSTANDING THE GROUNDWATER FLOW DYNAMICS OF A BURRIED VALLEY AQUIFER
Angus Calderhead, Marc Hinton, Charles Logan, David Sharpe, Hazen Russell, Greg Oldenborger, Natural Resources Canada, Canada; Pascal Castellazzi, Institut National de la Recherche Scientifique, Canada; André Pugin, Natural Resources Canada, Canada; Richard Martel, Institut National de la Recherche Scientifique, Canada; Alfonso Rivera, Natural Resources Canada, Canada

FR2.05.5 11:50
FIRST GEOLOGICAL CASE STUDY OF THE AIRBORNE LONGWAVE HYPERSPECTRAL HYPER-CAM SYSTEM, THETFORD MINES, QUEBEC.
Benoit Rivard, Jilu Feng, University of Alberta, Canada; Francois Huot, Université Laval, Canada; Martin Chamberland, Telops, Canada

Friday, July 18 | 13:30 - 15:10 | 205-AB
Session FR3.05 | Oral

Urban and Built Environment 1

Session Co-Chairs: Mattia Marconcini, German Aerospace Center (DLR); Hongsheng Zhang, Chinese University of Hong Kong

FR3.05.1 13:30
A NOVEL METHOD FOR BUILDING HEIGHT ESTMATION USING TANDEM-X DATA
Mattia Marconcini, Dimitrios Marmanis, Thomas Esch, Andreas Felbier, German Aerospace Center (DLR), Germany

FR3.05.2 13:50
3D MODELING OF TREE CROWNS AND ITS APPLICATION IN SOLAR ENERGY POTENTIAL MAPPING FOR URBAN NEIGHBORHOODS
Yang Lv, Peking University, China; Xianfeng Zhang, Peking University; Xinjiang Corps Center for Geospatial Information & Technology, China; Yu Liu, Peking University, China

FR3.05.3 14:10
IMPERVIOUS SURFACES ESTIMATION USING DUAL-POLARIMETRIC SAR AND OPTICAL DATA
Hongsheng Zhang, Hui Lin, Yu Li, Yuanzhi Zhang, The Chinese University of Hong Kong, Hong Kong SAR of China

FR3.05.4 14:30
INVESTIGATING LOW FREQUENCY IN URBAN AREAS
Laetitia Thirion-Lefevre, Régis Guinvarc'h, Supelec, France; Elise Koeniguer, ONERA, France

FR3.05.5 14:50
THE GLOBAL URBAN FOOTPRINT - PROCESSING STATUS AND CROSS COMPARISON TO EXISTING HUMAN SETTLEMENT PRODUCTS
Andreas Felbier, Thomas Esch, Wieke Heldens, Mattia Marconcini, Julian Zeidler, Achim Roth, Martin Klotz, Michael Wurm, Hannes Taubenböck, German Aerospace Center (DLR), Germany

Friday, July 18 | 15:40 - 17:20 | 205-AB
Session FR4.05 | Oral

Urban and Built Environment II

Session Co-Chairs: Xin Huang, Wuhan University; Yifang Ban, KTH Royal Institute of Technology

FR4.05.1 15:40
COMBINING TOP-DOWN AND BOTTOM-UP APPROACHES FOR BUILDING DETECTION IN A SINGLE VERY HIGH RESOLUTION SATELLITE IMAGE
Mahmoud Mohammed Sidi Youssef, Clément Mallet, IGN, France; Nesrine Chehata, Laboratoire G&E (EA 4592), IPB / Université de Bordeaux, France; Arnaud Le-Bris, Adrien Gressin, IGN, France

FR4.05.2 16:00
A NOVEL MULTI-INDEX LEARNING APPROACH FOR URBAN CLASSIFICATION OF HIGH-RESOLUTION IMAGES
Xin Huang, Qikai Lu, Wuhan University, China

FR4.05.3 16:20
DAMAGE DETECTION DUE TO THE TYPHOON HAIYAN FROM HIGH-RESOLUTION SAR IMAGES
Wen Liu, Chiba University, Japan; Masashi Matsuoka, Tokyo Institute of Technology, Japan; Bruno Adriano, Erick Mas, Shunichi Koshimura, Tohoku University, Japan

FR4.05.4 16:40
URBAN AREA OBJECT-BASED CLASSIFICATION BY FUSION OF HYPERSPECTRAL AND LIDAR DATA
Kamel Kiani, Graduate University of Advanced Technology, Iran; Barat Mojaradi, Iran University of Science and Technology, Iran; Ali Esmaeily, Graduate University of Advanced Technology, Iran; Bahram Salehi, Remote Sensing Engineer/C-Core, Canada

FR4.05.5 17:00
URBAN LAND COVER MAPPING WITH TERRASAR-X USING AN EDGE-AWARE REGION-GROWING AND MERGING ALGORITHM
Alexander Jacob, Yifang Ban, KTH Royal Institute of Technology, Sweden

Friday, July 18 | 08:20 - 10:00 | 206-A
Session FR1.06 | Oral

Snow Cover II

Session Co-Chairs: Simonetta Paloscia, IFAC-CNR; Edward Kim, NASA

FR1.06.1 08:20
NORTHERN HEMISPHERE SNOW WATER EQUIVALENT ESTIMATES OF CMIP5 ARCHIVE COMPARED WITH SATELLITE-RETRIEVED DATA
Kari Luojus, Jouni Pulliainen, Juval Cohen, Matias Takala, Juha Lemmetyinen, Tuomo Smolander, Jaakko Ikonen, Finnish Meteorological Institute, Finland; Chris Derksen, Environment Canada, Canada

FR1.06.2 08:40
THE AMSR2 SNOW DEPTH AND SWE RETRIEVAL PRODUCT: DEVELOPMENT AND EVALUATION
Richard Kelly, Nastaran Saberi, Qinghuan Li, Andrew Kasurak, University of Waterloo, Canada

FR1.06.3 09:00
RELATING CO-POLARIZATION PHASE DIFFERENCE AT L-BAND OVER LAND ICE TO THE STRUCTURE OF SNOW AND FIRN LAYERS
Giuseppe Parrella, Konstantinos Papathanassiou, German Aerospace Center (DLR), Germany; Irena Hajnsek, ETH Zurich / German Aerospace Center (DLR), Germany

FR1.06.4 09:20
COUPLING OF HUT SNOW EMISSION MODEL WITH SNOW GRAIN SIZE ESTIMATES FROM THERMODYNAMIC SNOW MODEL SNOWPACK
Anna Kontu, Juha Lemmetyinen, Leena Leppänen, Juho Vehviläinen, Jouni Pulliainen, Finnish Meteorological Institute, Finland

FR1.06.5 09:40
SNOWCOVER VARIATION IN THE INDUS RIVER BASIN, UPSTREAM KALABAGH DURING 2008 - 2012
Sher Muhammad, Badar Munir Ghauri, Mirza Muhammad Waqar, Institute of Space Technology, Karachi, Pakistan

Friday, July 18 | 10:30 - 12:10 | 206-A
Session FR2.06 | Oral

Ice Sheets and Glaciers

Session Co-Chairs: Jean-Pierre Dedieu, Université Joseph Fournier; Keith Morrison, Cranfield University

FR2.06.1 10:30
RADAR SIGNAL SIMULATION ON INVESTIGATION OF SUBSURFACE STRUCTURE BY RADAR ICE DEPTH SOUNDER
Chao Wu, University of Chinese Academy of Sciences, China; Xiaojuan Zhang, Key Laboratory of Electromagnetic Radiation and Sensing Technology, Chinese Academy of Sciences, China; Jiancheng Shi, State Key laboratory of Remote Sensing Science, China; Shiyin Liu, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences, China

FR2.06.2 10:50
TERRASAR-X AND TANDEM-X OBSERVATIONS OF THE RECOVERY GLACIER SYSTEM, ANTARCTICA
Dana Floricioiu, Wael Abdel Jaber, German Aerospace Center (DLR), Germany; Kenneth C. Jezek, The Ohio State University, United States

FR2.06.3 11:10
MASS BALANCE OF CAMPBELL GLACIER, EAST ANTARCTICA, DERIVED FROM COSMO-SKYMED INTERFEROMETRIC SAR IMAGES
Hyangsun Han, Hoonyol Lee, Kangwon National University, Republic of Korea

FR2.06.4 11:30
OBSERVING SEASONAL AND INTERANNUAL CHANGES IN GLACIER SURFACE TOPOGRAPHY BY MEANS OF TANDEM-X
Thomas Nagler, ENVEO IT GmbH, Austria; Helmut Rott, ENVEO IT GmbH & Institute for Meteorology and Geophysics, University of Innsbruck, Austria; Elisabeth Ripper, Jan Wuite, ENVEO IT GmbH, Austria; Dana Floricioiu, Wael Abdel Jaber, Remote Sensing Technology Institute, DLR, Germany; Eyjolfur Magnusson, Institute of Earth Sciences, University of Iceland, Iceland

FR2.06.5 11:50
COMPARISON OF SURFACE HEIGHTS OF ICE SHEET DERIVED BY TANDEM-X INTERFEROMETRY, CRYOSAT-2 RADAR ALTIMETERY AND BEDMAP2
Seung-Hee Kim, Jungkyo Jung, Duk-Jin Kim, Seoul National University, Republic of Korea

Friday, July 18 | 13:30 - 15:10 | 206-A
Session FR3.06 | Oral

Sea Ice

Session Co-Chairs: Desmond Power, C-Core; Susanne Lehner, DLR

FR3.06.1 13:30
SEA ICE THICKNESS RETRIEVAL FROM SAR IMAGERY OVER THE BOHAI SEA
Lijian Shi, National Satellite Ocean Application Service, China; Juha Karvonen, Bin Cheng, Timo Vihma, Finnish Meteorological Institute, Finland; Mingsen Lin, National Satellite Ocean Application Service, China; Yu Liu, National Marine Environmental Forecasting Center, China; Qimao Wang, Yongjun Jia, National Satellite Ocean Application Service, China

FR3.06.2 13:50
EVALUATION OF MAGIC SEA ICE CLASSIFIER ON 61 DUAL POLARIZATION RADARSAT-2 SCENES
Steven Leigh, University of Waterloo, Canada; Zhijie Wang, University of Western Ontario, Canada; David Clausi, University of Waterloo, Canada

FR3.06.3 14:10
A HEURISTIC METHOD TO USE ICE AND WATER PROBABILITIES FROM SAR IMAGERY TO IMPROVE ICE CONCENTRATION ESTIMATES
Zahra Ashouri, Andrea Scott, University of Waterloo, Canada

FR3.06.4 14:30
MICROWAVE REMOTE SENSING OF MULTI-LAYERED ROUGH-SURFACE SNOW-COVERED SEA ICE DIELECTRIC PROFILE: SENSITIVITY ANALYSIS AND INVERSION
Nariman Firoozy, Puyan Mojabi, David Barber, University of Manitoba, Canada

FR3.06.5 14:50
FIRST TESTS ON NEAR REAL TIME ICE TYPE CLASSIFICATION IN ANTARCTICA
Susanne Lehner, German Aerospace Center (DLR), Germany; Thomas Krumpen, Alfred Wegener Institute, Germany; Anja Frost, Rudolf Ressel, Thomas E. Busche, Egbert Schwarz, German Aerospace Center (DLR), Germany

Friday, July 18 | 15:40 - 17:20 | 206-A
Session FR4.06 | Oral

Permafrost

Session Chair: Achim Roth, German Aerospace Center (DLR)

FR4.06.1 15:40
UNSUPERVISED TERRAIN CLASSIFICATION OF ARCTIC ENVIRONMENTS BY MEANS OF POLARIMETRIC HH/VV SAR AND TANDEM-X DIGITAL ELEVATION MODEL (DEM) DATA
Tobias Ullmann, University of Wuerzburg, Institute for Geography and Geology, Germany; Andreas Schmitt, German Aerospace Center (DLR)/ German Remote Sensing Data Center (DFD), Germany; Jason Duffe, National Wildlife Research Center (NWRC), Canada; Achim Roth, German Aerospace Center (DLR)/ German Remote Sensing Data Center (DFD), Germany; Hans-Wolfgang Hubberten, Alfred Wegener Institute for Polar and Marine Research (AWI), Germany; Stefan Dech, German Aerospace Center (DLR)/ German Remote Sensing Data Center (DFD), Germany; Roland Baumhauer, University of Wuerzburg, Institute for Geography and Geology, Germany

FR4.06.2 16:00
TEMPORARY TARGETS FOR ARCTIC INSAR
Jon Leighton, Parwant Ghuman, Adrian McCardle, 3v Geomatics, Canada; Andrew Hooper, University of Leeds, United Kingdom

FR4.06.3 16:20
RADARSAT-BASED INSAR FOR PERMAFROST INFRASTRUCTURE MONITORING
Bernhard Rabus, Jayson Eppler, Jayanti Sharma, Jennifer Busler, MDA, Canada

FR4.06.4 16:40
MODEL CALIBRATION FOR MAPPING PERMAFROST USING LANDSAT-5 TM AND RADARSAT-2 IMAGES
Chunping Ou, University of New Brunswick, Canada; Yu Zhang, Canada Centre for Mapping and Earth Observation, Natural Resources Canada, Canada; Armand LaRocque, Brigitte Leblon, University of New Brunswick, Canada; Kara Webster, Canadian Forest Service, Natural Resources Canada, Canada; Jim McLaughlin, Ontario Ministry of Natural Resources, Canada; Peter Barnett, Ontario Geological Survey, Ministry of Northern Development and Mines, Canada

FR4.06.5 17:00
RADAR REMOTE SENSING OF PERMAFROST ACTIVE LAYER: A PRELIMINARY STUDY
Alireza Tabatabaeenejad, Mahta Moghaddam, University of Southern California, United States

Friday, July 18 | 08:20 - 10:00 | 206-B
Session FR1.07 | Oral

Image Segmentation II

Session Co-Chairs: James Tilton, NASA Goddard Space Flight Center; Paolo Gamba, University of Pavia

FR1.07.1 08:20 **LARGE SCALE REGION-MERGING SEGMENTATION USING THE LOCAL MUTUAL BEST FITTING CONCEPT**
Pierre Lassalle, Jordi Inglada, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Julien Michel, Manuel Grizonnet, CNES, France; Julien Malik, CS-SI, France

FR1.07.2 08:40 **INCORPORATING EDGE INFORMATION INTO BEST MERGE REGION-GROWING SEGMENTATION**
James Tilton, National Aeronautics and Space Administration (NASA), United States; Edoardo Pasolli, Purdue University, United States

FR1.07.3 09:00 **SCALE SELECTION BASED ON MORAN'S I FOR SEGMENTATION OF HIGH RESOLUTION REMOTELY SENSED IMAGES**
Yan Meng, School of Remote Sensing and Information Engineering, Wuhan University, China; Chao Lin, Beijing GEOWAY Software Co., Ltd, Beijing, China, China; Weihong Cui, Jian Yao, School of Remote Sensing and Information Engineering, Wuhan University, China

FR1.07.4 09:20 **A STATISTICAL APPROACH FOR SIMULTANEOUS SEGMENTATION AND CLASSIFICATION**
Daniel C. Zanotta, National Institute for Science, Education and Technology - IFRS, Brazil; Matheus P. Ferreira, National Institute for Space Research - Brazil, Brazil; Maciel Zortea, Norwegian Computing Centre (NR), Norway; Yosio Edemir Shimabukuro, National Institute for Space Research - Brazil, Brazil

FR1.07.5 09:40 **BEYOND THE CONFUSION MATRIX: GEOSTATISTICAL ERROR ASSESSMENT FOR LANDSAT LANDCOVER MAPS OF THE PORTUGUESE LANDSCAPE**
João Carneiro, Maria Joao Pereira, Instituto Superior Técnico, Portugal

Friday, July 18 | 13:30 - 15:10 | 206-B
Session FR3.07 | Oral

Image Fusion and Analysis

Session Chair: William Emery, University of Colorado

FR3.07.1 13:30 **PAN-SHARPENING: USE OF DIFFERENCE OF GAUSSIANS**
Kishor Upla, SVNIT, Surat, India; Manjunath Joshi, DAIICT, Gandhinagar, India; Prakash Gajjar, Govt. Poly for Girls, India

FR3.07.2 13:50 **AN INTERPOLATION-BASED DATA FUSION SCHEME FOR ENHANCING THE RESOLUTION OF THERMAL IMAGE SEQUENCES**
Paolo Addesso, Maurizio Longo, Rocco Restaino, Gemine Vivone, University of Salerno, Italy; Antonino Maltese, University of Palermo, Italy

FR3.07.3 14:10 **SPATIAL-SPECTRAL COMPRESSIVE SENSING FOR HYPERSPECTRAL IMAGES SUPER-RESOLUTION OVER LEARNED DICTIONARY**
Wei Huang, Zebin Wu, Hongyi Liu, Liang Xiao, Zhihui Wei, Nanjing University of Science and Technology, China

FR3.07.4 14:30 **A NOVEL DYNAMIC THRESHOLDING AND CATEGORIZING APPROACH TO EXTRACT WATER OBJECTS FROM VHR SATELLITE IMAGES**
Çaglar Senaras, HAVELSAN A.S., Turkey; Ekin Gedik, Yasemin Yardimci, METU, Turkey

FR3.07.5 14:50 **URC: UNSUPERVISED REGIONAL CLUSTERING OF REMOTE SENSING IMAGERY**
Parthipan Siva, Alexander Wong, University of Waterloo, Canada

Friday, July 18 | 10:30 - 12:10 | 206-B
Session FR2.07 | Oral

Object Detection

Session Co-Chairs: Philippe Salembier, Universitat Politècnica de Catalunya; Florence Tupin, Télécom ParisTech

FR2.07.1 10:30 **EXTENDED KALMAN FILTER BASED SEMI-AUTOMATIC ROBUST ROAD DETECTION**
Betül Karaömeroglu, Emre Baseski, HAVELSAN A.S., Turkey

FR2.07.2 10:50 **A DATA FUSION APPROACH FOR OIL SPILL DETECTION WITH WORLDVIEW-2 DATA**
Fabio Pacifici, Bill Baugh, Nathan Longbotham, DigitalGlobe, Inc., United States; William J. Emery, University of Colorado at Boulder, United States

FR2.07.3 11:10 **ROBUST PATH OPENING VERSUS PATH OPENING FOR THE DETECTION OF HEDGEROWS IN RURAL LANDSCAPES**
Mathieu Fauvel, Carole Planque, David Sheeren, INRA, France; Mauro Dalla Mura, Grenoble INP, France; François Cokelaer, IFP, France; Jocelyn Chanussot, Grenoble INP, France; Hugues Talbot, Université Paris-Est, France

FR2.07.4 11:30 **UNSUPERVISED EXTRACTION OF GREENHOUSES USING WORLDVIEW-2 IMAGES**
Kadim Tasdemir, Antalya International University, Turkey; Dilek Koc-San, Akdeniz University, Turkey

FR2.07.5 11:50 **BUILDING INVARIANCE PROPERTIES FOR DICTIONARIES OF SAR IMAGE PATCHES**
Sonia Tabti, Télécom ParisTech, France; Charles-Alban Deledalle, Université Bordeaux 1, France; Loïc Denis, Université de Saint-Etienne, France; Florence Tupin, Télécom ParisTech, France

Friday, July 18 | 15:40 - 17:20 | 206-B
Session FR4.07 | Oral

Parameter Estimation, Detection, and Monitoring

Session Co-Chairs: Sebastiano Serpico, University of Genoa; Ahmed Shaker, Ryerson University

FR4.07.1 15:40 **CAR SPEED ESTIMATION METHOD FOR UAV IMAGES**
Thomas Moranduzzo, Farid Melgani, University of Trento, Italy

FR4.07.2 16:00 **AIR SURFACE TEMPERATURE ESTIMATION FROM SATELLITE THERMAL INFRARED TIME SERIES AND PIXELWISE MODELING OF THE ESTIMATION UNCERTAINTY THROUGH SUPPORT VECTOR MACHINES**
Gabriele Moser, Michaela De Martino, Sebastiano Bruno Serpico, University of Genoa, Italy

FR4.07.3 16:20 **MONITORING STRUCTURAL DAMAGES IN BIG INDUSTRIAL PLANTS WITH UAV IMAGES**
Thomas Moranduzzo, Farid Melgani, University of Trento, Italy

FR4.07.4 16:40 **AN AUTOMATED FLOOD DETECTION FRAMEWORK FOR VERY HIGH SPATIAL RESOLUTION IMAGERY**
Andrea Scarsi, University of Genoa, Italy; William J. Emery, University of Colorado at Boulder, United States; Gabriele Moser, University of Genoa, Italy; Fabio Pacifici, DigitalGlobe, Inc., United States; Sebastiano Bruno Serpico, University of Genoa, Italy

FR4.07.5 17:00 **IMPROVING IMAGE-BASED CHARACTERIZATION OF ROAD JUNCTIONS, WIDTHS, AND CONNECTIVITY BY LEVERAGING OPENSTREETMAP VECTOR MAP**
Bin Chen, Weihua Sun, Anthony Vodacek, Rochester Institute of Technology, United States

Friday, July 18 | 08:20 - 10:00 | 202
Session FR1.08 | Oral

TRMM and GPM

Session Co-Chairs: Gail Skofronick-Jackson, NASA Goddard Space Flight Center; Chandrasekar V Chandra, Colorado State University

FR1.08.1 08:20 **EVALUATION OF DSD MODELS USED FOR GPM/DPR RAIN RETRIEVALS**
Liang Liao, Morgan State University, United States; Robert Meneghini, NASA Goddard Space Flight Center, United States; Ali Tokay, University of Maryland Baltimore County, United States

