



w h i s p e r s

4th Workshop on  
Hyperspectral Image and Signal Processing :  
Evolution in Remote Sensing

4 - 7 June 2012, Shanghai, China

## Workshop Program



### Monday, June 4

09:00 – 12:00	Registration in Tongji Days Hotel
14:00 – 17:00	
14:00 – 18:00	
tutorial 1	Spectral Unmixing of Hyperspectral Data
tutorial 2	Feature Mining from Hyperspectral Data
18:30 – 20:30	Welcome Reception Dinner

### Tuesday, June 5

07:30 – 08:30	Registration
08:30 – 09:00	Opening of the workshop
09:00 – 10:00	Plenary 1 – The Progress of Hyperspectral Remote Sensing in China
10:00 – 10:30	Coffee break
10:30 – 12:10	
<b>tue-o-1-a</b>	Classification (1)
<b>tue-o-1-b</b>	Vegetation (1)
12:10 – 13:30	Lunch break
13:30 – 15:10	
<b>tue-o-2-a</b>	Geology, Mineralogy and Mining Industry (1)
<b>tue-o-2-b</b>	Anomaly and Target Detection
15:10 – 15:40	Coffee break
15:40 – 17:40	
<b>tue-o-3-a</b>	Unmixing (1)
<b>tue-o-3-b</b>	Oceans and Water Bodies
19:30 – 21:00	Meeting of the GRSS Standardized Algorithm, Data, and Evaluation (SADE) Working group in Tongji Days Hotel

### Wednesday, June 6

08:30 – 09:30	Plenary 2 - Planetary Hyperspectral Imagery, from remote characterizations down to microscopic in situ analysis
09:30 – 11:10	
<b>wed-o-1-a</b>	Unmixing (2)
<b>wed-o-1-b</b>	Extraterrestrial Sensing / Change Detection
11:10 – 11:40	Coffee break
11:40 – 13:00	
<b>wed-p</b>	Poster
13:00 – 14:00	Lunch break
14:00 – 15:40	
<b>wed-o-2-a</b>	Classification (2)
<b>wed-o-2-b</b>	Advanced Models and Concepts in HS Data Processing
15:40 – 16:10	Coffee break
16:10 – 17:30	
<b>wed-o-3-a</b>	Infrared and Thermal Sensing
<b>wed-o-3-b</b>	Calibration, Atmospheric Correction and Restoration
19:00 – 22:00	Conference Banquet

### Thursday, June 7

08:30 – 09:30	Plenary 3 - Monitoring Canopy Chemistry with Next Generation Imaging Spectrometer from Satellites
09:30 – 11:10	
<b>thu-o-1-a</b>	Vegetation (3)
<b>thu-o-1-b</b>	Noise Reduction
11:10 – 11:40	Coffee break
11:40 – 13:00	
<b>thu-p</b>	Poster
13:00 – 14:00	Lunch break
14:00 – 15:40	
<b>thu-o-2-a</b>	Classification (3)
<b>thu-o-2-b</b>	Geology, Mineralogy and Mining Industry (2)
15:40 – 16:10	Coffee break
16:10 – 18:10	
<b>thu-o-3-a</b>	Band Selection, Feature Extraction
<b>thu-o-3-b</b>	Unmixing (3)

## **Locations**

---

### **Registration**

- June 4: Meeting Room 2, 3rd Floor, Tongji Days Hotel
- June 5: (and after): meeting room, 1st Floor, Yifu Building

### **Tutorials**

- College of Civil Engineering, Tongji University
  - Tutorial 1: Room A113
  - Tutorial 2: Room B504

### **Plenary sessions**

- main conference room, 1st floor, Yifu Building

### **Parallel sessions daily**

- 1 : main conference room, 1st floor, Yifu Building
- 2 : meeting room, 2st floor, Yifu Building

### **Exhibitions and posters**

- meeting room, 1st Floor, Yifu Building

### **SADE group meeting on June 5**

- Tongji Days Hotel (room number will be announced on site)

### **Coffee break**

- lobby, 1st floor, Yifu Building (just outside the meeting room)

### **Welcome reception dinner on June 4**

- Room 35, 3rd Floor, Tongji Days Hotel

### **Daily lunch and dinner buffet**

- Sunshine Cafeteria, 2nd Floor, Tongji Days Hotel
  - Lunch time: **12:15pm-13:45pm**
  - Dinner time: **18:15pm-19:45pm**

### **Banquet on June 6**

- Revolving Restaurant, the Oriental Pearl Tower
- Buses will leave from Tongji Days Hotel at 18:00pm, and come back at 22:15pm from the parking area of the Tower.

		June 4, 2012 Monday		June 5, 2012 Tuesday		June 6, 2012 Wednesday		June 7, 2012 Thursday							
07:30	08:00			<b>Registration</b> [Place E]											
08:00	08:30														
08:30	09:00			<b>Opening of the Workshop</b> [Place C]		<b>Plenary 2</b> [Place C]		<b>Plenary 3</b> [Place C]							
09:00	09:30	<b>Registration</b> [Place A]		<b>Plenary 1</b> [Place C]		<b>Unmixing (2)</b> [Place C]		<b>Extrater. Sensing / Change Detection</b> [Place D]		<b>Vegetation(3)</b> [Place C]		<b>Noise Reduction</b> [Place D]			
09:30	10:00														
10:00	10:30			Coffee Break											
10:30	11:10			<b>Classification(1)</b> [Place C]		<b>Vegetation(1)</b> [Place D]									
11:10	11:40					Coffee Break		Coffee Break							
11:40	12:10							<b>Poster(1)</b> [Place E]		<b>Poster(2)</b> [Place E]					
12:10	13:00			Lunch break (service 12:15pm-13:45pm)		Lunch Break (service 12:15pm-13:45pm)		Lunch Break (service 12:15pm-13:45pm)							
13:00	13:30														
13:30	14:00			<b>Geology, Mineralogy and Mining Industry</b> [Place C]		<b>Anomaly and Target Detection</b> [Place D]		<b>Classification(2)</b> [Place C]		<b>Advanced Models and Concepts in HS Data Processing</b> [Place D]		<b>Classification(3)</b> [Place C]		<b>Geology, Mineralogy and Mining Industry(2)</b> [Place D]	
14:00	15:10	<b>Registration</b> [Place A]		<b>Tutorial 1</b> [Place B] Room A113		<b>Tutorial 2</b> [Place B] Room B504		Coffee Break							
15:10	15:40							Coffee Break							
15:40	16:10			<b>Unmixing(1)</b> [Place C]		<b>Oceans and Water Bodies</b> [Place D]		Coffee Break		Coffee Break					
16:10	17:00							<b>Infrared &amp; Thermal Sensing</b> [Place C]		<b>Calibration, Atm. Correction &amp; Restoration</b> [Place D]		<b>Band Selection Feature Extraction</b> [Place C]		<b>Unmixing(3)</b> [Place D]	
17:00	17:30														
17:30	18:10														
18:10	18:30														
18:30	19:00	<b>Welcome Reception Dinner</b> Room 35, 3rd Floor, Tongji Days Hotel													
19:00	19:30							<b>Conference Banquet</b> Revolving Restaurant, the Oriental Pearl Tower Buses will leave from Tongji Days Hotel at 18:00pm, and come back at 22:15pm from the parking area of the Tower.							
19:30	20:30			<b>Meeting of the GRSS SADE</b> Tongji Days Hotel (room number will be announced on site)											
20:30	21:00														
21:00	22:00														

