



w h i s p e r s

**2nd Workshop on  
Hyperspectral Image and Signal Processing :  
Evolution in Remote Sensing**

**14 - 16 June 2010, Reykjavik, Iceland**

**Workshop Program**





w h i s p e r s

## WHISPERS at a glance

### Sunday, June 13, 2010

18:00 - 20:00 Icebreaker – [University Square](#)

### Monday, June 14, 2010

07:30 - 10:00 Arrival and registration

10:00 - 10:30 Opening of the workshop – [Room HT 102](#)

10:30 - 11:30 Plenary 1: Continuum fusion: a new theory of inference [Room HT 102](#)

11:30 - 13:10

mon-o-1-a Hyperspectral Data Processing for Defense and Security (1) [Room HT 102](#)

mon-o-1-b Coastal and littoral areas, oceanic monitoring [Room HT 104](#)

13:10 - 14:10 Lunch break

14:10 - 15:50

mon-o-2-a Spatial-Spectral Hyperspectral Image Analysis (1) [Room HT 102](#)

mon-o-2-b Next Steps in Environmental Monitoring [Room HT 104](#)

15:50 - 16:20 Coffee break

16:20 - 18:20

mon-o-3-a Classification [Room HT 102](#)

mon-o-3-b Astrophysics and planetary exploration (1) [Room HT 104](#)

### Tuesday, June 15, 2010

08:30 - 09:30 Plenary 2: Feature mining from a HS data cube for information mapping: 3D and beyond [Room HT 102](#)

09:30 - 11:10

tue-o-1-a Hyperspectral Data Processing for Defense and Security (2) [Room HT 102](#)

tue-o-1-b Machine Learning for Analysis of Hyperspectral Data (1) [Room HT 104](#)

11:10 - 11:40 Coffee break

11:40 - 13:00

tue-p-a Applications in biomedical imagery, chemistry and mineralogy

tue-p-b Monitoring of the vegetation and spectral invariants

tue-p-c Models, calibration and compression

13:00 - 14:00 Lunch break

14:00 - 15:40

tue-o-2-a Spatial-Spectral Hyperspectral Image Analysis (2) [Room HT 102](#)

tue-o-2-b Forward Modeling of Hyperspectral Data [Room HT 104](#)

15:40 - 16:10 Coffee break

16:10 - 17:50

tue-o-3-a Statistical vs. Geometric Unmixing Algorithms for Hyperspectral Data (1) [Room HT 102](#)

tue-o-3-b Monitoring of the vegetation [Room HT 104](#)

### Wednesday, June 16, 2010

08:30 - 09:30 Plenary 3: Hyperspectral applications for forestry [Room HT 102](#)

09:30 - 11:10

wed-o-1-a Data and decision fusion [Room HT 102](#)

wed-o-1-b Machine Learning for Analysis of Hyperspectral Data (2) [Room HT 104](#)

11:10 - 11:40 Coffee break

11:40 - 13:00

wed-p-a Endmembers and unmixing

wed-p-b Astrophysics and planetary exploration (2)

wed-p-c Applications in hyperspectral imagery

13:00 - 14:00 Lunch break

14:00 - 15:40

wed-o-2-a Monitoring vegetation at multiple scales: canopy structure & spectr. invar. Parameters [Room HT 102](#)

wed-o-2-b Feature extraction, dimension reduction

15:40 - 16:10 Coffee break

16:10 - 17:50

wed-o-3-a Exploitation & Evaluation of Synthetic Hyperspectral Data. [Room HT 102](#)

wed-o-3-b Statistical vs. Geometric Unmixing Algorithms for Hyperspectral Data (2) [Room HT 104](#)

17:50 - 18:00 Concluding remarks, closing of the workshop [Room HT 102](#)



w h i s p e r s

# Monday, June 14, 2010

## Overview

07:30 - 10:00 Arrival and registration

10:00 - 10:30 Opening of the workshop

**10:30 - 11:30 Plenary 1 - Continuum fusion: a new theory of inference**

Dr A. Schaum, Naval Research Laboratory, USA

Session chair: Marco Diani, University of Pisa, Italy

**11:30 - 13:10 Session mon-o-1-a**

**Hyperspectral Data Processing for Defense and Security (1)**

Session Chairs: Dirk Borghys, Royal Military Academy, Belgium

Nasser Nasrabadi, US Army Research Lab, USA

**Session mon-o-1-b**

**Coastal and littoral areas, oceanic monitoring**

Session Chairs: Audrey Minghelli-Roman, Université du Sud Toulon-Var, France

Michael Sears, University of the Witwatersrand, South Africa

13:10 - 14:10 Lunch break

**14:10 - 15:50 Session mon-o-2-a**

**Spatial-Spectral Hyperspectral Image Analysis (1)**

Session Chairs: Paul Gader, University of Florida, USA

Alina Zare, University of Florida, USA

**Session mon-o-2-b**

**Next Steps in Environmental Monitoring**

Session Chairs: Andreas Müller, DLR, Germany

Anita Simic, University of Toronto, Canada

15:50 - 16:20 Coffee break

**16:20 - 18:20 Session mon-o-3-a**

**Classification**

Session Chairs: Paolo Gamba, University of Pavia, Italy

Anna Brook, Tel-Aviv University, Israel

**Session mon-o-3-b**

**Astrophysics and planetary exploration (1)**

Session Chairs: Sylvain Douté, Laboratoire de Planétologie de Grenoble, France

Yves Langevin, IAS Univ. Paris-Sud XI, France



w h i s p e r s

Monday, June 14, 2010

**07:30 - 10:00 Arrival and registration**

**10:00 - 10:30 Opening of the workshop**

**10:30 - 11:30 Plenary 1 - Continuum fusion: a new theory of inference**

Dr A. Schaum, Naval Research Laboratory, USA

Session chair: Marco Diani, University of Pisa, Italy

**11:30 - 13:10 Session mon-o-1-a**

**Hyperspectral Data Processing for Defense and Security (1)**

Session Chairs: Dirk Borghys, Royal Military Academy, Belgium

Nasser Nasrabadi, US Army Research Lab, USA

11:30 - 11:50 ON THE MODELING OF HYPERSPECTRAL IMAGING DATA WITH ELLIPTICALLY CONTOURED DISTRIBUTIONS

Sidi Niu, Vinay Ingle, Dimitris Manolakis and Thomas Cooley

11:50 - 12:10 PASSIVE INFRARED HYPERSPECTRAL IMAGING FOR STANDOFF DETECTION OF TETRYL EXPLOSIVE RESIDUE ON A STEEL SURFACE