FR1.08.2 08:40 **DEVELOPMENT OF LEVEL 1 ALGORITHM OF DUAL FREQUENCY PRECIPITATION RADAR (DPR) FOR THE GLOBAL PRECIPITATION MEASUREMENT (GPM)**
Takeshi Masaki, Takuji Kubota, Riko Oki, Masahiro Kojima, Kinji Furukawa, Takeshi Miura, Hiroki Kai, Japan Aerospace Exploration Agency, Japan; Toshio Iguchi, Hiroshi Hanado, NICT, Japan; Naofumi Yoshida, Tomohiko Higashiuwatoko, RESTEC, Japan

FR1.08.3 09:00 **AN EFFICIENT SAMPLING TECHNIQUE FOR FORWARD AND INVERSE MODELLING OF MULTIPLE SCATTERING EFFECTS IN SPACE BORNE RADAR OBSERVATIONS**
Mircea Grecu, Lin Tian, William S. Olson, NASA Goddard Space Flight Center, United States

FR1.08.4 09:20 **RAINFALL ESTIMATION FROM SPACEBORNE AND GROUND BASED RADARS USING NEURAL NETWORKS**
Venkatachalam Chandrasekar, Srinivasa Ramanujam, Haonan Chen, Minda Le, Colorado State University, United States; Amin Alqudah, Yarmouk University, Jordan

FR1.08.5 09:40 **WWLLN LIGHTNING AND PASSIVE SATELLITE MICROWAVE DATA AT 37 TO 183 GHZ**
Natalia Solorzano, Jeremy Thomas, DigiPen Institute of Technology, United States; Michael Hutchins, Robert Holzworth, University of Washington, United States

Friday, July 18 | 13:30 - 15:10 | 202
Session FR3.08 | Oral

Atmospheric Sounding

Session Chair: William Blackwell, MIT Lincoln Laboratory

FR3.08.1 13:30 **MODIS CLOUD OPTICAL AND MICROPHYSICAL PROPERTIES: OVERVIEW OF COLLECTION 6 ALGORITHM AND RESULTS**
Michael King, University of Colorado, United States; Steven Platnick, Gala Wind, Nandana Amarasinghe, Kerry Meyer, Benjamin Marchant, Thomas Arnold, NASA Goddard Space Flight Center, United States; Zhibo Zhang, University of Maryland Baltimore County, United States

FR3.08.2 13:50 **GNOS - RADIO OCCULTATION SOUNDER ON BOARD OF CHINESE FY3 SATELLITES**
Xianyi Wang, Yueqiang Sun, Qifei Du, Weihua Bai, Dongwei Wang, Yuerong Cai, Di Wu, Qinglong Yu, National Space Science Center, Chinese Academy of Sciences, China

FR3.08.3 14:10 **RELATIONSHIP BETWEEN THE GEOGRAPHICAL FEATURES OF METHANE SOURCES OF SCIAMACHY AND VEGETATION INDEX OF MODIS**
Jonggeol Park, Tokyo University of Information Sciences, Japan; Sooyoung Park, Tokyo University of Agriculture, Japan; Youngjoo Kwak, International Centre for Water Hazard and Risk Management, Japan

FR3.08.4 14:30 **GNSS-BASED ATMOSPHERE SOUNDING ON THE EARTHQUAKE AND TSUNAMI INDUCED ATMOSPHERE-IONOSPHERE PERTURBATIONS**
Yu-Ming Yang, Attila Komjathy, Xing Meng, Jet Propulsion Laboratory, United States; James Garrison, Purdue University, United States

FR3.08.5 14:50 **RETRIEVAL OF 2-D TROPOSPHERIC WATER VAPOUR FIELDS BY USING A CONSTELLATION OF CO-ROTATING LEO SATELLITES**
Alessandro Lapini, University of Florence, Italy; Fabrizio Cuccoli, CNIT, Italy; Fabrizio Argenti, Luca Facheris, University of Florence, Italy

Friday, July 18 | 10:30 - 12:10 | 202
Session FR2.08 | Oral

Radar Rainfall Techniques

Session Co-Chairs: Robert Meneghini, NASA Goddard Space Flight Center; Gail Skofronick-Jackson, NASA Goddard Space Flight Center

FR2.08.1 10:30 **RAIN RETRIEVALS USING ATMOSPHERIC RADIATION MEASUREMENT PROGRAM KA-W DUAL WAVELENGTH RADARS**
Frederic Tridon, Alessandro Battaglia, University of Leicester, United Kingdom; Pavlos Kollias, McGill University, Canada

FR2.08.2 10:50 **ESTIMATING RAINDROP SIZE DISTRIBUTIONS AND VERTICAL AIR MOTION USING S- AND KA-BAND VERTICALLY POINTING RADARS**
Christopher Williams, University of Colorado at Boulder, United States

FR2.08.3 11:10 **DEPLOYMENT AND PERFORMANCE OF NASA D3R DURING GPM IFLOODS FIELD CAMPAIGN**
Venkatachalam Chandrasekar, Haonan Chen, Robert M Beauchamp, Manuel Vega, Colorado State University, United States; Mathew Schwaller, NASA Goddard Space Flight Center, United States; Walter Petersen, David Wolff, NASA Wallops Flight Facility, United States; Delbert Willie, Colorado State University, United States

FR2.08.4 11:30 **KA-BAND CLOUD RADAR OBSERVATIONS DURING MONSOON 2013 OVER MUMBAI**
Agarwal Arvind, K. Aurobindo, S. Rambabu, G. Isola, J.D. Abhyankar, P. Srivastava, J.S. Pillai, SAMEER, India

FR2.08.5 11:50 **ESTIMATION OF RAINFALL DROP SIZE DISTRIBUTION FROM DUAL-POLARIZATION MEASUREMENTS AT S-BAND, X-BAND, AND KU-BAND RADAR FREQUENCIES**
Haonan Chen, Venkatachalam Chandrasekar, Colorado State University, United States

Friday, July 18 | 15:40 - 17:20 | 202
Session FR4.08 | Oral

Aerosols, Dust, and Haze

Session Chair: Pierre Lahaie, DRDC Valcartier

FR4.08.1 15:40 **HURRICANE SANDY AND SAHARAN DUST**
Andrew Fontenot, Hesham El-Askary, Chapman University, United States; William Lau, National Aeronautics and Space Administration (NASA), United States

FR4.08.2 16:00 **THE ANALYSIS OF THE HAZE EVENT IN THE NORTH CHINA PLAIN IN 2013**
Xingwei He, Yong Xue, Jie Guang, Yuanli Shi, Hui Xu, Linlu Mei, Chi Li, Institute of Remote Sensing and Digital Earth, CAS, China

FR4.08.3 16:20 **ATMOSPHERIC HAZE DETECTION AND MAPPING IN SPRING OF 2013 OVER BEIJING REGION SYNTHETICALLY USING MULTI-SPECTRAL REMOTE SENSING AND IN-SITU DATA**
Jianzhong Feng, AII,CAAS, United States; Linyan Bai, Institute of Remote Sensing and Digital Earth, CAS, United States; Huang-Lung Huang, SSEC, U-WM, Armenia; Xuefu Zhang, Dingchun Yan, AII,CAAS, China; Li Wang, Institute of Remote Sensing and Digital Earth, CAS, China

FR4.08.4 16:40 **THREE DIMENSIONAL AEROSOL-CLOUD STRUCTURE IN CHINA FROM SPACE: IMPLICATIONS FOR AEROSOL INDIRECT EFFECT**
Jianping Guo, Chinese Academy of Meteorological Sciences, China; Fu Wang, University of Electronic Science and Technology of China, China; Jingfeng Huang, National Oceanic and Atmospheric Administration, United States; Shihua Li, University of Electronic Science and Technology of China, China; Xiaowen Li, Beijing Normal University, China

FR4.08.5 17:00 **ASSESSING MODIS C006 URBAN CORRECTIONS USING THE HIGH RESOLUTION DRAGON AERONET NETWORK**
Nabin Malakar, Adam Atia, Barry Gross, Fred Moshary, City College of New York, United States

Friday, July 18 | 08:20 - 10:00 | 2104-AB
Session FR1.09 | Oral

Ocean Surface Modeling

Session Chair: Paul Hwang, Naval Research Laboratory

FR1.09.1 08:20
ROUGHNESS PARAMETERS ESTIMATION OF SEA SURFACE FROM SAR IMAGES
Pasquale Iervolino, Raffaella Guida, Surrey Space Centre, University of Surrey, United Kingdom; Philip Whittaker, Surrey Satellite Technology Ltd, United Kingdom

FR1.09.2 08:40
THE GO-SSA EXTENDED MODEL FOR ALL-INCIDENCE SEA CLUTTER MODELING
Sebastien Angelliaume, Vincent Fabbro, ONERA, France; Gabriel Soriano, Aix Marseille Université, CNRS, Centrale Marseille, Institut Fresnel, UMR 7249, France; Charles-Antoine Guerin, Université de Toulon, CNRS/INSU, IRD, Mediterranean Institute of Oceanography (MIO), UM 110 / Marseille Université, CNRS/INSU, IRD, Mediterranean Institute of Oceanography (MIO), UM 110, France

FR1.09.3 09:00
SENSITIVITY OF MODELED POLARIMETRIC RADAR OCEAN SCATTERING TO WIND DIRECTION
Alexander Voronovich, Valery Zavorotny, NOAA/Earth System Research Laboratory, United States

FR1.09.4 09:20
JOINT MAGNITUDE AND PHASE PROPERTIES OF NUMERICALLY SIMULATED HIGH-RESOLUTION VV- AND HH-POLARIZED X-BAND SEA BACKSCATTER OVER WIDE RANGE OF INCIDENCE ANGLES
Jakov Toporkov, Mark Sletten, U.S. Naval Research Laboratory, United States

FR1.09.5 09:40
RADAR BACKSCATTERING MODELING OF OIL SLICKS AT SEA BASED ON THE MODEL OF LOCAL BALANCE
Nicolas Pinel, Alyotech, France; Christophe Bourlier, LUNAM Université de Nantes, France; Irina Sergievskaya, Institute of Applied Physics RAS, Russian Federation

Friday, July 18 | 10:30 - 12:10 | 2104-AB
Session FR2.09 | Oral

Vegetation Modeling

Session Chair: Leung Tsang, University of Washington

FR2.09.1 10:30
MULTIPLE SCATTERING EFFECTS IN L-BAND RADAR SCATTERING FROM VEGETATED SURFACE BASED ON VECTOR RADIATIVE TRANSFER THEORY FOR SMAP APPLICATIONS
Shurun Tan, Leung Tsang, University of Washington, United States; Seung-Bum Kim, Jet Propulsion Laboratory, United States

FR2.09.2 10:50
USE OF RADARSAT-2 POLARIMETRIC SAR IMAGES FOR FUEL MOISTURE MAPPING IN THE KRUGER NATIONAL PARK, SOUTH AFRICA
Martin Kong, University of New Brunswick/University of Freiburg, Canada; Brigitte Leblon, University of New Brunswick, Canada; Renaud Mathieu, Council for Scientific and Industrial Research (CSIR), South Africa; Claus-Peter Gross, University of Freiburg, Germany; Joseph Buckley, Royal Military College of Canada, Canada; Laven Naidoo, Council for Scientific and Industrial Research (CSIR), South Africa; Laura Bourgeau-Chavez, Michigan Technological University, United States

FR2.09.3 11:10
ANALYSIS OF TEMPORAL DECORRELATION IN REPEAT PASS RADAR ACQUISITIONS OVER TROPICAL FORESTS : RESULTS FROM ELECTROMAGNETIC SIMULATIONS AND TROPISCAT EXPERIMENT
Ludovic Villard, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Pierre Borderies, ONERA, France; Clément Albinet, Alia Hamadi, Thierry Koleck, Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France

FR2.09.4 11:30
CALIBRATION OF THE PROSPECT RADIATIVE TRANSFER MODEL FOR NON PHOTOSYNTHETIC VEGETATION
Cameron Proctor, Yuhong He, University of Toronto, Canada

FR2.09.5 11:50
GENERALIZED RADAR SCATTERING MODEL INCLUDING TERRAIN TOPOGRAPHY
Mariko Burgin, Jet Propulsion Laboratory, United States; Uday Khankhoje, Indian Institute of Technology Delhi, India; Xueyang Duan, Jet Propulsion Laboratory, United States; Mahta Moghaddam, University of Southern California, United States

Friday, July 18 | 13:30 - 15:10 | 2104-AB
Session FR3.09 | Oral

Electromagnetic Modelling

Session Chair: Howard Zebker, Stanford University

FR3.09.1 13:30
COMPARISON BETWEEN DMRT SIMULATIONS FOR MULTILAYER SNOWPACK AND DATA FROM NOSREX REPORT.
Xuan-Vu Phan, Grenoble Image Parole Signal et Automatique laboratoire, France; Laurent Ferro-Famil, Institut d'Électronique et de Télécommunications de Rennes, France; Michel Gay, Grenoble Image Parole Signal et Automatique laboratoire, France; Yves Durand, Marie Dumont, Centre d'Etude de la Neige, France

FR3.09.2 13:50
NUMERICAL ANALYSIS OF ELECTROMAGNETIC SCATTERING FROM ROUGH SURFACES USING AN OPTIMIZED MONTE CARLO PROCEDURE
Guangdi Yang, Yang Du, Zhejiang University, China

FR3.09.3 14:10
COHERENT MODEL OF L BAND RADAR SCATTERING BY SOYA BEAN FIELDS USING ANALYTIC METHODS AND MONTE CARLO SIMULATIONS
Huanting Huang, University of Washington, United States; Xiaolan Xu, Jet Propulsion Laboratory, California Institute of Technology, United States; Leung Tsang, University of Washington, United States

FR3.09.4 14:30
BEAMWIDTH EFFECTS ON BACKSCATTERING ENHANCEMENT FROM TARGETS IN RANDOM MEDIA FOR E-WAVE POLARIZATION
Hosam El-Ocla, Lakehead University, Canada

FR3.09.5 14:50
CASSINI ALTIMETER AND RADIOMETER ANALYSIS OF THE SURFACE OF LIGEIA MARE, TITAN
Howard Zebker, Stanford University, United States; Alex Hayes, Cornell University, United States; Mike Janssen, Jet Propulsion Laboratory, United States; Alice Legall, LATMOS, France; Ralph Lorenz, Applied Physics Laboratory, United States; Lauren Wye, SRI International, United States

Friday, July 18 | 15:40 - 17:20 | 2104-AB
Session FR4.09 | Oral

Ground-based Remote Sensing

Session Co-Chairs: Keith Morrison, Cranfield University; Raymond Soffer, National Research Council Canada

FR4.09.1 15:40
THREE YEARS OF GROUND-BASED L-BAND RADIOMETRY IN THE ALPS: TOPOGRAPHY, VEGETATION AND SNOW ISSUES
Thierry Pellarin, University of Grenoble - LTHE, France; Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Romain Biron, Catherine Coulaud, Bernard Mercier, University of Grenoble - LTHE, France; Samuel Morin, Météo-France - CEN, France; Ghislain Picard, University of Grenoble - LGGE, France; Jean-Pierre Wigneron, INRA, France; Mike Schwank, GAMMA Remote Sensing AG, Switzerland; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France

FR4.09.2 16:00
MAXIMUM LIKELIHOOD PARAMETRIC RECONSTRUCTION OF FOREST VERTICAL STRUCTURE FROM INCLINED LASER QUADRAT SAMPLING
Mark Ducey, University of New Hampshire, United States

FR4.09.3 16:20
PRODUCTION OF LAND SURFACE TEMPERATURE FOR JPSS MISSION
Yunyue Yu, Yuling Liu, Ivan Csiszar, NOAA/NESDIS, United States

FR4.09.4 16:40
ANALYSIS AND DESIGN OF PASSIVE SUPER LOW FREQUENCY DETECTION SYSTEM
Shan shan Zhao, Qi Ming Qin, Nan Wang, Li Chen, Yan bing Bai, Cheng Ye Zhang, Peking University, China

FR4.09.5 17:00
BENEFITS OF GROUND-BASED AERI RETRIEVALS IN OPERATIONAL FORECASTING
William G. Blumberg, Cooperative Institute for Mesoscale Meteorology Studies, United States; David D. Turner, National Severe Storms Laboratory, United States

Friday, July 18 | 08:20 - 10:00 | 205-C
Session FR1.10 | Oral

Remote Sensing Applications in Crop Mapping, Yield, and Parameter Estimation I

Session Chair: Pang-Wei Liu, University of Florida

FR1.10.1 08:20
MAPPING RICE AGRICULTURE ACROSS MONSOON ASIA WITH MULTI-SCALE IMAGERY
Nathan Torbick, William Salas, Applied Geosolutions, United States; Xiangming Xiao, University of Oklahoma, United States

FR1.10.2 08:40
APPLICATION OF STATISTICAL AND MACHINE LEARNING MODELS FOR GRASSLAND YIELD ESTIMATION BASED ON A HYPERTEMPORAL SATELLITE REMOTE SENSING TIME SERIES
Iftikhar Ali, Fiona Cawkwell, Department of Geography, University College Cork, Ireland; Stuart Green, Spatial Analysis Unit, Teagasc, Dublin, Ireland., Ireland; Ned Dwyer, Coastal & Marine Research Centre CMRC, University College Cork, Cork, Ireland., Ireland

FR1.10.3 09:00
MODIS SURFACE REFLECTANCE CALIBRATION WITH AVHRR FOR VEGETATION CONDITION MONITORING
Zhengwei Yang, USDA, NASS, United States; Genong Yu, Liping Di, George Mason University, United States; Feng Gao, USDA ARS, United States; Weiguo Han, George Mason University, United States

FR1.10.4 09:20
NEAR REAL TIME YIELD ESTIMATION FOR SUGARCANE IN BRAZIL COMBINING REMOTE SENSING AND OFFICIAL STATISTICAL DATA
Marcio Pupin Mello, The Boeing Company, Brazil; Clement Atzberger, University of Natural Resources and Life Sciences (BOKU), Austria; Antonio Roberto Formaggio, National Institute for Space Research – INPE, Brazil

FR1.10.5 09:40
EVALUATION OF MODIS, POLDER AND CYCLOPES GLOBAL FPAR PRODUCTS
Rongyuan Liu, Beijing Normal University, China; Huazhong Ren, Peking University, China; Suhong Liu, Qiang Liu, Beijing Normal University, China

FRI 18

Friday, July 18 | 10:30 - 12:10 | 205-C
Session FR2.10 | Oral

Remote Sensing Applications in Crop Mapping, Yield, and Parameter Estimation II

Session Co-Chairs: Liping Di, George Mason University; Marcio Pupin Mello, Boeing; Pang-Wei Liu, University of Florida

FR2.10.1 10:30
DYNAC: A FRAMEWORK FOR THE DYNAMIC DERIVATION OF THE USLE C-FACTOR USING HIGH TEMPORAL MULTI-SPECTRAL SATELLITE IMAGERY
Markus Möller, Henning Gerstmann, University of Halle-Wittenberg, Germany; Daniel Wurbs, geoflux GbR, Germany; Cornelia Gläßer, University of Halle-Wittenberg, Germany

FR2.10.2 10:50
ESTIMATION OF NET CO2 FLUXES FOR WINTER WHEAT BY COMBINING REMOTE SENSING DATA WITH A CROP MODEL AND VALIDATION WITH GROUND DATA
Amanda Veloso, Eric Ceschia, Valérie Demarez, Centre d'Études Spatiales de la Biosphère (CESBIO), France

FR2.10.3 11:10
TOWARDS AN OPERATIONAL PRODUCTION AND DISTRIBUTION OF 300M BIOPHYSICAL VARIABLES FROM PROBA-V SENSOR DATA
Roselyne Lacaze, HYGEOS, France; Bruno Smets, VITO, Belgium; Frédéric Baret, Marie Weiss, INRA, France; Didier Ramon, Laurent Wandrebeck, Bruno Monsterleet, HYGEOS, France; Jean-Louis Roujean, Jean-Christophe Calvet, Météo-France, France; Philippe Pacholczyk, CNES, France; Fernando Camacho, EOLAB, Spain

FR2.10.4 11:30
TOWARDS DETECTING MOWING OF AGRICULTURAL GRASSLANDS FROM MULTI-TEMPORAL COSMO-SKYMED DATA
Karlis Zalite, University of Tartu, Estonia; Kaupo Voormansik, Tartu Observatory, Estonia; Jaan Praks, Aalto University, Finland; Oleg Antropov, VTT Technical Research Centre of Finland, Finland; Mart Noorma, Tartu Observatory, Estonia

FR2.10.5 11:50
EFFICIENCY ESTIMATION OF DIFFERENT SATELLITE DATA USAGE FOR WINTER WHEAT YIELD FORECASTING IN UKRAINE
Nataliia Kussul, Andrii Kolotii, Sergii Skakun, Space Research Institute NAS Ukraine and SSA Ukraine, Ukraine; Andrii Shelestov, National University of Life and Environmental Sciences of Ukraine, Ukraine; Olga Kussul, National Technical University of Ukraine (Kyiv Polytechnic Institute), Ukraine; Tamara Oliynuk, Taras Shevchenko National University of Kyiv, Ukraine

Friday, July 18 | 13:30 - 15:10 | 205-C
Session FR3.10 | Oral

Remote Sensing Applications in Agriculture I

Session Co-Chairs: Yang Zhengwei, United States Department of Agriculture; Alicia Joseph, NASA Goddard Space Flight Center

FR3.10.1 13:30
ON CROP ROTATION IN CALCULATING NDVI-BASED AGRICULTURAL DROUGHT INDICATORS
Meixia Deng, Ali Levent Yagci, Liping Di, George Mason University, United States

FR3.10.2 13:50
NEAR REAL-TIME ASSESSMENT OF RICE CROP DAMAGE IN THE CAMBODIAN FLOODPLAIN USING MODIS TIME-SERIES IMAGES
Youngjoo Kwak, Badri Bhakta Shrestha, Atsuhiro Yorozuya, Hisaya Sawano, Public Works Research Institute - ICHARM, Japan

FR3.10.3 14:10
IMPACTS OF CLIMATE CHANGE ON THE AGRICULTURE PHENOLOGY OF MAJOR CROP TYPES IN NORTHEAST CHINA PLAIN
Yanmin Shuai, Jeffrey Masek, NASA Goddard Space Flight Center, United States; Donghui Xie, Beijing Normal University, China

