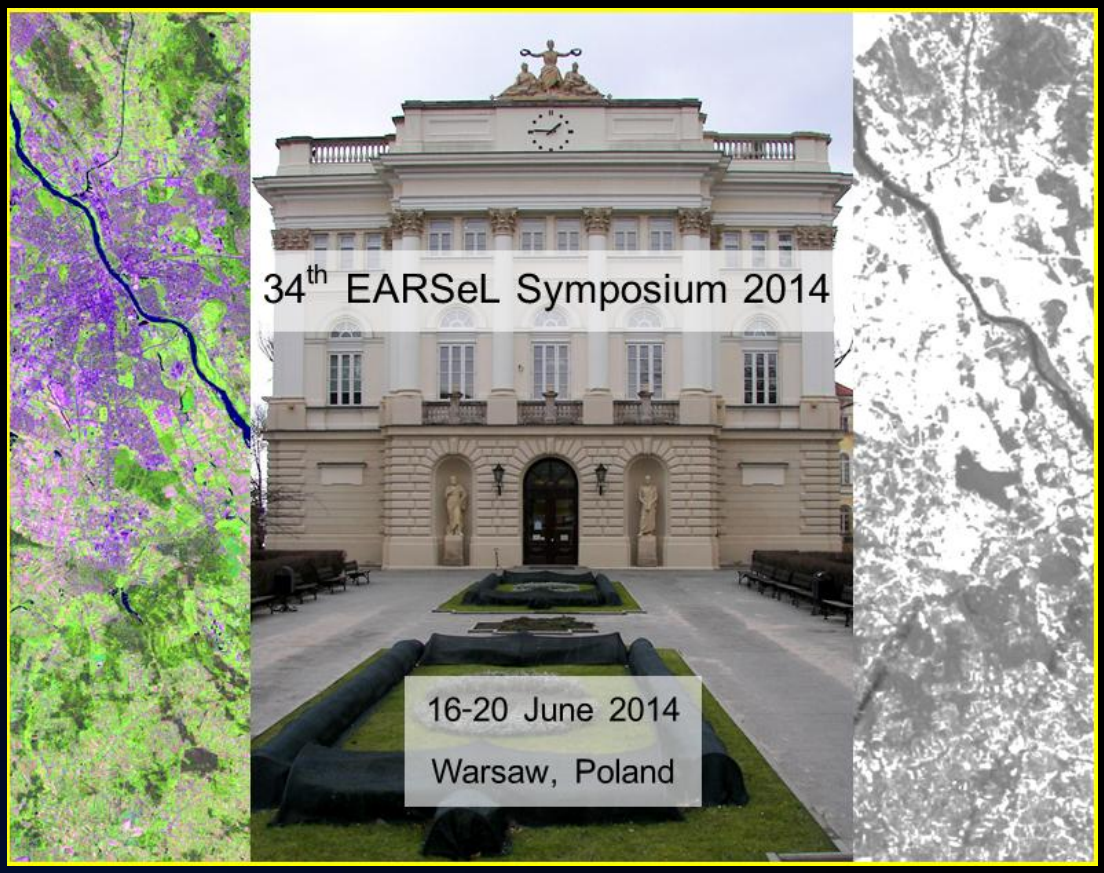
EARSeL



December 2013
No. 96

NEWSLETTER

EARSeL

European Association of Remote Sensing Laboratories

Front Cover – 34th EARSeL Symposium 2014, Warsaw, Poland.

Credits: Piotr VaGla Waglowski, Landsat 8 OLI and TIRS

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Individual observer	330€
Laboratory/Company with fewer than 10 researchers	330€
Laboratory/Company with 10 or more members	500€

Contents

Editorial

Dear members,

This December Issue starts with a report of the 33rd EARSeL Symposium that took place in Matera last June and as well as a report on the accompanying event “MEET-EO: the first brokerage event of Basilicata Innovazione”.

The proceedings of the 4th EARSeL Workshop on Education and Training in the framework of the 33rd EARSeL Symposium are now available online at the Workshop Website.

Moreover, a report on the 9th EARSeL FFSIG International Workshop on “Quantifying the Environmental Impact of Forest Fires” in Coombe Abbey, Warwickshire, UK, 15-17 October 2013 has also been included.

The preparations for the Annual 34th EARSeL Symposium 2014 in Poland, Warsaw, are well underway, accompanied by the Joint Workshop of EARSeL’s SIG on 3D Remote Sensing & Urban Remote Sensing and the 5th International Workshop of the EARSeL SIG "Geological Applications" - "Surveying the GEOsphere”.

We also want to extend a warm welcome to “GAMMA Remote Sensing” as the newest EARSeL member.

The “Science Article” rubric hosts once more an article by Wim Baker, who reports on the recent developments in Satellites and Sensors, while six new publications showing significant advances in the field of remote sensing, have been published at the EARSeL eProceedings.

The forthcoming EARSeL events include the 7th Workshop on Remote Sensing of Land Ice and Snow ‘Cryosphere: Monitoring for climate studies and operational applications’ in February and the 5th Land Use & Land Cover Workshop one month later in March. Last but not least, the Annual 34th EARSeL Symposium 2014 accompanied by the Joint Workshop of EARSeL’s SIG on 3D Remote Sensing & Urban Remote Sensing and the 5th International Workshop of the EARSeL SIG "Geological Applications", will held next June in Warsaw.

The last part of this issue includes a list of conferences, training courses and summer schools to attend in the near future.

Your feedback on the EARSeL Newsletter is critical to us. We will be pleased to hear your comments and suggestions. Moreover, you are more than welcome to contribute a science article or report for the forthcoming issues.

We send our warmest wishes for a very Happy Christmas and a prosperous New Year 2014.
Enjoy reading the December issue!

The Editors

News from EARSeL

Report on the 33rd EARSeL Symposium, June 2013, Matera

The 33rd EARSeL Symposium entitled "Towards Horizon 2020: Earth Observation and Social Perspectives" was held in Matera, from 3 to 6 June 2013. It was jointly organized by EARSeL and Istituto di Metodologie per l'Analisi Ambientale, Istituto dei Beni Archeologici e Monumentali of the Italian National Council Research (CNR-IMAA, CNR-IBAM) in collaboration with the University of Basilicata.

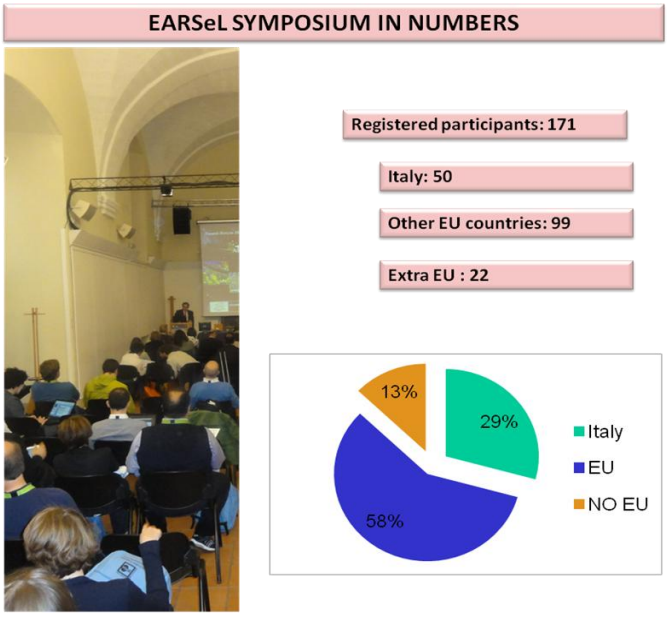
The symposium along with each accompanying event intended to address two main challenges:

1. The first has been, is and will be the fruitful contribution to a lively debate among remote sensing specialists and end-users on the main topic of the field which the application, strategies of development of EO according the Horizon 2020 priorities and requirements, as for example, the need to:
    i. apply EO data and information for societal benefits: helping to improve living conditions, including in developing countries, or developing tools for decision makers at all levels,
    ii. bridge the gap between research and the market,
2. The second challenge was to attract many scientists to come to Matera, very beautiful town, UNESCO site but not so close to airports and not so known as , for example, Prague, Paris or a very famous tourist place as Mykonos, just to mention the last places/venues where EARSeL symposium took place in the last 3 years.