Place A : Meeting Room 2, 3rd Floor, Tongji Days Hotel  
Place B : College of Civil Engineering, Tongji University  
Place C : main conference room, 1st floor, Yifu Building  
Place D : meeting room, 2nd floor, Yifu Building

Place E : meeting room, 1st Floor, Yifu Building  
Coffee Break : lobby, 1st floor, Yifu Building (just outside the meeting room)  
Lunch break : Sunshine Cafeteria, 2nd Floor, Tongji Days Hotel

07:30 – 08:30 Registration

08:30 – 09:00 Opening of the workshop

**09:00 – 10:00 Plenary 1**

**The Progress of Hyperspectral Remote Sensing in China**

Professor Qingxi Tong, Peking University, China

Session chair: Bing Zhang, CEODE, Chinese Academy of Sciences

10:00 – 10:30 Coffee break

**10:30 – 12:10 Session tue-o-1-a  
Classification (1)**

Session Chairs: Xiaohua Tong, Tongji University, China  
Miguel Velez-Reyes, University of Puerto Rico

**Session tue-o-1-b  
Vegetation (1)**

Session Chairs: Olaf Niemann, University of Victoria, Canada  
Peijun Du, Nanjing University, China

12:10 – 13:30 Lunch break

**13:30 – 15:10 Session tue-o-2-a  
Geology, Mineralogy and Mining Industry (1)**

Session Chairs: Zhizhong Li, China Geological Survey  
Shengbo Chen, Jilin University, China

**Session tue-o-2-b  
Anomaly and Target Detection**

Session Chairs: Robert Sundberg, Spectral Sciences, Inc. , USA  
Bing Zhang, CEODE, Chinese Academy of Sciences

15:10 – 15:40 Coffee break

**15:40 – 17:40 Session tue-o-3-a  
Unmixing (1)**

Session Chairs: Mario Parente, University of Massachusetts, USA  
Antonio Plaza, University of Extremadura, Spain

**Session tue-o-3-b  
Oceans and Water Bodies**

Session Chairs: Bin Luo, State Key Lab of Information Engineering in Surveying,  
Mapping, and Remote Sensing, Wuhan University, China  
Michael Sears, University of the Witwatersrand, South Africa

19:30 – 21:00 **Meeting of the GRSS Standardized Algorithm, Data, and Evaluation (SADE) Working group in Tongji Days Hotel.** The group will be focused on precisely defining specific problems in HISP and welcome all who would like to contribute.

**07:30 – 08:30 Registration**

08:30 – 09:00 Opening of the workshop

**09:00 – 10:00 Plenary 1**

**The Progress of Hyperspectral Remote Sensing in China**

Professor Qingxi Tong, Peking University, China

Session chair: Bing Zhang, CEODE, Chinese Academy of Sciences

**10:00 – 10:30 Coffee break**

**10:30 – 12:10 Session tue-o-1-a**

**Classification (1)**

Session Chairs: Xiaohua Tong, Tongji University, China  
Miguel Velez-Reyes, University of Puerto Rico

10:30 – 10:50 DISCRIMINATIVE DICTIONARY DESIGN USING LVQ FOR HYPERSPECTRAL IMAGE CLASSIFICATION

Yi Chen, Nasser M. Nasrabadi, and Trac D. Tran

10:50 – 11:10 AN NOVEL ACTIVE LEARNING STRATEGY FOR HYPERSPECTRAL IMAGE CLASSIFICATION

Qian Shi, Liangpei Zhang, Bo Du

11:10 – 11:30 HYPERSPECTRAL CLASSIFICATION USING SPECTRAL MAGNITUDE AND GRADIENT

Xiya Zhang, Haiqing Xu and Peijun Li

11:30 – 11:50 LOCALITY-PRESERVING DISCRIMINANT ANALYSIS AND GAUSSIAN MIXTURE MODELS FOR SPECTRAL-SPATIAL CLASSIFICATION OF HYPERSPECTRAL IMAGERY

Zhen Ye, Saurabh Prasad, Wei Li, James E. Fowler, Mingyi He

11:50 – 12:10 CLASSIFICATION FOR HYPERSPECTRAL IMAGERY BASED ON NONLOCAL WEIGHTED JOINT SPARSITY MODEL

Jiayi Li, Hongyan Zhang, Yuancheng Huang, and Liangpei Zhang

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

**Vegetation (1)**

Session Chairs: Olaf Niemann, University of Victoria, Canada  
Peijun Du, Nanjing University, China

10:30 – 10:50 UNMANNED AERIAL VEHICLE (UAV) HYPERSPECTRAL REMOTE SENSING FOR DRYLAND VEGETATION MONITORING

Jessica J. Mitchell, Nancy F. Glenn, Matthew O. Anderson, Ryan C. Hruska

10:50 – 11:10 A TEMPORAL INVESTIGATION OF LEAF SPECTROSCOPY FOR GRAPE VARIETY DISCRIMINATION

Diana Parton, Geoffrey S. Quinn, Fabio Visintini, and K.Olaf Niemann

11:10 – 11:30 HYPERSPECTRAL DATASETS OF BOREAL FOREST UNDERSTORY VEGETATION IN FINLAND

Miina Rautiainen, Janne Heiskanen, Matti Möttöus, Jouni Peltoniemi

11:30 – 11:50 EXTRACTION OF LAMBERT PARAMETER FROM LEAF SCALE HYPERSPECTRAL IMAGES

Kuniaki Uto and Yukio Kosugi

11:50 – 12:10 BIODIVERSITY ASSESSMENT USING HIERARCHICAL CLUSTERING OVER HYPERSPECTRAL IMAGES

Ollantay Medina, Vidya Manian and J. Danilo Chinaea

**12:10 – 13:30 Lunch break**

**13:30 – 15:10 Session tue-o-2-a**

**Geology, Mineralogy and Mining Industry (1)**

Session Chairs: Zhizhong Li, China Geological Survey  
Shengbo Chen, Jilin University, China