Neal Gallagher, James Kelly and Thomas Blake

12:10 - 12:30 ATMOSPHERIC CORRECTION OF AIRBORNE INFRARED HYPERSPECTRAL IMAGES USING NEURAL NETWORKS

Veronique Achard and Sebastian Lesage

12:30 - 12:50 Effects of signature mismatch on hyperspectral detection algorithms

Dimitris Manolakis, Thomas Cooley and John Jacobson

12:50 - 13:10 HYPER-CAM: HYPERSPECTRAL IR IMAGING APPLICATIONS IN DEFENCE INNOVATIVE RESEARCH

Philippe Lagueux, Vincent Farley, Yan Montembeault and Kevin C. Gross

**11:30 - 13:10 Session mon-o-1-b**

**Coastal and littoral areas, oceanic monitoring**

Session Chairs: Audrey Minghelli-Roman, Université du Sud Toulon-Var, France

Michael Sears, University of the Witwatersrand, South Africa

11:30 - 11:50 MONITORING INLAND WATERS WITH THE APEX SENSOR, A WAVELET APPROACH

Els Knaeps, Dries Raymaekers, Sindy Sterckx, Luc Bertels and Daniel Odermatt

11:50 - 12:10 ABOVE AND IN-WATER MEASUREMENTS OF REFLECTANCE AND CHLOROPHYLL ALGORITHMS IN THE KAŠTELA BAY IN THE ADRIATIC SEA

Mak Kisevic, Mira Morovic, Amer Smailbegovic and Roko Andricevic

12:10 - 12:30 MAPPING MARINE PHYTOPLANKTON ASSEMBLAGES FROM HYPERSPECTRAL REMOTE SENSING REFLECTANCES

Elena Torrecilla, Jaume Piera, Ismael F. Aymerich, Sergi Pons, Oliver Ross and Meritxell Vilaseca



12:30 - 12:50 THE HYPERSPECTRAL IMAGER FOR THE COASTAL OCEAN (HICO)- DESIGN AND EARLY RESULTS  
Daniel Korwan, Robert Lucke, Michael Corson, Jeffrey Bowles, Bo Gai Gao, Rong-Rong Li, Marcos Montes, William Snyder, Norm McGlothlin, Steve Butcher, Daniel Wood, Curt Davis and David Miller

12:50 - 13:10 SEA BED MAPPING IN THE LAGOON OF NEW CALEDONIA  
Audrey Minghelli-Roman, Cécile Dupouy, Christophe Chevillon and Pascal Douillet

**13:10 - 14:10 Lunch break**

**14:10 - 15:50 Session mon-o-2-a**

**Spatial-Spectral Hyperspectral Image Analysis (1)**

Session Chairs: Paul Gader, University of Florida, USA  
Alina Zare, University of Florida, USA

14:10 - 14:30 CLASSIFICATION OF HYPERSPECTRAL IMAGES BY USING MORPHOLOGICAL ATTRIBUTE FILTERS AND INDEPENDENT COMPONENT ANALYSIS  
Mauro Dalla Mura, Alberto Villa, Jon Atli Benediktsson, Jocelyn Chanussot and Lorenzo Bruzzone

14:30 - 14:50 SPATIAL STRUCTURES DETECTION IN HYPERSPECTRAL IMAGES USING MATHEMATICAL MORPHOLOGY  
Santiago Velasco-Forero and Jesus Angulo

14:50 - 15:10 SPATIAL-SPECTRAL PREPROCESSING FOR VOLUME-BASED ENDMEMBER EXTRACTION ALGORITHMS USING UNSUPERVISED CLUSTERING  
Gabriel Martin and Antonio Plaza

15:10 - 15:30 A Vector SIFT operator for interest point detection in hyperspectral imagery  
Leidy Dorado-Muñoz, Miguel Velez-Reyes, Amit Mukherjee and Badrinath Roysam

15:30 - 15:50 SPECTRAL IMAGE COMPLEXITY ESTIMATED THROUGH LOCAL CONVEX HULL VOLUME  
David Messinger, Amanda Ziemann, Bill Basener and Ariel Schlamm

**14:10 - 15:50 Session mon-o-2-b**

**Next Steps in Environmental Monitoring**

Session Chairs: Andreas Müller, DLR, Germany  
Anita Simic, University of Toronto, Canada

14:10 - 14:30 ACTIVE HYPERSPECTRAL LIDAR METHODS FOR OBJECT CLASSIFICATION  
Sanna Kaasalainen, Juha Suomalainen, Teemu Hakala, Yuwei Chen, Esa Räikkönen, Eetu Puttonen and Harri Kaartinen

14:30 - 14:50 MAPPING Ni-Cu (PGE) BEARING ULTRAMAFIC ROCKS WITH HYPERSPECTRAL IMAGERY, NUNAVIK, CANADA  
Derek Rogge, Benoit Rivard, Brian Grant and Jamie Pardy

14:50 - 15:10 VEGETATION MANAGEMENT OF UTILITY CORRIDORS USING HIGH-RESOLUTION HYPERSPECTRAL IMAGING AND LIDAR  
Michael Frank, Zhihong Pan and Brian Raber



w h i s p e r s

Monday, June 14, 2010

15:10 - 15:30 SUPPORTING ENVIRONMENTAL REMEDIATION: HYPERSPECTRAL MAPPING OF RE-VEGETATION AREAS IMPACTED BY SMELTING OPERATIONS IN SUDBURY, CANADA

Peter White and Abdelgadir Abdelgasim

15:30 - 15:50 AUTONOMOUS LIGHTWEIGHT AIRBORNE SPECTROMETERS FOR GROUND REFLECTANCE MEASUREMENTS

Joel Kuusk and Andres Kuusk

**15:50 - 16:20 Coffee break**

**16:20 - 18:20 Session mon-o-3-a  
Classification**

Session Chairs: Paolo Gamba, University of Pavia, Italy  
Anna Brook, Tel-Aviv University, Israel

16:20 - 16:40 BENEFITS OF TEXTURAL CHARACTERIZATION FOR THE CLASSIFICATION OF HYPERSPECTRAL IMAGES

Guillaume Roussel, Véronique Achard, Alexandre Alakian and Jean-Claude Fort

16:40 - 17:00 INDEPENDENT COMPONENT DISCRIMINANT ANALYSIS FOR HYPERSPECTRAL IMAGE CLASSIFICATION

Alberto Villa, Jon Atli Benediktsson, Jocelyn Chanussot and Christian Jutten

17:00 - 17:20 CLASSIFICATION OF HYPERSPECTRAL IMAGE BASED ON MORPHOLOGICAL PROFILES AND MULTI-KERNEL SVM

Kun Tan and Peijun Du

17:20 - 17:40 ITERATIVE SPATIAL FILTERING FOR REDUCING INTRA-CLASS SPECTRAL VARIABILITY AND NOISE

Derek Rogge and Benoit Rivard

17:40 - 18:00 UNSUPERVISED CLUSTERING OF SOIL SPECTRAL CURVES TO OBTAIN THEIR STRONGER CORRELATION WITH SOIL PROPERTIES

Jerzy Cierniewski, Cezary Kaźmierowski, Krzysztof Kuśnierek, Jan Piekarczyk, Sławomir Królewicz, Marcin Guliński, Henryk Terelak, Tomasz Stuczyński and Barbara Maliszewska-Kordybach