These two challenges have been faced by proposing and arranging a rich and diversified supply of events (the richest in the history of EARSEL) from conferences to training, from business opportunities meeting to exhibition. So the program was made up of 16 sessions of Symposium, 3 workshops (Costa zones, educational training, cultural heritage), a special forum on Developing Countries, a School of Remote Sensing for Archaeology funded by ESA, the event MEET-EO (Business opportunities in Earth Observation & remote sensing technologies), finally the exhibition ARCHAEO_SAT in collaboration with ASI and UNIBAS.

Figure shows some panels of the photographic exhibition opened free of charge to all the citizens.

The results in terms of participants of Symposium are very positive: more than 200 abstracts were submitted and presented in the following scientific sessions: Hydrology, Developing Countries, Space Technology and Missions, Radar Remote Sensing, Geologic & Seismic Applications, Urban Remote Sensing, Sea and Snow/Ice monitoring, Temporal Analysis, Land Use/Land Cover, Forestry & Natural Environment, Forest Fire, Methods & Instruments, Cultural Heritage, Climate Change & Meteorology.



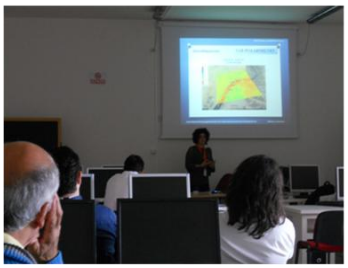
Country	N.
Italy	50
Germany	18
Poland	17
France	10
Belgium	7
Brazil	5
Hungary	5
Netherlands	5
Romania	5
Austria	4
Greece	4
Norway	4
Spain	4
UK	4
Czech Republic	3
Israel	3
Slovakia	3
Algeria	2
Chile	2
Morocco	2
USA	2
Argentina	1
Bulgaria	1
Denmark	1
Estonia	1
Indonesia	1
Korea	1
Mexico	1
Russia	1
Sweden	1
Switzerland	1
Turkey	1
Ukraine	1
TOTAL	171

SESSION HALLS

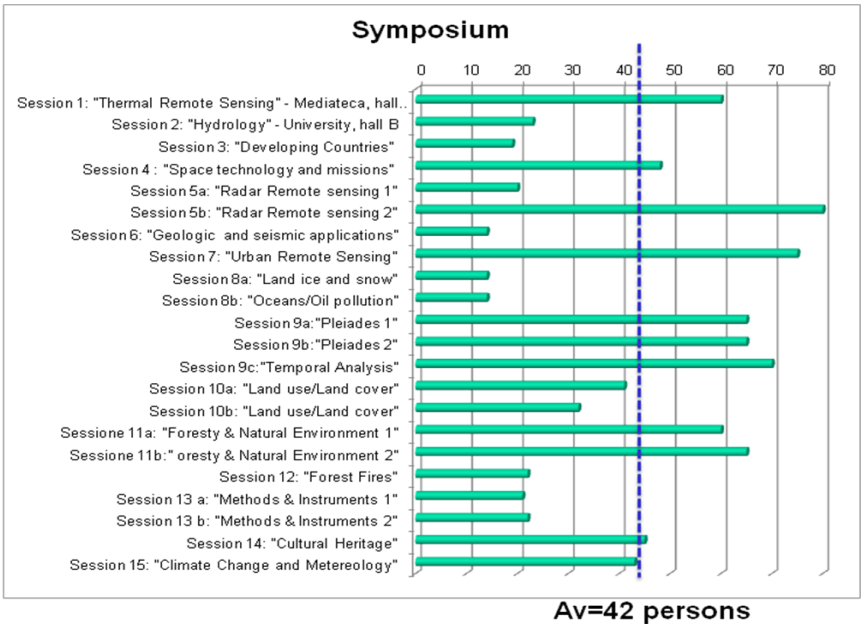
Mediateca, Hall A

University, Hall B

University, Hall C



University, Hall D



The graph shows the participation for each session of the symposium that had 3 parallel sessions along with the parallel activities of the workshops and ESA school.

A special session, jointly organized with CNES, was dedicated to the Pleiades mission.

As keynote presentations, outstanding representatives of national and international space agencies and institutions such as ESA, NASA, ASI, CNES, BELSPO, IEA, provided a focus on the past, present and future activities and opportunities.

Among the outstanding contributions of the young scientists the best paper awards were assigned to:

1) Ilaria Palumbo: Best Paper Award for a very significant contribution in the field of remote sensing entitled "A Web Client for Fire Monitoring in Support to Protected Areas management in Africa", co-authored with B. Verbeeck, M. Crerici and J.-M. Grégoire.
2) Tamir Caras: Best Paper Award for a very significant contribution in the field of remote sensing entitled "Ground-level spectroscopy analyses and classification of coral reefs using a hyperspectral camera" co-authored with Arnon Karnieli.
3) Bogdan Apostol: Best Poster Award for a very significant contribution in the field of remote sensing entitled "Estimation of biometric spruce stand parameters by automatic individual trees identification using ALS data" co-authored with Marius Petrila, Adrian Lorent and Vladimir Gancz.

Finally, a Special Award was assigned to Alain Gleyzes and Claire Tinel for giving a very significant contribution in the field of Earth Observation Technologies.


Best Paper Award
to
ILARIA PALUMBO
for a very significant contribution in the field of remote sensing entitled
A WEB CLIENT FOR FIRE MONITORING IN SUPPORT TO PROTECTED AREAS MANAGEMENT IN AFRICA
co-authored with B. VERBEECK, M. CRERICI, J.-M. GRÉGOIRE
presented at the 33rd Annual Symposium in 2013 of the European Association of Remote Sensing Laboratories held in Matera, Italy
Rosa Lasaponara & Nicola Masini Symposium Organizers
Thursday, 6th June 2013 Ioannis Manakos EARSeL Chairman


Best Paper Award
to
TAMIR CARAS
for a very significant contribution in the field of remote sensing entitled
GROUND-LEVEL SPECTROSCOPY ANALYSES AND CLASSIFICATION OF CORAL REEFS USING A HYPERSPECTRAL CAMERA
co-authored with ARNON KARNIELI
presented at the 33rd Annual Symposium in 2013 of the European Association of Remote Sensing Laboratories held at the University of Basilicata, Matera, Italy
Rosa Lasaponara & Nicola Masini Symposium Organizers
Thursday, 6th June 2013 Ioannis Manakos EARSeL Chairman


Best Poster Award
to
BOGDAN APOSTOL
for a very significant contribution in the field of remote sensing entitled
ESTIMATION OF BIOMETRIC SPRUCE STAND PARAMETERS BY AUTOMATIC INDIVIDUAL TREES IDENTIFICATION USING ALS DATA
co-authored with MARIUS PETRILA, ADRIAN LORENT, VLADIMIR GANCZ
presented at the 33rd Annual Symposium in 2013 of the European Association of Remote Sensing Laboratories held in Matera, Italy
Rosa Lasaponara & Nicola Masini Symposium Organizers
Thursday, 6th June 2013 Ioannis Manakos EARSeL Chairman


Special Award
to
ALAIN GLEYZES AND CLAIRE TINEL
for a very significant contribution in the field of Earth Observation Technologies
33rd Annual Symposium in 2013 of the European Association of Remote Sensing Laboratories held in Matera, Italy
Rosa Lasaponara & Nicola Masini Symposium Organizers
Thursday, 6th June 2013 Ioannis Manakos EARSeL Chairman

We would like to thank the sponsors: European Space Agency, Italian Space Agency and Belgium Federal Science Policy Office.
Special thanks to all the participants.
We are looking forward to meeting you next year, at the 34 EARSeL Symposium in Warsaw, Poland.

Rosa Lasaponara CNR-IMAA
Nicola Masini CNR-IBAM

Organisers of the 33rd EARSeL Symposium
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MEET-EO: the first brokerage event of Basilicata Innovazione

MEET-EO - *Meet Emerging Technologies in Earth Observation & Remote Sensing* - was the first technology dating organised by **Basilicata Innovazione.** It was held on 7th June 2013 in Matera, within the **33rd EARSeL Symposium** "Towards Horizon 2020: Earth Observation and Social Perspectives".

