



BELGIAN SCIENCE POLICY



DETAILED PROGRAMME

5th EARSeL SIG IS workshop “IMAGING SPECTROSCOPY: Innovation in Environmental Research”

23-25 April 2007
Bruges, Belgium

MONDAY 23 APRIL 2007

- 08:30–10:15 Registration and welcome coffee
- 10:15–10:55 Opening Session - Ambassadeur: VITO (I. Reusen), EARSeL (R. Goossens), ISPRS (J. Van Genderen), Belgian Science Policy (D. Fonteyn)
- 10:55–11:25 Keynote speaker: Eyal Ben-Dor “Imaging Spectroscopy: Time for the giant to wake up!”
- 11:25–11:55 Keynote speaker: Andreas Müller “Environmental Mapping and Analysis Program (EnMAP) - Development and status”
- 11:55–12:00 Group photo
- 12:00–13:30 Lunch – De Witte Roos
- 13:30–15:10 Session 1 - Ambassadeur: Sensors and missions I (Chairman: R. Meynart)**
- 13:30-13:50 ASI-CSA Joint Development Phase for a Hyperspectral Mission, Galeazzi C. , A. Hollinger, V. De Cosmo, M. Menenti, K. Staenz, J. Beck, M. Bergeron, C. Ananasso, R. Loizzo and M. Maszkiewicz
- 13:50-14:10 ALISEO: An Imaging Interferometer on Micro-Satellite for Earth Observation, Barducci A., F. Castagnoli, V. De Cosmo, D. Guzzi, P. Marcoionni and I. Pippi
- 14:10-14:30 The current status of the APEX project, Nieke J., K. Itten, K. Meuleman, and the APEX team
- 14:30-14:50 ARES - The New Airborne Hyperspectral Sensor at DLR, Holzwarth S., A. Müller, M. Bachmann, P.Gege and P. Haschberger
- 14:50-15:10 EO-HALO, an Earth observation mission for regional studies in Europe, Nieke J., K. Itten, W. Mauser, N. Oppelt, T. Ruhtz, J. Fischer, H. Kaufmann, S. Holzwarth, A. Müller, T. Heege, M. Vohland, J. Hill and H. Ziereis
- 15:10–15:30 Coffee – De Witte Roos

15:30–16:40 Session 2/3 - Ambassadeur: Market now and tomorrow/ Users vs providers: gap or match? (Chairwoman: C. Petit)

15:30-16:00 Keynote speaker: Alex Held "Operational Spaceborne Imaging Spectroscopy: Market and User Expectations, and Technical Challenges"

16:00-16:20 Commercial/operational hyperspectral imaging: Some perspectives from an instrument provider, Baarstad I. (NEO)

16:20-16:40 Towards an improved access to hyperspectral data across Europe (HYRESSA), Reusen I.

16:40–17:30 Poster introductions (Chairman: P. Kempeneers)

18:15–19:45 Workshop Reception – City Hall of Bruges

TUESDAY 24 APRIL 2007

08:50–10:30 Session 4 - Ambassadeur: Sensors and missions II (Chairman: K. Itten)

08:50-09:10 Development of CMOS Active Pixel Sensors for Earth Observation, Bogaerts J., P. De Moor, K. De Munck, D. Sabuncuoglu Tezcan and C. Van Hoof

09:10-09:30 Keystone detection in hyperspectral sensors, Dell'Endice F. and J. Nieke

09:30-09:50 The INTA AHS: update on instrument features and data processing chain, Fernández-Renau A., J.A. Gómez, E. de Miguel

09:50-10:10 Determining the directional response and field of view of two field spectroradiometers, Mac Arthur A., C. MacLellan and T. Malthus

10:10-10:30 Belgian Airborne Imaging Spectroscopy campaigns: an overview, Meuleman K., C. Petit and J. Vandenabeele

10:30–10:50 Coffee – De Witte Roos

10:50–12:40 Parallel Session 5 -Vives: Water and aquatic ecosystems (Chairman: R. Reuter)

10:50-11:20 Keynote speaker: Sam Purkis "Remote sensing the statistics of coral reef landscapes: the pattern in the patches"

11:20-11:40 Atmospheric and water column corrections of AVIRIS data for hyperspectral characterization of benthic marine communities in Puerto Rico, Armstrong R., L. Guild, F. Gilbes and Y. Detrés