18:00 - 18:20 ANOMALY DETECTION IN NON-STATIONARY BACKGROUNDS

Stanley Rotman, Nir Gorelik and Hadar Yehudai

**16:20 - 18:20 Session mon-o-3-b  
Astrophysics and planetary exploration (1)**

Session Chairs: Sylvain Douté, Laboratoire de Planétologie de Grenoble, France  
Yves Langevin, IAS Univ. Paris-Sud XI, France

16:20 - 16:40 GLOBAL MAPPING OF TITAN IN THE INFRARED USING A HEURISTIC APPROACH TO REDUCE THE ATMOSPHERIC SCATTERING COMPONENT

Stéphane Le Mouélic, Thomas Cornet, Sébastien Rodriguez, Christophe Sotin, Jason Barnes, Robert Brown, Olivier Bourgeois, Kevin Baines, Bonnie Buratti, Roger Clark and Philip Nicholson



wh i s p e r s

Monday, June 14, 2010

- 16:40 - 17:00 RETRIEVING MARS AEROSOL OPTICAL DEPTH FROM CRISM/MRO IMAGERY  
Sylvain Douté and Xavier Ceamanos
- 17:00 - 17:20 SPARSITY-BASED DENOISING OF HYPERSPECTRAL ASTROPHYSICAL DATA WITH COLORED NOISE. APPLICATION TO THE MUSE INSTRUMENT  
Sébastien Bourguignon, David Mary and Eric Slezak
- 17:20 - 17:40 SPECTRAL CONSTRAINTS ON THE COMPOSITION OF ACTIVE SLOPE STREAKS ON Mars  
Amit Mushkin, Alan R Gillespie, David R Montgomery, B. Charlotte Schreiber and Raymond E Arvidson
- 17:40 - 18:00 RADIOMETRIC CHARACTERISATION OF A VNIR HYPERSPECTRAL IMAGING SYSTEM FOR ACCURATE ATMOSPHERIC CORRECTION  
Lucas Martinez, Fernando Perez, Roman Arbiol and Anna Tarda
- 18:00 - 18:20 MULTI-BAND PROCESSING OF OBSERVATIONS OF THE POLAR REGIONS OF MARS WITH THE OMEGA IMAGING SPECTROMETER ON BOARD MARS EXPRESS  
Yves Langevin, Mathieu Vincendon, Jean-Pierre Bibring, Brigitte Gondet, Sylvain Douté, Francois Poulet and Frederic Schmidt



w h i s p e r s

Tuesday, June 15, 2010  
Overview

**08:30 - 09:30 Plenary 2 - Feature mining from a HS data cube for information mapping:  
3D and beyond**

Xiuping Jia, Univ. of New South Wales, Australian Defence Force Academy, Australia  
Session chair: Josée Lévesque, Defence Research & Development Canada

**09:30 - 11:10 Session tue-o-1-a**

**Hyperspectral Data Processing for Defense and Security (2)**

Session Chairs: Dirk Borghys, Royal Military Academy, Belgium  
Nasser Nasrabadi, US Army Research Lab, USA

**Session tue-o-1-b**

**Machine Learning for Analysis of Hyperspectral Data (1)**

Session Chairs: Erzsébet Merényi, Rice University, USA  
Jón Atli Benediktsson, University of Iceland, Iceland

11:10 - 11:40 Coffee break

**11:40 - 13:00 Session tue-p-a**

**Applications in biomedical imagery, chemistry and mineralogy**

Session Chair: David Bannon, Headwall Photonics, USA

**Session tue-p-b**

**Monitoring of the vegetation and spectral invariants**

Session Chair: Ivar Baarstad, NEO, Norway

**Session tue-p-c**

**Models, calibration and compression**

Session Chair: Stéphanie Delalieux, VITO, Belgium

13:00 - 14:00 Lunch break

**14:00 - 15:40 Session tue-o-2-a**

**Spatial-Spectral Hyperspectral Image Analysis (2)**

Session Chairs: Paul Gader, University of Florida, USA  
Alina Zare, University of Florida, USA

**Session tue-o-2-b**

**Forward Modeling of Hyperspectral Data**

Session Chairs: Robert Sundberg, Spectral Sciences, Inc., USA  
Emmett Lentilucci, Rochester Institute of Technology, USA

15:40 - 16:10 Coffee break

**16:10 - 17:50 Session tue-o-3-a**

**Statistical vs. Geometric Unmixing Algorithms for Hyperspectral Data (1)**

Session Chairs: Mario Parente, Stanford University, SETI Institute, USA  
Antonio Plaza, University of Extremadura, Spain

**Session tue-o-3-b**

**Monitoring of the vegetation**

Session Chairs: Peter H. White, Canada Centre for Remote Sensing, Canada  
Véronique Achard, ONERA, France





w h i s p e r s

Tuesday, June 15, 2010

**08:30 - 09:30 Plenary 2 - Feature mining from a HS data cube for information mapping:  
3D and beyond**

Xiuping Jia, Univ. of New South Wales, Australian Defence Force Academy, Australia  
Session chair: Josée Lévesque, **Defence Research & Development Canada**

**09:30 - 11:10 Session tue-o-1-a**

**Hyperspectral Data Processing for Defense and Security (2)**

Session Chairs: Dirk Borghys, Royal Military Academy, Belgium  
Nasser Nasrabadi, US Army Research Lab, USA

09:30 - 09:50 A NEW ALGORITHM FOR LOCAL BACKGROUND SUPPRESSION IN  
HYPERSPPECTRAL TARGET DETECTION

Stefania Matteoli, Nicola Acito, Marco Diani and Giovanni Corsini

09:50 - 10:10 CURRENT GROUND-BASED LWIR HIS REMOTE SENSING ACTIVITIES AT  
DEFENSE R&D CANADA - VALCARTIER

Jean-Marc Thériault, Eldon Puckrin, Hugo Lavoie, Francois Bouffard, Caroline S.  
Turcotte and Josée Lévesque