Why did Basilicata Innovazione decide to organize **this event**, looking to the **Earth Observation sector**? It is one of the leading sector in our region, as proved by the presence of professionals and researchers with exclusive competences and aware of the most cutting-edge technologies in the field. Then we have to remember that, close to Matera, it is located the *Geodesy Space Centre* (ASI). In this scenario, Basilicata Innovazione recently realized, with the support of technical experts, a project addressed to several EO regional enterprises, which took advantages from studies and analyses on the sector, supposing also future perspectives of development. So, Meet-EO could be considered a further advance in this path.

Figure 1: Location of Meet-EO - "Mediateca provinciale" - Matera

The main goal of Meet-EO was the **matching between offers and requests from enterprise and research field**. A dedicated platform, where the participants detailed their company or research profiles and the type of cooperation searched for (technical and/or commercial one or partner for European R&D projects), facilitated the matching.

The brokerage event was **perfectly combined with the EARSeL Symposium** which attracted international researchers: Basilicata Innovazione instead took care of inviting companies all over the world, belonging to the Earth Observation sector and with specific competences in remote sensing technologies. The result was the organization of **65 scheduled meetings (B2B and B2R)** and about 35 participants coming from Italy and other European countries. The **focus**, during the meetings, was on **technologies** applied for the monitoring and prevention of environmental damages, management of cultural assets, archaeology, coastal and urban areas (buildings, mobility, etc.) and climate change.

Figure 2: Meetings among participants

The synergy between Basilicata Innovazione and EARSeL contributed to the success of Meet-EO. Participants gave indeed **positive feedbacks**, that we can summarize in this way: Meet-EO was **the occasion to establish new and useful contacts**, creating the conditions for future collaborations, in business and technologies sharing/exchange fields, with potential research and commercial partners. «Nowadays it is very important to create a network between researchers and business opportunities, through a strong market-oriented approach, and to receive new inputs from companies» and «The initiative is a successful model for scouting new clients and potential partners», as declared by some participants after the meetings.

The day before the event, on 6th June 2013, Basilicata Innovazione organized a company visit at *Geodesy Space Agency*. All participants registered to the brokerage event were invited to take part. Many participants to the company visit came from Academia and were interested in the projects and technologies shown during the visit.

The technology dating was realized in collaboration also with the University of Basilicata and CNR - Italy's National Council of Research - and received the support of several regional stakeholders: trade associations, local governments, Chamber of Commerce, Local Development Agency and others.

Proceedings of the 4th EARSeL Workshop on Education and Training June 2013, Matera, Italy

The **4th EARSeL Workshop on Education and Training** of the EARSeL's Special Interest Group "Education and Training" took place on 4 June 2013 in Matera, Italy in the framework of the 33rd EARSeL Symposium. The thematic topics of the workshop aimed at the current use of earth observation as support tool for education, training and capacity building.

The proceedings of the Workshop have been edited by Rainer Reuter, the Workshop Chairman and are available for free, via the following link:

http://www.earsel.org/SIG/ET/4th-workshop/proceedings.php

Report on the 9th EARSeL FFSIG International Workshop on "Quantifying the Environmental Impact of Forest Fires"

Coombe Abbey, Warwickshire, UK, 15-17 October 2013

The 9th International Workshop on 'Quantifying the environmental impact of forest fires' was hosted and organised by the Department of Geography, University of Leicester in collaboration with the Laboratory of Forest Management and Remote Sensing, Aristotle University of Thessaloniki.

The Coombe Abbey workshop is the most recent of a series of technical meetings that were organised by the EARSeL SIG on Forest Fires after its foundation in 1995. The previous meetings were held in Alcalá de Henares (1995), Luso (1998), Paris (2001), Ghent (2003), Zaragoza (2005), Thessaloniki (2007), Matera (2009) and Stresa (2011).

The focus of the workshop was on understanding and quantifying the impact of forest fires on the Earth System (climate, the biosphere, ecosystem functioning, society and livelihood). As a result, the majority of paper contributions were related to:

- megafires and their impact of the environment,
- progress in quantifying fire severity from satellite observations,
- methods of establishing fire risk and post-fire recovery of the ecosystem,
- state-of-the-art developments in burned area mapping and the validation of those products,
- using radars to map burned areas in cloudy regions,
- advances in thermal observations of fires, and
- modelling the environmental impact of fires.

The workshop was attended by 50 participants from 17 different countries. The largest number of the participants originated from European Mediterranean countries as well as from other European countries such as Belgium, Bulgaria, Germany, Switzerland, the Netherlands and the U.K. A smaller number of participants originated from non-European countries such as Brazil, Canada, Mexico, South Africa and the USA.

The main activities of the Workshop included 4 keynote lectures given by invited speakers, oral presentations and a poster session. The different activities of the Workshop are presented, in more detail, below:

Keynote Lectures

The invited lectures focused on the following topics:

- *Fire Monitoring from Space: Past accomplishments, recent developments and future directions* by Chris Justice (University of Maryland, USA)
- *Building a global fire climate record: The challenge of meeting the Essential Climate Variable requirements* by Luigi Boschetti (University of Idaho, USA)
- *Quantifying wildfire fuel combustion using active fire observations* by Gareth Roberts (University of Southampton, UK)
- *Global fire emissions and potential fire-related climate mitigation options* by Guido van der Werf (VU University Amsterdam, The Netherlands)

Oral Presentations

Twenty nine papers focusing on the aforementioned subjects were presented in seven sessions.

Poster Session

Seventeen posters focusing on all aspects of 'Remote Sensing of Forest Fires' were presented in the poster session which included one-to-one discussions with the authors.

Workshop Conclusions

As a community we:

- Need to understand better how fire is parameterized in Dynamic Global Vegetation Models, so we can provide better products
- Were informed about how progress is being made on the re-processing the archive of AVHRR, but concerns expressed in being used stand alone
- Recognized that a step change is coming in systematic processing of moderate resolution data (e.g. Landsat 8, Sentinel 2) for automated burned area in development and we have new algorithms being developed
- Take the advantage international instruments of the same characteristics and combine processing
- Discussed approaches to compute the small fire contribution to overall burned area and emissions
- Recognized that future research, products and services in the field of 'RS of Forest Fires' are heavily affected by sensor availability and data distribution mechanisms
- Were informed that data from radar instruments were yielding important information about fire type and intensity, but that we lack a long time series of data and moisture effects need to be modelled and understood
- Were shown results that allowed the characterization of fire type in the Amazon rainforest to be made, with implications for emissions and land cover change estimates
- Need to continue work on compiling a burned area validation data set (to CEOS level 3/4) and form a consensus on metrics to allow evaluation and assessment
- Understand that burned area and active fire detections underpin the outputs coming out of GFEDv4, but there are many uncertainties to still understand
- Recognized that the definition of a megafire and subsequent consequences of them differed widely in the community

- Discussed the importance of estimating fire severity but to ensure that our definition of severity has ecological meaning
- Were presented with a statistical model of fire risk but recognized that human response to fire needs to be taken into account. More probabilistic modelling and linking the climatology and the vegetation dynamic to fire modelling
- Need to discuss the requirements (WMO-ECV) for fire disturbance products to ensure that next GCOS Implementation Plan and related targets are realistic
- Have confidence in the derivation of fuel consumption derived from FRE (moisture) made at different look angles, in different fuel types, and at different spatial scales
- Recognise that the implications for post-fire recovery vary from no viability in tropical peat swamps to a rapid recovery (3 years in Greece)
- See that terrestrial laser scanners can be a useful tool for fuel moisture characterization

Publications

Selected papers will be included in a special issue of Remote Sensing (http://www.mdpi.com/journal/remotesensing/special_issues/environmental_impact_of_forest_fires) which will be published in 2013 while abstracts of the papers presented at the workshop can be found at the following link: http://earsel-ffsig.web.auth.gr/images/PDF/9th_EARSeL_Forest_Fire_SIG_Workshop_Proceedings.pdf

Next Workshop

The EARSeL Forest Fire Special Interest Group will reconvene in Cyprus in 2015. The workshop will be hosted by the CYPRUS UNIVERSITY OF TECHNOLOGY.