13:30 – 13:50 SPECTRAL ENHANCEMENT OF SEBASS HYPERSPECTRAL DATA AND ITS APPLICATION IN MAPPING OF ULTRAMAFIC ROCKS  
J. Feng, B. Rivard, D.M. Rogge, and B. Grant

13:50 – 14:10 GOING STRAIGHT: PREPROCESSING HYPERSPECTRAL CORE LOG IMAGES  
NE Pendock, PD Harris, PL Linton, M Sears

14:10 – 14:30 CHARACTERISING SURFACE MINERALOGY OF AN OPEN PIT MINING AREA USING HYPERION IMAGERY  
Raval S., Jia X., Merton R. M. and Laurence D.

14:30 – 14:50 APPLICATION OF AIRBORNE HYPERSPECTRAL REMOTE SENSING TECHNIQUE TO GEOLOGICAL PROSPECTING-TAKEN THE LIUYUAN AREA IN GANSU PROVINCE AS AN EXAMPLE  
Liu Dechang, Sun Yu, Zhao Yingjun, Tian Feng, Yan Bokun

14:50 – 15:10 MINE TAILINGS WATER MAPPING USING CHRIS PROBA IMAGERY  
Raval S., Merton R. N. and Laurence D.

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

**Anomaly and Target Detection**

Session Chairs: Robert Sundberg, Spectral Sciences, Inc. , USA  
Bing Zhang, CEODE, Chinese Academy of Sciences

13:30 – 13:50 ROBUST RX ANOMALY DETECTOR WITHOUT COVARIANCE MATRIX ESTIMATION  
Santiago Velasco-Forero, Jesus Angulo

13:50 – 14:10 IMPROVEMENT OF BACKGROUND CHARACTERIZATION FOR HYPERSPECTRAL TARGET DETECTION  
Ben Ma, Qian Du

14:10 – 14:30 TARGETED CHANGE DETECTION FOR STACKED MULTI-TEMPORAL HYPERSPECTRAL IMAGE  
Chen Wu, Liangpei Zhang, Bo Du

14:30 – 14:50 A LOCAL SUBSPACE BASED NONLINEAR TARGET DETECTOR  
Ting Wang, Bo Du, Liangpei Zhang

14:50 – 15:10 PRELIMINARY RESULTS TO DEFINE AN ACTIVE MULTISPECTRAL IMAGER FOR GUNSHOT RESIDUES PATTERNS VISUALIZATION  
Ph. Déliot, B. Corcelle, V. Achard, Th. Dartigalongue, A. Desmarais, C. Giacometti

**15:10 – 15:40 Coffee break**

**15:40 – 17:40 Session tue-o-3-a**

**Unmixing (1)**

Session Chairs: Mario Parente, University of Massachusetts, USA  
Antonio Plaza, University of Extremadura, Spain

15:40 – 16:00 DICTIONARY PRUNING IN SPARSE UNMIXING OF HYPERSPECTRAL DATA  
Marian-Daniel Iordache, Jose M. Bioucas-Dias and Antonio Plaza

16:00 – 16:20 MINIMUM VARIANCE BLOCK-BASED NONNEGATIVE MATRIX FACTORIZATION ALGORITHM FOR HYPERSPECTRAL UNMIXING  
Sen Jia, Jinquan Liang, Lin Deng and Yuntao Qian

16:20 – 16:40 NONLINEAR UNMIXING OF HYPERSPECTRAL IMAGES BASED ON MULTI-KERNEL LEARNING  
Jie Chen, Cédric Richard, Paul Honeine

16:40 – 17:00 DETECTING NONLINEAR MIXTURES IN HYPERSPECTRAL IMAGES  
Yoann Altmann, Nicolas Dobigeon and Jean-Yves Tourneret

17:00 – 17:20 A SPARSITY PROMOTING BILINEAR UNMIXING MODEL  
Paul Gader, Dmitri Dranishnikov, Alina Zare, Jocelyn Chanussot

17:20 – 17:40 EXPLORING SUPPORT VECTOR MACHINE IN SPECTRAL UNMIXING  
Liguo Wang, Danfeng Liu, Liang Zhao

**Session tue-o-3-b  
Oceans and Water Bodies**

Session Chairs: Bin Luo, State Key Lab of Information Engineering in Surveying, Mapping, and Remote Sensing, Wuhan University, China  
Michael Sears, University of the Witwatersrand, South Africa

15:40 – 16:00 STUDY ON LEVEL-1 REQUIREMENTS OF HYPERSPECTRAL REMOTE SENSOR FOR INLAND WATERS  
Shen Qian, Zhang Bing, Li Junsheng, Wu Yanhong, Ni Li, Qiao Wei

16:00 – 16:20 FEATURES OF TURBID WATERS FROM HYPERSPECTRAL IMAGER FOR THE COASTAL OCEAN (HICO): PRELIMINARY RESULTS AT THE YELLOW RIVER DELTA AND THE BOHAI SEA  
Qianguo Xing, Mingjing Lou, Dingfeng Yu, Ruolin Meng, Ping Shi, Federica Braga, Luca Zaggia, Luigi Tosi

16:20 – 16:40 BATHYMETRIC ESTIMATION IN THE LAGOON OF NEW CALEDONIA, USING SEVERAL MERIS IMAGES  
Audrey MINGHELLI-ROMAN, Cécile DUPOUY

16:40 – 17:00 INFLUENCE OF SOLAR AND SENSOR ANGLES ON CHLOROPHYLL ESTIMATION FOR GEOSTATIONARY OCEAN COLOR IMAGER  
Manchun Lei, Audrey Minghelli-Roman, Sandrine Mathieu, Pierre Gouton

17:00 – 17:20 RESOLUTION IMPROVEMENT BY MERGING MERIS-ETM IMAGES USING BANDS OVERLAPPING INFORMATION AND PAN SHARPENING APPROACH  
Diogone Sylla, Audrey Minghelli-Roman, Antoine Mangin, Odile Fanton d'Andon

**19:30 – 21:00 Meeting of the GRSS Standardized Algorithm, Data, and Evaluation (SADE) Working group in Tongji Days Hotel.** The group will be focused on precisely defining specific problems in HISP and welcome all who would like to contribute.



