ForestSAT 2014

A bridge between forest sciences, remote sensing and geo-spatial applications

4-7 November 2014, Riva del Garda (TN), Italy

Conference program

FONDAZIONE EDMUND MACH
www.fmach.it

SISEF
Italian Society of Silviculture and Forest Ecology
Working Group on Forest Geomatics
www.sisef.org

MountFor
EFI Project Center on Mountain Forests

Associazione Italiana di Telerilevamento
ISPRS - ASITA
Italian Society of Remote Sensing
www.aitonline.org

Italian Academy of Forest Sciences
www.aisf.it

Consiglio Nazionale delle Ricerche
National Research Council
www.cnr.it

CRA
CONSIGLIO PER LA RICERCA E LA SPERIMENTAZIONE IN AGRICOLTURA
Agricultural Research Council
www.entecra.it

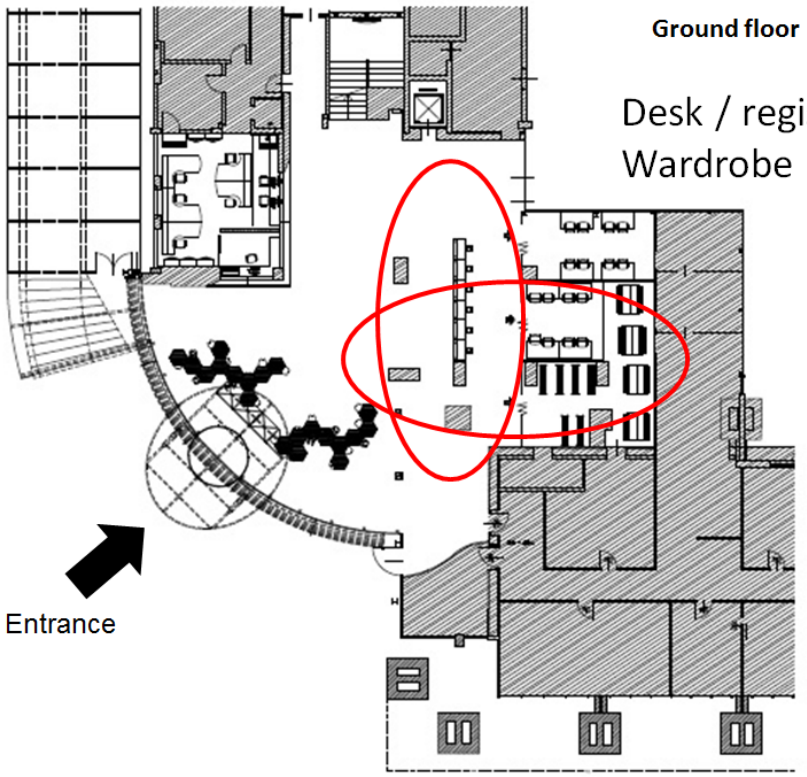
forestlab.net
Network of Forest Geomatics Laboratories
www.forestlab.net

www.forestsat2014.com

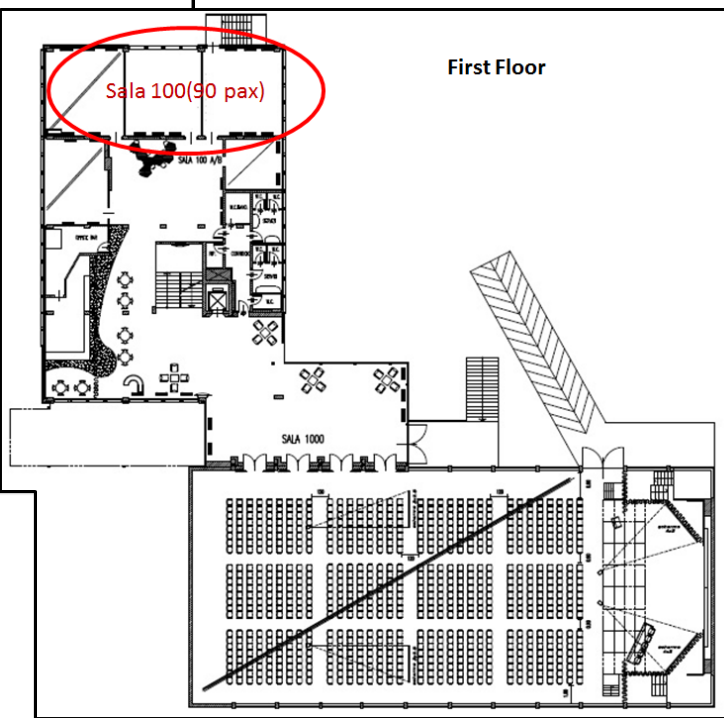
ForestSAT 2014

Ground floor

Desk / registration
Wardrobe



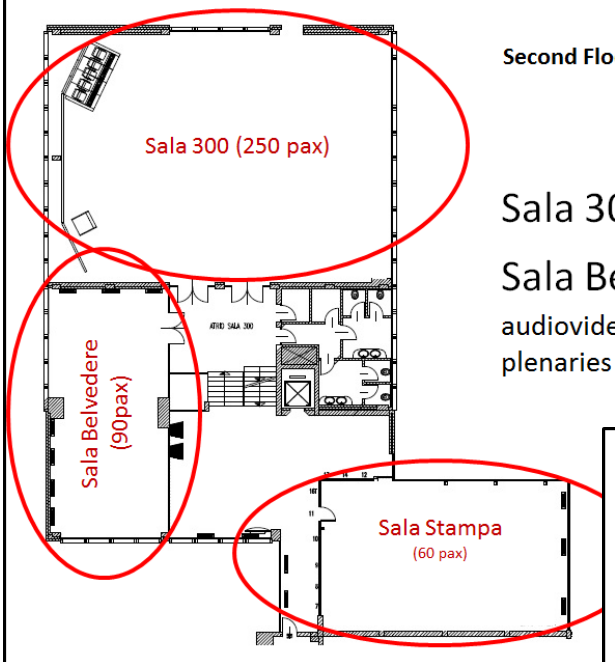
First Floor



Second Floor

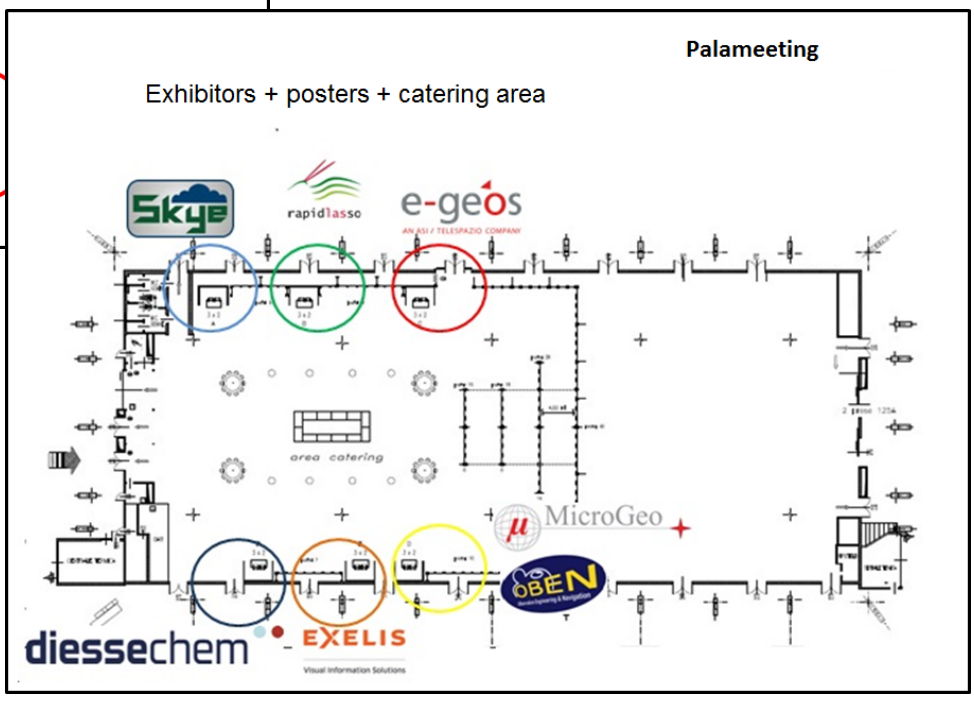
Sala 300 +

Sala Belvedere in audiovideo connection for plenaries



Palameeting

Exhibitors + posters + catering area



WELCOME TO FORESTSAT 2014

ForestSAT2014 is the 6th international conference in a series focusing on the applications of forest geomatics (the SAT of ForestSAT is for Spatial Analysis Techniques not for satellites!).Previous conferences have taken place in Scotland, Sweden, France, Spain and USA.