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EARSeL FFSIG Chair
igitas@for.auth.gr

Kevin Tansey
Workshop Host and Organiser
kjt7@le.ac.uk

The 34th EARSeL Symposium 2014, Warsaw

European Association of
Remote Sensing Laboratories

University of Warsaw
Faculty of Geography and Regional Studies

European remote sensing - new opportunities for science and practice

University of Warsaw, Main Campus, Krakowskie Przedmiescie 26/28, Warsaw, Poland
Warsaw, 16-20 June 2014

accompanied by:

Joint Workshop of EARSeL Special Interest Groups *3D Remote Sensing and Urban Remote Sensing*
Workshop of EARSeL Special Interest Group *Geological Applications*

EARSeL is a scientific network of European remote sensing laboratories, coming from both academia and commercial/industrial sector, which covers all fields of geoinformation and earth observation through remote sensing. All scientists, professionals and researchers involved or interested in the field of the symposium are strongly encouraged to present papers according to the following topics:

- Scientific applications of remote sensing, emerging methods and technologies
- Education and training in school, university, and public life
- Capacity building at organisations and authorities involved in environmental monitoring and protection
- Activities dealing with natural and cultural heritage
- Remote sensing for archaeology
- Land use and land cover, degradation and desertification
- Urban remote sensing (*Workshop of SIG Urban Remote Sensing*)
- Oceans, coastal zones and inland waters
- Natural and man-made disasters
- Forestry and forest fires
- Applications related to assist developing countries: mapping, monitoring and change analysis
- Remote sensing and its associated support to the understanding of climate change
- Hydrological applications: water management, underground water sources, land ice and snow
- 3D remote sensing, Radar, Lidar, Thermal Remote Sensing (*Workshop of SIG Urban Remote Sensing*)
- New instruments and methods, including ground truth
- Remote sensing technology
- Application of airborne hyperspectral APEX images
- Unmanned Aerial Vehicle (UAV) from theory to application
- Remote sensing applications for Natura2000 areas
- Remote sensing applications for grasslands and wetlands
- Remote sensing applications for agriculture-environment

All participants are kindly requested to send four-page papers **or** one-page abstracts using the WORD template:

- **four-page papers** will be **reviewed and published** as a Special Issue of the EARSeL eProceedings. The template is available on the Symposium web page. **Deadline: 31st January 2014,**
- **one-page abstracts** will be published as non-reviewed Abstract Book of the 34th EARSeL Symposium. The template is available for download in the Conference Management System

under *'34th EARSeL Symposium and 37th General Assembly 2014'*, following your login. Registered authors upload their manuscripts through the Conference Management System. To upload your manuscripts, please login and go to 'My abstracts' on the menu on the left column, click on 'upload fulltext' and follow the instructions. **Deadline: 28th February 2014.**

Registration and payment

For conference registration please visit the EARSeL Conference Management System. **Registration & Payment Form** is available from the CMS or the Symposium web page http://www.earsel.org/symposia/2014-symposium-Warsaw/registration.php

Registration Fees before 15 April 2014	EARSeL Members	Non- Members	EARSeL Students	Non EARSeL Students
Symposium	€ 350/300*	€ 400/350*	€ 150/100*	€ 200/100*
Workshop	€ 250/200*	€ 300/250*	€ 150/100*	€ 200/100*
Symposium + Work-shops	€ 450/350*	€ 500/400*	€ 150/100*	€ 200/100*

* a discount for authors of oral/poster contributions

The symposium fee includes Proceedings on CD ROM, the abstract book, coffee breaks and lunches. Workshop fees are reduced by 20% for participants of the symposium.

25% must be added to registration fees if paid after 15th April 2014.

Presenting authors of symposium contributions, oral and poster, are requested to transfer the registration fee **before 15th April 2014**. Otherwise contributions will be removed from the final programme.

Please register for the symposium and workshops in the **Conference Management System**. Following registration a **Payment Information** is available for download, which shall be sent to the EARSeL Secretariat.

For more information please visit: http://www.earsel.org/symposia/2014-symposium-Warsaw/index.php or contact local organiser: Bogdan Zagajewski (bogdan@uw.edu.pl) or the EARSeL Secretariat (secretariat@earsel.org)

Joint Workshop of EARSeL's SIG on 3D Remote Sensing & Urban Remote Sensing, 2014, Warsaw

Joint Workshop of EARSeL's SIG 3D Remote Sensing and Urban Remote Sensing.

University of Warsaw, Main Campus, Krakowskie Przedmiescie 26/28, Warsaw, Poland Warsaw, Poland 19-20 June 2014

Organised by Special Interest Group - 3D Remote Sensing and Urban Remote Sensing

The workshop is jointly organised by two Special Interest Groups (SIG) of the European Association of Remote Sensing Laboratories (EARSeL). The topic of the workshop is of mutual interest to these SIG's. Thus the workshop will have an integrative function to bring together people from 3D and Urban remote sensing branches to discuss their experiences and problems in dealing with high resolution data.

High resolution data are a valuable source for urban and suburban areas and can deliver information in high geometric and semantic quality for various cities and urban agglomerations around the world. The three-dimensional shape of the Earth is of major importance for several remote sensing applications. In this respect, methodologies and techniques related to the different steps of Digital Surface, Elevation and Terrain Models (DSM's, DEM's, DTM's) generation and quality control are continuously investigated, also considering the uninterrupted launches of new satellite sensors. In addition, DSM's, DEM's and DTM's applications are addressed, where they act as a base for orthoimages, correct georeferencing, radiometric correction of images depending upon aspects, terrain analysis, flood prediction, coastal mapping, erosion control, determination of subsidence, noise and gas propagation, telecommunications planning and several other aspects.

You are cordially invited to participate in a workshop with challenging topics. Please feel free to submit your individual input and to share your experiences with colleagues from around Europe.

Workshop Topics

- Urban climatology, geology, and geohazards
  - Urban heat island effects
  - Air quality assessment
  - Subsidence
  - Hydrology
  - Earthquake/Volcanic/ falling, landslide and debris flow geological hazards
  - Coastal hazards
  - Environmental monitoring (soil, groundwater contaminant studies)
- RS applications to social science
  - Applications to vital statistics
  - RS and health
  - RS and GIS applications to social science
  - Applications to security and emergency
  - Applications to "World Expo" and "Olympic Games"
  - RS and GIS applications in archaeology
- RS applications to urban planning and conservation
  - Urban planning
  - Transportation planning
  - Digital city
  - Urban conservation
  - Urban simulation based on RS

- Cultural heritage
- Urban development and growth pattern
  - Urban development modeling
  - Contributions to urban trajectory theory
  - Detailed structure change
  - Smart growth
- Urban and peri-urban ecology
  - Urban and peri-urban landscape ecology
  - Urban and peri-urban ecological process modeling
  - Comparative studies
- Generation of Digital Surface Models (DSM's) (the visible surface) based on space and aerial images, laser scanning, interferometric and radargrammetric Synthetic Aperture Radar (cooperation with the EARSeL SIG Radar Remote Sensing), with particular care to complex morphology areas (urban, mountain)
  - Models for orientation/geo-referencing of single and multiple optical and radar images
  - Matching strategies for stereo and multiple imagery
- Generation of 3D-city models
- DSM and DEM comparison, cross-validation and quality assessment, with special attention for global DEM's (SRTM, ASTER, TanDEM-X)
- Applications of DSM's, DEM's or other height information in engineering, land and environmental planning, management and protection
- Determination of changes of the Earth surface
- 3D spatial databases

Organisers

Prof. Mattia Crespi (e-mail: mattia.crespi@uniroma1.it) – 3D Remote Sensing SIG Chair
Dr. Karsten Jacobsen (e-mail: jacobsen@ipi.uni-hannover.de) – 3D Remote Sensing SIG Co-Chair
Prof. Carsten Jürgens (e-mail: carsten.juergens@rub.de) – Urban Remote Sensing SIG Chair
Prof. Derya Maktav (e-mail: maktavd@itu.edu.tr) – Urban Remote Sensing SIG Co-Chair

Venue

The Workshop will be hosted at the University of Warsaw - Old Library, Main Campus
Krakowskie Przedmiescie 26/28, Warsaw, Poland

Further information about the venue place and Warsaw can be found at the 34th EARSEL Symposium page.