FR3.10.4 14:30
PHENOLOGY FROM SPACE: AN ALTERNATIVE TO RAINFALL MEASUREMENTS FOR CROP MONITORING IN WEST AFRICA?
Agnès Bégué, Elodie Vintrou, Christian Baron, CIRAD, France; Seydou Traoré, AGHRYMET, Niger

FR3.10.5 14:50
QUANTITATIVE ESTIMATION OF DROUGHT RISK IN UKRAINE USING SATELLITE DATA
Sergii Skakun, Nataliia Kussul, Space Research Institute National Academy of Sciences of Ukraine and State Space Agency of Ukraine, Ukraine; Olga Kussul, National Technical University of Ukraine (Kyiv Polytechnic Institute), Ukraine; Andrii Shelestov, National University of Life and Environmental Sciences of Ukraine, Ukraine

Friday, July 18 | 15:40 - 17:20 | 205-C
Session FR4.10 | Oral

Remote Sensing Applications in Agriculture II

Session Chair: Brigitte Leblon, University of New Brunswick

FR4.10.1 15:40
ANNUAL SPACE-BASED CROP INVENTORY FOR CANADA: 2009-2014
Thierry Fisette, Andrew M. Davidson, Bahram Daneshfar, Patrick Rollin, Ziad Aly, Leander Campbell, Agriculture and Agri-Food Canada, Canada

FR4.10.2 16:00
AGRICULTURAL CROPS OF THE ONTARIO SHIELD ECOZONE: 2013 MOBILE MAPPING GROUND-TRUTH OBSERVATION RESULTS
Vicky R. Vanthof, Stewart J. Sweeney, Ontario Ministry of Agriculture and Food, Canada

FR4.10.3 16:20
LINEAR SPECTRAL UNMIXING FOR CROP AND SOIL INFORMATION EXTRACTION FROM A SINGLE WORLDVIEW-2 IMAGE
Yacine Bouroubi, Effigis GeoSolutions, Canada; Nicolas Tremblay, Philippe Vigneault, Agriculture and Agri-Food Canada, Canada; Mathieu Benoit, Effigis GeoSolutions, Canada

FR4.10.4 16:40
REGIONAL ANALYSIS OF CROP AND NATURAL VEGETATION IN WEST AFRICA BASED ON NDVI METRICS
Louise Leroux, Agnès Bégué, Danny Lo Seen, CIRAD, France

FR4.10.5 17:00
THE POTENTIAL OF UNMANNED AERIAL VEHICLES FOR PRECISION AGRICULTURE AND PHENOTYPING
Aleixandre Verger, CREAF, Spain; Corentin Chéron, AIRINOV, France; Frédéric Baret, INRA, France; Nathalie Vigneau, AIRINOV, France

Friday, July 18 | 08:20 - 10:00 | 207
Session FR1.11 | Oral

Ocean Surface Salinity Remote Sensing

Session Co-Chairs: Simon Yueh, NASA Jet Propulsion Laboratory, California Institute of Technology; David LeVine, NASA Goddard Space Flight Center

FR1.11.1 08:20
AQUARIUS SALINITY DATA VALIDATION AND SCIENCE STATUS
Gary Lagerloef, Earth and Space Research, United States; David Le Vine, NASA Goddard Space Flight Center, United States; Hsun-Ying Kao, Earth and Space Research, United States

FR1.11.2 08:40
AQUARIUS CALIBRATION USING CELESTIAL SKY, OCEAN AND LAND
Emmanuel Dinnat, NASA Goddard Space Flight Center / Chapman University, United States; David Le Vine, NASA Goddard Space Flight Center, United States; Rajat Bindlish, USDA ARS, United States; Jeffrey Piepmeier, NASA Goddard Space Flight Center, United States

FR1.11.3 09:00
AQUARIUS SEA SURFACE SALINITY RETRIEVAL UNDER RAINY CONDITIONS
Wenqing Tang, Simon Yueh, Alexander Fore, Akiko Hayashi, Tong Lee, Jet Propulsion Laboratory, United States; Gary Lagerloef, Earth and Space Research, United States

FR1.11.4 09:20
UPPER OCEAN SALINITY STRATIFICATION AND RAIN FRESHENING IN THE TROPICS OBSERVED FROM AQUARIUS
Thomas Meissner, Frank Wentz, Joel Scott, Kyle Hilburn, Remote Sensing Systems, United States

FR1.11.5 09:40
AQUARIUS' COMBINED ACTIVE PASSIVE ALGORITHM FOR OCEAN SURFACE SALINITY AND WIND RETRIEVAL
Simon Yueh, Wenqing Tang, Alexander Fore, Akiko Hayashi, Yuhe Song, Jet Propulsion Laboratory, California Institute of Technology, United States

Friday, July 18 | 10:30 - 12:10 | 207
Session FR2.11 | Oral

Satellite Altimeter Observations of Sea Surface Heights and Dynamics

Session Chair: Naoto Ebuchi, Hokkaido University

FR2.11.1 10:30
EVALUATION OF SAMOSA3 ADAPTED RETRACKER USING CRYOSAT-2 SAR ALTIMETRY DATA OVER THE ARCTIC OCEAN
Maulik Jain, National Space Institute / DTU Space, Denmark; Cristina Martin-Puig, isardSAT, Poland; Ole Baltazar Andersen, Lars Stenseng, Jorgen Dall, National Space Institute / DTU Space, Denmark

FR2.11.2 10:50
SIMULATION OF KA-BAND NEAR-NADIR INSAR DATA AND WATER ELEVATIONS REPRESENTATIVE OF KARIN/SWOT
Roger Fjørtoft, Jean-Claude Souyris, Damien Desroches, Jean-Marc Gaudin, Nadine Pourthié, Denis Carbonne, Hélène Vadon, Centre National d'Etudes Spatiales, France; Javier Duro, Xavier Banqué, Roberto Robledo, Fifamé Koudogbo, Altamira Information, Spain; Pierre Dubois, François Soulat, Collecte Localisation Satellites (CLS), France

FR2.11.3 11:10
IN-ORBIT CALIBRATION OF HY-2 ALTIMETER USING A SIGNAL RECONSTRUCTIVE TRANSPONDER
Caiyun Wang, Wei Guo, Fei Zhao, Junzhi Wan, the Key Laboratory of Microwave Remote Sensing, Center for Space Science and Applied Research, Chinese Academy of Sciences, China

FR2.11.4 11:30
HIDDEN SURFACE DYNAMICAL MODES AND SSH RETRIEVALS FROM A JOINT ANALYSIS OF ALTIMETRY AND MICROWAVE SST
Pierre Tandeo, Ronan Fablet, Télécom Bretagne, France; Pierre Ailliot, University of Brest, France

FR2.11.5 11:50
A GENERALIZED SEMI-ANALYTICAL MODEL FOR DELAY/DOPPLER ALTIMETRY
Abderrahim Halimi, Corinne Mailhes, Jean-Yves Tourneret, University of Toulouse, IRIT-ENSEEIHT-TéSA, France; Francois Boy, Centre National d'Etudes Spatiales, France; Thomas Moreau, Collecte Localisation Satellites (CLS), France

Friday, July 18 | 13:30 - 15:10 | 207
Session FR3.11 | Oral

Oceans: Coastal Zones I

Session Co-Chairs: Wooil Moon, University of Manitoba; Weimin Huang, Memorial University

FR3.11.1 13:30
SEA CLUTTER STATISTICAL CHARACTERIZATION USING TERRASAR-X DATA
Eduardo Makhoul, Yu Zhan, Antoni Broquetas, Josep Ruiz-Rodon, Universitat Politècnica de Catalunya, Spain; Stefan Baumgartner, German Aerospace Center (DLR), Germany

FR3.11.2 13:50
CANADIAN ARCTIC SHORELINE MAPPING USING RADARSAT-2 AND OPTICAL DATA THROUGH OBJECT-BASED CLASSIFICATION
Anne-Marie Demers, Sarah N. Banks, Jon Pasher, Jason Duffe, Environment Canada, Canada

FR3.11.3 14:10
ANALYSIS OF SHIP SIZE DETECTABILITY OVER DIFFERENT TERRASAR-X MODES
Carlos Bentes, Domenico Velotto, Susanne Lehner, German Aerospace Center (DLR), Germany

FR3.11.4 14:30
ANALYSIS OF THE SPATIAL VARIABILITY OF METEO-MARINE PARAMETERS: AN OPPORTUNITY IN ASSESSING OCEAN RENEWABLE ENERGY POTENTIAL WITH HIGH RESOLUTION SPACEBORNE SAR
Sven Jacobsen, Susanne Lehner, Andrey Pleskachevsky, Miguel Bruck, German Aerospace Center (DLR), Germany; Wolfgang Rosenthal, OceanWaveS GmbH, Germany; Roberto Mayerle, Research and Technology Centre Westcoast (FTZ), Germany

FR3.11.5 14:50
WATER LEVEL MEASUREMENT BY CONTROLLED RADAR REFLECTION AND TERRASAR-X IMAGING GEODESY
Michael Eineder, Ulrich Balss, Sergi Duque, German Aerospace Center (DLR), Germany

Friday, July 18 | 15:40 - 17:20 | 207
Session FR4.11 | Oral

Oceans: Coastal Zones II

Session Co-Chairs: Weimin Huang, Memorial University; Dirk Werle, AERDE Environmental Research

FR4.11.1 15:40
IMAGE SIMULATION OF THE GEOSTATIONARY SENSOR GEOOCAPI FOR THE WATER QUALITY SURVEY OF A DYNAMIC COASTAL AREA
Audrey Minghelli-Roman, Manchun Lei, University of Toulon, France; Marion Fraysse, Aix-Marseille Université, France; Ivane Pairaud, French Research Institute for Exploitation of the Sea, Ifremer, France; Christel Pinazo, Aix-Marseille Université, France; Romaric Verney, French Research Institute for Exploitation of the Sea, Ifremer, France

FR4.11.2 16:00
L-BAND SAR IMAGE PROCESSING FOR THE DETERMINATION OF COASTAL BATHYMETRY BASED ON SWELL ANALYSIS
Valentina Boccia, Alfredo Renga, Giancarlo Rufino, Antonio Moccia, Università degli Studi di Napoli, Italy; Marco D'Errico, Second University of Naples, Italy; Cesare Aragno, Kell S.r.l., Italy; Simona Zoffoli, Italian Space Agency, Italy

FR4.11.3 16:20
WAVELET BASED TEXTURE MODELING FOR PANCHROMATIC VERY HIGH RESOLUTION IMAGE CLASSIFICATION: APPLICATION TO OYSTER RACKS DETECTION
Olivier Regniers, Lionel Bombrun, Université de Bordeaux, France; Virginie Lafon, Aurélie Dehouck, Geo-Transfert, France; Claire Tinel, CNES, France; Christian Germain, Université de Bordeaux, France

FR4.11.4 16:40
MAPPING POSIDONIA MEADOW FROM HIGH SPATIAL RESOLUTION IMAGES IN THE GULF OF ORISTANO (ITALY)
Erica Matta, Martina Aiello, Mariano Bresciani, Institute for Electromagnetic Sensing of the Environment, Italy; Marco Gianinetto, Politecnico di Milano, Italy; Mauro Musanti, Claudia Giardino, Institute for Electromagnetic Sensing of the Environment, Italy

FR4.11.5 17:00
A MERIS-BASED MODEL FOR ESTIMATING THE CONCENTRATION OF SUSPENDED PARTICULATES IN THE ST. LAWRENCE ESTUARY
Gholamreza Mohammadpour, Martin Alejandro Montes-Hugo, Jean-Pierre Gagne, University of Quebec in Rimouski, Canada; Pierre Larouche, Pêches et Océans Canada, Canada; Habiba Bouakba, University of Quebec in Rimouski, Canada

Friday, July 18 | 08:20 - 10:00 | 2101
Session FR1.12 | Oral-Invited

The Chinese HY-2 Ocean Dynamic Environment Mission: Date Processing and Applications

Session Co-Chairs: Xiaolong Dong, National Space Science Center, Chinese Academy of Sciences; Ole Andersen, National Space Institute, Technical University of Demark

FR1.12.1 08:20 **WIND RETRIEVAL PROCESSING FOR HY-2A MICROWAVE SCATTEROMETER**
Juhong Zou, nsoas, China; Xuetong Xie, Guangzhou Universit, China; Yi Zhang, Mingsen Lin, nsoas, China

FR1.12.2 08:40 **STATISTICAL EVALUATION AND PERFORMANCE ASSESSMENT OF THE SEA SURFACE HEIGHT FROM HY-2A ALTIMETER: CROSS-CALIBRATION RESULTS**
Lifeng Bao, Peng Gao, Institute of Geodesy and Geophysics, Chinese Academy of Sciences, China; Hailong Peng, Yongjun Jia, National Satellite Ocean Application Service, China; C.K. Shum, The Ohio State University, United States; Minseng Lin, National Satellite Ocean Application Service, China

FR1.12.3 09:00 **HY-2A SATELLITE ALTIMETRIC DATA EVALUATION IN THE ARCTIC OCEAN**
Yongcun Cheng, School of Marine Sciences, Nanjing University of Information Science and Technology, China; Ole Baltazar Andersen, DTU Space, Denmark

FR1.12.4 09:20 **CROSS-CALIBRATION OF HY-2A WITH JASON-2 AND CRYOSAT-2 BASED ON LEVEL1 PROCESSING INSTRUMENTAL CORRECTIONS.**
Martinez Bernat, Garcia Albert, Martin-Puig Cristina, Roca Monica, Escola Roger, isardSAT, Spain

FR1.12.5 09:40 **HURRICANE SANDY'S STORM SURGE - A CASE STUDY USING HY-2A ALTIMETRY**
John Lillibridge, National Oceanic and Atmospheric Administration, United States; Mingsen Lin, National Satellite Ocean Application Service, China; C.K. Shum, The Ohio State University, United States; Lifeng Bao, Chinese Academy of Sciences, China

Friday, July 18 | 10:30 - 12:10 | 2101
Session FR2.12 | Oral-Invited

The Chinese HY-2 Ocean Dynamic Environment Mission: Mission and Payloads

Session Co-Chairs: Xiaolong Dong, National Space Science Center, Chinese Academy of Sciences; Mingsen Lin, National Satellite Ocean Application Service

FR2.12.1 10:30 **HY-2 OCEAN DYNAMIC ENVIRONMENT MISSION AND PAYLOADS**
Mingsen Lin, Xingwei Jiang, National Satellite Ocean Application Service, China

FR2.12.2 10:50 **SYSTEM TECHNIQUES AND CAPABILITIES OF THE HY-2A ALTIMETER**
Ke Xu, Heguang Liu, Peng Liu, Xiufen Yu, National Space Science Center, Chinese Academy of Sciences, China

FR2.12.3 11:10 **DESIGN AND GROUND VALIDATION TECHNIQUE OF HY-2ASCATTEROMETER**
Wang Xiaoning, Li Jun, Liu Lixia, Jin Xu, Chen Wenxin, China Academy of Space Technology Xi'an, China

FR2.12.4 11:30 **ACMR SYSTEM DESCRIPTION AND PERFORMANCE**
Dehai Zhang, Zhenzhan Wang, Hongjian Wang, Jin Zhao, Yun Li, National Space Science Center, Chinese Academy of Sciences, China

FR2.12.5 11:50 **IN-ORBIT CORRECTION AND OPTIMIZATION DESIGN OF THE CALIBRATION ASSEMBLY FOR HY-2 MICROWAVE RADIOMETER**
Yanming Li, Jun Li, Taiyang Hu, Chongdi Duan, Wenxin Chen, Weining Lei, China Academy of Space Technology Xi'an, China

Friday, July 18 | 13:30 - 15:10 | 2101
Session FR3.12 | Oral

Ground Processing and Data Management

Session Co-Chairs: David Kunkee, Aerospace Corporation; Hampapuram Ramapriyan, NASA Goddard Space Flight Center

FR3.12.1 13:30 **PROCESS AND TECHNOLOGIES FOR THE TRANSITION OF RESEARCH ALGORITHMS TO OPERATIONS FOR REAL-TIME SATELLITE PROCESSING**
Alexander Werbos, Erik Steinfelt, Daniel Hunt, Edward Kennelly, David Hogan, Hilary Snell, T. Scott Zaccheo, AER, United States

FR3.12.2 13:50 **RAPID ALGORITHM INTEGRATION IN THE JPSS CGS**
Kerry Grant, Shawn Miller, Michael Jamilkowski, Raytheon Company, United States

FR3.12.3 14:10 **A CONTENT BASED MAP RETRIEVAL SYSTEM FOR LAND COVER DATA**
Jun Liu, Bin Luo, Liangpei Zhang, Wuhan University, China

FR3.12.4 14:30 **CONTEXTUALISING IMAGERY: CONCEPTUAL DESIGN FOR A VIRTUAL LABORATORY FOR ENVIRONMENTAL ACCOUNTING AND RESOURCE MANAGEMENT (VLEARM)**
Phil Tickle, CRC for Spatial Information, Australia; Tai Chan, Dept. of Environment and Primary Industries, Australia; Kim Lowell, CRC for Spatial Information/University of Melbourne, Australia

FR3.12.5 14:50 **PHOTONS TO DECISIONS – JOINT POLAR SATELLITE SYSTEM COMMON GROUND SYSTEM VALUE CHAIN**
Kerry Grant, Shawn Miller, Michael Jamilkowski, Raytheon Company, United States

Friday, July 18 | 15:40 - 17:20 | 2101
Session FR4.12 | Oral

Remote Sensing Data and Policy Decisions

Session Chair: Hampapuram Ramapriyan, NASA Goddard Space Flight Center

FR4.12.1 15:40 **SUPPORTIVE GEOSPATIAL POLICIES FOR A SUSTAINABLE SPATIAL DATA INFRASTRUCTURE: BEST PRACTICES IN DATA ARCHIVING, DATA SHARING AND BIG DATA**
Simon Riopel, Cindy Mitchell, Paula Mcleod, Craig Eby, National Resources Canada, Canada

FR4.12.2 16:00 **A NEW USER-ORIENTED REMOTE SENSING INFORMATION SERVICE MODEL BASED ON INTEGRATED PLATFORM**
Junxiao Hu, Jian Jiao, Haizhen Zhang, Xin Li, Qiming Zeng, Peking University, China

FR4.12.3 16:20 **USE OF PLÉIADES IMAGERY BY INSTITUTIONAL AND SCIENTIFIC USERS**
Claire Tinel, Delphine Fontannaz, Steven Hosford, CNES, France; Bruno Montfort, Astrium GEO-Information Services, France; Hélène De Boissezon, CNES, France

FR4.12.4 16:40 **A DECISION-SUPPORT METHOD FOR WATER RESOURCE PROJECTS ALLOCATION AT THE CITY SCALE**
Xi Chen, Jing Li, Weiguo Jiang, Yunfei Zhang, Liangliang Tao, Beijing Normal University, China; Xiaoxia Shi, Logistics School, Beijing Wuzi University, China

FR4.12.5 17:00 **FEASIBILITY STUDIES FOR THE NEXT GENERATION OF CANADIAN MICROSATELLITES**
Martin Bergeron, Marleen van Mierlo, Catherine Casgrain, Martin Hebert, Guennadi Kroupnik, Canadian Space Agency, Canada

Forest and Land Modeling

Session Co-Chairs: Brigitte Leblon, University of New Brunswick; Mariko Burgin, University of Michigan

MOP.A.1 Board 1
CHANGES OF DOMINANT SCATTERERS AND PROPAGATION PATHS AS A POSSIBLE ORIGIN OF SINGULAR POINTS IN RADAR INTERFEROMETRY: EXPERIMENTAL ANALYSIS
Ryo Natsuaki, Akira Hirose, The University of Tokyo, Japan

MOP.A.2 Board 2
A MULTIPLE SCATTERING REFLECTANCE MODEL FOR VEGETATION CANOPY BASED ON RECOLLISION PROBABILITY
Gaoxing Chen, Beitong Zhang, Wenjie Fan, Xiru Xu, Yuan Liu, Lu Wang, Peking University, China

MOP.A.3 Board 3
SIMULATION OF COMPLEX VISIBILITIES IN IMAGING RADIOMETRY BY APERTURE SYNTHESIS
Eric Anterrieu, CNRS & Université de Toulouse, France; François Cabot, Yann H. Kerr, Younes Monjid, CNES, France; José-Philippe Pérez, CNRS & Université de Toulouse, France

MOP.A.4 Board 4
MONITORING OF OIL PALM PLANTATIONS AND GROWTH VARIATIONS WITH A DENSE VEGETATION MODEL
Khar-Chun Teng, Universiti Tunku Abdul Rahman, Malaysia; Jun-Yi Koay, University of Copenhagen, Denmark; Seng-Heng Tey, Applied Agricultural Resources Sdn. Bhd, Malaysia; Hong-Tat Ewe, Hean-Teik Chuah, Universiti Tunku Abdul Rahman, Malaysia

MOP.A.5 Board 5
EXPLORING THE EFFECTS OF WIND IN FORESTS ON SAR AND IFSAR FOREST MAPING USING COMSOL MULTIPHYSICS
Michael Benson, Leland Pierce, Kamal Sarabandi, University of Michigan, United States

MOP.A.6 Board 6
HIGH-ORDER SMALL PERTURBATION METHOD FOR SCATTERING FROM LAYERED STRUCTURE WITH MULTILAYER ROUGH INTERFACES
Chao Wu, Liting Rao, Youcheng Wang, University of Chinese Academy of Sciences, China; Xiaojuan Zhang, Key Laboratory of Electromagnetic Radiation and Sensing Technology, Chinese Academy of Sciences, China