11:40-12:00 Comparisons of the accuracies of airborne spectrometer and satellite mapping of temperate marine benthic habitats, Carmichael D. and T. Malthus

12:00-12:20 Hyperspectral seafloor mapping and direct bathymetry calculation using HYMAP data from the Ningaloo Reef and Rottnest Island areas in Western Australia, Heege T., P. Hausknecht and H. Kobryn

12:20-12:40 Retrieval of suspended sediment concentration in the Scheldt over the tidal cycle, Knaeps E., S. Sterckx, M. Bollen, K. Trouw and R. Houhuys

**10:50–12:50 Parallel Session 6 - Ambassadeur: Terrestrial ecosystems I
(Chairman: J. Clevers)**

- 10:50-11:10 Estimating canopy water content using imaging spectroscopy, Clevers J. et al.
- 11:10-11:30 Development of robust hyperspectral indices for detection of deviations from normal plant state, Delalieux S., J. van Aardt, P. Zarco-Tejada, P. Kempeneers and P. Coppin
- 11:30-11:50 Detection of vegetation stress characteristics in open cast lignite mining area Goitzsche/central Germany using hyperspectral remote sensing data, Götze C. and C. Gläßer
- 11:50-12:10 Development of a classification algorithm for differentiation of vegetation status in semi-arid environments using multi-temporal HyMap data, Spengler D., S. Chabrilat, H. Kaufmann, P. Escribano and M. Bachmann
- 12:10-12:30 Investigating species specific spectral-site-age interactions in managed, even-aged Eucalyptus plantations using hyperspectral data, van Aardt J. and M. Norris-Rogers
- 12:30-12:50 Assessing canopy PRI, chlorophyll fluorescence in-filling and thermal imagery for water stress detection with diurnal airborne hyperspectral data and a 3D model, Zarco-Tejada P., L. Suárez, O. Pérez-Priego, G. Sepulcre-Cantó, J.R. Miller, J.C. Jiménez Muñoz and J. Sobrino
- 12:50–14:00 Lunch – De Witte Roos
- 14:00–15:30 Poster Session – Ambassadeur (Chairman: P. Kempeneers)

15:30–16:00 Coffee – De Witte Roos

**16:00–17:40 Parallel Session 7 - Vives: Geology, mineralogy and soil
(Chairman: F. van der Meer)**

- 16:00-16:20 Classification of a sandy beach by means of airborne imaging spectroscopy, Deronde B., P. Kempeneers, L. Bertels, R. Houthuys, V. Van Lancker and J.-P. Henriët
- 16:20-16:40 Hyperspectral Remote Sensing as a Tool for Geological Exploration - Examples from the Northern Danakil Depression, Eritrea, Gersman R., E. Ben-Dor, M. Beyth, D. Avigad, M. Abraha and K. Alem
- 16:40-17:00 The use of hyperspectral remote sensing data for the assessment of chemical properties of dryland soils in SE-Spain, Jarmer T., J. Hill and S. Mader
- 17:00-17:20 Quantification of soil variables linked with land degradation using imaging spectroscopy, Richter N., S. Chabrilat and H. Kaufmann
- 17:20-17:40 Retrieval of physical properties of mudflat sediments from hyperspectral data using the Modified Gaussian Model and spectral curve fitting, Verpoorter C., V. Carrère and M. Robin

**16:00–18:00 Parallel Session 8 - Ambassadeur: Terrestrial ecosystems II
(Chairman: J. Van Genderen)**

- 16:00-16:20 Angular Photochemical Reflectance Index estimates derived from ground-based diurnal course data and multiangular CHRIS-PROBA data: two case studies, Aé A., J. Verrelst, Z. Malenovský, R. Zurita-Milla, J. Hanus, M. Marek and M. Schaepman
- 16:20-16:40 Retrieving canopy structure from hyperspectral multi-angular satellite data, Schlerf M., J. Hill, B. Koetz, M. Kneubühler and A. Skidmore
- 16:40-17:00 Estimating continuous vegetation fields in an arid ecosystem using a coupled leaf-canopy reflectance model at different spatial/spectral scales, Hill J. and S. Mader

- 17:00-17:20 Optical differences between sun exposed and shaded Norway spruce needles Homolova L., Z. Malenovsky, Z. Lhotakova, V. Kaplan and J. Hanus
- 17:20-17:40 Retrieving canopy variables by radiative transfer model inversion, Dorigo W., F. Baret, R. Richter, R. Ruecker, M. Schaepman and A. Müller
- 17:40-18:00 Combining multi-angular hyperspectral remote sensing data for chlorophyll retrieval in orchards, Kempeneers P., J. Chan, P. Zarco-Tejada, S. De Backer, F. Canters and P. Scheunders
- 19:00-22:00 Workshop Dinner – (B-IN)