ForestSAT2014 conference is aimed at promoting the integration of earth observation with other geo-spatial applications and traditional forest sciences. The conference covers all possible scientifically-based developments and applications of remote sensing and GIS tools for monitoring, mapping or modeling forest systems. Aiding a better understanding of their functioning and supporting their inventory and sustainable management.

We are happy to host ForestSAT2014 for the first time in Italy. We organized it in the picturesque town of Riva del Garda, located on the north shore of Lake Garda, which is the largest lake in Italy. In the 17th century, Lake Garda became a popular destination, the list of its guests includes Goethe, Freud, Nietzsche, the Mann brothers, Kafka, Lawrence.

Fondazione Edmund Mach is the very local host, but the conference is the result of the cooperation between a large number of scientific organizations that worked together to create the largest ForestSAT conference ever: more than 300 delegates with more than 330 contributions organized in 37 oral sessions and a non-stop poster session. 7 keynote speeches and, for the first time in ForestSAT, 2 courses (on LASTOOLS for manipulating Airborne Laser Scanning data and on Open Source geospatial tools for forest remote sensing) complete the conference program.
In this ForestSAT conference we also have for the first time 6 exhibitors, this probably means that our conference is starting to became interesting for the industry too.

We worked very hard in cooperation with scientists responsible for invited sessions to create oral tracks which may be as much homogeneous as possible. We hope this effort results in a strong thematic consistency of contributions which are included in the same session. This should stimulate a more interesting scientific debate.

My good friend Ronald McRoberts is used to say that a conference is successful when you go back home after it taking with you some good ideas for a couple of future experiments. This is what we wish you all! But we also hope that thanks to ForestSAT2014 you will meet new interesting people, you will have ideas for setting up new international cooperation, and you will be stimulated to create new projects. This will help the growth of our community and at a very end will contribute to a better comprehension of our forests.

So, welcome in Italy at Riva del Garda, and… enjoy ForestSAT2014!

Gherardo Chirici

ForestSAT 2014 Director

SCIENTIFIC COMMITTEE

Gregory Asner, Stanford University (US)

Frédéric Baret, INRA (FR)

Annemarie Bastrup-Birk, European Environmental Agency (International)

Piero Boccardo,Politecnico di Torino(IT)

Lorenzo Bruzzone,Università di Trento (IT)

Javier Cano,Scuela de Ingeniería Forestal de la Universidad Mayor in Santiago (CN)

Lin Cao,Nanjing Forestry University (CN)

Luis Carvalho,Universidade Federal de Lavras (BR)

Gherardo Chirici,Università degli Studi di Firenze (IT)

Warren Cohen,USDAForest Service (US)

Richard Fournier,Université de Sherbrooke (CA)

Damiano Gianelle,Fondazione Edmund Mach (IT)

Hubert Hasenauer,BOKU(AT)

Ross Hill,Bournemouth University (UK)

Yasumasa Hirata,Forestry and Forest Products Research Institute (JP)

Barbara Koch,University of Freiburg(DE)

Michael Koehl,World Forest Institute(DE)

Tatjana Koukal,BOKU (AU)

Erik Lindquist,FAO (International)

Steen Magnussen, Canadian Forest Service (CA)

Jeffery Masek, NASAGoddard Space Flight Center (US)

Fabio Maselli, Consiglio Nazionale delle Ricerche (IT)

Alexander Maslov, Inst. of Forest Science RAS / R&D Center SCANEX (RU)

Daniel McInerney, Laboratoire des Sciences du Climatet de l'Environnement (FR)

Ronald McRoberts, USDA Forest Service (US)

David Miranda, University of Santiago de Compostela (ES)

Erik Næsset, Norwegian University of Life Sciences, (NO)

Ross Nelson, NASA Goddard Space Flight Center (US)

Håkan Olsson, Swedish University of Agricultural Sciences (SW)

Simonetta Paloscia, Consiglio Nazionale delle Ricerche (IT)

Stuart Phinn, University of Queensland (AU)

Jesus San MiguelAyanz, JRC European Commission, International

Mathias Schardt, Joanneum Research and Graz University of Technology (AT)

Steve Stehman, State University of New York (US)

Juan Suarez, Forest Research (UK)

Margarida Tomè, Instituto Superior de Agronomia (PT)

Erkki Tomppo, METLA (FI)

Frieke Van Coillie, Ghent University (BE)

Lars Waser, WSL National Forest Inventory (CH)

Joanne White, Canadian Forest Service (CA)

Michael Wulder, Canadian Forest Service (CA)

Organizing Committee

Gherardo Chirici, Università di Firenze (IT)
Giorgio Alberti, Università di Udine (IT)
Maureen Duane, Oregon State University (US)
Davide Travaglini, Università di Firenze (IT)
Alessandro Montaghi, Aarhus University (DK)
Alberto Mattedi, FoxLab Joint CNR-FEM Initiative (IT)
Michele Dalponte, Fondazione Edmund Mach (IT)
Giovanni Lopez, Università del Molise (IT)
Alessandro Gretter, Fondazione Edmund Mach (IT)
Cristina Castellani, Fondazione Edmund Mach (IT)

Steering Committee

Gherardo Chirici, Università degli Studi di Firenze (IT)

Piermaria Corona,CRA-SEL (IT)

Marco Marchetti,Università del Molise (IT)

Roberto Tognetti, Università del Molise (IT)

Damiano Gianelle, Fondazione Edmund Mach (IT)

Franco Miglietta,FoxLab Joint CNR-FEM Initiative(IT)

Ronald McRoberts, Forest Service USDA (US)

Warren Cohen, Forest Service USDA(US)

Juan Suarez, Forest Research (UK)

David Miranda, University of Santiago (ES)

TatjanaKoukal,BOKU(AT)

Ross Hill, Bournemouth University (UK)

PROGRAM OVERVIEW

4 November

Tuesday	OPEN 14:00	16:00 - 18:00
	Registration	Welcome icebreaking

5 November

Wednesday	OPEN 07:30	08:00	09:30	ROOM	09:45	11:15	11:45	13:15	14:15	15:45	16:15	17:45 - 19:00
	Registration	Welcome	move to sessions	SALA 300	(I) BGC H. Hasenauer	Coffee Break	(I) STAT P. Corona L. Fattorini	Lunch	(I) SPATIAL L. Waser	Coffee Break	(I) HEALTH J. Suàrez	Poster session & wine tasting
		Steve Running		SALA 100	NFI M. Dees		FOREST MANAGEMENT J. Luther		FOREST MAPPING M. Marchetti		BIOMASS-CARBON I. Woodhouse	
		Lorenzo Fattorini		SALA BELVEDERE	FIRE-RISK W. Cohen		FUSION F. Álvarez-Taboada		STRUCTURE A. Bastrup-Birk		TLS F. Morsdorf	
				SALA STAMPA	HYPER R. Seitz		LEAF R. Tognetti		Lidar Course - I part		Lidar Course - II part	

6 November

Thursday	OPEN 07:30	08:15	09:30	ROOM	09:45	11:15	11:45	13:15	14:15	15:45	16:15	17:45	19:00
	Registration	Jesus San-Miguel Ayanz	move to sessions	SALA 300	(I) TRAJ W. Cohen S. Healey	Coffee Break	(I) LiDAR E. Naesset	Lunch	(I) REDD-FLEGT R.E. McRoberts	Coffee Break	(I) OBIA F. Van Coillie	Poster session	Bus to social dinner
		Marvin Bauer		SALA 100	(I) SAR S. Paloscia		LARGE-SCALE H. Olsson		NOVEL M. Dalponte		(I) DISTURBANCES M. Schardt		
				SALA BELVEDERE	FLUXES F. Maselli		PHENOLOGY M. Danson		WILD S. Goetz		NON-ALS HEIGHT T. Koukal		
				SALA STAMPA	PLANTATIONS Y. Hirata		PROX L. Vescovo		Open source Course - I part		Open source Course - II part		