MOP.A.7 Board 7
ADAPTING POLSARPROSIM TO SIMULATE TEMPORAL DECORRELATION IN A HETEROGENEOUS MIXED FOREST
Razi Ahmed, Scott Hensley, Maxim Neumann, Jet Propulsion Laboratory, United States; Paul Siqueira, University of Massachusetts, United States; Marco Lavalle, Jet Propulsion Laboratory, United States

MOP.A.8 Board 8
A PATCH-BASED FILTER FOR INSAR INTERFEROGRAMS
Xinglin Li, Graduate University of Chinese Academy of Sciences, China; Hongjun Song, Robert Wang, Institute of Electronics, Chinese Academy of Sciences, China; Yunfeng Shao, Runpu Chen, Graduate University of Chinese Academy of Sciences, China

MOP.A.9 Board 9
ELECTROMAGNETIC SCATTERING CHARACTERISTICS OF DNM ROUGH SURFACE IN THE TERAHERTZ REGIME BY THE FDTD ALGORITHM
Ke Li, Li-Xin Guo, Juan Li, Xidian University, China

Ocean Surface Scattering

Session Co-Chairs: Alexander Voronovich, NOAA / Earth System Research Laboratory; Pasquale Iervolino, Surrey Space Centre, University of Surrey

MOP.B.10 Board 10
RECENT PROGRESSES IN THE SIMULATION OF MICROWAVE DOPPLER SPECTRA FROM THE SEA SURFACE
Charles-Antoine Guerin, Frédéric Nouguier, David Miret, Université de Toulon, France; Philippe Forget, CNRS, France; Marc Saillard, Université de Toulon, France; Gabriel Soriano, Aix-Marseille Université, France

MOP.B.11 Board 11
APPLICATION OF AN EFFICIENT MULTIREGION FEM-BIM TO ELECTROMAGNETIC SCATTERING FROM AN DIELECTRIC TARGET ABOVE ROUGH SEA SURFACES
Run-Wen Xu, Li-Xin Guo, Xidian University, China

MOP.B.12 Board 12
MODELING OF MAGNETIC FIELD INDUCED BY WIND-DRIVEN SEA WAVES MOVING THROUGH THE GEOMAGNETIC FIELD
Xiaojian Zhu, University of Electronic Science and Technology of China, China; Mingyao Xia, Peking University, China

MOP.B.13 Board 13
IMITATION MODEL OF HF-BAND SIGNAL BACKSCATTERING FROM SEA SURFACE
Michael Potipak, Vladimir Lobatch, Southern Federal University, Russian Federation

MOP.B.14 Board 14
PROBABILITY OF ICEBERG DETECTION USING S- AND X-BAND MARINE RADARS
Joseph Chamberland, Desmond Power, Bing Yue, C-CORE, Canada

MOP.B.15 Board 15
A STUDY OF THE THIRD-ORDER SMALL SLOPE APPROXIMATION FOR SCATTERING FROM ONE-DIMENSIONAL ROUGH SURFACES
Jeffrey Ouellette, Joel T. Johnson, The Ohio State University, United States

MOP.B.16 Board 16
RADIATIVE TRANSFER MODEL FOR SCATTERING OF RAINFALL OVER ROUGH SEA SURFACE
Feng Xu, Peng Wang, Fudan University, China; Xiaofeng Li, NOAA - GST, United States; Ya-Qiu Jin, Fudan University, China

MOP.B.17 Board 17
HYBRID FE-BIM FOR ELECTROMAGNETIC SCATTERING FROM A DIELECTRIC TARGET ABOVE A DIELECTRIC ROUGH SURFACE
Li-Xin Guo, Run-Wen Xu, Xidian University, China

MOP.B.18 Board 18
A MODEL FOR COHERENT BACKSCATTER FROM DIFFUSE TARGETS
Don Atwood, Michigan Tech Research Institute, United States; Benjamin Matthiss, Karlsruhe Institute of Technology - KIT, Germany; Shimon Wdowinski, University of Miami, United States; Sang-Hoon Hong, KARI, United States

Monday, July 14 17:20 - 19:00 Poster Area C
Session MOP.C Poster

EM Modeling

Session Chair: Xuan-Vu Phan, Grenoble Image Parole Signal et Automatique Laboratoire

MOP.C.19 Board 19
A MICROWAVE BACKSCATTERING MODEL FOR HAIL-RAIN MIXTURE PRECIPITATION
Seda Ermis, Saibun Tjuatja, The University of Texas at Arlington, United States

MOP.C.20 Board 20
ON THE APPLICATION OF COMPLEX ICA TO RADAR DATA IN THE FREQUENCY DOMAIN
Jeffrey Hall, Saibun Tjuatja, The University of Texas at Arlington, United States

MOP.C.21 Board 21
SCATTERING MODEL FOR A COUPLE OF BUILDINGS IN SAR IMAGES
Alessio Ciotola, Gerardo Di Martino, Antonio Iodice, Daniele Riccio, Giuseppe Ruello, Università di Napoli Federico II, Italy

MOP.C.22 Board 22
SIGNAL MODEL BASED ON MAXWELL'S EQUATIONS
Bing Li, Bing Sun, Jie Chen, De-xian Deng, Yan Wang, BeiHang University, China

MOP.C.23 Board 23
ROBUST NUMERICAL ALGORITHM TO MODEL INDUCTION TOOL RESPONSES IN PLANAR-LAYERED MEDIA
Kamalesh Sainath, Fernando Teixeira, ElectroScience Laboratory, Ohio State University, United States; Burkay Donderici, Halliburton Sensor Physics and Technology, United States

MOP.C.24 Board 24
EXAMINATION OF MICROWAVE FORWARD REFLECTION FROM A RANDOMLY ROUGH LOSSY DIELECTRIC SURFACE
Sin-Myeong Park, Soon-Koo Kweon, Yisok Oh, Hongik University, Republic of Korea

MOP.C.25 Board 25
COMPARISON OF TWO METHODS FOR AEROSOL OPTICAL DEPTH RETRIEVAL OVER NORTH AFRICA FROM MSG/SEVIRI DATA
Jie Guang, Yong Xue, Institute of Remote Sensing and Digital Earth, CAS, China; Jean-Louis Roujean, Dominique Carrer, Xavier Ceamanos, Météo-France, CNRM/GMME, 42 av. G. Coriolis, 31057 Toulouse, France, France; Chi Li, Linlu Mei, Xingwei He, Jia Liu, Hui Xu, Institute of Remote Sensing and Digital Earth, CAS, China

Monday, July 14 17:20 - 19:00 Poster Area D
Session MOP.D Poster

High Resolution SAR Processing

Session Co-Chairs: Sergi Duque, German Aerospace Center (DLR); Andrea Recchia, Politecnico di Milano

MOP.D.26 Board 26
A NOVEL STEREO POSITIONING METHOD BASED ON OPTICAL AND SAR SENSOR
Zhefeng Wu, Huaping Xu, Huan Zhang, Jing-Wen Li, BeiHang University, China

MOP.D.27 Board 27
TERRASAR-X STARING SPOTLIGHT IMAGE REFOCUSING AND TARGET PARAMETER ESTIMATION
Sergi Duque, Alessandro Parizzi, Helko Breit, Thomas Fritz, German Aerospace Center (DLR), Germany

MOP.D.28 Board 28
OPTRONIC PROCESSING OF RCMC FOR REAL-TIME SAR IMAGE FORMATION
Yesheng Gao, Rui Guo, Kaizhi Wang, Xingzhao Liu, Shanghai Jiao Tong University, China

MOP.D.29 Board 29
GENERALIZED OMEGA-K ALGORITHM FOR MISSILE-BORNE SAR IMAGING WITH CONSTANT ACCELERATION
Qianghui Zhang, Junjie Wu, Zhongyu Li, Yulin Huang, Haiguang Yang, Jianyu Yang, Wencao Li, University of Electronic Science and Technology of China, China

MOP.D.30 Board 30
SCALABLE PERFORMANCE ANALYSIS OF THE PARALLEL SBAS-DINSAR ALGORITHM
Pasquale Imperatore, Ivana Zinno, Stefano Elefante, Claudio De Luca, Michele Manunta, Francesco Casu, IREA-CNR, Italy

MOP.D.31 Board 31
MAXIMUM A POSTERIORI ESTIMATION FOR RADAR ANGULAR SUPER-RESOLUTION
Yuebo Zha, Yulin Huang, Jianyu Yang, Junjie Wu, Yin Zhang, University of Electronic Science and Technology of China, China

MOP.D.32 Board 32
A NOVEL CONCEPT OF PLANE GRID RESOLUTION FOR HIGH-RESOLUTION SAR IMAGING SYSTEMS
Xin Lin, Tingting Liu, Kaizhi Wang, Xingzhao Liu, Shanghai Jiao Tong University, China

MOP.D.33 Board 33
CS-BASED HIGH-RESOLUTION ISAR IMAGING WITH ADAPTIVE SPARSE BASIS
Linna Pang, Shunsheng Zhang, Chan Liu, Xiaozhen Tian, University of Electronic Science and Technology of China, China

INSAR Techniques

Session Co-Chairs: Louis Veci, Array Systems Computing, Inc.; Shoichiro Kojima, National Institute of Information and Communications Technology

MOP.E.34 Board 34
THE SENTINEL-1 TOOLBOX
Luis Veci, Jun Lu, Array Systems Computing Inc., Canada; Pau Prats-Iraola, Rolf Scheiber, German Aerospace Center (DLR), Germany; Fabrice Collard, OceanDataLab, France; Norman Fomferra, Brockmann Consult GmbH, Germany; Marcus Engdahl, European Space Agency (ESA) / ESRIN, Italy

MOP.E.35 Board 35
OPTIMIZED ATMOSPHERIC SIGNAL REDUCTION IN INSAR TIME SERIES ASSISTED BY EXTERNAL ATMOSPHERIC INFORMATION
Wenyu Gong, Franz J. Meyer, Geophysical Institute, United States

MOP.E.36 Board 36
PRELIMINARY ANALYSIS OF CROSS-TRACK INTERFEROMETRY BY SYNTHETIC BEAM OF TWO ANTENNAS OF ALONG-TRACK INTERFEROMETRIC SAR
Shoichiro Kojima, Toshihiko Umehara, Tatsuharu Kobayashi, Makoto Satake, Jyunpei Uemoto, National Institute of Information and Communications Technology, Japan

MOP.E.37 Board 37
THE INFLUENCE OF SYSTEM PARAMETERS ON MULTIBASELINE INSAR FOR LAYOVER SOLUTION
Yanli Yuan, Huaping Xu, Xue Qiu, BeiHang University, China

MOP.E.38 Board 38
MULTI-BASELINE PHASE UNWRAPPING VIA MAXIMUM LIKELIHOOD PHASE GRADIENT ESTIMATION
Yanan You, Huaping Xu, Jianlong Li, Chunsheng Li, BeiHang University, China; Lvqian Zhang, Chinese Academy of Engineering, China; Peng Xiao, BeiHang University, China

MOP.E.39 Board 39
EVALUATION OF DIGITAL ELEVATION MODEL GENERATED BY AN AIRBORNE INTERFEROMETRIC SAR (PI-SAR2)
Tatsuharu Kobayashi, Toshihiko Umehara, Jyunpei Uemoto, Makoto Satake, Shoichiro Kojima, Takeshi Matsuoka, Akitsugu Nadai, Seiho Uratsuka, National Institute of Information and Communications Technology, Japan

MOP.E.40 Board 40
BLOCK ADJUSTMENT OF AIRBORNE INSAR BASED ON INTERFEROGRAM PHASE AND POS DATA
Xijuan Yue, Chunming Han, Changyong Dou, Yinghui Zhao, Institute of Remote Sensing and Digital Earth, CAS, China

MOP.E.41 Board 41
SPACEBORNE D-INSAR SYSTEM: COHERENCE ANALYSIS
Wei Li, Liangsheng Lou, Siwei Liu, State Key Laboratory of Geo-Information Engineering, China; Mingsheng Liao, State Key Laboratory of Information Engineering in Surveying, Mapping, and Remote Sensing, Wuhan University, China; Huaping Xu, BeiHang University, China; Weimin Yu, Shanghai Academy of Spaceflight Technology, China

INSAR DEM Techniques

Session Chair: Angus Calderhead, INRS-ETE

MOP.F.42 Board 42
DEM RECONSTRUCTION OF MOUNTAINOUS AREA FROM TWO ANTI-PARALLEL ASPECTS OF AIRBORNE INSAR DATA
Fang-fang Li, Donghui Hu, Jiayin Liu, Xiaolan Qiu, Chibiao Ding, Institute of Electronics, Chinese Academy of Sciences, China

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MOP.S.136 Board 136 **CALIBRATION/VALIDATION OF SPACEBORNE MICROWAVE SCATTEROMETER ON HY-2A**
Ailing Lv, Xiaoning Wang, Axin Jin, Lixia Liu, China Academy of Space Technology Xi'an, China

MOP.S.137 Board 137 **DECOUPLING OF SEA SURFACE AND RAIN BACKSCATTER FOR SPACEBORNE SCATTEROMETERS**
Di Zhu, Xiaolong Dong, Chinese Academy of Sciences, China; Lei Zhang, DHF Satellite co., Ltd, China; Xingou Xu, Jintai Zhu, Qian Wang, Qingliu Bao, Chinese Academy of Sciences, China

MOP.S.138 Board 138 **DIVIDE AND CONQUER: A FAST MATRIX INVERSE METHOD OF ITERATIVE ADAPTIVE APPROACH FOR REAL BEAM SUPERRESOLUTION**
Yongchao Zhang, Yin Zhang, Wenchao Li, Yulin Huang, Jianyu Yang, University of Electronic Science and Technology of China, China

Active Microwave

Session Co-Chairs: Feng Zhou, Xidian University; Paulo Marques, Instituto Superior de Engenharia de Lisboa - Instituto de Telecomunicacoes

MOP.T.139 Board 139 **CRYOSAT: SIRAL CALIBRATION AND PERFORMANCE**
Marco Fornari, European Space Agency (ESA), Netherlands; Michele Scagliola, Nicolas Tagliani, Aresys, Italy; Tommaso Parrinello, European Space Agency (ESA), Italy; Albert Garcia, isardSAT, Spain

MOP.T.140 Board 140 **SUB-SATELLITE MEASUREMENTS: NEW POSSIBILITY OF THE ADVANCED UNDERWATER ACOUSTIC WAVE GAUGE**
Vladimir Karaev, Eugeny Meshkov, Yury Titchenko, Institute of Applied Physics RAS, Russian Federation

MOP.T.141 Board 141 **AN INVESTIGATION OF GEOSTATIONARY DOPPLER WEATHER RADAR PERFORMANCE BASED ON MEAN DOPPLER RADIAL VELOCITY AND SPECTRUM WIDTH MEASUREMENTS**
Lixia Liu, Chongdi Duan, China Academy of Space Technology Xi'an, China; Hing Cheung So, City University of Hong Kong, China; Axin Jin, Xiaoning Wang, China Academy of Space Technology Xi'an, China

MOP.T.142 Board 142 **WEIGHTED LEAST SQUARES METHOD FOR FORWARD-LOOKING IMAGING OF SCANNING RADAR**
Yin Zhang, Yulin Huang, Yuebo Zha, Junjie Wu, Jianyu Yang, University of Electronic Science and Technology of China, China

MOP.T.143 Board 143 **PHASE CORRECTION FOR PASSIVE RADAR USING TARGETS OF OPPORTUNITY**
Paulo Marques, Instituto Superior de Engenharia de Lisboa - Instituto de Telecomunicacoes, Portugal

Biomass Assessment I

Session Co-Chairs: Thuy Le Toan, Centre D'Etudes Spatiales de la Biosphère (CESBIO); André Beaudoin, Canadian Forest Service

MOP.U.144 Board 144 **ESTIMATION OF EUCALYPTUS PLANTATIONS ABOVEGROUNG BIOMASS IN BRAZIL USING ALOS/PALSAR L-BAND DATA**
Nicolas Baghdadi, IRSTEA, France; Guerric Le Maire, CIRAD, France; Jean-Stéphane Bailly, AgroParisTech, France; Kenji Ose, IRSTEA, France; Yann Nouvellon, CIRAD, France; Mehrez Zribi, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Cristiane Lemos, Rodrigo Hakamada, ipaper, Brazil

MOP.U.145 Board 145 **ESTIMATION OF FOREST HEIGHT AND ABOVEGROUND BIOMASS FROM ICESAT/GLAS DATA IN EUCALYPTUS PLANTATIONS IN BRAZIL**
Nicolas Baghdadi, IRSTEA, France; Guerric Lemaire, CIRAD, France; Ibrahim Fayad, IRSTEA, France; Jean-Stéphane Bailly, AgroParisTech, France; Yann Nouvellon, CIRAD, France; Cristiane Lemos, Rodrigo Hakamada, ipaper, Brazil

MOP.U.146 Board 146 **DYNAMIC ANALYSIS AND MODELING OF FOREST ABOVE-GROUND BIOMASS**
Xin Tian, Zengyuan Li, Yun Guo, Min Yan, Erxue Chen, Research Institute of Forest Resource Information Techniques, Chinese Academy of Forestry, China; Zhongbo Su, Christiaan van der Tol, Faculty of Geo-Information Science and Earth Observation, University of Twente, China; Feilong Ling, Key Laboratory of Spatial Data Mining & Information Sharing of Ministry Education, Fuzhou University, China

MOP.U.147 Board 147 **CATARSI - CAP AND TRADE ASSESSMENT BY REMOTE SENSING INVESTIGATION: AN ALGORITHM FOR CROP AND FOREST BIOMASS ESTIMATE**
Emanuele Santi, Simone Pettinato, Simonetta Paloscia, CNR-IFAC, Italy; Paolo Castracane, Ugo Di Giammatteo, ACS, Italy

MOP.U.148 Board 148 **THE SPATIAL DISTRIBUTION OF FOREST BIOMASS IN CHINA USING REMOTE SENSING AND NATIONAL FOREST INVENTORY**
Ling Du, Tao Zhou, Xiang Zhao, Hao Wu, Donghai Wu, Beijing Normal University, China

MOP.U.149 Board 149 **COMPARISON OF ESTIMATING FOREST ABOVE-GROUND BIOMASS OVER MONTANE AREA BY TWO NON-PARAMETRIC METHODS**
Yun Guo, Fuzhou University, China; Xin Tian, Zengyuan Li, Chinese Academy of Forestry, China; Feilong Ling, Fuzhou University, China; Erxue Chen, Min Yan, Chunmei Li, Chinese Academy of Forestry, China

MOP.U.150 Board 150 **A STUDY ON IMPROVING DEM-BASED FOREST BIOMASS ESTIMATION USING PALSAR AND FOREST INVENTORY DATA**
Min-Gee Hong, Kookmin University, Republic of Korea; Hyo-Suk Lim, Korea Aerospace Research Institute, Republic of Korea; Choen Kim, Kookmin University, Republic of Korea

Multi-temporal Analysis

Session Chair: Kostas Papathanassiou, German Aerospace Center (DLR)

MOP.V.151 Board 151 **FOREST RESOURCES ANNUAL DYNAMIC MONITORING BASED ON HIGH-RESOLUTION REMOTE SENSING DATA**
Jingjing Shi, Yuxing Zhang, Chaozong Xia, Academy of Forest Inventory and Planning, State Forestry Administration, China

MOP.V.152 Board 152 **TEXTURE-BASED CLASSIFICATION OF A TROPICAL FOREST AREA USING MULTI-TEMPORAL ASAR DATA**
Ron Hagensieker, Björn Waske, Ribana Roscher, Freie Universität Berlin, Germany

MOP.V.153 Board 153 **ASSESSMENT OF LAND DEGRADATION USING TIME SERIES TRENDS ANALYSIS OF VEGETATION INDICTORS IN BEIJING-TIANJIN DUST AND SANDSTORM SOURCE REGION**
Hongyan Wang, Qiangzi Li, Institute of Remote Sensing and Digital Earth, CAS, China; Zhihai Gao, Bin Sun, Research Institute of Forest Resource Information Techniques, Chinese Academy of Forestry, China; Xin Du, Institute of Remote Sensing and Digital Earth, CAS, China

MOP.V.154 Board 154 **DOWNSCALING VEGETATION FRACTION BY FUSING MULTI-TEMPORAL MODIS AND LANDSAT DATA**
Jinying Wang, Northeast Forestry University, China; Hongyan Wang, Xiaosong Li, Institute of Remote Sensing and Digital Earth, CAS, China

MOP.V.155 Board 155 **MONITORING RESPONSES OF TERRESTRIAL ECOSYSTEM TO CLIMATE VARIATIONS USING MULTI TEMPORAL REMOTE SENSING DATA IN GHANA**
Ram Avtar, Osamu Saito, United Nations University, Japan; Gulab Singh, Niigata University, Japan; Hideki Kobayashi, Japan Agency for Marine-Earth Science and Technology, Japan; Yunus Ali, The University of Tokyo, Japan; Srikantha Herath, Kazuhiko Takeuchi, United Nations University, Japan

MOP.V.156 Board 156 **COSMO-SKYMED® FOR CROPS MONITORING**
Rocchina Guarini, Federica Segalini, Italian Space Agency, Italy; Claudia Notarnicola, Institute for Applied Remote Sensing, EURAC Research, Italy; Francesco Vuolo, University of Natural Resources and Life Sciences (BOKU), Austria; Luigi Dini, Italian Space Agency, Italy

MOP.V.157 Board 157 **LARGE-SCALE DETECTION OF VEGETATION DYNAMICS USING MODIS IMAGES AND BFAST: A CASE STUDY IN QUEBEC, CANADA**
Xiuqin Fang, Hohai University, China; Qiuan Zhu, Northwest Agriculture and Forestry University, China; Liliang Ren, Hanwei Xu, Hohai University, China; Huai Chen, Northwest Agriculture and Forestry University, China; Changhui Peng, University of Quebec at Montreal, Canada