- 08:30 – 09:30 Plenary 2**  
**Planetary Hyperspectral Imagery, from remote characterizations down to microscopic in situ analysis**  
Dr Jean-Pierre Bibring, Professor of Physics, University of Paris, Orsay, France, and Astrophysicist at IAS, Institut d'Astrophysique Spatiale, Orsay  
Session Chair: Xiaohua Tong, Tongji University, China
- 09:30 – 11:10 Session wed-o-1-a**  
**Unmixing (2)**  
Session Chairs: Sen Jia, Shenzhen University, China  
Mario Parente, University of Massachusetts, USA
- Session wed-o-1-b**  
**Extraterrestrial Sensing / Change Detection**  
Session Chairs: Lori Bruce, Mississippi State University, USA  
Liguo Wang, Harbin Engineering University, China
- 11:10 – 11:40 Coffee break
- 11:40 – 13:00 Session wed-p**  
**Poster**  
Session Chairs: Wenfei Luo, South China Normal University  
Naoto Yokoya, The University of Tokyo, Japan
- 13:00 – 14:00 Lunch break
- 14:00 – 15:40 Session wed-o-2-a**  
**Classification (2)**  
Session Chairs: Jean-Yves Tournet, University of Toulouse, France  
Mingmin Chi, Fudan University, China
- Session wed-o-2-b**  
**Advanced Models and Concepts in HS Data Processing**  
Session Chairs: Huanfeng Shen, Wuhan University, China  
Wing-Kin Ma, The Chinese University of Hong Kong, Hong Kong
- 15:40 – 16:10 Coffee break
- 16:10 – 17:30 Session wed-o-3-a**  
**Infrared and Thermal Sensing**  
Session Chairs: Nasser Nasrabadi, US Army Research Lab, USA  
Bo Du, Wuhan University, China
- Session wed-o-3-b**  
**Calibration, Atmospheric Correction and Restoration**  
Session Chairs: Lianru Gao, CEODE, Chinese Academy of Sciences  
Paul Gader, University of Florida, USA

**08:30 – 09:30 Plenary 2**

**Planetary Hyperspectral Imagery, from remote characterizations down to microscopic in situ analysis**

Dr Jean-Pierre Bibring, Professor of Physics, University of Paris, Orsay, France, and Astrophysicist at IAS, Institut d'Astrophysique Spatiale, Orsay

Session Chair: Xiaohua Tong, Tongji University, China

**09:30 – 11:10 Session wed-o-1-a**

**Unmixing (2)**

Session Chairs: Sen Jia, Shenzhen University, China  
Mario Parente, University of Massachusetts, USA

09:30 – 09:50 PRIMAL DUAL INTERIOR POINT OPTIMIZATION FOR PENALIZED LEAST SQUARES ESTIMATION OF ABUNDANCE MAPS IN HYPERSPECTRAL IMAGING

Saïd Moussaoui, Emilie Chouzenoux, Jérôme Idier

09:50 – 10:10 BOOTSTRAPPING FOR PIECE-WISE CONVEX ENDMEMBER DISTRIBUTION DETECTION

Alina Zare, Paul Gadery, Tim Allgire, Dmitri Dranishnikov, y Ryan Closey

10:10 – 10:30 ON THE USE OF OVERCOMPLETE DICTIONARIES FOR SPECTRAL UNMIXING

Jakub Bieniarz, Rupert Muller, Xiaoxiang Zhu, Peter Reinartz

10:30 – 10:50 A FAST GEOMETRIC ALGORITHM FOR SOLVING THE INVERSION PROBLEM IN SPECTRAL UNMIXING

Rob Heylen, Paul Scheunders

10:50 – 11:10 UNMIXING ANALYSIS BASED ON MULTISCALE SEGMENTATION

Maria C. Torres-Madronero, and Miguel Vélez-Reyes, Senior Member

**Session wed-o-1-b**

**Extraterrestrial Sensing / Change Detection**

Session Chairs: Lori Bruce, Mississippi State University, USA  
Liguo Wang, Harbin Engineering University, China

09:30 – 09:50 SELECTION OF DIFFERENT EXTRATERRESTRIAL SOLAR SPECTRAL IRRADIANCE DATASETS AND ITS EFFECTS ON MEAN SOLAR EXOATMOSPHERIC IRRADIANCE

Hu Shunshi, Zhang Lifu

09:50 – 10:10 SPATIAL-SPECTRAL UNMIXING OF HYPERSPECTRAL DATA FOR DETECTION AND ANALYSIS OF ASTROPHYSICAL SOURCES WITH THE MUSE INSTRUMENT

Yu-Shiuan Shen, Tsung-Han Chan, Sebastien Bourguignon and Chong-Yung Chi

10:10 – 10:30 HYPERSPECTRAL CHANGE DETECTION BY DIRECTION PURSUIT

G. Brisebarre, M. Guillaume, A. Huck and L. Denise

10:30 – 10:50 A NEW METHOD FOR CHANGE ANALYSIS OF MULTI-TEMPORAL HYPERSPECTRAL IMAGES

Qian Du

10:50 – 11:10 UNSUPERVISED HIERARCHICAL SPECTRAL ANALYSIS FOR CHANGE DETECTION IN HYPERSPECTRAL IMAGES

Sicong Liu Lorenzo Bruzzone Francesca Bovolo Peijun Du

**11:10 – 11:40 Coffee break**

**11:40 – 13:00 Session wed-p  
Poster**

Session Chairs: Wenfei Luo, South China Normal University  
Naoto Yokoya, The University of Tokyo, Japan