CURRENT AIRBORNE LWIR HSI REMOTE SENSING ACTIVITIES AT DEFENCE  
R&D CANADA - VALCARTIER

Eldon Puckrin, Caroline S. Turcotte, Josée Lévesque, Jean-Marc Thériault, Hugo  
Lavoie and Francois Bouffard

10:10 - 10:30 CLASSIFICATION FOR HYPERSPPECTRAL IMAGERY BASED ON SPARSE  
REPRESENTATION

Yi Chen, Nasser Nasrabadi and Trac Tran

10:30 - 10:50 STUDY OF THE INFLUENCE OF PRE-PROCESSING ON LOCAL STATISTICS-  
BASED ANOMALY DETECTOR RESULTS

Dirk Borghys and Perneel Christiaan

10:50 - 11:10 DETECTION OF OCCLUDED TARGETS USING THERMAL IMAGING  
SPECTROSCOPY

Michal Shimoni, Christiaan Perneel and Jean-Philippe Gagnon

**09:30 - 11:10 Session tue-o-1-b**

**Machine Learning for Analysis of Hyperspectral Data (1)**

Session Chairs: Erzsébet Merényi, Rice University, USA  
Jón Atli Benediktsson, University of Iceland, Iceland

09:30 - 09:50 THE ANGULAR KERNEL IN MACHINE LEARNING FOR HYPERSPPECTRAL DATA  
CLASSIFICATION

Paul Honeine and Cédric Richard

09:50 - 10:10 LOCALLY CONSISTENT GRAPH REGULARIZATION BASED ACTIVE LEARNING  
FOR HYPERSPPECTRAL IMAGE CLASSIFICATION

Wei Di and Melba Crawford

10:10 - 10:30 ADAPTING LEARNING PARAMETER TRANSITION IN THE GENERALIZED  
LEARNING VECTOR QUANTIZATION FAMILY OF CLASSIFIERS

Sarah Bischoff, Michael Mendenhall, Andy Rice and Juan Vasquez



w h i s p e r s

Tuesday, June 15, 2010

10:30 - 10:50 A MARKOVIAN GENERALIZATION OF SUPPORT VECTOR MACHINES FOR CONTEXTUAL SUPERVISED CLASSIFICATION OF HYPERSPECTRAL IMAGES  
Gabriele Moser and Sebastiano Serpico

10:50 - 11:10 DIVERGENCE BASED VECTOR QUANTIZATION OF SPECTRAL DATA  
Thomas Villmann and Sven Haase

**11:10 - 11:40 Coffee break**

**11:40 - 13:00 Session tue-p-a**

**Applications in biomedical imagery, chemistry and mineralogy**

Session Chair: David Bannon, Headwall Photonics, USA

01 MAPPING P-T CONDITIONS IN HYDROTHERMAL SYSTEMS USING HYPERSPECTRAL REMOTE SENSING AND OBJECT BASED TECHNIQUES  
Freek Vandermeer

02 AUTOMATED NEUTRAL REGION SELECTION USING SUPERPIXELS  
Lukas Mandrake, David Thompson, Martha Gilmore, Rebecca Castano and Eldar Dobra

03 SPECTRAL ANALYSIS AND UNSUPERVISED SVM CLASSIFICATION FOR SKIN HYPER-PIGMENTATION CLASSIFICATION  
Sylvain Prigent, Xavier Descombes, Didier Zugaj and Josiane Zerubia

04 HYPERSPECTRAL LOW-LIGHT CAMERA FOR IMAGING OF BIOLOGICAL SAMPLES  
Julio Hernandez-palacios, Lise Randeberg, Ivar Baarstad, Trond Løke and Torbjørn Skauli

05 NON-NEGATIVE MATRIX FACTORIZATION UNDER SPARSITY CONSTRAINTS TO UNMIX IN VIVO SPECTRALLY RESOLVED ACQUISITIONS  
Anne-Sophie Montcuquet, Lionel Hervé, Fabrice Navarro, Jean-Marc Dinten and Jérôme I. Mars

06 USING TEXTURE AND FRACTAL ANALYSIS FOR CLASSIFICATION OF CELL NUCLEI FROM LIGHT SCATTERING SPECTROSCOPIC IMAGES  
Radu Dobrescu, Matei Dobrescu and Loretta Ichim

**11:40 - 13:00 Session tue-p-b**

**Monitoring of the vegetation and spectral invariants**

Session Chair: Ivar Baarstad, NEO, Norway

01 HYPERSPECTRAL REMOTE SENSING OF VEGETATION GROWING CONDITION AND REGIONAL ENVIRONMENT  
Bing Zhang, Di Wu, Li Zhang, Quanjun Jiao and Qingting Li

02 SPECTRAL ANGLE MAPPER CLASSIFICATION OF FLUORESCENCE HYPERSPECTRAL IMAGE FOR AFLATOXIN CONTAMINATED CORN  
Haibo Yao, Zuzana Hruska, Russell Kincaid, Ambrose Ononye, Robert Brown and Thomas Cleveland



- 03 CLUSTERING OF CROP PHENOTYPES BY MEANS OF HYPERSPECTRAL SIGNATURES USING ARTIFICIAL NEURAL NETWORKS  
Udo Seiffert, Felix Bollenbeck, Hans-Peter Mock and Andrea Matros
- 04 GTI METHOD FOR WILT OAK TREES DETECTION  
Massimo Dell'Erba and Kuniaki Uto
- 05 SNNS APPLICATION FOR CROP CLASSIFICATION USING HYMAP DATA  
Dawid Olesiuk, Martin Bachmann, Martin Habermeyer, Wieke Heldens, Andreas Müller and Bogdan Zagajewski
- 06 CANOPY VERTICAL STRUCTURE USING MODIS BIDIRECTIONAL REFLECTANCE DATA  
Zhuosen Wang, Crystal Schaaf, Philip Lewis, Yuri Knyazikhin, Mitchell Schull, Alan Strahler, Ranga Myneni and Mark Chopping
- 07 OBSERVED SPECTRAL INVARIANT BEHAVIOR OF ZENITH RADIANCE IN THE TRANSITION ZONE BETWEEN CLOUD-FREE AND CLOUDY REGIONS  
Alexander Marshak, Yuri Knyazikhin, Christine Chiu and Warren Wiscombe
- 08 A PHYSICAL INTERPRETATION OF THE CORRELATION BETWEEN CANOPY ALBEDO AND NITROGEN USING HYPERSPECTRAL DATA  
Mitchell Schull, Liang Xu, Yuri knyazikhin and Ranga Myneni
- 09 MODELING RECOLLISION AND ESCAPE PROBABILITIES USING THE STOCHASTIC RADIATIVE TRANSFER EQUATION  
Liang Xu, Yuri Knyazikhin and Mitchell Schull
- 10 POTENTIAL OF CONTINUUM REMOVED REFLECTANCE SPECTRAL FEATURES ESTIMATING NITROGEN NUTRITION IN RICE CANOPY LEVEL  
Jinheng Zhang