MOP.V.158 Board 158 **TEMPORAL AND SPATIAL MONITORING OF POST-FIRE FOREST DYNAMICS USING TIME-SERIES MODIS DATA**
Wei Chen, Kazuyuki Moriya, Tetsuro Sakai, Lina Koyama, Kyoto University, Japan; Chunxiang Cao, Chinese Academy of Sciences, China

Forest Parameter Estimation I

Session Co-Chairs: Sylvain Leblanc, Natural Resources Canada; André Beaudoin, Canadian Forest Service

MOP.W.159 Board 159 **AN ENSEMBLE MULTISCALE FILTER APPROACH FOR RETRIEVING LEAF AREA INDEX FROM MULTIPLE SATELLITE DATA**
Jingyi Jiang, Zhiqiang Xiao, Beijing Normal University, China

MOP.W.160 Board 160 **A NOVEL METHOD TO ESTIMATE EFFECTIVE PAI FROM TERRESTRIAL LIDAR DATA**
Yunfei Bao, Beijing Institute of Space Mechanics and Electricity, China

MOP.W.161 Board 161 **AUTOMATIC TREE CROWN DELINEATION IN TROPICAL FOREST USING HYPERSPECTRAL DATA**
Matheus P. Ferreira, Daniel C. Zanotta, National Institute for Space Research, Brazil; Maciel Zortea, Norwegian Computing Centre (NR), Norway; Thales Körting, Leila Foncesa, Yosio Edemir Shimabukuro, National Institute for Space Research, Brazil; Carlos Souza Filho, University of Campinas, Brazil

MOP.W.162 Board 162 **FUSION OF HYPERSPECTRAL AND LIDAR DATA FOR FOREST ATTRIBUTES ESTIMATION**
Michele Dalponte, Lorenzo Frizzera, Damiano Gianelle, Research and Innovation Centre, Fondazione E. Mach, Italy

MOP.W.163 Board 163 **PERFORMANCE EVALUATION OF LIGHTWEIGHT LIDAR FOR UAV APPLICATIONS**
Salvatore Esposito, La Sapienza University of Rome, Oben srl, Italy; Matteo Mura, University of Molise, Italy; Paolo Fallavollita, Marco Balsi, La Sapienza University of Rome, Oben srl, Italy; Gherardo Chirici, University of Molise, Italy; Arturo Oradini, Forestlab Centre S.r.l, Italy; Marco Marchetti, University of Molise, Italy

MOP.W.164 Board 164 **PRACTICAL DATA ASSIMILATION FOR THE RETRIEVAL OF BIOPHYSICAL PARAMETERS OF VEGETATION**
Jose Gomez-Dans, Phil Lewis, NCEO & University College London, United Kingdom; Maxim Chernetskiy, Friedrich Schiller University Jena, Germany

MOP.W.165 Board 165 **ACCURACY AND PRECISION OF THE MODIS BURNED AREA PRODUCT IN THE BRAZILIAN SAVANNA BIOME**
Fernando Araujo, Laerte Ferreira, Federal University of Goiás - UFG, Brazil

MOP.W.166 Board 166 **3D RECONSTRUCTION OF A SINGLE TREE FROM TERRESTRIAL LIDAR DATA**
Xiangyu Wang, Donghui Xie, Guangjian Yan, Wuming Zhang, Yan Wang, Yiming Chen, Beijing Normal University, China

MOP.W.167 Board 167 **INDIVIDUAL TREE SEGMENTATION OVER LARGE AREAS USING AIRBORNE LIDAR POINT CLOUD AND VERY HIGH RESOLUTION OPTICAL IMAGERY**
Yuchu Qin, Antonio Ferraz, Clément Mallet, Institut national de l'information géographique et forestière, Laboratoire MATIS, Université Paris Est, France; Corina Iovan, UR-CoRéUs-LabEx-CORAIL, Institut de Recherche pour le Développement, France

Forest Parameter Estimation II

Session Chair: Sylvain Leblanc, Natural Resources Canada

MOP.X.168 Board 168 **PREFER (SPACE-BASED INFORMATION SUPPORT FOR PREVENTION AND RECOVERY OF FOREST FIRES) PROJECT ACHIEVEMENTS**
Giovanni Laneve, Roberto De Bonis, Università di Roma 'La Sapienza', Italy; Fabrizio Ferrucci, University of Calabria, Italy; Ana Sebastian, GMV, Spain; Sandra Oliveira, University of Coimbra, Portugal; Stephen Clandillon, SERTIT, France; Lucia Tampellini, CGS, Italy; Barbara Hirn, IESConsulting, Italy; Dimitris Diagourtas, SATWAYS, Greece; George Leventakis, KEMEA, Greece

MOP.X.169 Board 169 **THE SPATIAL SCALING EFFECT OF CANOPY FAPAR RETRIEVED BY REMOTE SENSING**
Lu Wang, Wenjie Fan, Xiru Xu, Yuan Liu, Peking University, China

MOP.X.170 Board 170 **THE EXPLORING RESEARCH OF A GEOMETRIC OPTICAL CANOPY REFLECTANCE MODEL (GOMS) FOR RETRIEVING LEAF AREA INDEX DIRECTLY**
Congrong Li, Jinling Song, Jindi Wang, Beijing Normal University, China

MOP.X.171 Board 171 **FAPAR AND BRDF SIMULATION FOR ROW CROP USING MONTE CARLO METHOD**
Beitong Zhang, Wenjie Fan, Xiru Xu, Yuan Liu, Peking University, China

MOP.X.172 Board 172 **COGNITIVE RADAR APPLIED TO FOREST AND KRIGING-BASED METAMODEL**
Panagiotis Piteros, Laetitia Thirion-Lefevre, Régis Guinvarc'h, SUPELEC/SONDRA, France; Marc Lambert, Université Paris-Sud, France

MOP.X.173 Board 173 **EFFICIENT FIELD DATA COLLECTION OF TROPICAL FOREST USING TERRESTRIAL LASER SCANNER**
Akira Kato, Koji Kajiwara, Yoshiaki Honda, Chiba University, Japan; Manabu Watanabe, Japan Aerospace Exploration Agency, Japan; Tsutomu Enoki, Kyushu University, Japan; Yoshio Yamaguchi, Niigata University, Japan; Tatsuaki Kobayashi, Chiba University, Japan

MOP.X.174 Board 174 **RETRIEVE OPTICAL DEPTH USING MICROWAVE VEGETATION INDICES FROM WINDSAT DATA**
Yunqing Li, Jiancheng Shi, Tianjie Zhao, State Key Laboratory of Remote Sensing Science, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, China; Tao Zhang, State Key Laboratory of Remote Sensing Science, Research Center for Remote Sensing and GIS, and School of Geography, Beijing Normal University, China

MOP.X.175 Board 175 **A MULTI-ECHO AIRBORNE LIDAR-BASED METHOD FOR ESTIMATING LEAF AREA DENSITY DISTRIBUTION OF INDIVIDUAL TREES**
Haruki Oshio, Takashi Asawa, Tokyo Institute of Technology, Japan; Akira Hoyano, The Open University of Japan, Japan; Satoshi Miyasaka, Nakanihon Air Service, Japan

MOP.X.176 Board 176 **USE OF SATELLITE DATA FOR MONITORING FIRE EVENTS IN POLAND**
Hoscilo Agata, Turlej Konrad, Institute of Geodesy and Cartography, Poland

Forest Parameter Estimation III

Session Co-Chairs: Marc Simard, NASA Jet Propulsion Laboratory, California Institute of Technology; Kalifa Goita, Université de Sherbrooke

MOP.Y.177 Board 177 **MEASUREMENT OF LEAF AREA INDEX AND LEAF ANGLE DISTRIBUTION USING TWO DIRECTIONAL GAP FRACTIONS OBTAINED FROM MULTI-ANGLE PICTURES**
Ronghai Hu, Xihan Mu, Beijing Normal University, China

MOP.Y.178 Board 178 **RETRIEVAL OF VEGETATION PARAMETERS FROM SPECTRODIRECTIONAL RADIOMETRIC DATA USING MULTI-SENSOR APPROACH**
Alijafar Mousivand, Massimo Menenti, Ben Gorte, Delft University of Technology, Netherlands; Wout Verhoef, University of Twente (ITC), Netherlands

MOP.Y.179 Board 179 **ANALYZING A NORTH AMERICAN PRAIRIE WILDFIRE USING REMOTE SENSING IMAGERY**
Bing Lu, Yuhong He, University of Toronto Mississauga, Canada

MOP.Y.180 Board 180 **EVALUATION OF AWIFS BASED NEAR REAL TIME DETECTION SYSTEM USING LANDSAT LIKE DATA**
Cesar Diniz, Diogo Santos, Arlesson Souza, Nelton Luz, Douglas Moraes, Janaina Maia, Alessandra Rodrigues Gomes, Marcos Adami, National Institute for Space Research, Brazil

MOP.Y.181 Board 181 **RELASPHONE - MOBILE PHONE AND INTERACTIVE APPLICATIONS TO COLLECT GROUND REFERENCE BIOMASS DATA FOR SATELLITE IMAGE ANALYSIS**
Matthieu Molinier, Tuomas Häme, Timo Toivanen, Kaj Andersson, Teemu Mutanen, VTT Technical Research Centre of Finland, Finland

MOP.Y.182 Board 182 **WOODY COVER MAPPING WITH RADAR AND AIRBORNE LIDAR IN THE GREAT KRUGER NATIONAL PARK REGION**
Mikhail Urbazaev, Christiane Schmullius, Christian Thiel, University Jena, Germany; Renaud Mathieu, Laven Naidoo, CSIR Pretoria, South Africa; Shaun Levick, Max Planck Institute for Biogeochemistry, Germany; Izak Smit, South African National Parks, Germany; Gregory P. Asner, Carnegie Institution for Science, United States

MOP.Y.183 Board 183 **THE SYNERGY OF ALOS/PRISM AND ALOS/PALSAR FOR THE MAPPING OF FOREST HEIGHT**
Wenjian Ni, Institute of Remote Sensing and Digital Earth, CAS, China; Guoqing Sun, University of Maryland, United States; Zhiyu Zhang, Institute of Remote Sensing and Digital Earth, CAS, China

Biomass Assessment II

Session Chair: André Beaudoin, Canadian Forest Service

MOP.Z.184 Board 184 **SUPPORT OF POLSAR INDICES TO IMPROVE FOREST BIOMASS ESTIMATION FROM P-BAND**
Pierre-Louis Frison, Université Paris-Est Marne-la-Vallée, France; Ludovic Vilard, Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France

MOP.Z.185 Board 185 **CONTRIBUTIONS OF THE GROUND-BASED INSTRUMENT TROPISCAT TO THE BIOMASS MISSION: PAST RESULTS AND FUTURE EXPERIMENTS**
Thierry Koleck, CNES, France; Clément Albinet, Ludovic Villard, Alia Hamadi, Dinh Ho Tong Minh, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Pierre Borderies, ONERA, France; Thuy Le Toan, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Fabio Rocca, Stefano Tebaldini, POLIMI, Italy; Benoit Burban, EcoFog, France

MOP.Z.186 Board 186 **MAPPING THE ABOVEGROUND BIOMASS OF TREE SPECIES ACROSS CANADA'S FOREST USING KNN IMPUTATION AND MODIS 250M IMAGERY**
André Beaudoin, Pierre Bernier, Philippe Villemaire, Luc Guindon, Denys Yemshanov, Natural Resources Canada, Canada; Barry Wilson, USDA Forest Service, United States; Ronald Hall, Graham Stinson, Natural Resources Canada, Canada

Dynamics of Earth Processes and Climate Change

Session Chair: Richard Fernandes, Natural Resources Canada

MOP.AA.187 ESTIMATION OF CAUSE OF ICE JAM FLOODING IN SUB-ARCTIC
Board 187 **REGIONS USING PALSAR FULL POLARIMETRY DATA**
Manabu Watanabe, Japan Aerospace Exploration Agency, Japan; Hiroki Takakura, Chinatsu Yonezawa, Tohoku University, Japan; Yasuhiro Yoshikawa, Kitami Institute of Technology, Japan; Masanobu Shimada, Japan Aerospace Exploration Agency, Japan

MOP.AA.188 AN APPROACH BASED ON SATELLITE IMAGE TIME SERIES MINING
Board 188 **TO IDENTIFY REGION SUSCEPTIBLE TO DESERTIFICATION**
Rachel Scrivani, University of Campinas, Brazil; Renata Ribeiro do Valle Gonçalves, Cepagri-Unicamp, Brazil; Luciana Romani, Stanley Oliveira, Eduardo Assad, Embrapa Agricultural Informatics, Brazil

MOP.AA.189 COMPARASION ON SNOW DEPTH ALGORITHMS OVER CHINA
Board 189 **USING AMSR-E PASSIVE MICROWAVE REMOTE SENSING**
Yubao Qiu, Huadong Guo, Chanjia Bin, Institute of Remote Sensing and Digital Earth, CAS, China; Duo Chu, Tibet Meteorological Bureau, China; Lijuan Shi, Institute of Remote Sensing and Digital Earth, CAS, China; Juha Lemmetyinen, Arctic Ressearch Centre, Finnish Meteorological Institute, Finland

MOP.AA.190 RESPONSE OF VEGETATION TO TEMPERATURE, PRECIPITATION
Board 190 **AND SOLAR RADIATION TIME-SCALES: A CASE STUDY OVER MAINLAND AUSTRALIA**
Donghai Wu, Xiang Zhao, Wenqian Zhao, Bijian Tang, Wenfang Xu, Beijing Normal University, China

MOP.AA.191 GLOBAL VEGETATION-CLIMATE DYNAMICS FROM 30-YEAR
Board 191 **SATELLITE OBSERVATIONS**
Aleixandre Verger, CREAF, Spain; Frédéric Baret, INRA, France; Iolanda Filella, Josep Peñuelas, CREAF, Spain

MOP.AA.192 MONITORING THE VULNERABILITY OF SOYBEAN TO HEAT WAVES
Board 192 **AND THEIR IMPACTS IN MATO GROSSO STATE, BRAZIL**
Anibal Gusso, Universidade do Vale do Rio dos Sinos (UNISINOS), Brazil; Jorge Ducati, Universidade Federal do Rio Grande do Sul (UFRGS), Brazil; Mauricio Veronez, Universidade do Vale do Rio dos Sinos (UNISINOS), Brazil; Damien Arvor, Institut de Recherche pour le Développement (IRD), France; Luiz Gonzaga, Universidade do Vale do Rio dos Sinos (UNISINOS), Brazil

Oil, Gas, and Mineral Exploration II

Session Co-Chairs: Mohamed Niang, Qatar Environmental & Energy Institute; Benoit Rivard, University of Alberta

MOP.BB.193 LITHOLOGIC ANOMALY IDENTIFICATION OF HYDROCARBON
Board 193 **MICROSEEPAGES IN KELASU FOLD-AND-THRUST BELT, WEST CHINA USING ASTER IMAGERY**
Zhaoqiang Huang, Zhixiang Yao, Minghua Cheng, Institute of Mineral Resources, China Metallurgic Geology Bureau, China

MOP.BB.194 PASSIVE SUPER-LOW FREQUENCY REMOTE SENSING TECHNIQUE
Board 194 **FOR MONITORING COAL-BED METHANE RESERVOIRS**
Nan Wang, Qi ming Qin, Li Chen, Yan bing Bai, Shan shan Zhao, Cheng Ye Zhang, Huazhong Ren, Peking University, China

MOP.BB.195 STUDY ON THE ALTERATION MINERALS CAUSED BY OIL AND GAS
Board 195 **MICROSEEPAGE BY EXTRACTING ENDMEMBERS FROM HYPERION**
Na Liu, Xiaomei Chen, Qianqian Li, Beijing Institute of Technology, China

MOP.BB.196 OPERATIONAL SURFACE MOVEMENT MONITORING WITH
Board 196 **SPACEBORNE INSAR FOR EOR**
Michael Henschel, Brad Lehrbass, MDA Geospatial Services, Canada

MOP.BB.197 NUMERICAL MODELLING OF ROCK DIELECTRIC BEHAVIORS USING
Board 197 **MICRO COMPUTERIZED TOMOGRAPHY IMAGE**
Chen Guo, Chang'an University, China; Richard Liu, University of Houston, United States; Zhili He, Zhao Jin, Chang'an University, China; Yuning Feng, Peking University, China

MOP.BB.198 MAPPING SPATIAL VARIABILITY OF GEOTHERMAL ENERGY IN
Board 198 **HOKKAIDO JAPAN BY COMBINATION OF THERMAL REMOTE SENSING AND BOREHOLE DATA**
Bingwei Tian, Katsuaki Koike, Kyoto University, Japan

Oil, Gas, and Mineral Exploration III

Session Co-Chairs: Mohamed Niang, Qatar Environmental & Energy Institute; Benoit Rivard, University of Alberta

MOP.CC.199 Board 199 **GROUND DEFORMATION DUE TO STEAM ASSISTED GRAVITY DRAINAGE AND CYCLIC STEAM STIMULATION OBSERVED BY RADARSAT-2 IN ALBERTA'S OIL SANDS**
Sergey Samsonov, Magdalena Czarnogorska, Natural Resources Canada, Canada

MOP.CC.200 Board 200 **AN APPROACH FOR DETECTING NATURAL GAS PIPELINE LEAKAGE BY USING LANDSAT-8 MULTISPECTRAL SATELLITE IMAGES**
Nazanin Etesami, Graduate University of Advanced Technology, Iran; Barat Mojaradi, Iran University of Science and Technology, Iran; Ali Esmaeily, Graduate University of Advanced Technology, Iran; Safa Khazai, Imam Hussein University, Iran

MOP.CC.201 Board 201 **ANALYSIS OF THE BACKSCATTER SIGNAL IN ALOS/PALSAR IMAGES COLLECTED OVER OFFSHORE ENVIRONMENTS AND THEIR USE IN OIL FILM DETECTION**
Luciana Pereira, University of Campinas, Brazil; Rogério Negri, São Paulo State University, Brazil; Marcelo Curtarelli, National Institute for Space Research, Brazil; Rosa Pabón, Carlos Souza Filho, University of Campinas, Brazil

Renewable Energies (hydro, solar, wind)

Session Co-Chairs: Danielle De Sève, Hydro-Québec; Francois Vachon, IREQ

MOP.DD.202 Board 202 **SPATIAL-TEMPORAL DYNAMIC OF THE TROPHIC STATE IN A LARGE AMAZONIAN HYDROELECTRIC RESERVOIR**
Marcelo Curtarelli, Igor Ogashawara, National Institute for Space Research, Brazil; Enner Alcântara, São Paulo State University, Brazil; João Lorenzzetti, José Stech, National Institute for Space Research, Brazil

MOP.DD.203 Board 203 **ANNUAL CYCLE IN LAKES AND RIVERS FROM CRYOSAT-2 ALTIMETRY - THE BRAHMAPUTRA RIVER**
Heidi Villadsen, Ole Baltazar Andersen, Lars Stenseng, DTU Space, Denmark

MOP.DD.204 Board 204 **BIO-OPTICAL CHARACTERIZATION OF TWO BRAZILIAN HYDROELECTRIC RESERVOIRS AS SUPPORT TO UNDERSTAND THE CARBON BUDGET IN HYDROELECTRIC RESERVOIRS**
Claudio Barbosa, Renato Ferreira, Carlos Araujo, Evlyn Márcia Leão de Moraes Novo, National Institute for Space Research – INPE, Brazil

Monday, July 14 17:20 - 19:00 Poster Area EE
Session MOP.EE Poster

Remote Sensing Archeology and Forensic Science

Session Chair: Tom Lukowski, Canada

MOP.EE.205 Board 205 **ARCHAEOLOGICAL PROSPECTION OF NORTHEASTERN HONDURAS WITH AIRBORNE MAPPING LIDAR**
Juan Fernandez-Diaz, William Carter, Ramesh Shrestha, University of Houston, United States; Stephen Leisz, Christopher Fisher, Colorado State University, United States; Alicia González, Independent Scholar, United States; Dan Thompson, Archaeological Modeling International, United States; Steve Elkins, UTL Productions, United States

MOP.EE.206 Board 206 **REMOTE SENSING AND GROUND PENETRATING RADAR SURVEY RESULTS FOR POSSIBLE RELOCATION SITE OF ROANOKE LOST COLONY**
Michael Cobb, Kelechi Onyiriuka, Elizabeth City State University, United States; Rashad Williamson, Mississippi Valley State University, United States; Patrina Bly, Malcolm LeCompte, Linda B. Hayden, Elizabeth City State University, United States

MOP.EE.207 Board 207 **APPLICATION OF HOUGH FORESTS FOR THE DETECTION OF GRAVE MOUNDS IN HIGH-RESOLUTION SATELLITE IMAGERY**
Gino Caspari, University of Hamburg, Germany; Timo Balz, Gang Liu, Wuhan University, China; Xinyuan Wang, International Centre on Space Technologies for Natural and Cultural Heritage under the Auspices of UNESCO, China; Mingsheng Liao, Wuhan University, China

MOP.EE.208 Board 208 **MAPPING PAST HUMAN ACTIVITY USING LOW REPRESENTATIVE SITE LOCATION DATASETS AND ELEVATION DATA**
Jaroslaw Jasiewicz, Adam Mickiewicz University, Poland; Iwona Sobkowiak-Tabaka, Polish Academy of Sciences, Poland

Monday, July 14 17:20 - 19:00 Poster Area FF
Session MOP.FF Poster-Invited

Mobile Laser Scanning and Point Cloud Processing

Session Co-Chairs: Jonathan Li, University of Waterloo, Canada; Cheng Wang, Xiamen University

MOP.FF.209 Board 209 **PARAMETER-DOMAIN AND SPATIAL-DOMAIN EXTRACTION OF POLE-LIKE FEATURES FROM MOBILE TERRESTRIAL LASER SCANNING DATA**
Zahra Lari, Kaleel Al-Durgham, Ayman Habib, University of Calgary, Canada