WEDNESDAY 25 APRIL 2007

**09:00–10:20 Session 9 - Ambassadeur: Image processing
(Chairman: A. Müller)**

- 09:00-09:20 Optimizing the workflow for APEX LEVEL2/3 processing, Schlaepfer D. and J. Nieve
- 09:20-09:40 Including Quality Measures in an Automated Processing Chain for Airborne Hyperspectral Data, Bachmann M., M. Habermeyer, S. Holzwarth, R. Richter and A. Müller
- 09:40-10:00 Image processing workflows for airborne remote sensing, Biesemans J., S. Sterckx, E. Knaeps, K. Vreys, S. Adriaensen, J. Hooyberghs and B. Deronde
- 10:00-10:20 Improving anisotropy correction for airborne imaging spectrometers, using a LIDAR DSM and angular spectral measurements, Feingersh T., E. Ben-Dor and S. Filin

10:20–10:50 Coffee – De Witte Roos

**10:50–12:50 Parallel Session 10 - Ambassadeur: Image analysis methods I
(Chairman: A. Nielsen)**

- 10:50-11:10 The influence of bidirectional reflectance in airborne hyperspectral data on spectral angle mapping and linear spectral mixture analysis, Langhans M., S. van der Linden, A. Damm and P. Hostert
- 11:10-11:30 Numerical minimisation and Artificial Neural Networks: Two different approaches to retrieve parameters from a canopy reflectance model, Vohland M. and S. Mader
- 11:30-11:50 Automatic normalization of multi-temporal, hyperspectral data, Nielsen A. and M. Canty
- 11:50-12:10 Monitoring FFH conservation areas with imaging spectroscopy: combining discrete and non-discrete approaches, Weiß C. and S. Schmidlein
- 12:10-12:30 Towards an optimized use of the spectral angle space, van der Linden., B. Waske and P. Hostert
- 12:30-12:50 Ensemble classifiers for hyperspectral classification, Chan J. and F. Canters

**10:50–12:30 Parallel Session 11 - Vives: Terrestrial ecosystems III
(Chairman: S. de Jong)**

- 10:50-11:10 Optimal scales to analyse natural vegetation in hyperspectral imagery, Nijland W. and A. Addink
- 11:10-11:30 LAI estimation from Earth Observation data: an operative approach, Vuolo F., L. Dini and G. D'Urso

- 11:30-11:50 Characterizing peatland surface heterogeneity using hyperspectral airborne remote sensing data, Mohammed A. and T. Malthus
- 11:50-12:10 A decision tree approach for predicting the degree of humification of organic soils using simulated HyMap data, Alroichdi A., J. McMorrow and M. Evans
- 12:10-12:30 An update system for urban biotope maps based on hyperspectral remote sensing data, Bochow M., K. Segl and H. Kaufmann
- 12:50–14:00 Lunch – De Witte Roos
- 14:00–15:40 Session 12 - Ambassadeur: Image analysis methods II
(Chairman: A. Held)**
- 14:00-14:20 Object definition for aboveground biomass and Leaf Area Index estimation, Addink E., S. de Jong and E. Pebesma
- 14:20-14:40 2nd Generation of RSL's Spectrum Database "SPECCHIO", Nieke J., J. Schopfer, M. Kneubühler, A. Hüni and K. Itten
- 14:40-15:00 Improved object recognition by fusion of Hyperspectral and SAR data, Borghys D., M. Shimoni, M. Milisavljevic and C. Parneel
- 15:00-15:20 Hyperspectral remote sensing of aerosol plumes: a semi analytical model, Alakian A., R. Mario and X. Briottet
- 15:20-15:40 Use of imaging spectroscopy and data fusion for detecting aerosols from biomass burning events, McCubbin I., D. Schlaepfer and P. Arnott
- 15:40–16:00 Closing Session – Ambassadeur**
- VITO (Ils Reusen)
EARSeL (Andreas Müller)