7 November

Friday	OPEN 07:30	08:00	09:30	ROOM	09:45	11:15	11:45	13:15	14:15	15:45	16:15	18:00
	Registration	Susan Ustin	move to sessions	SALA 300	(I) BIODIVERSITY R. Hill	Coffee Break	(I) MULTI-IMAGE J. White	Lunch	(I) TROP-BIO H. Olsson	Coffee Break	Plenary session Round table: Future of ForestSAT	End of ForestSAT2014
		Josep Peñuelas		SALA 100	VALIDATION R.E. McRoberts		PROJECTS D. Miranda Barros		POST-FIRE L. Carvalho			
		Frank Veroustraete		SALA BELVEDERE	TRENDS C. Goméz		DEFORESTATION Y. Hirata		SINGLE-TREE D. Gianelle			

Tuesday, November 4th

14.00-18.00 REGISTRATION at the Reception of Riva del Garda Fierecongressi

16-18.00 **Welcome icebreacking cocktail**

Wednesday, November 5th

7.30-8.00 REGISTRATION

8.00-9.30

Welcome to ForestSAT 2014
Gherardo CHIRICI, Università di Firenze

SALA 300+BELVEDERE

Keynote: **The potential role of global forests in mitigating climate change**
Steve RUNNING, University of Montana

Keynote: **The use of LiDAR information to reduce nonresponse bias and improve accuracy of volume estimates in forest inventories**
Lorenzo FATTORINI, Università di Siena

9.45-11.15

SALA 300

Using biogeochemical-mechanistic models to assess the ecosystem fluxes, Invited

Hubert HASENAUER, *moderator*

A productivity and carbon cycle analysis for a tropical montane rainforest. Sebastian PAULICK, C DISLICH, A HUTH

Carbon losses due to tropical forest fragmentation: a forgotten process in the global carbon cycle? Andreas HUTH, R FISCHER, K BRINCK, J GROENEVELD, S PUETZ

Contribution to a higher accuracy of aboveground biomass estimations in tropical forests: linking LiDAR data and

SALA 100

Supporting and improving NFIs

Matthias DEES, *moderator*

The role of aerial photographs in the Swiss national forest inventory: review and perspectives. Berthold TRAUB, C GINZLER, A LANZ

Comparing the precision of biomass estimates from a sample based forest inventory and a model-assisted approach utilizing small footprint LiDAR data-A case study from Central Kalimantan. Paul MAGDON, ES PURNAMA, E GONZÁLEZ FERREIRO, C PÉREZ, C KLEINN

An optimal linear model parameter estimation method for forest inventory with a reduced number of field plots. Virpi JUNTTILA,

SALA BELVEDERE

Fire risk assessment

Warren COHEN, *moderator*

Decomposing MODIS NDVI time series to monitor changes in annual and evergreen vegetation in Mediterranean forests – Implications for management and fire risk assessment David HELMAN, IM LENSKY, Y OSEM, N TESSLER

Validation of a new broadband spectral index to map live fuel moisture content with MODIS. Carmine MAFFEI, L BONORA, L BOTTAI, M MENENTI

Are low-density airborne LiDAR data suitable to map Mediterranean fuel types? Alessandro QUATRINI, A BARBATI, P CORONA

SALA STAMPA

Hyperspectral EO

Rudolf SEITZ, *moderator*

Retrieving tree species and tree cover density maps from hyperspectral images using the ISMA unmixing approach in a multitemporal setup. Sandra DOTZLER, H BUDDENBAUM, J HILL

Lessons learned from the first carbon neutral airborne hyperspectral mission in Costa Rica: Mission Airborne Carbon 13. Margaret KALACSKA, R SOFFER, JP ARROYO-MORA

Subpixel vegetation class cover estimation with MixSSMA: a Mixture of Stratified Spectral Mixture Analysis models. Alexander KOLTUNOV, C RAMIREZ

forest simulations. Rico FISCHER, NKNAPP, AHUTH

Multi-year simulation of forest carbon fluxes in Italy by the combination of ground and remotely sensed data. Marta CHIESI, G CHIRICI, P CORONA, DPAPALE, R SALVATI, F MASELLI

The use of a process based canopy photosynthesis model for the evaluation of a satellite-based primary productivity model. Nikolaos MARKOS, S STAGAKIS, T VANIKIOTIS, E LEVIZOU, A KYPARISSIS

TKAURANNE

Automated production of forestry thematic maps – a concept of remotely sensed data fusion in the Czech NFI2. Filip HÁJEK, RADOLT, M KANTOROVÁ, KSTUDENÁ, OTOMANČÁK

Using model inputs from remote sensing to improve forest production forecast. Jackie ROSETTE, J SUÁREZ

Production of a nationwide forest attribute map of Sweden using airborne laser scanning and national forest inventory plot data. Håkan OLSSON, J WALLERMAN, K NORDKVIST, JJONZÉN, P AXENSTEN, N LINDGREN, M NILSSON, LL NILSSON, S LARSSON

MARCHETTI, F BOTTALICO, DTRAVAGLINI

Wildland-urban interface: characterization using Lidar and aerial photography as a tool for prevention and management of the fire risk on local scale. Sandra BUJÁN, MJ ENRÍQUEZ-GARCÍA, M CORDERO, D MIRANDA

Model of fire protection zone in the University Forest of Taxiarchi – Vrastama in Greece. Nikolaos S KARATZIDIS, E KARAGIANNIS,KAG DOUCAS,VC DROSOS, SAG LIAMPAS

Assessment of fire hazard zones in the forest landscape in Simitli Municipality (Bulgaria) on the base of terrestrial and satellite data. Daniela A VETISYAN, R NEDKOV

Tree species mapping by combining hyperspectral with LiDAR data. Pieter KEMPENEERS, F VAN COILLIE, W LIAO, M VERDONCK, K VANDEKERKHOVE

Estimating above ground biomass and biodiversity in Ghana tropical forests with LiDAR and Hyperspectral data. Gaia VLAURIN, Q CHEN, VLIESENBERG, RAVEZZANO, RVALENTINI

Preprocessing EO-1 Hyperion hyperspectral data applied to forests and vegetation classification. Youcef SMARA, Z HAMADACHE, S CHOUAF

11.15-11.45 BREAK – coffee, tea and refreshments

11.45-13.15

Statistical Issues, *Invited*

Piermaria CORONA and

Lorenzo FATTORINI, *moderators*

Estimation for inaccessible, non-sampled forest areas using model-based inference and remotely sensed auxiliary information. Ronald E MCROBERTS, E NÆSSET, T GOBAKKEN

Regression estimators in three-phase sampling. Daniel MANDALLAZ

Random-effect or spatial-autocorrelation? Inference on stand-level in remote sensing-assisted forest inventories. Johannes BREIDENBACH, R ASTRUP

Comparison of Model-Assisted Estimators for Two-Stage Cluster Sampling. Stephen STEHMAN

Recent Applications and Developments in Randomized Branch Sampling. Timothy G GREGOIRE, DLR AFFLECK, HT VALENTINE

Earth Observation for operational support to forest management and decision makers

Joan LUTHER, *moderator*

Use of high resolution satellite imagery for forestry management applications within New Zealand. Michael Stuart WATT

Estimating stem diameter distributions from airborne laser scanning data and their effects on long term forest management planning. Rami SAAD, J WALLERMAN, T LÄMÅS

Assessing stand structure of beech forests in the Ukrainian Carpathians using WorldView-2 satellite imagery. Natalia REHUSH, LT WASER

Initializing Climate Sensitive Forest Dynamics Models via Remotely Sensed Data. Michael FALKOWSKI, P FEKETY, A HUDAK, L NAGEL

Effect of natural disturbances on direct protection forests assessed by remote sensing. Giorgio VACCHIANO, EB MONDINO, R BERRETTI, R MOTTA, F MELONI