MOP.FF.210 Board 210 **3D CRACK SKELETON EXTRACTION FROM MOBILE LIDAR POINT CLOUDS**
Yongtao Yu, Jonathan Li, Xiamen University, China; Haiyan Guan, University of Waterloo, Canada; Cheng Wang, Xiamen University, China

MOP.FF.211 Board 211 **AUTOMATIC EXTRACTION OF POWER LINES FROM MOBILE LASER SCANNING DATA**
Haiyan Guan, Jonathan Li, University of Waterloo, Canada; Yongjun Zhou, Shanghai Jiao Tong University, China; Yongtao Yu, Cheng Wang, Xiamen University, China; Michael Chapman, Ryerson University, Canada; Chenglu Wen, Xiamen University, China

MOP.FF.212 Board 212 **EARTHWORK VOLUMES ESTIMATION IN ASPHALT PAVEMENT RECONSTRUCTION USING A MOBILE LASER SCANNING SYSTEM**
Fukai Jia, Jonathan Li, Cheng Wang, Yongtao Yu, Ming Cheng, Xiamen University, China; Dawei Zai, Xiamen university, China

Image Segmentation and Clustering I

Session Chair: Paolo Gamba, University of Pavia

TUP.A.1 Board 1
A MULTI-BAND WATERSHED SEGMENTATION METHOD FOR INDIVIDUAL TREE CROWN DELINEATION FROM HIGH RESOLUTION MULTISPECTRAL AERIAL IMAGE
Jian Yang, University of Toronto, Canada; Yuhong He, University of Toronto Mississauga, Canada; John Caspersen, University of Toronto, Canada

TUP.A.2 Board 2
AN MEAN SHIFT ALGORITHM WITH ADAPTIVE BANDWIDTH AND WEIGHT SELECTION FOR HIGH SPATIAL REMOTELY SENSED IMAGERY SEGMENTATION
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Janja Avbelj, Rupert Müller, German Aerospace Center (DLR), Germany

WEP.V.151 Board 151
EFFECTS OF LAND USE/LAND COVER CHANGES ON WATER QUALITY OF A SUB-TROPICAL RIVER BASIN
Satyavati Shukla, Mohan V. Khire, Shirishkumar S. Gedam, Indian Institute of Technology Bombay, India

WEP.V.152 Board 152
VHR SAR IMAGES FOR DETECTING SPARSE DAMAGED BUILDINGS IN URBAN AREAS: THE L'AQUILA EARTHQUAKE CASE STUDY
Christian Bignami, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Manuel Di Paolo, Nazzareno Pierdicca, Sapienza University of Rome, Italy; Marco Chini, Centre de Recherche Public - Gabriel Lippmann, Luxembourg; Salvatore Stramondo, Istituto Nazionale di Geofisica e Vulcanologia, Italy; Roberta Anniballe, Sapienza University of Rome, Italy

WEP.V.153 Board 153
SPATIO-TEMPORAL ANALYSIS OF SURFACE URBAN HEAT ISLAND (SUHI) USING MODIS LAND SURFACE TEMPERATURE (LST) FOR SUMMER 2003-2012, A CASE STUDY OF THE NETHERLANDS
Mehdi Aminipouri, Anders Knudby, Simon Fraser University, Canada

WEP.V.154 Board 154
DIRECT VALIDATION OF MODIS SPECTRAL ABLEDO PRODUCT WITH FIELD MEASUREMENT
Hongmin Zhou, Jindi Wang, Beijing Normal University, China; Shunlin Liang, Department of Geographical Sciences, University of Maryland, College Park, MD, United States; Kai Zhang, Yuechan Shi, Beijing Normal University, China

Soil Moisture-SMOS and SMAP

Session Co-Chairs: Carsten Montzka, Research Center Julich; David Levine, NASA/Goddard Space Flight Center

WEP.W.155 Board 155 **EVALUATING THE RANDOM CASCADE HIERARCHICAL AND STATISTICAL ARRANGEMENT MODEL FOR THE DISAGGREGATION OF SMOS SOIL MOISTURE ESTIMATES**
Mehdi Hosseini, Ramata Magagi, Kalifa Goïta, Université de Sherbrooke, Canada

WEP.W.156 Board 156 **DOWNSCALING SMOS DERIVED SOIL MOISTURE FOR VERY WET CONDITIONS USING A PHYSICALLY BASED APPROACH**
Najib Djamai, Ramata Magagi, Kalifa Goïta, Université de Sherbrooke, Canada; Olivier Merlin, Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Anne Walker, Environnement Canada, Canada

WEP.W.157 Board 157 **ASSIMILATION OF SMOS OBSERVATIONS TO IMPROVE STREAMFLOW SIMULATION IN THE MURRAY DARLING BASIN, AUSTRALIA**
Hans Lievens, Ghent University, Belgium; Ahmad Al Bitar, François Cabot, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Gabrielle De Lannoy, NASA Goddard Space Flight Center, United States; Matthias Drusch, European Space Agency (ESA), Netherlands; Gift Dumedah, Monash University, Australia; Harrie-Jan Hendricks-Franssen, Forschungszentrum Jülich GmbH, Germany; Yann H. Kerr, Tomer Sat Kumar, Olivier Merlin, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Ming Pan, Joshua Roundy, Princeton University, United States; Martinus Johannes van den Berg, Ghent University, Belgium; Harry Vereecken, Forschungszentrum Jülich GmbH, Germany; Niko Verhoest, Ghent University, Belgium; Jeffrey P. Walker, Monash University, Australia; Eric Wood, Princeton University, United States; Valentijn Pauwels, Monash University, Australia

WEP.W.158 Board 158 **VALIDATION OF SMOS SOIL MOISTURE RETRIEVALS IN AURAJOKI CATCHMENT, WESTERN FINLAND**
Jaakko Seppänen, Martti Hallikainen, Aalto University, Finland; Juho Jakkila, Finnish Environmental Institute, Finland

WEP.W.159 Board 159 **DESIGN OF AN OPTIMUM SOIL MOISTURE MONITORING NETWORK USING SMOS**
Kurt Kornelsen, Paulin Coulibaly, McMaster University, Canada

Soil Dielectric Propeties

Session Chair: William Philpot, Cornell University

WEP.X.160 Board 160 **DEVELOPMENT OF A NEW END EFFECT PROBE DEDICATED TO IN SITU MEASUREMENTS OF SOIL PERMITTIVITY OVER A LARGE RANGE OF FREQUENCIES**
François Demontoux, Stephen Razafindratsima, Carlos Serradilla Arellano, Gilles Ruffie, Fabrice Bonnaudin, IMS, University of Bordeaux, France, France

WEP.X.161 Board 161 **INTEGRATED APPROACH FOR EFFECTIVE PERMITTIVITY ESTIMATION OF MULTI-LAYERED SOILS AT L-BAND**
François Demontoux, Bordeaux University-IMS Laboratory, France; François Jonard, Agrosphere IBG 3, Institute of Bio and Geosciences Research center Julich, Germany; Simone Bircher, Laboratoire CESBIO, France; Stephen Razafindratsima, Bordeaux University-IMS Laboratory, France; Mike Schwank, Swiss Federal Institute for Forest, Snow and Landscape Research, Switzerland; Jean-Pierre Wigneron, INRA - Laboratoire EPHYSE, France; Yann H. Kerr, Laboratoire CESBIO, France

WEP.X.162 Board 162 **EFFECTIVE DIELECTRIC CONSTANT FOR LAND SURFACE REMOTE-SENSING**
Chang-Hwan Park, Andreas Behrendt, University of Hohenheim, Germany; Ellsworth LeDrew, University of Waterloo, Canada; Volker Wulfmeyer, University of Hohenheim, Germany

WEP.X.163 Board 163 **MICROWAVE DIELECTRIC CONSTANT PROPERTIES OF ARID SOIL IN THE 0.3-3 GHZ FREQUENCY RANGE AND APPLICATION TO PALSAR DATA**
Saeid Gharechelou, Ryutaro Tateishi, Josaphat Tetuko Sri Sumantyo, Chiba University, Japan

WEP.X.164 Board 164 **DUAL POLARIZATION AND MULTI-INCIDENCE ANGLE APPROACH TO RETRIEVE SOIL MOISTURE AND SURFACE ROUGHNESS WITH SPECULAR SCATTERING DATA BY MINIMISING SOIL TEXTURE EFFECT**
Rishi Prakash, Graphic Era University Dehradun, India; Dharmendra Singh, Indian Institute of Technology Roorkee, India

WEP.X.165 Board 165 **SENSITIVITY STUDY OF PASSIVE AND ACTIVE MICROWAVE DATA TO SOIL MOISTURE ON BOREAL FOREST**
Safa Jammali, Amirouche Benchallal, Ramata Magagi, Kalifa Goïta, Université de Sherbrooke, Canada

Soil Moisture-Radar

Session Co-Chairs: Nazzareno Pierdicca, La Sapienza University; Amen Alyaari, Institut National de la Recherche Agronomique (INRA)

WEP.Y.166 Board 166
SOIL MOISTURE RETRIEVAL USING RADARSAT-2 AND HJ-1 CCD DATA IN GRASSLAND
Minfeng Xing, Binbin He, Xiaowen Li, Xingwen Quan, University of Electronic Science and Technology of China, China

WEP.Y.167 Board 167
X-BAND TERRASAR-X AND COSMO-SKYMED SAR DATA FOR BARE SOIL PARAMETERS ESTIMATION
Azza Gorrab, INAT, France; Mehrez Zribi, CNRS, France; Nicolas Baghdadi, IRSTEA, France; Bernard Mougenot, IRD, France; Zohra Lili-Chabaane, INAT, Tunisia

WEP.Y.168 Board 168
ANALYSING L-BAND AND C-BAND POLARIMETRIC RADAR SIGNALS FOR THE MONITORING OF SOIL MOISTURE OVER SMAPVEX12 FORESTED SITES
Safa Jammali, Ramata Magagi, Kalifa Goïta, Université de Sherbrooke, Canada

WEP.Y.169 Board 169
CROP BACKSCATTER MODELING AND SOIL MOISTURE ESTIMATION WITH SUPPORT VECTOR REGRESSION
Jelena Stamenkovic, École Polytechnique Fédérale de Lausanne, Switzerland; Paolo Ferrazzoli, Leila Guerriero, University of Rome Tor Vergata, Italy; Devis Tuia, Jean-Philippe Thiran, École Polytechnique Fédérale de Lausanne, Switzerland; Maurice Borgeaud, European Space Agency (ESA), Italy

WEP.Y.170 Board 170
SENSITIVITY OF RADARSAT-2 QUAD POLARIMETRIC AND SIMULATED COMPACT POLARIMETRIC PARAMETERS TO SOIL MOISTURE AND FREEZE/THAW STATE IN SOUTHWEST ONTARIO
Wen Tang, Richard Kelly, University of Waterloo, Canada

WEP.Y.171 Board 171
IMPROVEMENT OF SOIL MOISTURE INVERSION FOR SINGLE-POLARIZED SAR DATA OF BARE SOIL SURFACES USING DINSAR TECHNIQUE
Soon-Koo Kweon, Sin-Myeong Park, Yisok Oh, Hongik University, Republic of Korea

WEP.Y.172 Board 172
RETRIEVING SOIL MOISTURE BELOW A VEGETATION LAYER USING POLARIMETRIC TOMOGRAPHIC SAR DATA
Nabil Lahlou, Laurent Ferro-Famil, Sophie Allain-Bailhache, IETR, UMR CNRS 6164, University of Rennes 1, France

WEP.Y.173 Board 173
EMPIRICAL MODELLING TO ESTIMATE SURFACE SOIL MOISTURE AT FIELD SCALE IN SARDINIA, ITALY: COMPARAISON BETWEEN OPTICAL AND SAR DATA.
Rebecca Filion, Monique Bernier, Claudio Paniconi, Karem Chokmani, Manon Talazac, Institut National de la Recherche Scientifique, Canada

Soil Properties I

Session Chair: William Philpot, Cornell University

WEP.Z.174 Board 174
EVALUATION OF SOIL MOISTURE CONTENT USING ASTER AND WORLDVIEW 2 IMAGERIES
Hilal Soydan, H.Sebnem Düzgün, Middle East Technical University, Turkey

WEP.Z.175 Board 175
HYPERSPECTRAL PREDICTING MODEL OF SOIL SALINITY IN TIANJIN COSTAL AREA USING PARTIAL LEAST SQUARE REGRESSION
Jun Wang, Peking University, China; Zhoujing Li, China Agricultural University, China; Xuebin Qin, Xiucheng Yang, Zhongling Gao, Qiming Qin, Peking University, China

WEP.Z.176 Board 176
IMPROVEMENT OF TVDI FOR SOIL MOISTURE ESTIMATION
Zhong ling Gao, Qi ming Qin, Yue jun Sun, Xiao po Zheng, Ling Wu, Nan Wang, Peking University, China

WEP.Z.177 Board 177
SPECTRAL REFLECTANCE OF DRYINGSOIL
Jia Tian, William Philpot, Cornell University, United States

WEP.Z.178 Board 178
TOP SOIL MOISTURE ESTIMATION FOR PRECISION AGRICULTURE USING UNMMANED AERIAL VEHICLE MULTISPECTRAL IMAGERY
Leila Hassan-Esfahani, Alfonso Torres-Rua, Andres M. Ticlavilca, Austin Jensen, Mac McKee, Utah Water Research Laboratory, United States

WEP.Z.179 Board 179
A SENSITIVITY STUDY OF LAND SURFACE TEMPERATURE TO SOIL MOISTURE USING IN-SITU AND SPACEBORNE OBSERVATIONS
Miriam Pablos, María Piles, Universitat Politècnica de Catalunya, Spain; Nilda Sánchez, Universidad de Salamanca, Spain; Verónica González-Gambau, Consejo Superior de Investigaciones Científicas, Spain; Mercè Vall-llossera, Adriano Camps Carmona, Universitat Politècnica de Catalunya, Spain; José Martínez-Fernández, Universidad de Salamanca, Spain

Soil Properties II

Session Chair: Andres Jacome, INRS-ETE

WEP.AA.180 TWELVE MONTHLY MAPS OF GROUND ALBEDO PARAMETERS
Board 180 **DERIVED FROM MODIS DATA SETS**
Philippe Blanc, Benoit Gschwind, Mireille Lefevre, Lucien Wald, MINES ParisTech, France

WEP.AA.181 INTEGRATION MRA AND MVA FOR CROPLAND SOIL PROPERTY
Board 181 **ESTIMATION USING HYPERSPECTRAL REFLECTANCE**
Huiling Long, Xiaohe Gu, Weiguo Li, Yancang Wang, Qingyun Xu, Beijing Research Center for Information Technology in Agriculture, China

WEP.AA.182 REMOTELY SENSED SOIL MOISTURE FOR DROUGHT INDEX
Board 182 *Yoomi Hur, Jae Hyun Shim, National Disaster Management Institute, Republic of Korea; Chanyang Sur, Minha Choi, Sungkyunkwan University, Republic of Korea*

WEP.AA.183 ON THE DISCREPANCY OF SPATIAL VARIABILITY-BASED MODELS
Board 183 **FOR REGIONAL EVAPOTRANSPIRATION ESTIMATION**
Ronglin Tang, Institute of Geographic Sciences and Natural Resources Research, CAS, China; Zhao-Liang Li, Ministry of Agriculture/Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, China

WEP.AA.184 A REMOTE SENSING TECHNIQUE TO DETERMINE THE SOIL
Board 184 **MOISTURE SATURATION INDEX**
Zhang Dianjun, University of Chinese Academy of Sciences, China; Li Zhao-liang, Tang Ronglin, Tang Bo-hui, Wu Hua, Institute of Geographic Sciences and Natural Resources Research, CAS, China

WEP.AA.185 DETECTING SOIL ORGANIC CARBON BY CASI HYPERSPECTRAL
Board 185 **IMAGES**
Raffaella Matarrese, Valeria Ancona, Rosamaria Salvatori, National Research Council, Italy; Maria Rita Muolo, SIT- Servizi di Informazione Territoriale s.r.l., Italy; Vito Felice Uricchio, Michele Vurro, National Research Council, Italy

WEP.AA.186 IDENTIFYING INDUSTRIAL PROCESSES THROUGH VNIR-SWIR
Board 186 **REFLECTANCE SPECTROSCOPY OF THEIR WASTE MATERIALS**
Maiwenn Lothode, Veronique Carrere, Universite de Nantes, France; Rodolphe Marion, Commissariat a l'Energie Atomique, France

Soil Moisture Retrieval I

Session Co-Chairs: Mariette Vreugdenhil, Technical University of Vienna; William Philpot, Cornell University

WEP.BB.187 TEMPORAL-SPATIAL VARIATIONS MONITORING OF SOIL
Board 187 **MOISTURE USING MICROWAVE POLARIZATION DIFFERENCE INDEX**
Si-Bo Duan, Institute of Geographic Sciences and Natural Resources Research, CAS, China; Zhao-Liang Li, Chinese Academy of Agricultural Sciences, China; Ronglin Tang, Bo-Hui Tang, Hua Wu, Institute of Geographic Sciences and Natural Resources Research, CAS, China; Xiaoguang Jiang, University of Chinese Academy of Sciences, China

WEP.BB.188 THE FY-3B/MWRI SOIL MOISTURE PRODUCT AND ITS
Board 188 **APPLICATION IN DROUGHT MONITORING**
Ruijing Sun, Yeping Zhang, Shengli Wu, Hu Yang, National Satellite Meteorological Center, China Meteorological Administration, China; Jinyang Du, Institute of Remote Sensing and Digital Earth, CAS, China

WEP.BB.189 IMPROVEMENT OF AMSR2 SOIL MOISTURE ALGORITHM WITH
Board 189 **CONSIDERING TEMPERATURE PROFILE EFFECTS IN DRY SOIL: A CASE STUDY IN HEIHE BASIN**
Hui Lu, Tsinghua University, China; Toshio Koike, The University of Tokyo, Japan; Kun Yang, Chinese Academy of Sciences, China

WEP.BB.190 COMPARING SOIL MOISTURE RETRIEVALS FROM SMOS, ASCAT
Board 190 **AND AMSR-E OVER THE PAMPAS PLAINS**
Ezequiel Smucler, Federico Carballo, Francisco Grings, Cintia Bruscantini, Mercedes Salvia, Institute Of Astronomy and Space Physics (IAFE), Argentina; Wade Crow, USDA ARS, United States; Haydee Karszenbaum, Institute Of Astronomy and Space Physics (IAFE), Argentina

WEP.BB.191 EVALUATION OF ORGANIC MATTER EFFECT ON BRIGHTNESS
Board 191 **TEMPERATURE SIMULATED OVER GENHE REGION, CHINA**
Xiaokang Kou, Lingmei Jiang, Shaojie Zhao, Shuang Yan, Linna Chai, Beijing Normal University, China

WEP.BB.192 EVALUATING ROUGHNESS EFFECTS ON C-BAND AMSR-E
Board 192 **OBSERVATIONS**
Shu Wang, Beijing Normal University/INRA, France; Jean-Pierre Wigneron, INRA, France; Marie Parrens, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Amen Alyaari, Roberto Fernández-Morán, INRA, France; Lingmei Jiang, Beijing Normal University, China; Jiang-yuan Zeng, Chinese Academy of Sciences, China; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France

WEP.BB.193 ASSIMILATING SATELLITE-DERIVED SOIL MOISTURE PRODUCTS
Board 193 **INTO A DISTRIBUTED HYDROLOGICAL MODEL**
Giovanni Corato, Patrick Matgen, Centre de Recherche Public - Gabriel Lippmann, Luxembourg; Fabrizio Fenicia, Eawag: Swiss Federal Institute of Aquatic Science and Technology, Switzerland; Stefan Schlaffer, Vienna University of Technology, Austria; Marco Chini, Centre de Recherche Public - Gabriel Lippmann, Luxembourg

WEP.BB.194 VALIDATION OF REMOTE SENSING SOIL MOISTURE PRODUCTS
Board 194 **WITH A DISTRIBUTED CONTINUOUS HYDROLOGICAL MODEL**
Paola Laiolo, Simone Gabellani, Luca Pulvirenti, Giorgio Boni, Roberto Rudari, Fabio Delogu, Francesco Silvestro, Lorenzo Campo, CIMA Research Foundation, Italy; Fabio Fascetti, Nazzareno Pierdicca, Sapienza University of Rome, Italy; Raffaele Crapolicchio, Serco SpA, Italy; Stefan Hasenauer, University of Wien, Austria; Silvia Puca, Italian Civil Protection Department, Italy

WEP.BB.195 PASSIVE MICROWAVE SOIL MOISTURE DISAGGREGATION USING
Board 195 **REMOTE SENSING AND LAND SURFACE MODEL DATA**
Bin Fang, Venkat Lakshmi, University of South Carolina Columbia, United States

WEP.BB.196 ESTIMATING SOIL MOISTURE IN A POLAR SEMI-DESERT
Board 196 *Emma Buckley, Queen's University, Canada; Joseph Buckley, Royal Military College of Canada, Canada; Neal Scott, Paul Treitz, Queen's University, Canada*

Soil Moisture Retrieval II

Session Co-Chairs: Hui Lu, Tsinghua University; Kurt Kornelsen, McMaster University

WEP.CC.197 Board 197 **A DOWNSCALING APPROACH OF PHASE TRANSITION WATER CONTENT USING AMSR2 AND MODIS PRODUCTS**
Qinyu Ye, Linna Chai, Lingmei Jiang, Shaojie Zhao, Beijing Normal University, China

WEP.CC.198 Board 198 **SPACEBORNE ALTIMETRY AND SCATTEROMETRY BACKSCATTERING COEFFICIENTS AT C- AND KU- BAND OVER WEST AFRICA**
Christophe Fatras, CNES/GET/ONERA, France; Frédéric Frappart, GET - GRGS - Université de Toulouse, France; Eric Mougin, GET, France; Pierre-Louis Frison, Université Paris-Est Marne-la-Vallée, France; Faye Gayane, Université Cheikh Anta DIOP, Senegal; Pierre Borderies, ONERA, France; Lionel Jarlan, Centre d'Études Spatiales de la Biosphère (CESBIO), France