Posters

Sensors and missions

- Evaluation of quality and information content of CHRIS hyper-spectral images
Aiazzi B., A. Barducci, S. Baronti, D. Guzzi, C. Lastris, P. Marcoianni, I. Pippi, L. Santurri and M. Selva
- HYPER experiment to test biomass burning using the potassium emission technique
Amici S., F. Aversa, A. Bartoloni, F. Buongiorno, R. Bianchi, M. Dami and V. Lombardo
- Evaluating the information content of the AHS MIR Bands
de Miguel E., M. Jimenez, E. Prado and C. Robles
- Characterizing noise in AHS Thermal Bands
de Miguel E., O. Gutierrez and J. Gomez
- DLR flight facilities - platforms and know how for airborne research
Hausold A., M. Krautstrunk, H. Finkenzeller, S. Schröder and R. Kösters
- Thermal imaging spectroscopy: present technology and future dual-use applications
Shimoni M., F. van der Meer and M. Acheroy
- Geological mapping on Mars by spectral and spatial segmentation of OMEGA data
van der Werff H., F. van Ruitenbeek and T. Zegers
- The ARES Project: A Review of Sensor Requirements and Achieved Performance, Cocks T., P. Purdy and A. Stewart

Market now and tomorrow/Users vs Providers: gap or match?

- Evaluation of user-oriented attractiveness of imaging spectroscopy data using the benefit-value analysis (BVA) methodology
Nieke J., K. Itten, I. Reusen and S. Adriaensen
- Development of the Hyperspectral Remote Sensing Marketplace: A Perspective from Down Under, Cocks T., P. Hausknecht, P. Cocks and M. Hussey

Terrestrial ecosystems

- Measuring around the tree, does it matter? Effects of tree-side difference on chlorophyll and reflectance properties
Addink E. and S. de Jong
- Classification of vegetation cover type in the semi-arid Sierra de Gador Mountains using Spectral mixture analysis
Daebel A., N. Richter, S. Chabrillat and H. Kaufmann
- Response of hyperspectral vegetation indices to vegetation architecture and background soil for estimation of leaf area index
Darvishzadeh R., A. Skidmore and C. Atzberger
- Quantifying the spectral variability of arid ecosystems
Escribano P., C. Oyonarte, A. Palacios-Orueta and S. Chabrillat
- Estimation of leaf area index using optical field instruments and imaging spectroscopy
Gonsamo A., G. Schaepman-Strub, L. Kooistra and M. Schaepman
- Drought risk assessment of wheat fields by means of Hyperspectral imagery
Huber K., J. Eitzinger, P. Rischbeck, W. Schneider and Ph. Weihs
- Classification of Blanket Mire Microhabitats using Spectral Library, Lidar and Hyperspectral Data
Dowens J., L. Belyea and T. Malthus
- Coupled ground-based hyperspectral vegetation indices and principle component analysis (PCA) to diagnosis biophysical parameters of tropical irrigated wetland rice at West-Java, Indonesia
Evri M., M. Sady, M. Frederik, T. Akiyama
- The Characterisation of Heather Canopy and Foliar Sample Hyperspectral Reflectance
Mac Arthur A. and T. Malthus
- Towards the assessment of carbon sequestration in peatlands: Estimation of the fractional cover of three plant functional types
Menken M., G. Schaepman-Strub, J. Limpens and M. Schaepman
- AISA imaging of vegetation communities indicative of soil moisture at a clear-cut site in Finnish Lapland
Middleton M., and R. Sutinen
- Modelling biochemical concentrations of grassland habitats from in situ and imaging spectroscopy data
Psomas A., M. Kneubühler, S. Huber, K. Itten and N. Zimmermann
- Comparing vegetation indices and radiative transfer model inversion for the estimation of chlorophyll in cotton fields in Uzbekistan using Proba-1/CHRIS imagery and field spectrometer data
Ruecker G. and W. Dorigo
- Use of imaging spectroscopy to map vegetation hydraulic resistance in river floodplains
Suárez L., L. Kooistra and M. Schaepman
- Detection and classification of vegetation patterns in thornbush savannas (Namibia) from hyperspectral data using geobiophysical indicators and object-oriented methods
Wouters K., L. Lieckfeld, J. Oldeland and A. Müller
- Spectral properties of Montane, agriculturally, extensively used plants
Zagajewski B.