Data fusion from multiple platforms

Flor ALVAREZ-TABOADA, *moderator*

Classification of forests site types using airborne laser scanning data and satellite images. Inka Pippuri, P PACKALEN, M MALTAMO, KT KORHONEN, A SUVANTO, J PITKÄNEN

Synergistic use of satellite laser altimetry and optical imagery for developing forest biomass map in Japan. Masato HAYASHI, NSAIGUSA, H BORJIGIN, Y SAWADA, HOGUMA, Y YAMAGATA

Estimation of aboveground biomass in Siberian boreal forest from optical and radar remote sensing data. Martyna ASTELMASZCZUK-GÓRSKA, P RODRIGUEZ-VEIGA, CTHIEL, HBALZTER, CSCHMULLIUS

Fusing Landsat and PALSAR time-series data for detecting forest change. Johannes REICHE, J VERBESSELT, DHOEKMAN, M HEROLD

Upscaling studies from leaf to Earth Observation

Roberto TOGNETTI, *moderator*

Leaf to image scalability based on spectral libraries: a case study using forest plantations in Northern Costa Rica. Margaret KALACSKA, MFAGAN, JPARROYO-MORA

Measuring sun-induced fluorescence of forest ecosystems from ground and airborne scale. Micol ROSSINI, L ALONSO, A BURKART, M CELESTI, C CILIA, S COGLIATI, R COLOMBO, A DAMM, L GUANTER, J HANUS, T JULITTA, P KOKKALIS, J MORENO, C PANIGADA, F PINTO, A SCHICKLING, D SCHÜTTEMEYER, F ZEMEK, U RASCHER

UP-Scalinggross primary production in a Mediterranean savanna (Dehesa) ecosystem using field spectroscopy and radiative transfer models. Javier PACHECO-LABRADOR

Biophysical parameter retrieval of a forest by combining structural information and hyperspectral data. Gianfranco INDRIO

Producing country-level maps for climate change research and decision making in Finland: Climforisk web tool. Sanna HÄRKÖNEN, J PÖNTINEN, A LEHTONEN, T KALLIOKOSKI, P MUUKKONEN, A MÄKELÄ, S NEUVONEN, S SIRKIÄ, S NEVALAINEN, A POUTTU, M PELTONIEMI

High-resolution pan-tropical vegetation height and biomass mapping from ALOS/PALSAR and ICESAT/GLAS observations. Josef KELLNDORFER, J BISHOP, O CARTUS, W WALKER, A ROSENQVIST, M SHIMADA

Satellite based Forest Biomass Modelling: Fusion of Hyperspectral data and interferometric respectively photogrammetric canopy height models. Teja KATTENBORN, J MAACK, F ENßLE, B KOCH

Monitoring multi-layer canopy spring phenology of temperate deciduous and evergreen forests using low-cost spectral sensors. Youngryel RYU, G LEE, YH WANG

Leaf vs Canopy reflectance of Coniferous Species in Mexican Conservation Area. Jose M MADRIGAL

13.15-14.15 LUNCH

14.15-15.45

Spatially estimating forest variables, *Invited*

Lars WASER, *moderator*

A comparison of forest inventories based on aerial image matching and Airborne Laser Scanning data. Jonas BOHLIN, J WALLERMAN, JES FRANSSON

Timber volume predictions and their spatial autocorrelation based on four different 3D remote sensing methods. Johannes RAHLF, J BREIDENBACH, S SOLBERG, E NÆSSET, R ASTRUP

Forest attribute model extrapolation to adjacent areas by means of image based canopy height models. Christoph STEPPER, C STRAUB, HPRETZSCH

Accuracy of tree species separation in dependence on satellite sensor and classification method. Fabian ENßLE, AC BRAUN, B KOCH

Using auxiliary data to improve accuracy of NFI target parameter estimates: a case study based on normalized digital surface model and Czech NFI1 data. Radim ADOLT, HFILIP

Forest cover and forest type mapping

Marco MARCHETTI, *moderator*

Detection of trees outside forest (TOF) using digit aerial images – a cross-country approach. Christoph BAUERHANSL, L WASER, C GINZLER, F KROIHER, K OEHMICHEN, G CHIRICI, C VIDAL

Mapping of spruce and pine fractional coverage at 1 ha resolution for entire Bavaria. Clement A TZBERGER, M IMMITZER, K EINZMANN, M MATTIUZZI, WT NG, N PINNEL, A REICHMUTH, A WALLNER, M FROST, R SEITZ

Unmasking forest borderlines with a LIDAR-based automatic delineation. Alessandro ALIVERNINI, A BARBATI, P CORONA

Automatic Tree Species Recognition Using High Resolution Aerial Winter Imagery. Anton KUZMIN L KORHONEN, T MANNINEN, M MALTAMO

Comparison of maximum likelihood, support vector machine and random forest for forest type mapping. Emmanuelle CANO

Application of Haralick texture features for the discrimination of conifer and broadleaf dominate stands using digital aerial orthoimages. Hans-Joachim K LEMMT, B FOERSTER, C STRAUB, C STEPPER, R SEITZ, G LERMER

Assessing forest structure

Annemarie BASTRUP-BIRK, *moderator*

Robust characterization of forest canopy structure using Bayesian mixture models. Reik LEITERER, F MORSDORF, R FURRER, ME SCHAEPMAN

Comparison of forest structure estimates using discrete and full-waveform LiDAR metrics. Luis ARUIZ, T HERMOSILLA, AN KAZAKOVA, LM MOSKAL

Why Lorenz Ordering Applies to Airborne Laser Scanning Remote Sensing of Forests? Ruben VALBUENA, P PACKALÉN, M MALTAMO

Evaluation of the effect of accessibility on forest stand structure with airborne laser scanning data and GIS-based models. Jérémy BELLIER, JM MONNET, S DUPIRE, T CORDONNIER

Airborne spectro-directional information for large-area classification of forest structure. Tatjana KOUKAL

Continental Scale Forest and Woodland Structure Mapping using Landsat, ALOS Palsar and GLAS ICESat. Peter SCARTH

LiDAR Course

I PART

Hands-on LiDAR processing course

Organized by:
Martin Isenburg

15.45-16.15 BREAK – coffee, tea and refreshments

16.15-17.45

Tree health and forest decline

Invited

Juan SUÀREZ, *moderator*

Measuring photosynthesis of Beech Seedlings with VNIR and TIR Field Imaging Spectroscopy. Henning BUDDENBAUM, GROCK, J HILL, W WERNER

Spatial and temporal analysis of drought impacts on semi-arid woodlands. Timothy ASSAL, J SIBOLD

Multi-sensor and multi-scale system for monitoring forest health in *Pinusradiata* stands defoliated by *Lymantriadispar* in NW Spain. Flor ALVAREZ-TABOADA, E SANZ-ABLANEDO, JR RODRIGUEZ-PÉREZ, F CASTEDO-DORADO, MJ LOMBARDERO

Development of an algorithm for monitoring insect defoliation in pure scots pine stands using RapidEye data. Alexander MARX

Detecting damage precisely in coastal forest stands caused by the Tohoku earthquake tsunami using airborne LiDAR. EijiK ODANI

Biomass and carbon spatial estimation

Iain WOODHOUSE, *moderator*

Deriving airborne laser scanning based computational canopy volume for forest biomass and allometry studies. Jari VAUHKONEN, E NÆSSET, T GOBAKKEN

A tool for monitoring woody biomass (change) in woodland ecosystems. Simone VACCARI

On the potential of multi-temporal TanDEM-X data to assess the aboveground biomass (AGB) of two temperate forests in Germany. Christian BERGER, S ENGELHARDT, J TRUCKENBRODT, C THIEL, F ENSSLE, F FASSNACHT, C SCHMULLIUS, B KOCH

Using Leaf-on and Leaf-off LiDAR to model fine scale carbon storage from trees, understory, and coarse woody debris. Kristen Brubaker, M KAYE

High Resolution Carbon Estimation Using Remote Sensing and Ecosystem Modeling In NASA's Carbon Modeling System. Ralph DUBAYAH, ASWATANTRAN, KJOHNSON, G HURTT, M ZHAO, A FINLEY, R BIRDSEY, J O'NEIL-DUNNE, L DUNCANSON, W HUANG