- 01 VERTEX COMPONENT ANALYSIS GPU-BASED IMPLEMENTATION FOR  
HYPERSPPECTRAL UNMIXING  
Jose M. Rodriguez Alves, Jose M. P. Nascimento, Antonio Plaza, Sergio Sanchez, Jose M.  
Bioucas-Dias, and Vitor Silva
- 02 HIGH-LEVEL FPGA-BASED IMPLEMENTATION OF A HYPERSPPECTRAL ENDMEMBER  
EXTRACTION ALGORITHM  
Sebastian Lopez, Gustavo M. Callico, Anabella Medina, Jose F. Lopez and Roberto Sarmiento
- 03 GPU IMPLEMENTATION OF A LOSSY COMPRESSION ALGORITHM FOR HYPERSPPECTRAL  
IMAGES  
Lucana Santos, Raffaele Vitulli, José Fco. López, Roberto Sarmiento
- 04 GPU-BASED ENSEMBLE EMPIRICAL MODE DECOMPOSITION APPROACH TO  
SPECTRUM DISCRIMINATION  
Yung-Ling Wang, Hsuan Ren, Min-Yu Huang, and Yang-Lang Chang
- 05 GPU IMPLEMENTATION OF ANT COLONY OPTIMIZATION ALGORITHM  
FOR ENDMEMBER EXTRACTION FROM HYPERSPPECTRAL IMAGE  
Jianwei Gao, Lianru Gao, Xu Sun, Yuanfeng Wu, Bing Zhang
- 06 UTILIZING HYPERSPPECTRAL IMAGERY TO IDENTIFY HIGHLY-REACTIVE VOLATILE  
ORGANIC COMPOUNDS IN COMBUSTION FLARE EMISSIONS  
R. Taylor and R. Panfili
- 07 VERTICAL MOVEMENT OF THE METAL ELEMENTS FROM ROCK TO LEAF AND THEIR PLANT  
STRESS SPECTRAL RESPONSE IN METAL MINES  
Zhou Chao, Chen Sheng-bo, Yang Qian, Liu Yan-li, Zhao Liang
- 08 AERIAL INVENTORY OF FRAGMENTED FOREST USING AIRBORNE HYPERSPPECTRAL  
IMAGING  
Alias M.S., Wan Ghazali W.A., Puteri Arlydia A.
- 09 THE STUDY OF CORRELATION ANALYSIS BETWEEN THE SALINE SOIL HYPERSPPECTRAL  
REFLECTANCE AND THE SURFACE SOIL CONDUCTIVITY AT THE WEIGAN-KUQA RIVERS  
DELTA OASIS  
DING Jian-li, TASHPOLAT. Tiyip YAO Yuan ZHAO Zhenliang ZHANG Fei
- 10 THE THEORY AND APPLICATION OF THE SPECTRALOGY OF SOIL REMOTE SENSING  
Zhou Ping , Guan Xiao , Wang Huarui
- 11 SVM-BASED FEATURE EXTRACTION AND CLASSIFICATION OF AFLATOXIN CONTAMINATED  
CORN USING FLUORESCENCE HYPERSPPECTRAL DATA  
Haibo Yao, Zuzana Hruska, Russell Kincaid, Robert L. Brown, Deepak Bhatnagar, and Thomas E.  
Cleveland
- 12 A COMPARISON OF HYPERSPPECTRAL DATA AND WORLDVIEW-2 IMAGES TO DETECT  
IMPERVIOUS SURFACE  
Ebrahim Taherzadeh, Helmi Z.M. Shafri, Shattri Mansor and Ravshan Ashurov

- 13 CORRELATION BETWEEN THE VARIATIONS OF CLAY CONTENT IN SOILS AND SEDIMENTS AND THE SPECTRAL BEHAVIOR OF SUPERJACENT VEGETATION USING SPECTIR HYPERSPECTRAL IMAGES  
Cibele Hummel do Amaral, Teodoro Isnard Ribeiro de Almeida, Carlos Roberto de Souza Filho, Moreno Botelho, Marcos Nopper Alves, Natasha Costa Penatti
- 14 SPECTRAL BRDF OF COMMON URBAN MATERIALS  
K.L. Seow, M. Doya, X. Briottet, R. Ceolato, N. Riviere, S.K. Pang
- 15 EFFECTS OF SHOOT-LEVEL STRUCTURE ON NARROWBAND VEGETATION INDICES FOR SCOTS PINE  
Matti Möttöus, Miina Rautiainen
- 16 SPECTRAL MIXTURE ANALYSIS OF HYPERSPECTRAL DATA USING GENETIC ALGORITHM AND SPECTRAL ANGLE CONSTRAINT (GA-SAC)  
Subir Chowdhury, Jinkai Zhang, Karl Staenz, and Derek Peddle

**13:00 – 14:00 Lunch break**

**14:00 – 15:40 Session wed-o-2-a  
Classification (2)**

Session Chairs: Jean-Yves Tournet, University of Toulouse, France  
Mingmin Chi, Fudan University, China

- 14:00 – 14:20 AN IMPROVED BINARY ENCODING ALGORITHM FOR CLASSIFICATION OF HYPERSPECTRAL IMAGES  
Huan XIE, Xiaohua TONG
- 14:20 – 14:40 HYPERSPECTRAL CLASSIFICATION USING SELECTED CONTOURLET SUBBANDS  
Zhiling Long, Qian Du, and Nicolas H. Younan
- 14:40 – 15:00 SEMI-SUPERVISED DISCRIMINATIVE RANDOM FIELD FOR HYPERSPECTRAL IMAGE CLASSIFICATION  
Jun Li, Jose M. Bioucas-Dias, and Antonio Plaza
- 15:00 – 15:20 A NEW SEMI-SUPERVISED APPROACH FOR HYPERSPECTRAL IMAGE CLASSIFICATION WITH DIFFERENT ACTIVE LEARNING STRATEGIES  
Inmaculada D'opido, Jun Li, Antonio Plaza and Jose M. Bioucas-Dias
- 15:20 – 15:40 UNSUPERVISED MULTISPECTRAL IMAGE CLASSIFICATION  
Shih-Yu Chen, Chinsu Lin, Yen-Chieh Ouyang, Chein-I Chang

**Session wed-o-2-b**

**Advanced Models and Concepts in HS Data Processing**

Session Chairs: Huanfeng Shen, Wuhan University, China  
Wing-Kin Ma, The Chinese University of Hong Kong, Hong Kong