WEP.CC.199 Board 199 **EFFECTS OF VEGETATION PROPERTIES ON SOIL MOISTURE RETRIEVALS FROM ACTIVE MICROWAVE INSTRUMENTS**
Mariette Vreugdenhil, Wouter Dorigo, Technical University Vienna, Austria; Richard de Jeu, VU University Amsterdam, Netherlands; Sebastian Hahn, Wolfgang Wagner, Technical University Vienna, Austria

WEP.CC.200 Board 200 **OPEN SOURCE TOOLBOX AND WEB APPLICATION FOR SOIL MOISTURE VALIDATION**
Christoph Paulik, Caroline Steiner, Sebastian Hahn, Thomas Melzer, Alexander Gruber, Wolfgang Wagner, Vienna University of Technology, Austria

WEP.CC.201 Board 201 **SOIL MOISTURE IN FRENCH ALPINE VALLEY USING L-BAND RADIOMETER**
Arnaud Mialon, Centre d'Études Spatiales de la Biosphère (CESBIO), France; François Lemaître, ONERA, France; Thierry Pellarin, LTHE, France; Philippe Richaume, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Jean-Pierre Wigneron, INRA, France; François Cabot, CNES, France; Yann H. Kerr, Centre d'Études Spatiales de la Biosphère (CESBIO), France

WEP.CC.202 Board 202 **DATA-BASED DISAGGREGATION OF SMOS SOIL MOISTURE**
Kurt Kornelsen, Paulin Coulibaly, McMaster University, Canada

WEP.CC.203 Board 203 **WCOM: THE MISSION CONCEPT AND PAYLOADS OF A GLOBAL WATER CYCLE OBSERVATION MISSION**
Xiaolong Dong, Hao Liu, Zhenzhan Wang, National Space Science Center, Chinese Academy of Sciences, China; Jiancheng Shi, Tianjie Zhao, Institute of Remote Sensing and Digital Earth, CAS, China

Inland Waters

Session Co-Chairs: Manabu Watanabe, Japan Aerospace Exploration Agency; Karem Chokmani, INRS, Centre Eau Terre Environnement

WEP.DD.204 Board 204 **MAPPING AMYOTROPHIC LATERAL SCLEROSIS LAKE RISK FACTORS ACROSS NORTHERN NEW ENGLAND**
Nathan Torbick, Applied Geosolutions, United States; Sarah Hession, Michigan State University, United States; Elijah Stommel, Tracie Caller, Dartmouth College, United States

WEP.DD.205 Board 205 **AN EMPIRICAL APPROACH FOR HYPERSPECTRAL REMOTE SENSING OF CHLOROPHYLL-A CONCENTRATION IN FUNIL HYDROELECTRIC RESERVOIR (RIO DE JANEIRO STATE, BRAZIL)**
Enner Alcântara, Fernanda Watanabe, São Paulo State University, Brazil; Claudio Barbosa, Igor Ogashawara, Marcelo Curtarelli, José Stech, National Institute for Space Research, Brazil

WEP.DD.206 Board 206 **DEVELOPMENT OF A METHODOLOGY FOR FLOOD HAZARD DETECTION IN URBAN AREAS FROM RADARSAT-2 IMAGERY**
Marion Tanguy, Monique Bernier, Karem Chokmani, Yves Gauthier, Jimmy Poulin, Institut National de la Recherche Scientifique, Canada

WEP.DD.207 Board 207 **COMBINED USE OF MULTI-TEMPORAL COSMO-SKYMED DATA AND A HYDRODYNAMIC MODEL TO MONITOR FLOOD DYNAMICS**
Luca Pulvirenti, Giorgio Boni, CIMA Research Foundation, Italy; Nazzareno Pierdicca, Sapienza University of Rome, Italy; Mattia Fiorini, Roberto Rudari, CIMA Research Foundation, Italy

WEP.DD.208 Board 208 **ASSESSING THE POTENTIAL OF SATELLITE AND GROUND SPECTRAL DATA FOR CHLOROPHYLL-A MONITORING IN LAKE KASUMIGAURA, JAPAN**
D.D.G.L. Dahanayaka, Hideyuki Tonooka, Ibaraki University, Japan; M.J.S. Wijeyaratne, University of Kelaniya, Sri Lanka; Atsushi Minato, Satoru Ozawa, Ibaraki University, Japan

WEP.DD.209 Board 209 **EXTRACTION OF FLOODED AREAS IN THE 2011 THAILAND FLOOD FROM RADARSAT-2 AND THAICHOTE IMAGES**
Pisut Nakmuenwai, Fumio Yamazaki, Chiba University, Japan

WEP.DD.210 Board 210 **VEGETATION IMPACT ON SWOT MISSION MEASUREMENTS**
Christine Lion, LEGOS / CNRS, France; Denis Blumstein, LEGOS / CNES, France

WEP.DD.211 Board 211 **ANALYSIS OF SPATIO-TEMPORAL VARIATIONS IN THE LAKE OF CHALCO, MEXICO, USING SATELLITE IMAGERY.**
Raul Aguirre Gomez, Olivia Salmeron-García, Rene Ramos Alvarez, Instituto de Geografía, Universidad Nacional Autonoma de Mexico, Mexico

Thursday, July 17 17:20 - 19:00 Poster Area A

Session THP.A Poster

Sea Ice

Session Co-Chairs: Karem Chokmani, INRS, Centre Eau Terre Environnement; Igor Zakharov, C-Core

THP.A.1 Board 1
THE ICEPAC PROJECT: A SEA-ICE SPATIOTEMPORAL VARIABILITY ATLAS
Charles Gignac, Monique Bernier, Karem Chokmani, Institut National de la Recherche Scientifique, Canada

THP.A.2 Board 2
DETECTION AND CHARACTERIZATION OF EXTREME ICE FEATURES IN SINGLE HIGH RESOLUTION SATELLITE IMAGERY
Igor Zakharov, Pradeep Bobby, Desmond Power, Sherry Warren, Mark Howell, C-CORE, Canada

THP.A.3 Board 3
AUTOMATIC FEATURE LEARNING OF SAR IMAGES FOR SEA ICE CONCENTRATION ESTIMATION USING FEED-FORWARD NEURAL NETWORKS
Lei Wang, K. Scott, David Clausi, University of Waterloo, Canada

THP.A.4 Board 4
MONITORING EXTREME ICE FEATURES USING MULTI-RESOLUTION RADARSAT-2 DATA
Igor Zakharov, Pradeep Bobby, Desmond Power, Sherry Warren, C-CORE, Canada

THP.A.5 Board 5
A MULTI-SENSOR ANALYSIS OF ICE IN THE BEAUFORT SEA
Suzanne Brunke, Gordon Staples, Cynthia Dacre, MDA, Canada; David Palandro, Lucie N'Guessan, Nina Springer, Exxon Mobil Upstream Research, United States; Don Isaacs, Bob Brovey, Isaacs Consulting, Canada

THP.A.6 Board 6
ESTIMATION OF ICE PHENOLOGY AND ICE CONCENTRATION ON LARGE NORTHERN LAKES FROM MULTI-SOURCE SPACE-BORNE MEASUREMENTS
Kyung-Kuk(Kevin) Kang, Claude R. Duguay, University of Waterloo, Canada

Thursday, July 17 17:20 - 19:00 Poster Area B

Session THP.B Poster

Snow Cover I

Session Co-Chairs: Roger De Roo, University of Michigan; Kari Luojus, Finnish Meteorological Institute

THP.B.7 Board 7
EVALUATION AND REFINEMENT OF MODIS SNOW PRODUCTS FOR LAKE ICE
Kyung-Kuk(Kevin) Kang, Claude R. Duguay, University of Waterloo, Canada

THP.B.8 Board 8
IMPROVED SUBPIXEL MONITORING OF SEASONAL SNOW COVER: A CASE STUDY IN THE ALPS
Miguel Angel Veganzones, LTHE/GIPSA-lab, Grenoble-INP, France; Mauro Dalla Mura, GIPSA-lab, Grenoble-INP, France; Marie Dumont, M ´et ´eo-France-CNRS, CNRM-GAME/CEN, UMR 3589, France; Isabella Zin, LTHE, CNRS, France; Jocelyn Chanussot, GIPSA-lab, Grenoble-INP, France

THP.B.9 Board 9
SAR BACKSCATTER MODEL INVERSION FOR ESTIMATION OF STRATIGRAPHIC SNOW ALONG THE UNION GLACIER – ANTARCTICA.
Jean Espinoza, UFRGS, Brazil; Jorge Arigony-Neto, FURG, Brazil; Ricardo Jaña, INACH, Chile

THP.B.10 Board 10
APPLICATION OF ENSEMBLE-BASED SYSTEMS FOR SNOW-MAPPING USING NOAA-AVHRR DATA OVER EASTERN CANADA
Sophie Roberge, Karem Chokmani, Institut National de la Recherche Scientifique, Canada; Danielle DeSève, Institut de Recherche d'Hydro-Québec, Canada

THP.B.11 Board 11
A NOVEL TECHNIQUE FOR AUTONOMOUS SNOW QUANTITY MEASUREMENT
Eric Haengel, Roger DeRoo, University of Michigan, United States

THP.B.12 Board 12
AREA RETRIEVAL OF MELTING SNOW IN ALPINE AREAS
Xiaonan Ji, Yan Chen, Ling Tong, Mingquan Jia, Longfei Tan, Shaokai Fan, University of Electronic Science and Technology of China, China

THP.B.13 Board 13
EVALUATION OF THE IMS SNOW MAP IN SOUTHERN CHINA BASED ON HIGH SPATIAL RESOLUTION IMAGERY
Xiyu Chen, Lingmei Jiang, Beijing Normal University, China

Snow Cover II

Session Co-Chairs: Giovanni Macelloni, IFAC-CNR; Alain Royer, University of Sherbrooke

THP.C.14 Board 14
ASSIMILATION OF TERRASAR-X DATA INTO A SNOWPACK MODEL
Xuan-Vu Phan, Michel Gay, Grenoble Image Parole Signal et Automatique laboratoire, France; Laurent Ferro-Famil, Institut d'Électronique et de Télécommunications de Rennes, France; Yves Durand, Marie Dumont, Centre d'Etude de la Neige, France

THP.C.15 Board 15
SCOTA: AN OPEN SOURCE TOOLBOX FOR SNOW COVER MAPPING FROM SPOT-VEGETATION DAILY SYNTHESES
Simon Gascoin, Fabrice Dubertret, Laurent Drapeau, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Nahossio Gonga-Saholiariliva, Laboratoire HydroSciences Montpellier, France; Lionel Jarlan, Benoît Duchemin, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Philippe Maisongrande, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales, France

THP.C.16 Board 16
SPRING-TIME FRACTIONAL SNOW COVER MAPPING IN NORTHERN HEMISPHERE WITH NPP SUOMI/VIIRS WITHIN ESA DUE GLOBSNOW-2 PROJECT
Sari Metsämäki, Finnish Environment Institute, Finland; Mwaba Hiltunen, Kari Luojus, Jouni Pulliainen, Finnish Meteorological Institute, Finland

THP.C.17 Board 17
MODEL ANALYSIS OF SNOW BACKSCATTERING ON FRESHWATER LAKE ICE
Marco Brogioni, Giovanni Macelloni, IFAC-CNR, Italy; Grant Gunn, Claude R. Duguay, University of Waterloo, Canada

THP.C.18 Board 18
MONITORING SNOW AVALANCHE TERRAIN WITH AUTOMATED TERRESTRIAL LASER SCANNING
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USING THE BUTTERFLY EFFECT IN A DETERMINISTIC NON-LINEAR SYSTEM TO DETECT LAND COVER CHANGE
Brian Salmon, Council of Scientific and Industrial Research, Australia; Jan Olivier, University of Tasmania, Australia; Waldo Kleynhans, Konrad Wessels, Council of Scientific and Industrial Research, South Africa

THP.P.102 Board 102
CHANGE DETECTION AS SUPPORT FOR MONITORING THE DYNAMIC OF LAND AROUND RESERVOIR
Thanan Rodrigues, Ulisses Guimarães, Maria de Lourdes Bueno Trindade Galo, São Paulo State University, Brazil

THP.P.103 Board 103
OBJECT-ORIENTED LAND USE COVER CLASSIFICATION OF LANDSAT 8 OLI IMAGES IN SUMATRA
Chew Wai Chang, Chenghua Shi, Soo Chin Liew, Leong Keong Kwoh, NUS, Singapore

THP.P.104 Board 104
DATA AND SAMPLING ISSUES ASSOCIATED WITH ACCURACY ASSESSMENT OF LANDCOVER CHANGE MAPS PRODUCED FROM MULTI-TEMPORAL IMAGE CLASSIFICATION
Kim Lowell, CRC for Spatial Information/University of Melbourne, Australia; Shanti Reddy, Department of Environment, Australia; Elizabeth Farmer, Department of the Environment, Australia

Land Use and Land Cover Change III

Session Co-Chairs: Jin-King Liu, LIDAR Technology Co., Ltd.; Anne Smith, Agriculture and Agri-Food Canada

THP.Q.105 Board 105
LAND USE AND LAND COVER MONITORING WITH MULTITEMPORAL AND MULTIPOLARIZATION RADARSAT DATA: APPLICATION TO AN INTENSIVE AGRICULTURAL AREA (FRANCE)
Samuel Corgne, Delphy Dallon, LETG Rennes Costel (CNRS), France; Grégoire Mercier, UMR CNRS 2872 TAMCIC, Equipe TIME, France

THP.Q.106 Board 106
INVESTIGATING THE IMPACT OF ROAD NETWORK DEVELOPMENT ON LAND COVER CHANGE IN LIJIANG RIVER BASIN
Ruofeng Xu, Qiming Qin, Cong Lin, Yuan Zhang, Jun Li, Peking University, China

THP.Q.107 Board 107
ANNUAL MAPPING OF SEVERE FOREST DISTURBANCES ACROSS CANADA'S FORETS USING 250M MODIS IMAGERY FROM 2000 TO 2011
Luc Guindon, Pierre Bernier, André Beaudoin, Philippe Villemaire, Darren Pouliot, Ronald Hall, Rasim Latifovic, Natural Resources Canada, Canada

THP.Q.108 Board 108
LAND SUBSIDENCE MONITORING WITH A NETWORK OF CONTINUOUSLY OPERATING GPS STATIONS IN YUNLIN COUNTY, MIDDLE TAIWAN
Jin-King Liu, En-Kai Lin, LIDAR Technology Co., Ltd., Taiwan; Wei-Chen Hsu, National Chiao-Tung University and LIDAR Technology Co., Ltd., Taiwan; Feng-Chi Yu, Kuan-Tsung Chang, Minghsin University of Science and Technology, Taiwan; Yuei-An Liou, National Central University, Taiwan

THP.Q.109 Board 109
MONITORING THE DYNAMICS OF LAND COVER IN THE LAKE KIVU REGION USING MULTI-TEMPORAL LANDSAT IMAGERY
Bikash Basnet, Anthony Vodacek, Rochester Institute of Technology, United States

THP.Q.110 Board 110
DEFORESTATION AREA ESTIMATION IN CHINA BASED ON LANDSAT DATA
Xuejun Wang, Yuxing Zhang, State Forestry Administration, China; Enping Yan, Research Center of Forest Remote Sensing & Information Engineering, Central South University of Forestry & Technology, China; Guosheng Huang, State Forestry Administration, China; Chunxiang Cao, Xiliang Ni, Institute of Remote Sensing and Digital Earth, CAS, China

THP.Q.111 Board 111
ASSESSMENT OF BURNED AREAS IN MATO GROSSO STATE, BRAZIL, FROM A SYSTEMATIC SAMPLE OF MEDIUM RESOLUTION SATELLITE IMAGERY
Yosio Edemir Shimabukuro, René Beuchle, Rosana Cristina Grecchi, Joint Research Centre of the European Commission, Italy; Dario Simonetti, Arcadia SIT, Joint Research Centre of the European Commission, Italy; Frédéric Achard, Joint Research Centre of the European Commission, Italy

THP.Q.112 Board 112
TOPO-EDAPHIC VARIABLES AND VEGETATION CONDITION TRENDS IN THE COMMUNAL RANGELAND OF NORTH WEST PROVINCE, SOUTH AFRICA
Naledzani Ndou, Lobina G. Palamuleni, North West University, South Africa

THP.Q.113 Board 113
MULTI-TEMPORAL AND MULTI-SENSOR CLASSIFICATION APPLIED TO INTERTIDAL FLAT MAPPING
Virginie Lafon, Guillaume Clos, GEO-Transfert, France; Ducrot Danielle, Centre d'Études Spatiales de la Biosphère (CESBIO), France; Aurélie Dehouck, GEO-Transfert, France; Regniers Olivier, IMS - Bordeaux Sciences AGRO, France

Land Use and Land Cover Change IV

Session Co-Chairs: Angela Erb, University of Massachusetts Boston; Joseph Buckley, Royal Military College

THP.R.114 Board 114
ANALYSIS OF VEGETATION DYNAMICS IN MIDDLE EAST AREA DURING 2002-2013 IN RELATION TO THE 2007-2009 DROUGHT EPISODE
Paolo Villa, Mirco Boschetti, CNR-IREA, Italy; Andrea Scozzari, CNR-ISTI, Italy; Stefano Vignudelli, CNR-IBF, Italy

THP.R.115 Board 115
MONITORING URBAN EXPANSION OF THE GREATER TORONTO AREA FROM 1985 TO 2013 USING LANDSAT IMAGES
Lanying Wang, Shiqian Wang, Wei Li, University of Waterloo, Canada; Jonathen Li, School of Information Science and Engineering, China

THP.R.116 Board 116
COMPARISON OF REMOTE SENSING BASED FOREST AREA AND CHANGE ESTIMATION WITH NATIONAL FORESTRY INVENTORY BETWEEN 2000 AND 2005 IN CHINA
Dan-Xia Song, Chengquan Huang, Praveen Noojipady, University of Maryland, United States; Saurabh Channan, Global Land Cover Facility, United States; John Townshend, University of Maryland, United States

THP.R.117 Board 117
DEFORESTATION AND RICE: USING REMOTE SENSING TO LINK PATTERNS OF FOREST CHANGE WITH RICE AGRICULTURE IN EASTERN MADAGASCAR
Amanda Armstrong, ORAU-NPP, United States; Temilola Fatoyinbo Agueh, NASA Goddard Space Flight Center, United States

THP.R.118 Board 118
USING LANDSAT DERRIVED ALBEDO TO INVESTIGATE FOREST MANAGEMENT AND DISTURBANCE IN THE NORTHEASTERN UNITED STATES
Angela Erb, Zhuosen Wang, University of Massachusetts Boston, United States; Qingsong Sun, Boston University, United States; Yanmin Shuai, Jeffery Masek, NASA Goddard Space Flight Center, United States; David Publicover, Appalachian Mountain Club, United States; Crystal Schaaf, University of Massachusetts Boston, United States

THP.R.119 Board 119
LULC CHANGE ON RONDONIA, WESTERN BRAZILIAN AMAZON, BY TERRACLASS PROJECT
Marcos Adami, National Institute for Space Research – INPE, Brazil; Adriano Venturieri, Alexandre Camargo Coutinho, Julio Cesar D. M. Esquerdo, EMBRAPA, Brazil; Alessandra Rodrigues Gomes, National Institute for Space Research – INPE, Brazil

THP.R.120 Board 120
STUDY ON EXTRACTION OF EARTHQUAKE DAMAGE INFORMATION BASED ON REGIONAL OPTIMIZING CHANGE DETECTION FROM REMOTE SENSING IMAGE
Haixia Yang, Aixia Dou, Wei Zhang, Shusong Huang, Institute of Earthquake Science, China Earthquake Administration, China

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Session THP.S Poster

Land Use and Land Cover Change V

Session Chair: Joseph Buckley, Royal Military College

THP.S.121 Board 121
AUTOMATIC CLUSTERING OF MULTISPECTRAL DATA USING A NON-GAUSSIAN STATISTICAL MODEL
Salman Saeed Khan, University of Surrey, United Kingdom; Anthony P. Doulgeris, University of Tromsø, Norway; Salvatore Savastano, Raffaella Guida, University of Surrey, United Kingdom

THP.S.122 Board 122
FAST GENERATION OF LULC MAPS FOR TEMPORAL STUDIES IN NORTH-WESTERN AFRICA
Pol del Aguila, Kungliga Tekniska Högskolan, Sweden; Felipe Calderero, Universitat Pompeu Fabra, Spain; Ferran Marqués, Universitat Politècnica de Catalunya, Spain; Francisco Javier Marcello-Ruiz, Francisco Eugenio-González, Universidad de Las Palmas de Gran Canaria, Spain

THP.S.123 Board 123
A FRAMEWORK FOR CLIMATE CHANGE AND VULNERABILITY ASSESSMENT IN AN URBANIZED RIVER BASIN THROUGH GEOSPATIAL TECHNOLOGIES AND HYDROLOGICAL MODELING
Anjan Roy, Arun Inamdar, Indian Institute of Technology Bombay, India

Thursday, July 17 17:20 - 19:00 Poster Area T
Session THP.T Poster

Physiological State/Foliar Chemistry

Session Chair: Derek Peddle, University of Lethbridge

THP.T.124 Board 124
AN INVERSION METHOD OF FRACTION OF ABSORBED PHOTOSYNTHETICALLY ACTIVE RADIATION WHICH DIVIDED DIRECT AND DIFFUSE RADIATION
Li Li, Qinhuo Liu, Institute of Remote Sensing and Digital Earth, CAS, China; Wenjie Fan, Peking University, China; Yongming Du, Xiaozhou Xin, Institute of Remote Sensing and Digital Earth, CAS, China

THP.T.125 Board 125
AN INVERSION METHOD TO ESTIMATE THE WINTER WHEAT WATER CONTENT BASED ON VEGETATION OPTICAL DEPTH
Qi Wang, Linna Chai, Shaojie Zhao, Tao Zhang, Beijing Normal University, China