Important Dates

Due date for abstract submission	31 January 2014
Notification of acceptance	28 February 2014
Early registration	15 April 2014
Due date for full paper submission	15 June 2014

Abstract Submission Instructions

Please send your abstract of 500 words (maximum) no later than 31 January 2014 including: title, author(s) and affiliation.
The abstract should be uploaded to the Earsel Conference Management System at the following address: http://www.conferences.earsel.org

Registration Fees*

EARSEL Members	250/200*
Non EARSEL Members	300/250*
STUDENT EARSEL members	150/100*
STUDENT Non EARSEL MEMBERS	200/100*

* Discount provided to authors of oral/poster contributions

25% must be added to registration fees if paid after 15 April 2014.
Workshop fees are reduced by 20% for participants of the Symposium.

Registration fees include:

- free access to oral and poster presentations
- abstract book, cd with workshop proceedings, and other workshop material
- midday lunches, coffee breaks

To register, please follow the instructions at the Earsel Conference Management System web site:
http://www.conferences.earsel.org

Dr. Karsten Jacobsen
Prof. Carsten Jürgens
Prof. Derya Maktav
Dr. Mattia Crespi

Organisers of the Joint Workshop

5th International Workshop of the EARSeL SIG "Geological Applications" - "Surveying the GEOsphere", 2014, Warsaw

European Association of
Remote Sensing Laboratories

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ
UNIVERSITY OF PATRAS

5th International Workshop of the EARSeL Special Interest Group "Geological Applications" Remote Sensing and Geology: "Surveying the GEOsphere"

University of Warsaw, Main Campus, Krakowskie Przedmiescie 26/28, Warsaw, Poland
Warsaw, 19-20 June 2014

In conjunction with:

34th EARSeL SYMPOSIUM

"European remote sensing - new opportunities for science and practice"

June 16-20 2014

The 5th International Workshop of the European Association of Remote Sensing Laboratories (EARSeL) Special Interest Group "Geological Applications" will take place in Warsaw Poland, on June 19-20 2014 in conjunction with the **34th EARSEL Symposium** "European remote sensing - new oportunities for science and practice" that will be organized on June 16-20, 2014.

The 2014 workshop in Warsaw is the fifth in a series of workshops organised by the EARSeL SIG during the last years. Previous workshops were held in Warsaw (2006), Bosen (2007), Istanbul (2008) and Mykonos (2012). More info on the previous workshops and the proceedings can be found in the **activities** page of the SIG (http://www.earsel.org/SIG/Geology/activities.php).

The main subject of the workshop will be the use of Remote Sensing in Geology. Paper contributions are expected to focus on RS and GIS applications on:

- **Geological Mapping**
- **Tectonic Geology**
- **Mine Monitoring**
- **Hydrogeology**
- **Geomorphology**
- **Geohazards (Landslides, Floods, Earthquakes)**

The two days of the workshop will be dedicated to scientific presentations (oral and posters). Full texts of all the presentations (oral and posters) will be included in the Proceedings CD of the workshop. Since 2012 the workshop proceedings are published regularly and have a unique ISBN number. The proceedings from the last workshop can be downloaded from the SIG website: http://www.earsel.org/SIG/Geology/workshop_proceedings.php

Please send your abstract of 500 words (maximum) no later than 31 January 2014 including: Title, author(s) and affiliation.

The abstract should be uploaded to the EARSeL Conference Management System at the following address: http://www.conferences.earsel.org.

Registration Fees*:

EARSEL Members	250/200*
Non EARSEL members	300/250*
STUDENT EARSEL members	150/100*
STUDENT Non EARSEL MEMBERS	200/100*

* - discount provided to authors of oral/poster contributions.

25% must be added to registration fees if paid after 15th April 2014. Workshop fees are reduced by 20% for participants of the Symposium.

Registration fees include:

Free access to oral and poster presentations.
Abstract book, cd with workshop proceedings, and other workshop material.
Midday lunches, coffee brakes.

To register, please follow the instructions at the EARSeL Conference Management System website: http://www.conferences.earsel.org

For more information please visit:

www.earsel.org/SIG/Geology/workshop.php
www.conferences.earsel.org
or contact the SIG Chairman:
knikolakop@upatras.gr
or the EARSEL Secretariat:
secretariat@earsel.org

New EARSeL Members

We want to extend a warm welcome to the new member registered with EARSeL. We are looking forward to its active participation and contribution to the EARSeL activities, and in collaboration with other members, in this long-established network of scientific research laboratories.

GAMMA Remote Sensing,

http://www.gamma-rs.ch
Worbstrasse 225
CH-3073 Gümligen
Switzerland

GAMMA REMOTE SENSING

EARSeL Representative: Mr. Urs Wegmüller

GAMMA Remote Sensing is a Swiss corporation with extensive experience in scientific research, radar and interferometric signal processing, software development, and microwave hardware development and manufacture. It developed the GAMMA SAR, SAR interferometry and Persistent Scatterer Interferometry (PSI) processing software and provides licenses for it. More recently, GAMMA developed the GAMMA Portable Radar Interferometer (GPRI), an advanced interferometric real aperture radar for terrestrial ground-motion monitoring. GAMMA is well integrated in the international remote sensing community. Furthermore, GAMMA provides a range of value added services and consulting using satellite and terrestrial radar data.

Science Article

Satellites & Sensors

This issue discusses missions to the Moon and Mars. A future issue will include a more focused report on developments in Earth Observation satellites and sensors.

LADEE

Last time I reported on NASA launching mobile phones into orbit. On September 6 things got even weirder when NASA published a photograph of a frog inadvertently being launched during the launch of their LADEE Lunar probe. Apparently, the frog had been hiding in the launch pad water tank and was blown away when the water was released during the launch of the rocket. LADEE safely made it into orbit, eventually reached its orbit around the Moon on October 6, and has started collecting scientific data. The fate of the frog, however, is unknown.

After decades of inactivity, NASA has, within the past years, sent three spacecraft into lunar orbit (LRO, GRAIL A, and GRAIL B), and crashed one (LCROSS) into its surface. Now, LADEE is the fourth in line. It is the busiest period of unmanned lunar exploration for NASA since the days of Ranger, Lunar Orbiter, and Surveyor.

LADEE carries an ultraviolet and visible light spectrometer (UVS), the lunar dust experiment (LDEX), a neutral mass spectrometer (NMS), and a laser communications experiment (LLCD). Depending on the amount of fuel needed for manoeuvers, it will be orbiting the Moon for 100 days, after which it will be directed to impact the far side of the Moon.

Fengyun-3

China's third meteorological satellite in the Fengyun series was launched from Taiyuan Space Center on September 23 into a sunsynchronous orbit with a 10:10 local time descending node. Fengyun-1 and Fengyun-2 were launched in May 2008 and November 2010 respectively.

Kuaizhou-1

On September 25, China launched a brand new rocket, called Kuaizhou (quick-vessel). Kuaizhou is an all solid launch rocket. Small solid fuelled rockets do not require complex launch facilities and could be launched from a number of sites to reach various orbits with short notice prior to a launch.

The rocket carried a satellite called Kuaizhou-1. The satellite is supposed to have an optical resolution of 1.2 meter. Kuaizhou-1 successfully made orbital adjustments to observe the aftermath of the September 24 Pakistan earthquake. There are plans to launch the Kuaizhou-2, which has a much higher resolution of 30 cm, somewhere next year.

Yaogan-18

On October 29, China launched another Yaogan Weixing satellite, number 18. The Chinese media refer to the satellite as a new remote sensing satellite that will be used for scientific experiments, land survey, crop yield assessment, disaster monitoring and so on. However, western analysts believe this class of satellites to be used for military purposes. The Yaogan-18 likely carries a synthetic aperture radar.

Mars Orbiter Mission

If you're looking for a little peace and quiet, don't go to Mars. The planet is going to be crowded in the coming years.

On November 5, India began its Mars Orbiter Mission with the launch of the Mars Orbiter Spacecraft. MOS was inserted in an elliptical Earth orbit and it will use its own propulsion to enter solar orbit.

ISRO seems to be using the name Mars Orbiter Spacecraft for the vehicle (as opposed to the mission). The Indian media are also using the nickname Mangalyaan, but this is never used by ISRO. The correct name seems to be the somewhat boring Mars Orbiter Mission (MOM).