- 14:00 – 14:20 A METHOD FOR OBJECT IDENTIFICATION IN MULTISPECTRAL IMAGE BASED ON TENSOR APPROACH  
Lefei Zhang, Xin Huang and Liangpei Zhang
- 14:20 - 14:40 ROBUST DETECTION USING M-ESTIMATORS FOR HYPERSPECTRAL IMAGING  
J. Frontera-Pons, M. Mahot, J.P. Ovarlez, F. Pascal, J. Chanussot
- 14:40 – 15:00 LATTICE AUTO-ASSOCIATIVE MEMORIES INDUCED SUPERVISED ORDERING DEFINING A MULTIVARIATE MORPHOLOGY ON HYPERSPECTRAL DATA  
Miguel A. Veganzones, Manuel Graña

- 15:00 – 15:20 SUPERVISED MORPHOLOGICAL TARGET DETECTION  
FROM POLARIMETRIC STOKES VECTORS IMAGES  
Joana Frontera-Pons, Jesus Angulo
- 15:20 – 15:40 HYPERSPECTRAL AND MULTISPECTRAL DATA FUSION BASED ON NONLINEAR  
UNMIXING  
Naoto Yokoya, Jocelyn Chanussot, and Akira Iwasaki
- 15:40 – 16:10 Coffee break**
- 16:10 – 17:30 Session wed-o-3-a  
Infrared and Thermal Sensing**  
Session Chairs: Nasser Nasrabadi, US Army Research Lab, USA  
Bo Du, Wuhan University, China
- 16:10 – 16:30 PHYSIC BASED AGGREGATION MODEL FOR THE UNMIXING OF TEMPERATURE AND  
OPTICAL PROPERTIES IN THE INFRARED DOMAIN  
Manuel Cubero-Castan, Xavier Briottet, Michal Shimoni, Veronique Achard, Jocelyn  
Chanussot
- 16:30 – 16:50 PERFORMANCE ANALYSIS OF UNSUPERVISED UNMIXING MODELS FOR THERMAL  
HYPERSPECTRAL  
Michal Shimoni, Xavier Briottet, Manuel Cubero-Castan, Christiaan Perneel, Véronique  
Achard and Jocelyn Chanussot
- 16:50 – 17:10 COMPARISON OF THE LAND SURFACE TEMPERATURE AND EMISSIVITY  
SEPARATION METHOD FOR HYPERSPECTRAL THERMAL INFRARED  
MEASUREMENT  
Ning Wang, Xinhong Wang, Lingling Ma, Yonggang Qian, Lingli Tang and Chuanrong Li
- 17:10 – 17:30 ANALYSIS OF SURFACE RADIANCE COMPOSITION FOR ABSORPTION BANDS  
IN MIDDLE-INFRARED REGIONS  
Yao Liu, Wenjuan Zhang, Bing Zhang
- Session wed-o-3-b  
Calibration, Atmospheric Correction and Restoration**  
Session Chairs: Lianru Gao, CEODE, Chinese Academy of Sciences  
Paul Gader, University of Florida, USA
- 16:10 – 16:30 QUICK ATMOSPHERIC CORRECTION (QUAC) CODE FOR VNIR-SWIR SPECTRAL  
IMAGERY: ALGORITHM DETAILS  
Lawrence S. Bernstein, Steven M. Adler-Golden, Xuemin Jin, Brian Gregor and Robert L.  
Sundberg
- 16:30 – 16:50 ATMOSPHERIC CORRECTION OF A SEASONAL TIME SERIES OF HYPERION EO-1  
IMAGES AND RED EDGE INFLECTION POINT CALCULATION  
Veli-Heikki Vesanto, Matti Möttöus, Janne Heiskanen, Miina Rautiainen, Titta Majasalmi
- 16:50 – 17:10 A PRELIMINARY STUDY ON GOSAT L1B DATA AND CO2 ABSORPTION SPECTRAL  
SIMULATION USING LINE-BY-LINE RADIATIVE MODEL  
Shanshan Hou, Liping Lei, Zhaocheng Zeng, Xianhua Guan, Fei Ru
- 17:10 – 17:40 AN EM-BASED SPATIAL-SPECTRAL RESTORATION APPROACH FOR  
HYPERSPECTRAL IMAGES  
Yifan Zhang and Mingyi He

**08:30 – 09:30 Plenary 3**

Monitoring Canopy Chemistry with Next Generation Imaging Spectrometer from Satellites  
Dr Susan L. Ustin, Dept of Land, Air and Water Resources, Uni. Of California, Davis, USA  
Session Chair: Peijun Du, Nanjing University, China

**09:30 – 11:10 Session thu-o-1-a  
Vegetation (2)**

Session Chairs: Kun Tan, China University of Mining and Technology  
Miina Rautiainen, University of Helsinki, Finland

**Session thu-o-1-b  
Noise Reduction**

Session Chairs: Paolo Gamba, University of Pavia, Italy  
Yanfei Zhong, State Key Lab of Information Engineering in  
Surveying, Mapping, and Remote Sensing, Wuhan University, China

11:10 – 11:40 Coffee break

**11:40 – 13:00 Session thu-p  
Poster**

Session chairs: Hongjun Su, Hohai University, China  
Alina Zare, University of Missouri, USA

13:00 – 14:00 Lunch break

**14:00 – 15:40 Session thu-o-2-a  
Classification (3)**

Session Chairs: Heesung Kwon, U.S. Army Research Laboratory, USA  
Mingyi He, Northwestern Polytechnical University, China

**Session thu-o-2-b  
Geology, Mineralogy and Mining Industry (2)**

Session Chairs: Daming Wang, China Geological Survey  
Lifu Zhang, Institute of Remote Sensing Applications, Chinese  
Academy of Sciences

15:40 – 16:10 Coffee break

**16:10 – 18:10 Session thu-o-3-a  
Band Selection, Feature Extraction**

Session Chairs: Xiuping Jia, UNSW, Canberra, Australia  
Bin Wang, Fudan University, China

**Session thu-o-3-b  
Unmixing (3)**

Session Chairs: Yuntao Qian, Zhejiang University, China  
Michal Shimoni, SIC-RMA, Brussels, Belgium

**08:30 – 09:30 Plenary 3**

**TBA**

Dr Susan L. Ustin, Dept of Land, Air and Water Resources, Uni. Of California, Davis, USA  
Session Chair: Peijun Du, Nanjing University, China

**09:30 – 11:10 Session thu-o-1-a  
Vegetation (2)**

Session Chairs: Kun Tan, China University of Mining and Technology  
Miina Rautiainen, University of Helsinki, Finland