Estimating aboveground biomass in the miombo woodlands of Tanzania combining field measurements and airborne laser scanning data. Liviu T ENE, E NÆSSET, T GOBAKKEN, E ZAHABU, TG GREGOIRE, G STHÅL

Terrestrial Laser Scanning

Felix MORSDORF, *moderator*

Assessing the accuracy of co-registered terrestrial and airborne laser scanning data in forests. Marius HAUGLIN, E NÆSSET, T GOBAKKEN

Monitoring tree health with dual-wavelength laser scanning. Rachel GAULTON, S HANCOCK, M DANSON

Improving the efficiency of forest inventory with Terrestrial LiDAR: what about Hand-held Mobile LiDAR? Sebastien BAUWENS, KCALDERS, A PIBOULE, S BONNET, P LEJEUNE

Towards improving forest structure ground truth using mobile terrestrial laser scanning. David KELBE

Comparing voxelisation methods of 3D terrestrial laser scanning with Radiative Transfer simulation to assess vegetation density. Eloi GRAU, S DURRIEU, R FOURNIER, JP GASTELLU-ETCHEGORRY, T YIN, N LAURET, M BOUVIER

Dynamic Forest Ecology Plot Layouts for Terrestrial Lidar. Ian L PAYNTER, E SAENZ, A ERB, F PERI, J VAN AARDT, C SCHAAF

LiDAR Course

II PART

Hands-on LiDAR processing course

Organized by:
Martin Isenburg

17.45-19.00 POSTER SESSION

Coffee Break partially supported by:

Thursday, November 6th

7.30-8.15 REGISTRATION

SALA 300+BELVEDERE

8.15-9.30

Keynote: **On the development of a Forest Information System for Europe**

JesusSAN-MIGUEL AYANTZ, European Commission, Joint Research Centre

Keynote: **Remote Sensing of Forests: Perspectives from the Editor of Remote Sensing of Environment**

Marvin BAUER, University of Minnesota

9.45-11.15

SALA 300

Trajectory methods, *Invited*

Warren COHEN & Sean HEALEY, *moderators*

Plot-based estimates of forest disturbance derived from Landsat time series data for the conterminous US. Warren B COHEN, ZYANG, SV STEHMAN

Using a remote sensing-based photo-interpretation approach to improve national forest inventory estimates of disturbance. Todd A SCHROEDER, SP HEALEY, GG MOISEN, TS FRESCINO, WB COHEN, CHUANG, RE KENNEDY, ZYANG

Estimates of U.S. forest biomass loss as a result of disturbance from a Landsat time-series approach. Scott L POWELL, WB COHEN, RE KENNEDY, SP HEALEY

Monitoring carbon emissions from deforestation and forest degradation in mosaic landscapes of Southeast Asia using dense Landsat time series. Dirk PFLUGMACHER, K GROGAN, S THONGMANIVONG, P HOSTERT

SALA 100

Forest monitoring by using high resolution SAR images, *Invited*

Simonetta PALOSCIA, *moderator*

Demonstrating the Potential of ALOS PALSAR Backscatter and INSAR Coherence for Forest Growing Stock Volume Estimation in Central Siberia. Christian THIEL, CSCHMULLIUS

Perspectives and interpretation of forest 3D structure for future spaceborne SAR missions. Astor T CAICOYA, D BAYER, P BIBER, M HEYM, K PAPATHANASSIOU, M PARDINI, M TELLO ALONSO

The potential of SAR images in identifying forest characteristics. Simone PETTINATO, S PALOSCIA, ESANTI

Measuring Forest Change in the Congo Basin 2007-2010 using Synthetic Aperture Radar. James EM WHEELER, K TANSEY, H BALZTER

Synergetic use of multi-annual and seasonal multi-frequency spaceborne SAR data for land cover mapping at national scale. Massimo BARBIERI

SALA BELVEDERE

Investigating forest fluxes with moderate resolution imagery

Fabio MASELLI, *moderator*

An integrated measurement and modeling approach for predicting landscape-level carbon and water budgets at the Priest River Experimental Forest in northern Idaho, USA. Andrew T HUDAK,P FEKETY, LWEI, J MARSHALL, TLINK, KKAVANAGH, MFALKOWSKI

How and where are terrestrial primary productivity regimes changing across the globe? Shanley D THOMPSON, TA NELSON, NC COOPS, MA WULDER

Analysis of forest GPP response to water stress in Spain. MA GILABERT, A MORENO, F MASELLI, B MARTÍNEZ, M CHIESI, S SÁNCHEZ, ACARRARA

A New Satellite-Based Methodology for Detecting Vulnerability of Forests to Climate Change. David JMILDREXLER, ZYANG, WB COHEN

Retrieving evapotranspiration in forests by combining geostationary and polar orbit satellite data. José MBARRIOS, N GHILAIN, AARBOLEDA, F GELLENS-MEULENBERGHS

SALA STAMPA

Monitoring forest plantations with different tools

Yasumasa HIRATA, *moderator*

Nearest Neighbour Estimation of Stand Yields and Associated Errors Using Aerial LiDAR in a Commercial Plantation Forest in New Zealand. Jonathan DASH, HMARSHALL, B RAWLEY, D PONT, MWATT

Yearly-variation Analysis of Acacia Plantation Forests using ALOS PALSAR Polarimetric Data. Shoko KOBAYASHI

Integrating hyperspectral and multitemporal Landsat imagery to monitor tree plantation expansion in northeastern Costa Rica. Matthew EFAGAN, RSDEFRIES, SS SESNIE, JPARROYO-MORA, CSOTO, RLCHAZDON

Estimating forest age and carbon accumulation in pine tree plantations across the southeastern US using G-LiHTLiDAR and Landsat disturbance maps. Matthew FAGAN, DCMORTON, BDCOOK, RFNELSON, JGMASEK

Analysis of oil palm plantations using multi-sensor and multi-temporal remotely sensed data in Indonesia and Malaysia. Valentin LOUIS,

Monte Carlo Simulation of Map Error in Carbon Assessments. Sean HEALEY, P PATTERSON, C GARRARD

Assessing boreal forest dynamics through space-borne measurements of greenness, chlorophyll fluorescence and model GPP. Sophia WALTHER, L GUANTER, M VOIGT, P KÖHLER, J JOINER, M JUNG

H BALZTER, S PAGE, P FEARN

Bats in an 'ecological desert': activity and abundance of batsin commercial coniferous plantations. Lucinda KIRKPATRICK

11.15-11.45 BREAK – coffee, tea and refreshments

11:45-13.15

Use of LiDAR for change estimation, *Invited*

Erik NAESSET, *moderator*

Indirect and direct lidar-assisted estimation of forest biomass change. Ronald E MCROBERTS, E NÆSSET, T GOBAKKEN, OMBOLLANDSÅS

Estimation of biomass change in montane forest in Norway. Ole M BOLLANDSÅS, T GOBAKKEN, E NÆSSET

Terrestrial LiDAR and 3D tree reconstruction modeling for quantification of biomass loos and characterization of impacts of selective logging in tropical forest of Peruvian Amazon. Multi-sensor assessment combining near and remote sensing. Jose Gonzalo de TANAGO, M HEROLD, V ABITABILE

Use of multi-temporal, multi-level remote sensing and field data for retrospective estimation of aboveground carbon levels and associated uncertainty on the Kenai Peninsula of Alaska over a ten-year period (1999-2009). Hans EANDERSEN

Estimating the efficacy of fuel reduction treatments with field data and multi-temporal Airborne Laser Scanner data. Nicholas S SKOWRONSKI, A SIMEONI, K CLARK, R KREMENS, W MELL, M GALLAGHER, E MUELLER

Large scale investigations

Håkan OLSSON, *moderator*

Will continental forest data enable downstream services for regional studies? Global and pan-European forest change maps under a closer look. Lucia M SEEBACH, P STROBL, P VOGT, P ADLER, A RÖDER, V BRAUNISCH

The Global Ecosystem Dynamics Investigation (GEDI) Lidar. Ralph DUBAYAH,S GOETZ,JB BLAIR, S LUTHCKE, S HEALEY, M HANSEN, M HOFTON, G HURTT,J KELLNER, T FATOYINBO, A SWATANTRAN, K PAPATHANASSIOU