The third stage rocket re-entered off the coast of Peru after half an orbit. The fourth stage and MOM payload entered a highly elliptic orbit with first perigee over the South Pacific. On November 7 the orbit was raised and on November 8 a 70,000-km apogee was reached. A further burn on November 10 fell short of the planned power, raising the apogee less than planned. A makeup burn on November 11 fixed the problem, and a burn on November 15 put the spacecraft in an 850 by 200,000 km orbit. Solar orbit insertion is scheduled for around December 1.

MAVEN

The Mars MAVEN mission was launched on November 18. It was designed to enter Martian orbit and study the escape of gases from the upper Martian atmosphere. It carries instruments for measuring the composition and isotopes of neutral gases and charged ions. Furthermore it carries an imaging ultraviolet spectrometer for measuring the global characteristics of the upper atmosphere and ionosphere.

By November 25, the spacecraft was more than 2.2 million kilometres from Earth. The next big milestone is a trajectory correction manoeuvre on December 3, followed by the power up of the eight science instruments between December 4 and December 10. Next year September, MAVEN is expected to arrive at Mars.

Mars

The Russian billionaire Dennis Tito has revealed a plan for sending two astronauts to the red planet in December 2017. Due to the opportunity of a rare alignment of Mars and Earth the mission would require minimal rocket fuel. The mission would consist of two separate trips. The first launch would be a NASA Orion program rocket delivering the first vehicle in orbit of Mars. The second would take the Cygnus capsule with two astronauts to the first vehicle. The whole mission to Mars and back would take around 500 days. Any volunteers? However, the window of opportunity for takeoff is very narrow and the rocket would have to launch between Christmas Day 2017 and January 5 2018. This could prove difficult as the new NASA Space Launch System (SLS) is currently still under development, and delays in space travel are notoriously common.

In an effort to rehabilitate its space program after the embarrassing failure of its Phobos-Grunt mission in 2011, Russia plans to land a rover on Mars in 2018. Phobos-Grunt carried the LIFE module to test whether micro-organisms can survive a few years in deep space. Unfortunately, the space probe ended up in the wrong orbit around Earth and later crashed somewhere in the Pacific. It would be interesting to know if it actually did find any life after all. Frogs maybe?

Furthermore, there is a collaboration between Finnish, Russian and Spanish participants on a plan to deliver several dozen landers to Mars to form a meteorological observation network (MetNet) on the surface. The objective is to establish a widespread surface observation network on Mars to investigate the planet's atmospheric structure, physics and meteorology.

GOCE

Talking about spectacular crashes, on November 11, ESA's GOCE mission ended with a beautiful bang. The satellite disintegrated high in the atmosphere. GOCE, the Gravity field and steady-state Ocean Circulation Explorer, was launched in March 2009 and has been mapping variations in the Earth’s gravity with unrivalled precision. The result is the most accurate shape of the geoid ever produced. In addition to that, it also mapped ocean surface currents, the upper atmosphere density

and wind speeds, the geodynamics in the Earth's lithosphere, sound waves from earthquakes, the Moho or the Mohorovičić discontinuity between the Earth's crust and the mantle, and ice mass variations.

The SWARM mission

The SWARM constellation was successfully launched on November 22. The Swarm mission will measure the Earth's magnetic field with unprecedented accuracy. The three Swarm satellites will fly in a triangular formation to build up a 3D view of the Earth's magnetic field, but also its changes. For instance, in the last hundred and fifty years the magnetic field of the Earth has weakened by some 10%. Eventually, but only probably in a couple of thousand years, the Earth's magnetic field might flip, this is called a geomagnetic reversal, as it did numerous times in the past. The latest complete reversal, the Brunhes–Matuyama reversal, occurred 780,000 years ago. A short reversal, known as the Laschamp event, occurred only 41,000 years ago. There are also instruments on board of Swarm for measuring the drag and density of the atmosphere. The Swarm mission is the fourth of ESA's Earth Explorer missions after GOCE, SMOS and CryoSat.

Upcoming launches

Satellite	Launch date
Kondor-E1	Nov 28, 2013
Amazônia-1	Dec, 2013
CBERS-3	Dec, 2013
ALOS-2	Dec, 2013
Egyptsat-2 (MisrSat-2)	Dec 23, 2013
BelarusSat-1	Jan 2014
PRSS-1	Jan 2014
SPOT-7	Jan 2014
Asnaro-1	Feb 2014
Meteor-M2	Feb 2014
Sentinel-1	Feb 2014
GeoEye-2	Mar 2014
Electro-L	Mar 2014
Hai Yang 2B	Mar 2014

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EARSeL eProceedings

New Publications in Vol. 12(2), 2013

Identifying multi-decadal changes of the Sao Paulo urban agglomeration with mixed remote sensing techniques: Spectral mixture analysis and night lights

Reinaldo Paul Pérez Machado, and Christopher Small

Abstract

Read full paper online: http://www.eproceedings.org

One of the first applications of satellite remote sensing imagery was to detect the size and shape of urbanized areas. Under many circumstances the mere identification of what is really urban is not clear. Smaller towns, diffuse development and varying degrees of spatial connectivity combined with the lack of an agreed upon definition of urban complicate the task. The proximity of urban development to spectrally similar fallow agricultural areas is a primary challenge of mapping urban development with satellite imagery.

As sensors on satellites became more sophisticated and technically advanced, urban applications of remote sensing used higher spatial resolution imagery. However, moderate spatial resolution is widely used on non-urban applications because the synoptic spatial and retrospective temporal coverage is superior that offered by high resolution sensors. The most widely available imagery over the longest time period is provided by the Landsat missions. However, the 30 m spatial resolution of Landsat imagery combined with the spectral heterogeneity of urban land cover results in most urban areas being imaged as spectrally mixed pixels. Spectral mixture models may provide a physically based solution to the urban spectral heterogeneity because it is possible to reduce the dimensionality of the multispectral reflectance by converting it to areal fractions of land cover components, thus making interpretation easier. The spectral ambiguity of urban land cover is unavoidable but the challenge of mapping urban extent may be mitigated by using multiple sensors to image different characteristics of the urban environment.

The present analysis was based on a three component linear mixture model incorporating substrate, vegetation and dark targets, directly used for visualization on false colour composites of red, green & blue respectively. Fraction composites suggest the location and extent of urban development - both at the periphery and within Sao Paulo's urban agglomeration and its surroundings - but the spectral ambiguities with non-urban land cover remain a challenge.

Winter and summer image pairs were selected for quality and consistency of solar illumination for two time intervals: 1986-2005 and 2000-2010. Changes over both time periods were quantified in terms of changes in endmember fractions. The results show increases of substrate, greater than 10% of the pixel area, with equivalent reduction of vegetation and/or shadow fractions. From these increases in substrate fraction, together with the presence of night lights of higher intensity and concentration, we infer an increase in urbanized land cover. A quantitative and visual analysis of these changes at different spatial scales is presented.

Wide field synoptic imagery provided by the Defence Meteorological Satellite Program Operational Line Scanner (DMSP-OLS) indicates the presence of urbanized areas by imaging nocturnal lights. This sensor has been used by the Earth Observation group at NOAA NGDC to produce annual global composites of temporally stable nighttime lights since 1992. OLS night light imagery helps to differentiate non-urban substrate (i.e. exposed soil) from urbanized surfaces with different degrees of development, according to the intensity of the emitted light.

Analysis of the performances of hyperspectral lidar for water pollution diagnostics

Innokenti Sobolev, and Sergey Babichenko

Abstract Read full paper online: http://www.eproceedings.org

The paper is aimed at the analysis of the performances of hyperspectral lidar for detection and classification of oil pollution in water in comparison with a laser fluorosensor having a few discrete detection channels only. It is demonstrated that hyperspectral laser-induced fluorescence (HLIF) spectra include all relevant spectral information about the target in contrast to discrete detection channel sensor data. In order to extract significant features from HLIF data, a multi-resolutional analysis, namely the discrete wavelet transform (DWT), is applied. The feature extraction is automated using the sparsity-norm optimization method. The resulting features have a clear spectral representation and are used in automatic object classification. The classification results and selectivity are compared with discrete detection channel sensor data on a number of oil pollutants. The results of simulation experiments demonstrate the high value of classification accuracy and the ability to sub-classify similar organic compounds from single groups of objects. A comparison with discrete channel sensor data shows a significant increase in the overall performance of oil pollution detection and classification.