09:30 – 09:50 SPATIAL PROBABILITY MEMBERSHIP VALUE BASED ENSEMBLE: AN IMPROVED  
TOOL FOR VEGETATION MAPPING

Karoly Livius Bakos, Paolo Gamba

09:50 – 10:10 SHAPE-BASED UNMIXING FOR VEGETATION MAPPING

L. Tits, B. Somers, W. De Keersmaecker, G.P. Asner J. Farifteh, P. Coppin

10:10 – 10:30 CONSIDERING THE IMPLICATIONS OF SPECIES ON PIGMENT ESTIMATION FROM  
LEAF SPECTROSCOPY

Geoffrey S. Quinn, Fabio Visintini and K.Olaf Niemann

10:30 – 10:50 CORRELATION BETWEEN SPECTRAL VEGETATION INDICES AND PARAMETERS OF  
BIOCHEMICAL OF TOMATOES UNDER YELLOW LEAF CURL VIRUS STRESS

Xin Yu, Jun Li, Jinheng Zhang Zhende Chen, Yongliang Lv

10:50 – 11:10 INVERSION OF THE PROFLAIR LEAF-CANOPY REFLECTANCE MODEL FOR  
RETRIEVAL OF FOREST CANOPY PARAMETERS

H. Peter White, Khalid Omari, Karl Staenz, Douglas J. King

**Session thu-o-1-b**

**Noise Reduction**

Session Chairs: Paolo Gamba, University of Pavia, Italy  
Yanfei Zhong, State Key Lab of Information Engineering in  
Surveying, Mapping, and Remote Sensing, Wuhan University, China

09:30 – 09:50 RESTORING AQUA MODIS BAND 6 BY OTHER SPECTRAL BANDS USING  
COMPRESSED SENSING THEORY

Xinghua Li Huanfeng Shen Chao Zeng Penghai Wu

09:50 – 10:10 A COMPARATIVE STUDY ON NOISE ESTIMATION FOR HYPERSPECTRAL IMAGERY

Lianru Gao, Qian Du, Wei Yang, Bing Zhang

10:10 – 10:30 THE EFFECT OF SPECTRALLY CORRELATED NOISE ON NOISE ESTIMATION  
METHODS FOR HYPERSPECTRAL IMAGES

K. Cawse-Nicholson, A. Robin, M. Sears

10:30 – 10:50 MIXED POISSON-GAUSSIAN NOISE MODEL BASED SPARSE DENOISING FOR  
HYPERSPECTRAL IMAGERY

Minchao Ye and Yuntao Qian

10:50 – 11:10 HYPERSPECTRAL IMAGE DENOISING WITH A MULTI-VIEW FUSION STRATEGY

Qiangqiang Yuan, Huanfeng Shen, Liangpei Zhang, Xia Lan

**11:10 – 11:40 Coffee break**

**11:40 – 13:00 Session thu-p  
Poster**

Session chairs: Hongjun Su, Hohai University, China  
Alina Zare, University of Missouri, USA

- 01 HYPERSPECTRAL IMAGERY VISUALIZATION USING BAND SELECTION  
Hongjun Su, Qian Du, Peijun Du
- 02 A HYPERSPECTRAL IMAGE FUSION ALGORITHM BASED ON COMPRESSIVE SENSING  
Anzhu Yu , Ting Jiang , Wei Chen , Xiong Tan
- 03 SUBPIXEL MAPPING OF HYPERSPECTRAL DATA USING HIGH RESOLUTION COLOR IMAGES  
Z. Mahmood, G. Thoonen, M.A. Akhter, and P. Scheunders
- 04 IMPROVED L-ISOMAP FOR CLASSIFICATION OF HYPERSPECTRAL IMAGE VIA VECTOR  
QUANTIZATION  
Weiwei Sun Chun Liu Beiqi Shi Weiyue Li
- 05 FURTHER IMPROVEMENTS OF PARALLEL N-FINDR ALGORITHM USING NVIDIA GPUS  
Wenfei Luo
- 06 NOISE-ADJUSTED SUBSPACE LINEAR DISCRIMINANT ANALYSIS FOR  
HYPERSPECTRAL-IMAGE CLASSIFICATION  
Wei Li , Saurabh Prasad , James E. Fowler , Qian Du
- 07 SPARSE REPRESENTATION FOR HYPERSPECTRAL IMAGE TARGET DETECTION  
Yongshuai Yan, Binbin He
- 08 A SPLIT BREGMAN METHOD FOR LINEAR SPECTRAL UNMIXING  
Jianjun Liu, Zebin Wu, Zhihui Wei, Le Sun
- 09 SPARSE REPRESENTATION BASED HYPERSPECTRAL IMAGERY CLASSIFICATION VIA  
EXPANDED DICTIONARY  
Lin He, Weitong Ruan, Yuanqing Li
- 10 AN ENDMEMBER EXTRACTION FRAMEWORK BASED ON ABUNDANCE CONSTRAINT  
Mingming Xu, Liangpei Zhang, Bo Du and Liqun Liu
- 11 NEW AUTOMATED METHOD FOR ESTIMATING THE NUMBER OF ENDMEMBERS IN  
HYPERSPECTRAL IMAGES  
C. Andreou, V. Karathanassi
- 12 BAND SELECTION-BASED GABOR WAVELET FEATURE EXTRACTION FOR  
HYPERSPECTRAL IMAGERY CLASSIFICATION  
Sen Jia, Linlin Shen and Lin Deng
- 13 ABUNDANCE ESTIMATION FOR HYPERSPECTRAL UNMIXING: A METHOD  
BASED ON DISTANCE GEOMETRY  
Hanye Pu, Wei Xia, Bin Wang, and Liming Zhang
- 14 HYPERSPECTRAL DATA COMPRESSION USING SPARSE REPRESENTATION  
Chengfu Huo, Rong Zhang, Dong Yin, Qian Wu, Dawei Xu
- 15 SPECTRAL ANGLE SENSITIVE FOREST: A SOLUTION FOR FAST HYPERSPECTRAL  
MATCHING  
Yuan Zhou, Shenghui Fang, Xinwei Fang



13:00 – 14:00 Lunch break

14:00 – 15:40 **Session thu-o-2-a  
Classification (3)**

Session Chairs: Heesung Kwon, U.S. Army Research Laboratory, USA  
Mingyi He, Northwestern Polytechnical University, China