Assessment of forest stand parameters in Britain using satellite lidar. Jackie ROSETTE, SLOS, J SUÁREZ, S BATHGATE

NI-SAR: A joint NASA/ISRO L-band SAR mission for large-scale forest assessment and monitoring. Josef M KELLNDORFER, BCHAPMAN, R DUBAYAH, P ROSEN, S SAATCHI, P SIQUEIRA

Our Ecosystem, a webmapping tool for publishing, sharing and managing remote sensing-derived data for forest applications. Karin VIERGEVER, V MOREL

COSMO-SkyMed X-Band SAR Constellation: Expanding VHR remote sensing capabilities in forestry monitoring. Filippo BRITTI, N BERTONI, L PIETRANERA, F VOLPE, L PAGLIA, V GENTILE, L CESARANO, G CAMMAROTA

Vegetation monitoring and phenology

Mark DANSON, *moderator*

Variability in the phenology of global land surfaces (1982-2012) using NDVI3g. Irene GARONNA, R DE JONG, ME SCHAEPMAN

Validation of main phonological key stages estimation from MODIS using in-situ observations. Federico FILIPPONI, M BOSCHETTI, A CAMPANARO, P COLANGELO, L BUSETTO, A OGGIONI

A study of 4D phenology in UK woodland canopies using a dual-wavelength full-waveform TLS. Lucy WALKER, FM DANSON, N ENTWISTLE

Comparison of data and methods to best estimate starting of season dates across RENECOFOR forest plots (France) based on MODIS imagery. Stefano TESTA, L BOSCHETTI, EBORGOGNOMONDINO

Survey on the state and dynamics of the forest vegetation in Haskovo Region (Bulgaria) by applying vegetation indices and climate data, based on satellite and terrestrial data. Daniela AVETISYAN, R NEDKOV

Understanding phenology of larch trees on alpine slopes in optical satellite imagery. Martin RUTZINGER, M BREMER, K SCHMIDTNER

Proximal sensing

Loris VESCOVO, *moderator*

Separating Structure Measurements of Leaves and Woody Materials of Forests with Dual-Wavelength Echidna Lidar. Zhan LI, A STRAHLER, C SCHAAF, G HOWE, J MARTEL, K HEWAWASAM, E DOUGLAS, S CHAKRABARTI, T COOK, I PAYNTER, EJ SAENZ, Z WANG, X YANG, CE WOODCOCK, DL BJUPP, M SCHAEFER, DS CULVENOR, GJ NEWNHAM, JL LOVELL

Evaluating the interaction of light with forest canopies using terrestrial laser scanning data in a ray-tracing environment. Renato CIFUENTES, D VANDER ZANDE, J FARIFTEH, L TITS, P COPPIN

Comparison of terrestrial laser scanners for forest canopy characterization. Mark DANSON, L WALKER, J ARMSTON, Z LI, G NEWNHAM, I PAYNTER, C SCHAAF, AH STRAHLER, Z ZHANG

Using consumer grade infrared cameras in proximal sensing systems for monitoring phenology. Wiebe NIJLAND, RDE JONG, NC COOPS

A Forest Measurement Method by using high density point cloud data derived from video images. Yasumichi YONE, H OGUMA

ForeStereo: 3D forest measurement based on stereoscopic hemispherical images. Fernando MONTES, MS ÁNCHEZ-GONZÁLEZ, R VALLEJO, I CAÑELLAS

13.15-14.15 LUNCH

14.15-15.45

REDD / FLEGT, *Invited*

Ronald E. MC ROBERTS, *moderator*

Suitability of Global Forest Change data to report forest cover estimates at national level in Gabon. Christophe SANNIER, RE MC ROBERTS, LV FICHET

Estimating forest carbon stock using a combination of remote sensing techniques for REDD+ implementation. Yasumasa HIRATA, N FURUYA, H SAITO, L CHIVIN, P CHEALY, T OTA, T KAJISA, N MIZOUE, T SANO

Remote Sensing for Detecting and Monitoring Forest Degradation in Tanzania, Africa. Sizwe MABASO, P BUNTING, A HARDY, S BROWN, R LUCAS

Satellite Data Time-series Analysis in Support of REDD+ and FLEGT Voluntary Partnership Agreements processes: an Opportunity for Synergies. Brice MORA, YTTEGEGNE, M HEROLD, M LINDNER

Monitoring costs, uncertainties, and economic benefits in REDD. Michael KOEHL, DPLUGGE, T BALDAUF

Use of ALS for estimating unusual forest variables

Michele DALPONTE, *moderator*

Predicting the occurrence of large-diameter trees using airborne laser scanning. Lauri KORHONEN, C SALAS, T ØSTGÅRD, V LIEN, T GOBAKKEN, E NÆSSET

A novel algorithm for detection of small trees in the forest-tundra ecotone. Marius HAUGLIN, OM BOLLANDSÅS, T GOBAKKEN, E NÆSSET

Mapping stand diversity of tropical rainforest in northern Borneo using airborne LiDAR. Keiko IOKI, S TSUYUKI, Y HIRATA, M-H PHUA, W WONG, ZY LING, SA JOHARI, H SAITO, G TAKAO

Spatially estimating forest wood fiber attributes with multi-scale ground, airborne and satellite data. Joan E LUTHER, OVAN LIER, RR FOURNIER, M BUJOLD, WW BOWERS, TAMOULTON

Exploring small-footprint full-waveform LiDAR derived canopy metrics for tree species classification in subtropical forests. Lin CAO, N COOPS, J DAI

Estimation of forestry stand variables and structural diversity in Mediterranean broadleaved and coniferous forests using Airborne Laser Scanning data. Francesca BOTTALICO, R GIANNINI, SMELE, M PUXEDDU, MMURA, G CHIRICI, D TRAVAGLINI

Earth observation for habitat modeling and wildlife monitoring

Scott GOETZ, *moderator*

Developing a Landscape Modeling Framework and a Time-Aware Forest Geodatabase for Land and Wildlife Management in Nova Scotia, Canada. David COLVILLE, R MILTON, S BASQUILL, J MACKAY, M GEMMELL

Analyzing the structure of moose (*Alcesalces*) calving sites by integrating GPS-collar data with airborne LiDAR data. Markus MELIN, J MATALA, L MEHTÄTALO, J PUSENIUS, P PACKALEN

Using ALS and Landsat data in an integrated habitat classification for wildlife management. Wiebe NIJLAND, NC COOPS, GB STENHOUSE

Predicting great ape habitat suitability in Central Africa. Nadine TLAPORTE, D MORGAN, N HORNING

Linking predation risk with forest vegetation structure: Airborne laser scanning elucidates risk landscapes and habitat selection for roe deer. Karen LONE, TGOBAKKEN, A MYSTERUD, J ODDEN, J LINNELL, LE LOE

Characterizing Forest for Wildlife Habitat Models: Past, Present, and Future. Jody C VOGELER, WB COHEN

Open Source Course

I PART

Open Source geospatial tools for forest remote sensing

Organized by:
Daniel McInerney
Pieter Kempeneers

15.45-16.15 BREAK – coffee, tea and refreshments

16.15-17.45

Object-based image analysis, *Invited*

Frieke VAN COILLIE, *moderator*

Evaluating Land Cover Maps Derived from Synthetic Landsat Images. Carolina SOUZA, LCARVALHO, PSANTOS, TARANTES, APEREIRA, QCARDOSO, ICORRÊA

Mapping small scale deforestation in the La Amistad-Caribe Conservation Area using object-based image analysis. J Pablo ARROYO-MORA, GIFIMOV, MKALACSKA

UAV and Worldview-2 imagery for the object based mapping of the invasive species Hakeasericea in the North of Portugal. Claudio PAREDES, J JULIAN-PELAZ, M ÁRODRÍGUEZ-GARRIDO, AR DE LA FUENTE, F ALVAREZ-TABOADA

Multi-scale forest information maps derived from ALS data for the implementation in forest management strategies. Dirk TIEDE, T STRASSER, B MAIER

Individual tree crown delineation algorithm using hierarchical data structures and LIDAR data. Bogdan MSTRIMBU

Successive updating of cartographic land cover databases using image segmentation, GIS analysis and visual interpretation. Jean-Francois MAS, R GONZÁLEZ