**11:40 - 13:00 Session tue-p-c**

**Models, calibration and compression**

Session Chair: Stéphanie Delalieux, VITO, Belgium

- 01 IMAGE SIMULATION OF GEOSTATIONARY SENSOR DEDICATED TO OCEAN COLOR  
Manchun Lei, Audrey Minghelli-Roman, Sandrine Mathieu and Pierre Gouton
- 02 SOIL REFLECTANCE MODELING & HYPERSPECTRAL MIXTURE ANALYSIS: TOWARDS VEGETATION SPECTRA MINIMIZING THE SOIL BACKGROUND CONTAMINATION  
Ben Somers, Laurent Tits, Willem W Verstraeten and Pol Coppin
- 03 MONTE CARLO BASED HYPERSPECTRAL SCENE SIMULATION  
Robert Sundberg, Steven Richtsmeier and Raymond Haren
- 04 THE EFFECTS OF ATMOSPHERIC MIS-ESTIMATION ON HYPERSPECTRAL-BASED ADAPTIVE MATCHED FILTER TARGET DETECTION AS MEASURED BY THE BHATTACHARYYA COEFFICIENT  
Allan Yarbrough, Michael Mendenhall and Richard Martin



- 05 REFLECTANCE SPECTRA OF RAMI STANDS IN ESTONIA  
Andres Kuusk, Joel Kuusk, Mait Lang and Tiit Nilson
- 06 THERMAL INFRARED RADIOSITY AND HEAT DIFFUSION MODEL VERIFICATION  
AND VALIDATION  
Iryna Danilina, Alan Gillespie, Matthew Smith, Lee Balick and Elsa Abbott
- 07 CALIBRATION OF CRISM/MRO APPARENT WAVELENGTHS USING SYNTHETIC  
DATA  
Xavier Ceamanos and Sylvain Douté
- 08 ATMOSPHERIC CORRECTION OF AIRBORNE INFRARED HYPERSPECTRAL  
IMAGES BY DIRECT ESTIMATION OF THE RADIATIVE TERMS  
François Lemaître, Laurent Poutier and Yannick Boucher
- 09 LOSSLESS COMPRESSION OF HYPERSPECTRAL DATA OBTAINED FROM  
FOURIER-TRANSFORM INFRARED IMAGING SPECTROMETERS  
Julien Roy, Simon Potvin, Jean-Daniel Deschênes and Jérôme Genest
- 10 CALIBRATION OF A CHEMOMETRICAL MODEL FROM FIELD HYPERSPECTRAL  
CLOSE-RANGE IMAGES: TAKING INTO ACCOUNT LEAF INCLINATION AND  
MULTIPLE REFLECTION EFFECTS  
Nathalie Vigneau, Gilles Rabatel, Pierre Roumet and Martin Ecarnot

**13:00 - 14:00 Lunch break**

**14:00 - 15:40 Session tue-o-2-a**

**Spatial-Spectral Hyperspectral Image Analysis (2)**

Session Chairs: Paul Gader, University of Florida, USA  
Alina Zare, University of Florida, USA

- 14:00 - 14:20 INTEREST SEGMENTATION OF HYPERSPECTRAL IMAGERY  
Ariel Schlamm, David Messinger and William Basener
- 14:20 - 14:40 SPATIAL MULTIPLE INSTANCE LEARNING FOR HYPERSPECTRAL IMAGE  
ANALYSIS  
Jeremy Bolton and Paul Gader
- 14:40 - 15:00 EXPLOITING SPATIAL INFORMATION IN SEMI-SUPERVISED HYPERSPECTRAL  
IMAGE SEGMENTATION  
Jun Li, Jose Bioucas-Dias and Antonio Plaza
- 15:00 - 15:20 SPATIALLY-SMOOTH PIECE-WISE CONVEX ENDMEMBER DETECTION.  
Alina Zare, Ouïem Bchir, Hichem Frigui and Paul Gader
- 15:20 - 15:40 A SPATIAL/SPECTRAL PROTOCOL FOR QUALITY ASSURANCE OF  
DECOMPRESSED HYPERSPECTRAL DATA FOR PRACTICAL APPLICATIONS  
Anna Brook and Eyal Ben-Dor



w h i s p e r s

Tuesday, June 15, 2010

**14:00 - 15:40 Session tue-o-2-b**

**Forward Modeling of Hyperspectral Data**

Session Chairs: Robert Sundberg, Spectral Sciences, Inc., USA  
Emmett Lentilucci, Rochester Institute of Technology, USA

14:00 - 14:20 FULL SPECTRUM BROKEN CLOUD SCENE SIMULATION  
Steven Richtsmeier and Robert Sundberg

14:20 - 14:40 VALIDATION OF IN-WATER 3D RADIATIVE TRANSFER USING DIRSIG  
Jacqueline Speir, John Schott, Adam Goodenough and Scott Brown

14:40 - 15:00 UTILITY ASSESSMENT OF A MULTISPECTRAL SNAPSHOT LWIR IMAGER  
Jeffrey Mercier, Toby Townsend and Robert Sundberg

15:00 - 15:20 AN EXTENDED-WAVELENGTH EXOPLANET SPECTRAL MODEL BASED ON MODTRAN5  
Lawrence Bernstein, Alexander Berk, Marsha Fox and Robert Sundberg

15:20 - 15:40 HYPERSPECTRAL TARGET DETECTION IN A WHITENED SPACE UTILIZING FORWARD MODELING CONCEPTS  
Emmett Lentilucci and Peter Bajorski

**15:40 - 16:10 Coffee break**

**16:10 - 17:50 Session tue-o-3-a**

**Statistical vs. Geometric Unmixing Algorithms for Hyperspectral Data (1)**

Session Chairs: Mario Parente, Stanford University, SETI Institute, USA  
Antonio Plaza, University of Extremadura, Spain

16:10 - 16:30 SPECTRAL UNMIXING OF AIRBORNE HYPERSPECTRAL IMAGERY FOR MAPPING GIANT REED INFESTATIONS  
Chenghai Yang, Qian Du, James Everitt, John Goolsby and Nicolas Younan

16:30 - 16:50 A NEURAL NETWORK APPROACH FOR PIXEL UNMIXING IN HYPERSPECTRAL DATA  
Giorgio Licciardi and Fabio Del Fratte

16:50 - 17:10 A GENERALIZED KERNEL FOR AREAL AND INTIMATE MIXTURES  
Joshua Broadwater and Amit Banerjee