Model for detection and assessment of abiotic stress caused by uranium mining in European Black Pine landscapes

Lachezar Filchev, and Eugenia Roumenina

Abstract Read full paper online: http://www.eproceedings.org

The article presents the results obtained from a study for detection and assessment of abiotic stress through pollution with heavy metals, metalloids, and natural radionuclides in European Black Pine (Pinus nigra L.) forests caused by uranium mining using ground-based biogeochemical, biophysical, and field spectrometry data. The forests are located on a territory subject to underground and open uranium mining. An operational model of the study is proposed. The areas subject to technogeochemical load are outlined based on the aggregate pollution index Zc. Laboratory and field spectrometry data were used to detect the signals of abiotic stress at pixel level. The methods used for determination of stressed and unstressed black pine forests are: four vegetation indices (TCARI, MCARI, MTVI 2, and PRI 1) for stress detection, and the position, depth, asymmetry, and shift of the red-edge. Based on the "blue shift" and the depth and position of the red-edge, registered by the laboratory analysis and field spectral reflectance, it is established that coniferous forests subject to abiotic stress show an increase in total chlorophyll content and carotene. It has been found that the vegetation indices MTVI 2 and PRI 1, as well as the combination of vegetation indices and pigments may be used as a direct indicator of abiotic stress in coniferous forests caused by uranium mining.

Spatio-temporal constraints for emissivity and surface temperature retrieval: Preliminary results and comparisons for SEVIRI and IASI observation

Marilena Amoroso, Italia De Feis, Guido Masiello, Carmine Serio, Sara Venafra, and Philip Watts

Abstract Read full paper online: http://www.eproceedings.org

Infrared instrumentation on geostationary satellites is now rapidly approaching the spectral quality and accuracy of modern sensors flying on polar platforms. Currently, the core of EUMETSAT

geostationary meteorological programme is the Meteosat Second Generation (MSG). However, EUMETSAT is preparing for the Meteosat Third Generation (MTG). The capability of geostationary satellites to resolve the diurnal cycle and hence to provide time-resolved sequences or times series of observations is a source of information which could suitably constrain the derivation of geophysical parameters.

Nowadays, also because of lack of time continuity, when dealing with observations from polar platforms, the problem of deriving geophysical parameters is normally solved by considering each single observation as independent of past and future events. For historical reason, the same approach is currently pursued with geostationary observations, which are still being dealt with as they were with polar observations.

In this study we show some preliminary results on emissivity and surface temperature retrieval for SEVIRI observations, using the Kalman filter methodology (KF) and compare the retrievals with those obtained using IASI observations co-localized with SEVIRI ones using the times accumulation approach (Optimal Estimation OE). The Sahara desert was chosen as target area, and both SEVIRI and IASI data (infrared radiances and cloud mask) were acquired. The time period considered is that of July 2010 (the whole month). ECMWF analyses for the same date and target area have also been acquired, which comprise Ts, T(p), O(p), Q(p) for the canonical hours 0:00, 6:00, 12:00 and 18:00. Moreover, for the purpose of developing a suitable background for emissivity, the Global Infrared Land Surface Emissivity database developed at CIMSS, University of Wisconsin, derived by MODIS observations was used and was available from the year 2003 till 2011.

Concerning the performance of the two methodologies, the retrieval of skin temperature is almost equivalent. The agreement between OE and KF is fairly good if compared with ECMWF analysis for sea surface, while for land surface, OE and KF agree fairly well with ECMWF during the night, but at midday ECMWF shows a cold bias of 10 K and more. For emissivity the comparison with the UW/BFEMIS database for the same date and location is fairly good for both methods.

σ-IASI-β: a hyperfast radiative transfer code to retrieve surface and atmospheric geophysical parameters

Giuseppe Grieco, Carmine Serio, and Guido Masiello

Abstract Read full paper online: http://www.eproceedings.org

This paper describes an improved, faster, implementation of the σ-IASI model, with a new parameterization of radiative transfer in cloudy atmosphere. The model can compute up and/or downwelling spectral radiances, emitted from the Earth's system and their analytical Jacobians with respect to a set of geophysical parameters and the water vapour and carbon dioxide continua absorbing coefficients. The paper presents also its software implementation and a retrieval exercise of the tropospheric content of CO2, CO, N2O and CH4 on the Mediterranean Sea. The content of the gases is compared with the ground-based measurements of the Global Atmosphere Watch network. The innovation introduced in the model is the down-sampling of the look-up table by means of a spectral averaging of the layer optical depths on bins of 10â˜'2 cmâ˜'1 width before they are parameterized as a low order polynomial of temperature and, only for water vapour, of water vapour concentration itself to take into account the self-broadening effect.

The down-sampling of the look-up table is responsible for an additional speed-up which makes the code useful for almost real time retrieval applications and thus useful for operational purposes.

This code is a powerful tool also to check the validity of the molecular spectroscopic parameters. It is an evolution of the well-known code σ-IASI. It has been developed in the context of the Infrared Atmospheric Sounding Interferometer (IASI) of the European Space Agency EUMETSAT, but it is well

suited for every nadir viewing satellite, airplane sensor or ground-based sensor with a sampling rate in the range 0.1 - 2 cm-1.

Teaching Materials, Encyclopaedia, Easy-to-use image processing – THE FIS Learning Portal on Remote sensing

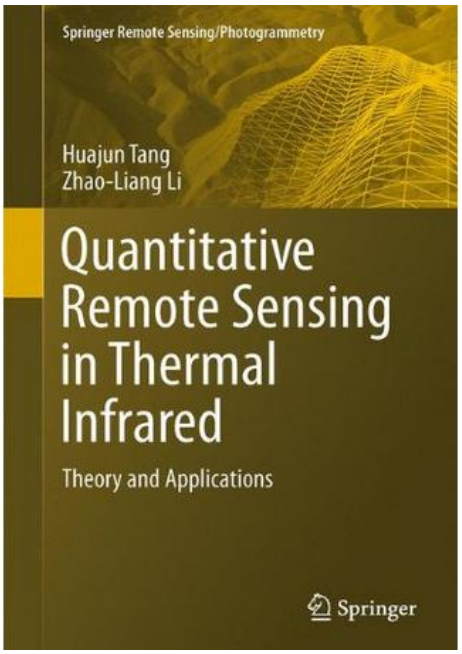
Roland Goetzke, Henryk Hodam, Andreas Rienow, and Kerstin Voß

Abstract Read full paper online: http://www.eproceedings.org

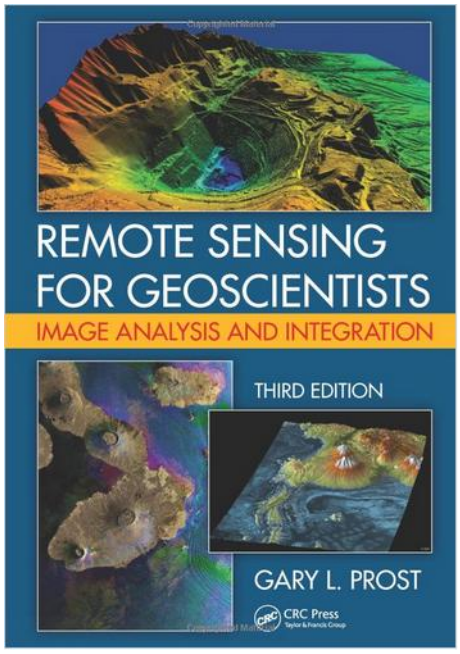
In this contribution we present a web based learning portal on the subject of remote sensing for schools. The learning portal contains interactive material that is intended to give young students a new understanding of the value of natural sciences by connecting curriculum-oriented topics with specific exemplary applications from topics of remote sensing and digital image analysis. Above that, the portal contains comprehensive background information on remote sensing and specific analysis tools enabling individual exploration of satellite images. Both, the learning portal and the learning material are following a moderate constructivist approach encouraging students to discover the material independently. Here, we focus on the portal's learning management functions, giving teachers the opportunity to analyse their students' results. Furthermore, we present our first experiences with the portal after half a year of service.