Monitoring forest disturbances, *Invited*

Mathias SCHARDT, *moderator*

Running ForestGALES with high resolution data estimated from airborne LiDAR and WAsP. A case study in the Trossacs-Ben Lomond National Park in Scotland. Juan SUAREZ

Applying shape selection methods to Landsat time series for mapping forest disturbance history and cause. Gretchen MOISEN, M MEYER, T SCHROEDER, C TONEY, X LIAO, K SCHLEEWEIS, WB COHEN, S HEALEY

Assessing forest condition from airborne remotely sensed data. Ross A HILL, MJ SUMNALL, SA HINSLEY

Quantifying Forest Disturbance on a National Scale: Using MODIS to Adjust Current Forest Conditions for the US National Insect and Disease Risk Map. James ELLENWOOD

Can the challenges for operational satellite based storm damage mapping in forests be met? – An analysis of Rapid Eye based mapping of a medium scale storm damage event in forests in North-West Poland. Matthias DEES

Investigating 3D forest properties from non-ALS data

TatjanaKOUKAL, *moderator*

Tree structure captured by UAV-SfM and TLS for field validation of satellite remote sensing. Akira KATO, YHAYAKAWA, HOBANAWA, G CHRISTOPHER

Nation-wide image matched point clouds for biodiversity assessments in Switzerland. Martina Lena HOBI, CGINZLER

Estimating species-specific stand volume by means of 3D image-matching data. Stefano PULITI, T GOBAKKEN, HO ØRKA, E NÆSSET

Reliability of forest canopy height extraction from digital aerial images. Petra ADLER, T NAAKE, S PETERS, C GINZLER, C BAUERHANSL, C STEPPER

Combining large timespan photogrammetrically derived forest point clouds with lidar. Paula LITKEY, K NURMINEN, E HONKAVAARA, M VASTARANTA, TKANTOLA, P LYYTIKÄINEN-SAARENMAA, M HOLOPAINEN

Assessment of Terra-X Stereogrammetry Product for UK Forest Height Mapping. Veronique SMOREL, I WOODHOUSE, K VIERGEVER, S SNAPE

Open Source Course

II PART

Open Source geospatial tools for forest remote sensing

Organized by:
Daniel McInerney
Pieter Kempeneers

17.45 -19.00 POSTER SESSION

19.00 BUS TO SOCIAL DINNER

Friday, November 7th

7.30-8.00 REGISTRATION

SALA 300+BELVEDERE

8-9.30

Keynote: **Remote Sensing of Forest Canopy Chemistry**
Susan USTIN, University of California

Keynote: **On the use of remote sensing techniques to assess forest gas exchange**
Josep PENUELAS, Universitat Autònoma de Barcelona

Keynote: **On the use of Remote Sensing in Terrestrial Vegetation Carbon Cycling: Past, Present and Future**
FrankVEROUSTRAETE, Antwerp University

SALA 300

Biodiversity mapping and modelling using remote sensing data, *Invited*

Ross HILL, *moderator*

9.45-11.15

The potential of LiDAR for forest structure assessment in biodiversity monitoring. Marc BOUVIER, BHERPIGNY, SDURRIEU, FGOSSELIN, RFOURNIER, EGRAU

Mapping and modeling patterns of breeding bird diversity across the United State. Scott GOETZ, R DUBAYAH

Linking biological field data and remote sensing for decision making – Examples from Kakamega Forest, Kenya. Gertrud SCHAAB, T LUNG, T LEVINE, N FARWIG, K BÖHNING-GAESE

Estimating biodiversity in a Free and Open Source environment. Duccio ROCCHINI, GM FOODY, C RICOTTA, M MARCANTONIO, L DELUCCHI, M METZ, M NETELER

Global distribution of Pistacia with focus on the Mediterranean species – remote sensing and GIS analyses. Giorgi KOZHORIDZE, N ORLOVSKY, L ORLOVSKY, DG BLUMBERG, A GOLAN-GOLDHIRSH

SALA 100

Validating ALS surveys

Ronald E. MCROBERTS, *moderator*

Impact of plot size on precision of lidar-assisted estimation of aboveground biomass in a submontane rain forest in Tanzania. Erik NÆSSET, T GOBAKKEN, E HHANSEN, E MAUYA, E ZAHABU

Efficient field validation of tropical rainforest biomass using terrestrial laser for satellite remote sensing. Akira KATO, M BRADFORD, K KAJIWARA, Y HONDA

The influence of LiDAR pulse density on the precision of relationships between LiDAR and inventory metrics in young unthinned Douglas-fir stands. Michael Stuart WATT

Sensitivity of LAIe and CHP retrieved from airborne full-waveform LiDAR data to incidence angle in discontinuous forest canopy. Karolina D FIEBER,IJ DAVENPORT,MA TANASE, JM FERRYMAN, RJ GURNEY, JP WALKER, JM

Scale dependence in Area-based Approach with Airborne Laser Scanning. Petteri PACKALEN, J STRUNK, L MEHTÄTALO, M MALTAMO

Evaluation of survey flight parameters for the accuracy of single tree extraction based on high resolution aerial images. Steven BAYER, A WIEDEN,T BUCHER

SALA BELVEDERE

Monitoring temporal

Cristina GOMEZ, *moderator*

Mapping Time-Series Changes in Global Mangrove Extent using L-band SAR. Nathan M THOMAS

UAVs for change detection in forestry: preliminary insights and assessment. Francesco PIROTTI, M PELLEGRINI, N MARCHI, M GARBARINO, E SIBONA, F MELONI, R MOTTA, D FEDEL, P COMIN, A WOLYNSKI, B COMINI, A VITALI, E LINGUA

Combining remote sensing and graph theory to analyse multi-temporal montado fragmentation. Sérgio GODINHO, R MACHADO, A GIL, T PINTO-CORREIA

Predicting the spatial distribution of *Tsugacanadensis* in Maine using remote sensing and GIS. Kathleen L DUNCKEL, E LATTY, A ARNETT

Multitemporal dynamic of boreal forest landscape, eastern Canada for the last 33 years. Eliana MOLINA, O VALERIA, L DE GRANDPRÉ, A LEDUC

Spatial and temporal patterns of forest disturbance within and between geographically distinct regions of the US: rates, intensity, and size distribution. Katelyn DOLAN, GC HURTT, C HUANG, JG MASEK, J FISK, RO DUBAYAH

11.15 BREAK – coffee, tea and refreshments

11.45-13.15

Image compositing and temporal analysis, *Invited*

Gherardo CHIRICI, *moderator*

Reconstructing the history of Canada's forests using Landsat pixel-based image composites. Joanne WHITE, MA WULDER, G HOBART, T HERMOSILLA, NC COOPS, C GÓMEZ, JE LUTHER

Landscape-level forest change characterized with spatio-temporal segmentation of an annual time series of Landsat pixel-based image composites. Cristina GOMEZ, J WHITE, M WULDER, P ALEJANDRO

Industrial forest mapping: a Landsat Spatial and Temporal Approach. Luigi BOSCHETTI, A SMITH, R KEEFE, A HUDAK, PA BRIVIO

Regional rates of U.S. forest regeneration measured from annual Landsat disturbance history and IKONOS stereo imagery. Christopher S NEIGH

Monitoring dynamics of semi-arid riparian Tugai forests at the Tarim River with RapidEye and Landsat data fusion products. Philipp GÄRTNER, M FÖRSTER, T SCHMIDT, A KURBAN, B KLEINSCHMIT

Pan-European services and research projects

David Miranda BARROS, *moderator*

NEWFOR - Enhancing the wood supply chain within the alpine space – An insight in forest delineation, stratification of growing stock models and forest roads extraction based on LIDAR data. Lothar EYSN, M HOLLAUS, F BERGER

EUFODOS – Development of Forest Downstream Services based on COPERNICUS High Resolution CORE Services. Gernot RAMMINGER, M DEES, HOTT, J ERMERT, D HERRMANN, H SAGISCHEWSKI, M PROBECK

Copernicus pan-European forest products: status, use-cases, future development. Tobias LANGANKE, H DUFOURMONT, G BÜTTNER, A BASTRUP-BIRK, G ZEUG