17:10 - 17:30 ROBUST HYPERSPECTRAL DATA UNMIXING WITH SPATIAL AND SPECTRAL REGULARIZED NMF  
Alexis Huck and Mireille Guillaume

17:30 - 17:50 IDENTIFIABILITY OF GEOMETRIC MODELS FOR LINEAR UNMIXING AT DIFFERENT SPATIAL RESOLUTIONS IN HYPERSPECTRAL UNMIXING  
Andrea Santos-Garcia and Miguel Velez-Reyes



w h i s p e r s

Tuesday, June 15, 2010

**16:10 - 17:50 Session tue-o-3-b**

**Monitoring of the vegetation**

Session Chairs: Peter H. White, Canada Centre for Remote Sensing, Canada  
Véronique Achard, ONERA, France

- 16:10 - 16:30 CLASSIFICATION OF HIGH-MOUNTAIN PLANT COMMUNITIES USING ARTIFICIAL NEURAL NETS AND HYPERSPECTRAL DATA  
Bogdan Zagajewski
- 16:30 - 16:50 DERIVATION OF STRESS SEVERITIES IN WHEAT FROM HYPERSPECTRAL DATA USING SUPPORT VECTOR REGRESSION  
Thorsten Mewes, Björn Waske, Jonas Franke and Gunter Menz
- 16:50 - 17:10 STATISTICAL ANALYSIS OF GROWTH LEVELS OF RICE PADDY BASED ON HYPERSPECTRAL IMAGERY WITH HIGH SPATIAL RESOLUTION  
Kuniaki Uto, Yukio Kosugi and Jiro Sasaki
- 17:10 - 17:30 MONITORING HEATHLAND HABITAT STATUS USING HYPERSPECTRAL IMAGE CLASSIFICATION AND UNMIXING  
Stephanie Delalieux, Ben Somers, Birgen Haest, Lammert Kooistra, Sander Mucher and Jeroen Vanden Borre
- 17:30 - 17:50 THE DETAILED VEGETATION CLASSIFICATION FOR AIRBORNE HYPERSPECTRAL REMOTE SENSING IMAGERY BY COMBINING PCA AND PP  
Lianpeng Zhang, Qinhua Liu, Changsheng Zhao, Hui Lin and Huasheng Sun



w h i s p e r s

## Wednesday, June 16, 2010 Overview

### 08:30 - 09:30 Plenary 3 - Hyperspectral applications for forestry

David Goodenough, University of Victoria, Canada  
Session chair: Benoit Rivard, University of Alberta, Canada

### 09:30 - 11:10 Session wed-o-1-a

#### Data and decision fusion

Session chairs: Jenny Q. Du, Mississippi State University, USA  
Luciano Alparone, University of Florence, Italy

### Session wed-o-1-b

#### Machine Learning for Analysis of Hyperspectral Data (2)

Session Chairs: Erzsébet Merényi, Rice University, USA  
Jón Atli Benediktsson, University of Iceland, Iceland

11:10 - 11:40 Coffee break

### 11:40 - 13:00 Session wed-p-a

#### Endmembers and unmixing

Session chair: Gabriele Moser, University of Genoa, Italy

### Session wed-p-b

#### Astrophysics and planetary exploration (2)

Session chair: Bin Luo, Grenoble Institute of Technology, France

### Session wed-p-c

#### Applications in hyperspectral imagery

Session chair: Björn Waske, University of Bonn, Germany

13:00 - 14:00 Lunch break

### 14:00 - 15:40 Session wed-o-2-a

#### Monitoring vegetation at multiple scales: canopy structure and spectrally invariant parameters

Session chairs: Miina Rautiainen, University of Helsinki, Finland  
Yuri Knyazikhin, Boston University, USA

### Session wed-o-2-b

#### Feature extraction, dimension reduction

Session chairs: Melba Crawford, Purdue University, USA  
Peijun Du, China University of Mining and Technology, China

15:40 - 16:10 Coffee break

### 16:10 - 17:50 Session wed-o-3-a

#### Exploitation & Evaluation of Synthetic Hyperspectral Data.

Session Chairs: Michael J. Mendenhall, Air Force Institute of Technology, USA  
John Kerekes, Rochester Institute of Technology, USA

### Session wed-o-3-b

#### Statistical vs. Geometric Unmixing Algorithms for Hyperspectral Data (2)

Session Chairs: Mario Parente, Stanford University, SETI Institute, USA  
Antonio Plaza, University of Extremadura, Spain



**08:30 - 09:30 Plenary 3 - Hyperspectral applications for forestry**

David Goodenough, University of Victoria, Canada  
Session chair: Benoit Rivard, University of Alberta, Canada

**09:30 - 11:10 Session wed-o-1-a**

**Data and decision fusion**

Session chairs: Jenny Q. Du, Mississippi State University, USA  
Luciano Alparone, University of Florence, Italy

09:30 - 09:50 SYNERGISTIC USE OF LANDSAT AND HYPERION IMAGERIES FOR ECOLOGICAL SITE CLASSIFICATION IN RANGELANDS

Paula Blanco, Héctor del Valle, Pablo Bouza, Graciela Metternicht and Alfred Zinck

09:50 - 10:10 EFFICIENT COMBINATION OF MULTIPLE HYPERSPECTRAL DATA PROCESSING CHAINS USING BINARY DECISION TREES

Karoly Bakos and Paolo Gamba

10:10 - 10:30 HYPERSPECTRAL PANSHARPENING BASED ON MODULATION OF PIXEL SPECTRA

Andrea Garzelli, Luca Capobianco, Luciano Alparone, Bruno Aiazzi, Stefano Baronti and Massimo Selva

10:30 - 10:50 NON-NEGATIVE MATRIX FACTORIZATION PANSHARPENING OF HYPERSPECTRAL DATA: AN APPLICATION TO MID-INFRARED ASTRONOMY

Olivier Berne

10:50 - 11:10 FUSION OF HYPERSPECTRAL IMAGES AND LIDAR DATA FOR CIVIL ENGINEERING STRUCTURE MONITORING

Anna Brook, Eyal Ben-Dor and Rolf Richter

**09:30 - 11:10 Session wed-o-1-b**

**Machine Learning for Analysis of Hyperspectral Data (2)**

Session Chairs: Erzsébet Merényi, Rice University, USA  
Jón Atli Benediktsson, University of Iceland, Iceland