- Regularization methods for the retrieval of vegetation parameters in the context of the ill-posed problem: multiple remote sensing data inversion
Berjón A., V. Cachorro, P. Zarco-Tejada, A. de Frutos and S. Hernández
- Hyperspectral characterisation of arable crop stress associated with buried gas pipeline earthworks
White D, C. Williams and S. Barr
- Crop type classification by Hyperion data and unmixing algorithm
Fahimnejad H., S. Soofbaf, A. Alimohammadi and M. Zoj
- Mapping dune valley vegetation using imaging spectroscopy for Ameland, the Netherlands
Meddens A., L. Kooistra, A. Schmidt, H. van Dobben, M. Schaepman and P. Slim
- Exploring the Potential of Hyperspectral Sensors to monitor Crop Load in Citrus Orchards - A ground-based study on "Midnight" Valencia orange trees (Citrus sinensis L. cv. Midnight) in Wellington, South Africa
Somers B., A. Vanden Eynde, S. Delalieux, W. Verstraeten and P. Coppin

Geology, mineralogy and soil

- Assessment of laboratory, field and airborne spectral sensors to determine organic carbon content in agricultural soil: performance and disturbing factors
Stevens A., B. van Wesemael, H. Bartholomeus, D. Rosillon, B. Tychon and E. Ben-Dor
- Capability to quantify pedochemical parameters using spectroscopic data of semi-arid soils in the Otjozondjupa region, Central Namibia
Eisele A., M. Bachmann and A. Müller
- Hyperspectral image data analysis for soil erosion modeling in agricultural ecosystems
Gerighausen H. and E. Borg
- Mapping of Soil Salinity Using a Combined Hyperspectral and EM Approach
Goldshleger N., M. Eshel, V. Mirlas and E. Ben-Dor
- Bio-physical Characterization of Indicators of Sediment Stability in mudflats using Remote Sensing (CISS)
Adam S., A. De Backer, J. Monbaliu, E. Toorman and M. Vincx
- Hyperspectral Remote Sensing of the Environmental Impact of Historic and Modern Industrial Activities in the Meuse Valley (Liège, Belgium)
Dardenne V., F. Cacères, E. Bonino, B. Campanella and E. Pirard
- Detection of acid drainage effects around Rosia Poieni mine in Romania using ASTER images
Dardenne V., F. Cacères, H. Hansen, E. Bonino and E. Pirard
- Salinity modelling by inverted Gaussian parameters of soil reflectance spectra
Farifteh J., F. van der Meer, S. De Jong and M. van der Meijde
- Weathering of surfaces in a temperate climate: geological mapping using VIS-NIR hyperspectral remote sensing
Roy R., P. Launeau, V. Carrère and Ch. Ducommun
- Using Hyperion hyperspectral data for mineral research and geological mapping: A case study in Dana national reserve, Jordan
Dadon A., A. Karnieli and E. Ben-Dor
- Thresholding of Classification Rule Images
Hecker Ch., H. van der Werff, J. Kooistra and M. van de Meijde

Risk management

- Measuring pollutant gases using VNIR and TIR imaging spectroscopy
Shimoni M., R. Heremans, F. van der Meer and M. Achery

Urban environment

- Classification of materials in sunny and shadowed urban area
Lachéradé S., Ch. Miesch, D. Boldo, X. Briottet, H. Le Men and Ch. Valorge
- Hyperspectral Technology in Urban Vegetation Analysis
Jung A. and C. Gläßer

Image processing

- Development of an atmospheric correction method of hyperspectral image using MODTRAN
Kim S-H, S-J Kang, J-H Chi and K-S Lee

Image analysis methods

- A user-oriented tool for advanced classification of hyperspectral data using support vector machines
Janz A., S. van der Linden, B. Waske and P. Hostert
- Land Cover Types of Fordata Island using CASI Hyperspectral and Terra-ASTER Imagery
Frederik M., H. Sanjaya, M. Sady, Y. Wahyudi, D. Yusuf, I. Farahidy, L. Bertels, E. Knaeps, S. Sterckx, K. Meuleman, B. Deronde.

Water and aquatic ecosystems

- Validation of atmospheric correction of MODIS 1Km and 250m resolution over Belgian turbid coastal waters
Nechad B., B. van Mol and K. Ruddick

- Investigation of the potential of hyperspectral sensors for bathymetry applications using airborne Hymap data from Lake Constance
Yanez L., P. Gege, T. Heege and M. Schaepman
- Mapping of coral reefs using hyperspectral CASI data; A case study: Fordata, Tanimbar, Indonesia
Bertels L., T. Vanderstraete, S. Van Coillie, E. Knaeps, S. Sterckx, R. Goossens and B. Deronde