Topography, Geology, Geomorphology Applications I

Session Chair: Irena Hajnsek, ETH / German Aerospace Center (DLR)

THP.U.126 Board 126
RESEARCH ON FAULT INFORMATION EXTRACTION WITH LANDSAT TM IMAGES IN THREE GEORGES AREA
Lina Xu, Ruiqing Niu, China University of Geosciences, China; Shenghui Fang, Wuhan University, China; Yanfang Dong, China Earthquake Administration, China

THP.U.127 Board 127
A MULTIPLE-POINT GEOSTATISTICAL METHOD FOR DIGITAL ELEVATION MODELS CONFLATION
Yunwei Tang, Institute of Remote Sensing and Digital Earth, CAS, China; Jingxiong Zhang, Wuhan University, China; Hui Li, Haifeng Ding, Qingjie Liu, Linhai Jing, Institute of Remote Sensing and Digital Earth, CAS, China

THP.U.128 Board 128
AUTOMATED OBJECT-BASED LANDSLIDE MAPPING IN VHR SATELLITE IMAGES: THE CASE OF MADEIRA ISLAND 2010 FLASH-FLOODS
Sandra Heleno, Magda Matias, Pedro Pina, Instituto Superior Técnico, University of Lisbon, Portugal

THP.U.129 Board 129
THE LANDSLIDE STABILITY EVALUATION METHOD RESEARCH IN THE THREE GORGES RESERVOIR USING ZY-3 DATA
Lina Xu, Wuhan University, China; Junbin Duan, Ruiqing Niu, China University of Geosciences, China; Shenghui Fang, Wuhan University, China; Yanfang Dong, China Earthquake Administration, China

THP.U.130 Board 130
APPLICATION OF INFORMATION INDEX MODEL IN LANDSLIDE SUSCEPTIBILITY MAPPING ON TONGGU JIANGXI PROVINCE, CHINA
Yu Chen, Qinjun Wang, Key Laboratory of Digital Earth Sciences, Institute of Remote Sensing and Digital Earth, CAS, China; Yongming Wei, Linhai Jing, Yunwei Tang, Institute of Remote Sensing and Digital Earth, CAS, China

THP.U.131 Board 131
PSI-WAP OF THE BROADER AREA OF PATRAS GULF (WESTERN GREECE)
Vassilis Sakkas, National & Kapodistrian University of Athens, Greece; Nico Adam, German Aerospace Center (DLR), Germany; Evangelos Lagios, National & Kapodistrian University of Athens, Greece; Brian Neal Damiata, University of California, Los Angeles, United States; Spyridoula Vassilopoulou, Panagiotis Papadimitriou, Konstantina Vlachou, National & Kapodistrian University of Athens, Greece

THP.U.132 Board 132
ESTIMATION OF SURFACE ROUGHNESS IN AIRD ALLUVIAL FAN USING SAR DATA
Lu Zhang, Huadong Guo, Guoqing Lin, Qinjun Wang, Xinwu Li, Institute of Remote Sensing and Digital Earth, CAS, China; Yue Huang, Intermap Technologies Corp., Canada; Guozhuang Shen, Institute of Remote Sensing and Digital Earth, CAS, China

Topography, Geology, Geomorphology Applications II

Session Chair: Othmar Frey, ETH Zurich

THP.V.133 Board 133
LARGE SCALE ROAD NETWORK EXTRACTION IN FORESTED MOUNTAINOUS AREAS USING AIRBORNE LASER SCANNING DATA
Antonio Ferraz, Clément Mallet, IGN/SR, Laboratoire MATIS, Université Paris Est, Saint-Mandé, France, France; Nesrine Chehata, IRD/UMR LISAH El Menzah 4, Tunis, Tunisia

THP.V.134 Board 134
APPLICATION OF PSI-WAP TO THE BROADER AREA OF ATALANTI FAULT ZONE (CENTRAL GREECE)
Vassilis Sakkas, National & Kapodistrian University of Athens, Greece; Nico Adam, German Aerospace Center (DLR), Germany; Spyridoula Vassilopoulou, Evangelos Lagios, National & Kapodistrian University of Athens, Greece; Brian Neal Damiata, University of California, Los Angeles, United States

THP.V.135 Board 135
AN TOPOGRAPHICAL LAND-SURFACE ALBEDO ALGORITHM COUPLING DEM AND KERNEL FUNCTIONS
Kai Yan, Xihan Mu, Wanjuan Song, Guangjian Yan, Beijing Normal University, China

THP.V.136 Board 136
GROUND DEFORMATION STUDY OF KOS ISLAND (SE GREECE) BASED ON SQUEE-SAR INTERFEROMETRIC TECHNIQUE
Vassilis Sakkas, National & Kapodistrian University of Athens, Greece; Fabrizio Novali, Tele-Rilevamento Europa s.r.l., Italy; Evangelos Lagios, National & Kapodistrian University of Athens, Greece; Fernando Bellotti, Tele-Rilevamento Europa s.r.l., Italy; Spyridoula Vassilopoulou, National & Kapodistrian University of Athens, Greece; Brian Neal Damiata, University of California, Los Angeles, United States; Jacopo Allievi, Tele-Rilevamento Europa s.r.l., Italy

THP.V.137 Board 137
STREAM MORPHOMETRY ANALYSIS BY AIRBORNE LASER ALTIMETRY
Ming-Chee Wu, Mon-Shieh Yang, National Cheng Kung University (NCKU), Taiwan; Jin-King Liu, Taiwan Group on Earth Observations (TGEO), Taiwan

THP.V.138 Board 138
UNCERTAINTIES OF A TANDEM-X DERIVED DIGITAL SURFACE MODEL – A CASE STUDY FROM THE RODA CATCHMENT, GERMANY
Jussi Baade, Christiane Schmullius, Friedrich Schiller University Jena, Germany

THP.V.139 Board 139
THE TOPOGRAPHIC CHANGE OF TURTLE MOUNTAIN ISLAND WITH MULTI-TEMPORAL AIRBORNE LIDAR DATA
Kuan-Tsung Chang, Minghsin University of Science and Technology, Taiwan; Feng-Chi Yu, Institute of Service Industries and Management, Ming Hsin University of Science and Technology, Taiwan; Yi Chang, Institute of Ocean Technology and Marine Affairs, National Cheng Kung University, Taiwan; Jin-King Liu, CEO, LiDAR Technology Co., Ltd., Taiwan; Hui-Peng Chen, Graduate Student, Department of Civil Engineering and Environmental Informatics, Minghsin University of Science and Technology, Taiwan

Thursday, July 17 17:20 - 19:00 Poster Area W
Session THP.W Poster

Topography, Geology, Geomorphology Applications III

Session Chair: Irena Hajnsek, ETH / German Aerospace Center (DLR)

THP.W.140 Board 140 **THE IMPACTS OF STRUCTURAL FEATURES IN KARST REGION FOR GROUNDWATER MANAGEMENT**
Saied Pirasteh, Jonathan Li, University of Waterloo, Canada; Somayeh Mollaee, Universiti Putra Malaysia, Malaysia

THP.W.141 Board 141 **LANDSLIDE SUSCEPTIBILITY MAPPING USING COMBINED AHP AND BAYESIAN PROBABILITY METHOD IN A RESERVOIR RIM AREA.**
Rohan Kumar, R Anbalagan, Indian Institute of Technology Roorkee, India

Thursday, July 17 17:20 - 19:00 Poster Area X
Session THP.X Poster

Wetland I

Session Co-Chairs: Andres Jacome, INRS, Centre Eau Terre Environnement; Claude Duguay, University of Waterloo

THP.X.142 Board 142 **OPTICAL REMOTE SENSING FOR LONG-TERM CHANGES OF SURFACE SEDIMENTS ON TIDAL FLATS: PRELIMINARY RESULTS IN THE WEST COAST OF KOREA**
Wook Park, Yonsei University, Republic of Korea; Yoon Kyung Lee, Korea Institute of Ocean Science and Technology, Republic of Korea; Dong Jae Kwon, Joong-Sun Won, Yonsei University, Republic of Korea

THP.X.143 Board 143 **WETLAND CLASSFICATION BASED ON POLARIMETRIC SAR DECOMPOSITIONS**
Sang-Hoon Hong, Hyun-Ok Kim, Korea Aerospace Research Institute, Republic of Korea; Shimon Wdowinski, University of Miami, United States

THP.X.144 Board 144 **CO2 BUDGET ESTIMATION WITH CONSIDERING HUMAN EFFECTS OF TROPICAL PEAT LANDS IN INDONESIA**
Haemi Park, Wataru Takeuchi, University of Tokyo, Japan

THP.X.145 Board 145 **MAPPING WETLAND CHANGE OF PRAIRIE POTHOLE REGION IN BIGSTONE COUNTY FROM 1938 YEAR TO 2011 YEAR**
Yan Wang, Joseph K. Knight, Lian Rampi, Rong Cao, University of Minnesota Twin Cities, United States

THP.X.146 Board 146 **THE SENSITIVITY OF POLARIMETRIC C-BAND RADARSAT-2 DATA TO LAI AND MOISTURE CONDITIONS OVER BOREAL LAND-SURFACES**
Michael Merchant, Aaron Berg, Justin Adams, Rebecca Warren, Jennifer Baltzer, University of Guelph, Canada

Thursday, July 17 17:20 - 19:00 Poster Area Y
Session THP.Y Poster

Wetland II

Session Co-Chairs: Danielle De Sève, Hydro-Québec; Nicolas Baghdadi, IRSTEA

THP.Y.147 Board 147
ALPINE WETLAND LANDSCAPE CHANGES IN THE EASTERN TIBETAN PLATEAU BASED ON COUPLING ANALYSIS OF MULTISPECTRAL FACTOR DECISION TREE
Wenlong Li, Lanzhou University, China; Jing Xu, Lanzhou University of Finance and Economics, China

THP.Y.148 Board 148
REMOTE SENSING DATA FOR MAPPING SEASONALLY CHANGING WETLAND HABITAT OF A THREATENED TURTLE SPECIES IN ONTARIO
Amy Mui, Yuhong He, University of Toronto, Canada; Bob Johnson, Toronto Zoo, Canada

THP.Y.149 Board 149
SATELLITE ESTIMATION OF FLOODED AREA AND RIVER WATER LEVEL DYNAMICS
Mercedes Salvia, Francisco Grings, Cintia Bruscantini, Veronica Barraza, Pablo Perna, IAFE- Insitute for Astronomy and Space Physics (CONICET-UBA), Argentina; Paolo Ferrazzoli, University of Rome Tor Vergata, Italy; Haydee Karszenbaum, IAFE- Insitute for Astronomy and Space Physics (CONICET-UBA), Argentina

Thursday, July 17 17:20 - 19:00 Poster Area Z
Session THP.Z Poster

Anomalous Conditions Related to Oil Spills and Seasonal Processes

Session Co-Chairs: Karem Chokmani, INRS, Centre Eau Terre Environnement; Claude Duguay, University of Waterloo

THP.Z.150 Board 150
OIL SPILL INFORMATION EXACTION BY LASER FLUORESCENCE
Peng Chen, Ying Li, Bingxin Liu, Jin Xu, Dalian Maritime University, China

THP.Z.151 Board 151
OCEAN TRANSPARENCY INVERSION AND ITS MERGING FROM TERRA-MODIS AND NPP-VIIRS SATELLITES ON THE NORTHWEST PACIFIC
Yingni Shi, Tinglu Zhang, Lin Tian, Ocean University of China, China; Lijian Shi, National Satellite Ocean Application Service, China

THP.Z.152 Board 152
ANALYSIS ON ADAPTABILITY OF MONITORING METHODS FOR OIL SPILL BY USING SAR IMAGERY
Qi Yao, Zhanqiang Chang, Zurui Ao, Chao Zhao, Capital Normal University, China

THP.Z.153 Board 153
OBSERVATION AND SIMULATION OF 2010 ULVA PROLIFERA BLOOM IN THE YELLOW SEA
Qing Xu, Hongyuan Zhang, Hohai University, China; Yongcun Cheng, Nanjing University of Information Science and Technology, China; Xiaofeng Li, NOAA/NESDIS, United States; Xianwen Ding, Shanghai Ocean University, China

Modeling and Algorithms for Sensing of Sea Spectra and Currents

Session Co-Chairs: David Weissman, Hofstra University; Susanne Lehner, DLR

THP.AA.154 Board 154 **AN INVESTIGATION ON SEA SURFACE WAVE SPECTRA AND APPROXIMATE SCATTERING THEORIES**
Franco Fois, Peter Hoogeboom, Francois Le Chevalier, Delft University of Technology, Netherlands; Ad Stoffelen, KNMI - Koninklijk Nederlands Meteorologisch Instituut, Netherlands

THP.AA.155 Board 155 **CHARACTERIZATION OF OCEANIC MESOSCALE AND SUB-MESOSCALE ENERGY SPECTRA AND FLUXES**
Sung Yong Kim, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea

THP.AA.156 Board 156 **AN ALTERNATIVE METHOD FOR SURFACE CURRENT EXTRACTION FROM X-BAND MARINE RADAR IMAGES**
Chengxi Shen, Weimin Huang, Eric Gill, Memorial University of Newfoundland, Canada

THP.AA.157 Board 157 **LATEST ADVANCES OF THE SWIM INSTRUMENT**
Céline Tison, Thierry Amiot, CNES, France; Danièle Hauser, LATMOS, CNRS, France; Thierry Koleck, Patrick Castillan, Nathalie Corcoral, CNES, France

THP.AA.158 Board 158 **CURRENT ESTIMATION FROM SATELLITE IMAGE SEQUENCE WITH GLOBAL SIMILARITY OPTIMIZATION MODEL**
Wei Chen, Naval Research Laboratory, United States

THP.AA.159 Board 159 **RETRIEVING SEA SURFACE CURRENT CIRCULATION FROM JASSON SATELLITE ALTIMETRY DATA USING INVERSE VOLTERRA MODEL**
Dr.Maged Marghany, INSTEG,UTM, Malaysia

THP.AA.160 Board 160 **THE EFFECT OF THE WIND FILED TO THE MPI ALGORITHM OF RETRIEVING DIRECTIONAL OCEAN WAVE SPECTRA FROM SAR**
Xiaoyan Liu, Kan Zeng, Ming-Xia He, Ocean University of China, China

Wind Vector Retrievals Using Scatterometers and SAR

Session Co-Chairs: Paul Chang, NOAA / NESDIS; Zorana Jelenak, NOAA / NESDIS

THP.BB.161 Board 161 **CALIBRAITON AND VALIDATION OF THE HY-2 SCATTEROMETER BACKSCATTER MEASUREMENTS OVER OCEAN**
Jintai Zhu, Xiaolong Dong, Risheng Yun, National Space Science Center, Chinese Academy of Sciences, China

THP.BB.162 Board 162 **INTENSITY-LEVEL-SELECTION-BASED WIND RETRIEVAL FROM SHIPBORNE NAUTICAL X-BAND RADAR DATA**
Ying Liu, Weimin Huang, Eric Gill, Memorial University of Newfoundland, Canada

THP.BB.163 Board 163 **A METHOD FOR THE WIND VECTOR RETRIEVAL OVER THE OCEAN SURFACE USING POLARIMETRIC SAR DATA**
Maria Panfilova, Mihail Kanevsky, Galina Balandina, Vladimir Karaev, Institute of Applied Physics Russian Academy of Sciences, Russian Federation

THP.BB.164 Board 164 **MATHEMATICAL MORPHOLOGICAL ANALYSIS OF TYPICAL CYCLONE EYES ON OCEAN SAR**
Ke Wang, University of New South Wales, Australia; Xiaofeng Li, National Oceanic and Atmospheric Administration, United States; John Trinder, University of New South Wales, Australia

THP.BB.165 Board 165 **NOAA WIND DATA PRODUCTS AND QUALITY CONTROL FOR THE OCEANSAT-2 SCATTEROMETER**
Seubson Soisuvarn, Zorana Jelenak, NOAA/NESDIS-UCAR, United States; Qi Zhu, NOAA/NESDIS-GST, United States; Paul Chang, NOAA/NESDIS, United States; Faozi Said, NOAA/NESDIS-GST, United States

THP.BB.166 Board 166 **SAR OFFSHORE WIND FARM MONITORING: ANALYSIS OF SMALL-SCALE WIND FIELD VARIATIONS WITH TERRASAR-X IMAGERY**
Sven Jacobsen, Susanne Lehner, Tobias Gies, Andrey Pleskachevsky, Xiao-Ming Li, German Aerospace Center (DLR), Germany; Thomas Bruns, Deutscher Wetterdienst (DWD), Germany

THP.BB.167 Board 167 **A NEW POLARIZATION RATIO MODEL FROM PLATFORM-BORNE SCATTEROMETER DATA**
Dawei Li, Hui Shen, Institute of Oceanology, Chinese Academy of Sciences, China

Active and Passive Observations of Ocean Bology, Spectra, Rain and Wnds.

Session Co-Chairs: Xiaofeng Li, NOAA / NESDIS; Ad Stoffelen, Koninklijk Nederlands Meteorologisch Instituut (KNMI)

THP.CC.168 Board 168 **IMPEDANCE MODEL OF SEA SURFACE AT S-L-BAND**
Victor Raizer, Zel Technologies, LLC, United States

THP.CC.169 Board 169 **RAIN CELL ON THE OCEAN SURFACE IMAGED BY SAR**
Xiaofeng Li, National Oceanic and Atmospheric Administration, United States; Xu Feng, Fudan University, China; Xiaofeng Yang, Chinese Academy of Sciences, China; Weizhong Zheng, National Oceanic and Atmospheric Administration, United States; Xianwen Ding, Shanghai Ocean University, China; William Pichel, National Oceanic and Atmospheric Administration, United States

THP.CC.170 Board 170 **FRONT DETECTION IN MODIS IMAGERY OF THE BLACK SEA**
Svetlana Karimova, Helmholz-Zentrum Geesthacht, Germany

THP.CC.171 Board 171 **IMPACT OF THE CENTRAL PACIFIC ZONAL WIND ON THE CENTRAL PACIFIC PATTERN EL NINO EVENT**
Jinnian Chen, Tao Zuo, Institute of Oceanology, Chinese Academy of Sciences, China

THP.CC.172 Board 172 **AN ANISOTROPIC OCEAN SURFACE EMISSIVITY MODEL BASED ON WINDSAT AND SSM/I POLARIMETRIC BRIGHTNESS OBSERVATIONS**
Dean Smith, Albin Gasiewski, University of Colorado at Boulder, United States

THP.CC.173 Board 173 **USING REMOTE SENSING METHOD ANALYSIS CHARACTERISTIC OF BOHAI SEA AND YELLOW SEA MIXED ZONE**
Jie Guo, Yantai Institute of Coastal Zone Research,Chinese Academy of Sciences, China; Yijun He, School of Marine Sciences, Nanjing University of Information Science and Technology, China

Ocean Temperature Remote Sensing Science and Application

Session Co-Chairs: Paul Chang, NOAA / NESDIS; Harendra Dadhich

THP.DD.174 Board 174 **SEA SURFACE TEMPERATURE AND CHLOROPHYLL CONCENTRATION TRENDS IN THE NORTH ATLANTIC USING MODIS DATA**
Ricardo Topham, Euroconsult, Canada; Francisco Javier Marcello-Ruiz, Francisco Eugenio-González, Alonso Hernández-Guerra, Institute for Oceanography and Global Change, Spain

THP.DD.175 Board 175 **COMPARISON OF COASTAL SEA SURFACE TEMPERATURE DERIVED FROM SHIP-, AIR-, AND SPACE-BORNE THERMAL INFRARED SYSTEMS**
Ki-mook Kang, Seung-Hee Kim, Duk-Jin Kim, Yang-Ki Cho, Seoul National University, Republic of Korea; Sang-Ho Lee, Kunsan National University, Republic of Korea

THP.DD.176 Board 176 **BOHAI FRONT DETECTION BASED ON MULTI-SCALE SOBEL ALGORITHM**
Bo Ping, Wuhan University, China; Fenzhen Su, Yunyan Du, University of the Chinese Academy of Sciences, China

THP.DD.177 Board 177 **THE ENSO AND LA NIÑA IMPACT ON THE MEXICAN CATCH FISHERY**
Olivia Salmeron-García, Miriam Vazquez-Liévanos, Instituto de Geografia, Universidad Nacional Autonoma de Mexico, Mexico

Ocean Surface Salinity Remote Sensing

Session Co-Chairs: Emmanuel Dinnat, Chapman University; David Levine, NASA/Goddard Space Flight Center

THP.EE.178 Board 178 **EVALUATION OF SEA SURFACE SALINITY OBSERVED BY AQUARIUS**
Naoto Ebuchi, Hiroto Abe, Hokkaido University, Japan

THP.EE.179 Board 179 **SURFACE SCATTERING AND EMISSION MODELS FOR OCEAN SURFACE SALINITY REMOTE SENSING**
Jie Zhu, University of Chinese Academy of Sciences, China; Xiangkun Zhang, Hao Liu, Chinese Academy of Sciences, China; Yongjun Cai, University of Chinese Academy of Sciences, China

THP.EE.180 Board 180 **SEA SURFACE SALINITY SIGNATURES OF TROPICAL INSTABILITY WAVES: NEW EVIDENCES FROM SMOS**
Xiaobin Yin, Jacqueline Boutin, Gilles Reverdin, Laboratoire d'Océanographie et du Climat-Expérimentation et Approches numériques, France; Tong Lee, Jet Propulsion Laboratory, California Institute of Technology, United States; Sabine Arnault, LOCEAN, France; Nicolas Martin, Laboratoire d'Océanographie et du Climat-Expérimentation et Approches numériques, France

Oceans: Coastal Zones I

Session Co-Chairs: Joost Van der Sanden, Canada Centre for Mapping and Earth Observation; Gordon Staples, MDA Geospatial Services, Inc.

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