09:30 - 09:50 COMPARISON OF ADVANCED NEURAL NETWORK ARCHITECTURES FOR HYPERSPECTRAL DATA CLASSIFICATION

Prashanth Reddy Marpu, Giorgio Licciardi, Paolo Gamba and Fabio Del Frate

09:50 - 10:10 DIRICHLET PROCESS BASED CONTEXT LEARNING FOR MINE DETECTION IN HYPERSPECTRAL IMAGERY

Kenneth D. Morton, Jr., Peter Torrione and Leslie Collins

10:10 - 10:30 AUTOMATIC SELECTION OF INFORMATIVE SAMPLES FOR SVM-BASED CLASSIFICATION OF HYPERSPECTRAL DATA USING LIMITED TRAINING SETS

Antonio Plaza and Javier Plaza

10:30 - 10:50 SUPERVISED HYPERSPECTRAL IMAGE SEGMENTATION USING ACTIVE LEARNING

Jun Li, José Bioucas Dias and Antonio Plaza





10:50 - 11:10 SIMPLIFYING SUPPORT VECTOR MACHINES FOR CLASSIFICATION OF  
HYPERSPPECTRAL IMAGERY AND SELECTION OF RELEVANT FEATURES  
Andreas Rabe, Sebastian van der Linden and Patrick Hostert

**11:10 - 11:40 Coffee break**

**11:40 - 13:00 Session wed-p-a**

**Endmembers and unmixing**

Session chair: Gabriele Moser, University of Genoa, Italy

- 01 AN EVALUATION OF THREE ENDMEMBER EXTRACTION ALGORITHMS: ATGP,  
ICA-EEA & VCA  
Isaac Gerg
- 02 MULTIPLE MODEL ENDMEMBER DETECTION BASED ON SPECTRAL AND  
SPATIAL INFORMATION  
Ouiem Bchir, Hichem Frigui, Alina Zare and Paul Gader
- 03 USING RANDOM MATRIX THEORY TO DETERMINE THE NUMBER OF  
ENDMEMBERS IN A HYPERSPPECTRAL IMAGE  
Bergh and Renaud Mathieu
- 04 MAPPING SEALED SURFACES FROM CHRIS/PROBA DATA: A MULTIPLE  
ENDMEMBER UNMIXING APPROACH  
Luca Demarchi, Frank Canters, Jonathan Cheung-Wai Chan and Tim Van de Voorde
- 05 SPECTRAL-TEXTURAL ENDMEMBER EXTRACTION  
Maciel Zortea, Devis Tuia, Fabio Pacifici and Antonio Plaza
- 06 ON THE USE OF SPECTRAL LIBRARIES TO PERFORM SPARSE UNMIXING OF  
HYPERSPPECTRAL DATA  
Marian-Daniel Iordache, Jose Bioucas-Dias and Antonio Plaza
- 07 ACCURACY AND PERFORMANCE OF OPTIMIZED BAYESIAN SOURCE  
SEPARATION FOR HYPERSPPECTRAL UNMIXING  
Frédéric Schmidt, Albrecht Schmidt, Erwan Tréguier, Maël Guiheneuf, Saïd Moussaoui  
and Nicolas Dobigeon
- 08 A MODIFIED PIXEL PURITY INDEX METHOD FOR HYPERSPPECTRAL IMAGES  
Peter Bajorski and Niek Sanders.
- 09 QUANTITATIVE DETECTION OF SEDIMENT DUST ANALOG OVER GREEN  
CANOPY USING AIRBORNE HYPERSPPECTRAL IMAGERY  
Anna Brook and Eyal Ben-Dor
- 10 A COMPARISON OF DETERMINISTIC AND PROBABILISTIC APPROACHES TO  
ENDMEMBER REPRESENTATION  
Alina Zare, Ouiem Bchir, Hichem Frigui and Paul Gader
- 11 IMPACT OF COLLINEARITY ON LINEAR AND NONLINEAR SPECTRAL MIXTURE  
ANALYSIS  
Xiuping Jia, Xuehong Chen, Jin Chen and Jin Wu



- 12 DETECTION OF MISALLOCATED ENDMEMBERS THROUGH THE NETWORK BASED METHOD  
Dimitris Sykas and Vassilia Karathanassi

**11:40 - 13:00 Session wed-p-b**

**Astrophysics and planetary exploration (2)**

Session chair: Bin Luo, Grenoble Institute of Technology, France

- 01 SYSTEMATIC DETECTION OF TITAN'S CLOUDS IN VIMS/CASSINI HYPER SPECTRAL IMAGES USING A NEW AUTOMATED ALGORITHM  
Sebastien Rodriguez, Frederic Schmidt, Said Moussaoui, Stephane Le Mouelic, Pascal Rannou, Jason W. Barnes, Christophe Sotin, Robert H. Brown, Kevin H. Baines, Bonnie J. Buratti, Roger N. Clark and Phil D. Nicholson
- 02 MARTIAN AEROSOL ABUNDANCE ESTIMATION BASED ON UNMIXING OF HYPER SPECTRAL IMAGERY  
Bin Luo, Xavier Ceamanos, Sylvain Douté and Jocelyn Chaussoot
- 03 THE PLANETARY EMISSIVITY LABORATORY (PEL) AT DLR, BERLIN  
Alessandro Maturilli, Joern Helbert and Mario D'Amore
- 04 MODAL MINERALOGY OF PLANETARY SURFACES FROM VISIBLE AND NEAR INFRARED SPECTRAL DATA  
Francois Poulet, Bethany L. Ehlmann, John F. Mustard, Mathieu Vincendon and Yves Langevin

**11:40 - 13:00 Session wed-p-c**

**Applications in hyperspectral imagery**

Session chair: Björn Waske, University of Bonn, Germany

- 01 HYPER SPECTRAL ANOMALY DETECTOR BASED ON VARIABLE NUMBER OF LINEAR PREDICTORS  
Edisanter Lo
- 02 A SPECTRAL ANOMALY DETECTOR IN HYPER SPECTRAL IMAGES BASED ON A NON-GAUSSIAN MIXTURE MODEL  
Tiziana Veracini, Stefania Matteoli, Marco Diani, Giovanni Corsini and Sergio Ugo de Ceglie
- 03 ARCHITECTURE OF THE REAL-TIME TARGET DETECTION PROCESSING IN AN AIRBORNE HYPER SPECTRAL DEMONSTRATOR SYSTEM  
Trym Vegard Haavardsholm, Gunnar Arisholm, Amela Kavara and Torbjørn Skauli
- 04 EXTRACTION OF URBAN IMPERVIOUS SURFACE FROM HYPER SPECTRAL REMOTE SENSING IMAGE  
Peijun Du, Junshi Xia, Wen Cao and Xiaoling Wang
- 05 HYPER SPECTRAL TECHNIQUES FOR WATER QUALITY MONITORING: APPLICATION TO THE "SACCA DI GORO" – ITALY  
Luigi Alberotanza, Federica Braga, Rosa Maria Cavalli, Stefano Pignatti and Federico Santini