14:00 – 14:20 WEIGHTED FEATURES FOR CLUSTER SPACE CLASSIFICATION OF HYPERSPECTRAL IMAGES

Theam Foo Ng, Xiuping Jia, Tuan D. Pham

14:20 – 14:40 OPTIMAL SPARSE KERNEL LEARNING IN THE EMPIRICAL KERNEL FEATURE SPACE FOR HYPERSPECTRAL CLASSIFICATION

Prudhvi Gurram, Heesung Kwon

14:40 – 15:00 SEMI-SUPERVISED DIMENSIONALITY REDUCTION FOR HYPERSPECTRAL REMOTE SENSING IMAGE CLASSIFICATION

Junshi Xia, Jocelyn Chanussot, Peijun Du, Xiyan He

15:00 – 15:20 HYPERSPECTRAL IMAGE CLASSIFICATION USING BAND SELECTION AND MORPHOLOGICAL PROFILE

Kun Tan, Erzhu Li, Qian Du, Peijun Du

15:20 – 15:40 WHEN SPECTRAL DERIVATIVE FEATURES WORKING FOR THE SUPERVISED CLASSIFICATION OF REMOTE SENSING DATA: AN EXPERIMENTAL EVALUATION

Jiangfeng Bao, Mingmin Chi, Jon Atli Benediktsson

**Session thu-o-2-b**

**Geology, Mineralogy and Mining Industry (2)**

Session Chairs: Daming Wang, China Geological Survey  
Lifu Zhang, Institute of Remote Sensing Applications, Chinese Academy of Sciences

14:00 – 14:20 A REVIEW ON THE GEOLOGICAL APPLICATIONS OF HYPERSPECTRAL REMOTE SENSING TECHNOLOGY

Li Zhizhong, Yang Rihong, Dang Fuxing, Du Peijun, Zhang Xianfeng, Tan Bingxiang, Zhao Huijie, Su Hongjun

14:20 – 14:40 THE SPECTRAL CRUST PROJECT—RESEARCH ON NEW MINERAL EXPLORATION TECHNOLOGY

Jinnian Wang, Lifu Zhang, Qingxi Tong, Xuejian Sun

14:40 – 15:00 SYSTEM COMPOSITION AND MULTIDIMENSIONAL ANALYSIS TOOLS OF MULTIDIMENSIONAL HYPERSPECTRAL DATABASE FOR ROCK AND MINERAL

Lifu Zhang, Huanhu Qin, Kai Liu, Taixia Wu

15:00 – 15:20 APPLICATION OF AIRBORNE HYPER-SPECTRAL REMOTE SENSING TECHNIQUE TO URANIUM PROSPECTING: A CASE STUDY OF BAIYANGHE AREA, XINJIANG

Ye Fawang, Zhang Jieli, Zhang Chuan, Fang Maolong

15:20 – 15:40 A NOVEL METHOD FOR AUTOMATIC MINERALS IDENTIFICATION AND THEIR ABUNDANCE ESTIMATION FOR MATERIAL TYPE DISCRIMINATION USING HYPERSPECTRAL DATA

Keshav Dev Singh, Desikan Ramakrishnan and Lalu Mansinha

15:40 – 16:10 **Coffee break**

16:10 – 18:10 **Session thu-o-3-a**

**Band Selection, Feature Extraction**

Session Chairs: Xiuping Jia, UNSW, Canberra, Australia  
Bin Wang, Fudan University, China

16:10 – 16:30 CORRELATION MATRIX FEATURE EXTRACTION BASED ON SPECTRAL CLUSTERING FOR HYPERSPECTRAL IMAGE SEGMENTATION  
Bor-Chen Kuo, Wei-Ming Chang, Cheng-Hsuan Li, and Chih-Cheng Hung

16:30 – 16:50 OUTLIER-ROBUST DIMENSION REDUCTION AND ITS IMPACT ON HYPERSPECTRAL ENDMEMBER EXTRACTION  
Hao-En Huang, Tsung-Han Chan, ArulMurugan Ambikapathi, Wing-Kin Ma, Chong-Yung Chi

16:50 – 17:10 GLOBALLY MAXIMIZING, LOCALLY MINIMIZING: REGULARIZED NONNEGATIVE MATRIX FACTORIZATION FOR HYPERSPECTRAL DATA FEATURE EXTRACTION  
Mingyi He, Feng Wei and Xiuping Jia

17:10 – 17:30 A SEMISUPERVISED FEATURE METRIC BASED BAND SELECTION METHOD FOR HYPERSPECTRAL IMAGE CLASSIFICATION  
Chen Yang Sicong Liu Lorenzo Bruzzone Renchu Guan Peijun Du

17:30 – 17:50 A NEW NETWORK BASED FEATURE-SELECTION APPROACH FOR HYPERSPECTRAL ANALYSIS  
Wei Xia, Hanyue Pu, Zhao Dong, Bin Wang, and Liming Zhang

**Session thu-o-3-b**

**Unmixing (3)**

Session Chairs: Yuntao Qian, Zhejiang University, China  
Michal Shimoni, SIC-RMA, Brussels, Belgium

16:10 – 16:30 ITERATIVE PIXEL PURITY INDEX  
Chein-I Chang, Chao-cheng Wu

16:30 – 16:50 NON-LOCAL SPARSE SPECTRAL UNMIXING FOR REMOTE SENSING IMAGERY  
Ruyi Feng, Yanfei Zhong and Liangpei Zhang

16:50 – 17:10 NONNEGATIVE MATRIX FACTORIZATION WITH COLLABORATIVITY FOR HYPERSPECTRAL UNMIXING  
Jun Li, Jose M. Bioucas-Dias, and Antonio Plaza

17:10 – 17:30 AN ENDMEMBER DISSIMILARITY BASED NON-NEGATIVE MATRIX FACTORIZATION METHOD FOR HYPERSPECTRAL UNMIXING  
Nan Wang, Liangpei Zhang, Bo Du

17:30 – 17:50 A NEW ENDMEMBER EXTRACTION ALGORITHM BY MAXIMUM ASC FRACTION  
Luyan Ji, Xiurui Geng, Yongchao Zhao

17:50 – 18:10 ANALYSIS OF ENDMEMBER EXTRACTION PROCESS IN GEOLOGICAL SITE  
Yuki Itoh and Akira Iwasaki