Book Releases

Quantitative Remote Sensing in Thermal Infrared: Theory and Applications is available from Springer written by Huajun Tang and Zhao-Liang Li.



The book provides a comprehensive and advanced overview of the basic theory of thermal remote sensing and its application in hydrology, agriculture, and forestry. Specifically, the book highlights the main theory, assumptions, advantages, drawbacks, and perspectives of these methods for the retrieval and validation of surface temperature/emissivity and evapotranspiration from thermal infrared remote sensing. It will be an especially valuable resource for students, researchers, experts, and decision-makers whose interest focuses on the retrieval and validation of surface temperature/emissivity, the estimation and validation of evapotranspiration at satellite pixel scale, and the application of thermal remote sensing.



The third edition of Remote Sensing for Geoscientists: Image Analysis and Integration written by Gary L. Prost was published by CRC Press.

The book is the third edition of the Remote Sensing for Geologists: A Guide to Image Interpretation. This edition applies to a broad spectrum of geosciences, not just geology; stresses that remote sensing has become more than photointerpretation; and emphasizes integration of multiple remote sensing technologies to solve Earth science problems. The text reviews systems and applications, explains what to look for when analyzing imagery, and provides abundant case histories to illustrate the integration and application of these tools.

In new edition can be found: broader coverage to include integration of multiple remote sensing technologies, expanded with significant new illustrations in color and reviews of new satellites and sensors and analysis of imagery for geobotanical remote sensing, remote geochemistry, modern analogs to ancient environments, and astrogeology.

The book covers how to initiate a project, including determining the objective, choosing the right tools, and selecting imagery. It describes techniques used in geologic mapping and mineral and hydrocarbon exploration, image analysis used in mine development and petroleum exploitation, site evaluation, ground water development, surface water monitoring, geothermal resource exploitation, and logistics. It also demonstrates how imagery is used to establish environmental baselines; monitor land, air, and water quality; map hazards; and determine the effects of global warming.

Forthcoming EARSeL Conferences

7th Workshop on Remote Sensing of Land Ice and Snow: Cryosphere: Monitoring for climate studies and operational applications

At University of Bern, Institute of Geography
3 – 6 February 2014, Bern, Switzerland **More info**

General

The EARSeL Special Interest Group on Land Ice and Snow (SIG LIS) aims to bundle methodological and application-oriented research activities in this thematic field. The workshops shall provide a platform for scientific exchange and discussion on a variety of related topics.

The workshop invites presentations on all fields of environmental research focussing on snow and ice as proxy for changing cryosphere, methods for retrieving cryospheric parameters from various types of remote sensing data, theoretical basis of inversion methods and their application, state-of-the-art retrieval algorithms, data assimilation of remote sensing data and in situ observations in process models, current and planned sensors for snow and ice, etc. The workshop also offers the possibility for sessions covering preparations and successful realization of field campaigns in mountainous and polar regions. The last day is dedicated for the ESA-Globsnow User Consultation Meeting. All participants are invited to attend the meeting.

Workshop Topics

- Glaciers and Ice Caps
- Snow cover (continental to global scale)
- Snow albedo and climate
- Snow hydrology
- New technologies (sensors/methods)
- Snow modelling and data assimilation
- ESA Globsnow contribution (special session included in the workshop)

For more detailed information please visit the Workshop website at:
http://www.earsel.org/SIG/Snow-Ice/workshops.php.

5th Land Use & Land Cover Workshop

At Humboldt-Universität zu Berlin

17 – 18 March 2014, Berlin, Germany **More info**

General

Landsat-8 and the upcoming Sentinels, together with an increasing number of free-access EO data archives open up new possibilities for space-based analysis of land use and land cover chance. This first joint workshop of the EARSeL SIG LULC and NASA's LCLUC Science Team focuses on the new frontiers in remote sensing analyses that result from these new possibilities.

The workshop is organised in half-day sessions around 4 themes. Each session contains 2 keynotes by international experts, intensive poster presentations and discussions, and wrap-up discussions.

- New sensors and emerging opportunities for land use and land cover monitoring. This session will offer space for presentations on recent and future missions including their associated data policies, formats, standard products, and will highlight emerging opportunities for LUCC mapping.
- Advances in Land-Cover and Land-Use Science using Earth Observations. This session provides examples of recent land use studies that incorporate remotely sensed data.
- Mining the archives: better use of existing data for long-term LUCC studies. This session will highlight the opportunities and challenges for making better use of existing image archives, including topics such as mass-processing, automated image analyses, compositing, time series analysis and sensor inter-calibration for LUCC applications.
- Frontiers in Remote Sensing of Land Cover and Land Use. This session will be focused on new frontiers in remote sensing of land cover and land use change.

For more detailed information please visit the Workshop website at:
https://www.geographie.hu-berlin.de/labs/geomatics/events/earsel-en/workshop.

34th EARSeL Symposium 2014 & Workshops

European remote sensing - new opportunities for science and practice
16 – 20 June 2014, Warsaw, Poland **More info**

Call for papers

The 34th EARSeL Symposium entitled “European remote sensing - new opportunities for science and practice” will be held in Warsaw, Poland from 16th to 20th June 2014. It will be accompanied by a Joint Workshop of EARSeL Special Interest Groups 3D Remote Sensing and Urban Remote Sensing, Warsaw, 19-20 June 2014 and a Workshop of SIG Geological Applications, Warsaw, 19-20 June 2014 All scientists are encouraged to submit their research papers.

For more detailed information please refer to the “News from EARSeL” section of this issue or to the Symposium website at: http://www.earsel.org/symposia/2014-symposium-Warsaw.

Other Conferences

7-9 January, 2014: SENSORNETS 2014.
Lisbon, Portugal.

3-7 February, 2014: Global Vegetation Monitoring and Modeling (GV2M).
Avignon, France.

12-14 February, 2014: EuroCOW 2014: the Calibration and Orientation Workshop.
Barcelona, Spain.

17-19 February, 2014: International LiDAR Mapping Forum.
Denver, Colorado, USA.

5-7 March, 2014: Image Information Mining Conference: The Sentinels Era.
Bucharest, Romania.

19-21 March, 2014: 2014 Global Land Project Open Science Meeting.
Berlin, Germany.

23-27 March, 2014: The Sixth International Conference on Advanced Geographic Information Systems, Applications, and Services – GEOProcessing 2014.
Barcelona, Spain.

23-28 March, 2014: ASPRS 2014 Annual Conference and JACIE Workshop.
Louisville, Kentucky, USA.

14-16 April, 2014: Wavelength Conference 2014.
Malvern, Worcestershire, United Kingdom.

22-23 April, 2014: 7th IGRSM International Remote Sensing & GIS Conference and Exhibition (IGRSM2014): Geospatial Innovation for Nation Building.
Kuala Lumpur, Malaysia.

27 April – 02 May, 2014: European Geosciences Union General Assembly 2014, Remote sensing in Oil and Gas Exploration, Development and Production.
Vienna, Austria.

6-8 May, 2014: SPIE DSS 2014.
Baltimore, USA.

21-23 May, 2014: GEOBIA 2014: 5th International Conference on Geographic Object-Based Image Analysis.
Thessaloniki, Greece.

22-23 May, 2014: Symposium: Remote Sensing for Conservation - ZSL 2014.
London, United Kingdom.

Summer Schools and Advanced Courses

SplitRS '14/SPLIT Remote Sensing Summer School
22-23 May 2014, Split, Croatia
Registration**: 01 February - 01 April 2014**

2014 GeoInformatics Summer Camp and 11th ISPRS SC and WG VI/5 Summer School
22-28 May 2014, Wuhan University, Wuhan, China
Registration deadline**: 15 March 2014**

International Summer School GeKo 2014
26 May - 6 June 2014, University of Applied Sciences, Frankfurt, Germany
Registration will be possible until **31 March 2014**

PhD Summer School Remote Sensing for Wind Energy
10-13 June 2014, Technical University of Denmark, Roskilde, Denmark
Registration deadline: to be announced.

Summer School Radar/SAR 2014: International Summer School on Radar/SAR
4-11 July 2014, Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR, Bonn, Germany
Registration deadline: **18 March 2014**

International Summer School in Glaciology
6-16 August 2014, University of Alaska (UAF), McCarthy, Alaska
Application deadline: **15 February 2014**

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