- 06 COMPARISON BETWEEN HYPERSPECTRAL IRRADIANCE REFLECTANCE AND DIFFUSE ATTENUATION COEFFICIENT AS INDICATORS OF ALGAE PRESENCE IN THE WATER COLUMN  
Ismael F. Aymerich, Sergi Pons, Jaume Piera, Elena Torrecilla and Oliver Ross

**13:00 - 14:00 Lunch break**

**14:00 - 15:40 Session wed-o-2-a**

**Monitoring vegetation at multiple scales: canopy structure and spectrally invariant parameters**

Session chairs: Miina Rautiainen, University of Helsinki, Finland  
Yuri Knyazikhin, Boston University, USA

- 14:00 - 14:20 ON CANOPY SPECTRAL INVARIANTS AND HYPERSPECTRAL RAY TRACING  
Philip Lewis and Mathias Disney
- 14:20 - 14:40 THE PHYSICS OF SPECTRAL INVARIANTS  
Matti Möttöus
- 14:40 - 15:00 ESTIMATING CANOPY SPECTRAL INVARIANTS FROM GROUND REFERENCE AND REMOTE SENSING DATA  
Miina Rautiainen, Pauline Stenberg, Petr Lukes, Matti Mottus and Janne Heiskanen
- 15:00 - 15:20 THE APPLICATION OF SPECTRAL INVARIANTS FOR DISCRIMINATION OF CROPS USING CHRIS-PROBA DATA  
Pedro Latorre Carmona, Mitchell Schull, Yuri Knyazikhin and Filiberto Pla
- 15:20 - 15:40 A PHYSICALLY BASED APPROACH IN RETRIEVING VEGETATION LEAF AREA INDEX FROM LANDSAT SURFACE REFLECTANCE DATA  
Sangram Ganguly, Ramakrishna R. Nemani, Yuri Knyazikhin, Weile Wang, Hirofumi Hashimoto, Peter Votava, Andrew Michaelis, Cristina Milesi, Jennifer L. Dungan, Forrest S. Melton and Ranga B. Myneni

**14:00 - 15:40 Session wed-o-2-b**

**Feature extraction, dimension reduction**

Session chairs: Melba Crawford, Purdue University, USA  
Peijun Du, China University of Mining and Technology, China

- 14:00 - 14:20 Investigation of Virtual Dimensionality and Broken Stick Rule for hyperspectral images  
Peter Bajorski
- 14:20 - 14:40 STOCHASTIC FEATURE SELECTION WITH DISTRIBUTED FEATURE SPACING FOR HYPERSPECTRAL DATA  
Jeffrey Clark, Michael Mendenhall and Gilbert Peterson
- 14:40 - 15:00 VIRTUAL DIMENSIONALITY ESTIMATION FOR HYPERSPECTRAL IMAGERY WITH A FRACTAL-BASED METHOD  
Qian Du
- 15:00 - 15:20 DIMENSIONALITY REDUCTION OF HYPERSPECTRAL DATA BASED ON CENTROID FEATURE  
Jayanta Kumar Ghosh and Kriti Mukherjee



w h i s p e r s

Wednesday, June 16, 2010

15:20 - 15:40 FEATURE SELECTION BASED ON ANT COLONY ALGORITHM FOR  
HYPERSPETRAL REMOTE SENSING IMAGES  
Farhad Samadzadegan and Tahmineh Partovi

**15:40 - 16:10 Coffee break**

**16:10 - 17:50 Session wed-o-3-a**

**Exploitation & Evaluation of Synthetic Hyperspectral Data.**

Session Chairs: Michael J. Mendenhall, Air Force Institute of Technology, USA  
John Kerekes, Rochester Institute of Technology, USA

16:10 - 16:30 TARGET DISCRIMINATION VIA OPTIMAL WAVELENGTH BAND SELECTION WITH  
SYNTHETIC HYPERSPETRAL IMAGERY  
Zhong Lu, Andrew Rice, John Kerekes and Juan Vasquez

16:30 - 16:50 DYNAMIC IMAGE SIMULATIONS FOR ADAPTIVE SENSOR PERFORMANCE  
PREDICTIONS  
John Kerekes and David Pogorzala

16:50 - 17:10 USING SPATIAL CORRESPONDENCES FOR HYPERSPETRAL KNOWLEDGE  
TRANSFER: EVALUATION ON SYNTHETIC DATA  
Brian Bue and Erzsebet Merenyi

17:10 - 17:30 IMPROVED CHANGE DETECTION THROUGH POST CHANGE CLASSIFICATION:  
A CASE STUDY USING SYNTHETIC HYPERSPETRAL IMAGERY  
Karmon Vongsy and Michael Mendenhall

17:30 - 17:50 MODELING THE HYPERSPETRAL REFLECTANCE SIGNAL OF MOIST SANDY  
SOILS  
Ben Somers, Willem W. Verstraeten, Stephanie Delalieux and Pol Coppin

**16:10 - 17:50 Session wed-o-3-b**

**Statistical vs. Geometric Unmixing Algorithms for Hyperspectral Data (2)**

Session Chairs: Mario Parente, Stanford University, SETI Institute, USA  
Antonio Plaza, University of Extremadura, Spain

16:10 - 16:30 SURVEY OF GEOMETRIC AND STATISTICAL UNMIXING ALGORITHMS FOR  
HYPERSPETRAL IMAGES  
Mario Parente and Antonio Plaza

16:30 - 16:50 MARKOV RANDOM FIELDS FOR JOINT UNMIXING AND SEGMENTATION OF  
HYPERSPETRAL IMAGES  
Olivier Eches, Nicolas Dobigeon and Jean-Yves Tourneret.

16:50 - 17:10 CONTROLLED SPECTRAL UNMIXING USING EXTENDED SUPPORT VECTOR  
MACHINES  
Xiuping Jia and Chandrama Dey

17:10 - 17:30 A ROBUST ALTERNATING VOLUME MAXIMIZATION ALGORITHM FOR  
ENDMEMBER EXTRACTION IN HYPERSPETRAL IMAGES  
ArulMurugan Ambikapathi, Tsung-Han Chan, Wing-Kin Ma and Chong-Yung Chi



Wednesday, June 16, 2010

w h i s p e r s

17:30 - 17:50 ALTERNATING DIRECTION ALGORITHMS FOR CONSTRAINED SPARSE REGRESSION: APPLICATION TO HYPERSPPECTRAL UNMIXING  
José Bioucas-Dias and Mário Figueiredo

**17:50 - 18:00 Concluding remarks, closing of the workshop**