Development of Forest Services in the frame of EUFODOS FP7 Project in Bulgaria. Vassil VASSILEV, I IVANOV, A VASSILEVA

Remote Sensing of Forests at ESA. Frank M SEIFERT

EUFODOS –European forest downstream services on improved information on forest structure and damages – The service for the alpine region of Styria, Austria. Klaus GRANICA, M SCHARDT

Tropical deforestation and logging monitoring

Yasumasa HIRATA, *moderator*

Correlating Socioeconomic and Biogeophysical Factors to Forest Fragmentation and Deforestation in the Brazilian Atlantic Forest. Lisiane ZANELLA, L CARVALHO, A BLACKBURN, A FOLKARD

Integration of remote sensing techniques and information on ecosystem services to measure tropical forest degradation - A case study from the tropical rain forest of Ecuador. Maria J DELGADO, C SCHMITT

Impact of logging on the canopy structure of a Bornean peat swamp forest. Beatrice WEDEUX, DCOOMES

Assessing Deforestation Patterns in Mexico Using Geographically Weighted Regression Models. Jean-Francois MAS, A RODRÍGUEZ, G CUEVAS-GARCÍA, J PANEQUE-GÁLVEZ, Y GAO, J LOYA, MSKUTSCH

Predicting Regeneration of the Brazilian Amazon From the Synergy of a Process-based Model and EO data. Joshua JONES

Synergy of TanDEM-X bistatic data &TerraSAR-X to map the state and evolution of forest degradation. Felicitas VON PONCET, ML SCHLUND, S KUNTZ

13.15 - 14.15 LUNCH

14.15 - 15.45

Tropical forest monitoring for biological and functional diversity, *Invited*

Håkan OLSSON, *moderator*

Ultraportable Terrestrial Lidar in Tropical Forest Ecosystems. Edward SAENZ, I PAYNTER, A ERB, F PERI, C SCHAAF, L FATOYINBO, M ROMAN, D CLARK, C DE LA ROSA, A VEGA

Assessment of Spectral Indices Derived from Landsat Data for Discriminating Burned Areas in Northern. Minas Gerais, Brazil. Allan PEREIRA, L CARVALHO

New opportunities for estimating the state and fate of terrestrial ecosystems from MODIS. Thomas Hilker

Time series analysis of multi-angle MODIS observations to evaluate patterns of rainfall and forest

Monitoring burnt areas and fire effects

Luis CARVALHO, *moderator*

The use of Landsat derived albedo to track post-fire recovery in high latitude forests. Angela M ERB, CB SCHAAF, Z WANG, Q SUN, Y SHUAI, JG MASEK

Post fire monitoring in Mediterranean area with cosmoskymed products. Ruggero G AVEZZANO, G VAGLIOLAURIN, V BACCIU, F COVELLO, F CALTAGIRONE, M VIRELLI, F DEL FRATE, G SCHIAVON, R VALENTINI

Monitoring post-fire vegetation green vegetation cover dynamics in European Burnt Areas from MODIS scaled NDVI time series. Lorenzo BUSETTO, P STROBL, TH DURRANT, R BOCA, F BOCCACCI, A CAMIA, J SAN MIGUEL-AYANZ

Mapping post-fire habitat characteristics through the fusion

Single tree level applications of ALS

Damiano GIANELLE, *moderator*

Single tree crowns delineation using multireturn ALS data in an Alpine forest. Kaja KANDARE, M DALPONTE, J CHEUNG-WAI CHAN, HO ØRKA, D GIANELLE

Radiometric waveform LiDAR features for Scandinavian trees – species classification and statistical analysis of feature variation. Aarne HOVI, I KORPELA, J VAUHKONEN

Rethinking single-tree remote sensing: Histogram matching of remotely sensed and field measured tree size distributions. Jari VAUHKONEN, L MEHTÄTALO

Identification and delineation of individual tree crowns in mixed forests using multispectral and Lidar data fusion. Linda GULBE

cover in the Amazon. Yhasmin M MOURA, T HILKER, LS GALVAO, JR DOS SANTOS, R DAL`AGNOL DA SILVA

Monitoring the carbon stocks of tropical habitat corridors. Scott GOETZ

of remote sensing tools. Jody C VOGELER, Z YANG, WB COHEN

Monitoring the dynamics and post-fire recovery processes of different vegetation communities using MODIS satellite images. Nataliya STANKOVA, R NEDKOV

Estimating burned area in Brazilian Amazon, using a systematic sample of medium resolution satellite images. Yosio E SHIMABUKURO, R BEUCHLE, RC GRECCHI, D SIMONETTI, F ACHARD, J MIETTINEN

Estimation of forest attributes at single tree level using hyperspectral and ALS data. Michele DALPONTE, L FRIZZERA, D GIANELLE

Individual tree segmentation using the space colonization algorithm. Matthew PARKAN, D TUIA

15.45 BREAK – coffee, tea and refreshments

16.15-18.00 Plenary session - Round Table - Future of ForestSAT

SALA 300

The Combined Pack: Unbeatable Value

The monthly Print Magazine, the eNewsletter, and full access to the Website with Daily News and Stories from your Geospatial industry sectors plus other benefits

Join today for only £2.50 a month

Print and Online Combined Pack

Never miss news as it happens

Join and enjoy access to:

- ✔ Your own printed copy of GeoConnexion International and GeoConnexion UK magazines – 10 issues a year
- ✔ Privileged access to online news, comment and features sections
- ✔ Unlimited access to archive of news, articles, latest recruitments and training
- ✔ Benefit from exclusive events and special offers on industry reports
- ✔ Monthly e-Newsletter, packed with latest news and what's on in the regions

Online Pack

News at your finger tips

Join and enjoy access to:

- ✔ Privileged access to online news, comment and features sections
- ✔ Unlimited access to archive of news, articles, latest recruitments and training
- ✔ Benefit from exclusive events and special offers on industry reports
- ✔ Monthly e-Newsletter, packed with latest news and what's on in the regions

Subscribe and stay ahead of the game

The content that you can trust

geoconnexion.com

POSTERS

006 - REDD+ opportunities in the Kashmir region of Western Himalayas -a geospatial modeling approach. Akhlaq Amin Wani, PK Joshi, Ombir Singh

007- **Estimating biomass and carbon mitigation in temperate coniferous forests using spectralmodeling and field inventory data.**Akhlaq Amin Wani, P K Joshi, Ombir Sing

009- **A synergy of multi-date medium resolution earth observation data to characterize infestations by European bark beetle.**HoomanLatifi, Fabian Ewald Fassnacht, Bastian Schumann, Stefan Dech

011 - Comparing the importance of sample size, data type and extrapolation method for remote sensing-based estimations of aboveground forest biomass. Fabian Ewald Fassnacht

014- **Forest fire hazard mapping using remotely sensed data and geographic information system (Case study: the GOLESTAN province, Northern IRAN).**Amin AbbasiHabashi, MehranSattari, Ahmad Rajabi, BehnamTahmasebiBoldaji, OmidDana

015- **Habitat Identification using Remote sensing Applications.** Rick Hagdu

019- **Evaluating the potential of WorldView-2 data to classify tree species and different levels of ash and Scots pine mortality.**Lars T. Waser, Kai Jütte, TheresiaStampfer

021- Early detection and quantification of spruce beetle outbreaks through the use of imaging spectroscopy. AdriannaCatherine Foster

022- **Estimating Forest Carbon with Terrestrial LiDAR.**Atticus E Stovall, Herman H Shugart

023- Using remote sensed data to assess danger from virus vector in Portugal. Maria-ConceiçãoProença

026- Estimating aboveground biomass of oil palm plantation using alospalsar l-band data. Putri Ida Sunaryathy

047- **Comparison of aboveground carbon pool estimation using satellite images and LiDAR.**Him Lal Shrestha

052- **Areal sampling strategies for estimating totals and averages on a grid of quadrats: applications to forest surveys.**Maria ChiaraPagliarella, Fattorini Lorenzo

054- **Detecting forest and tree cover in Swiss mountain regions using historical B&W images.**Zuyuan Wang, Christian Ginzler

059- **Inferring forest inventory information from LiDAR remote sensing data.**Rebecca Spriggs, David Coomes, Mark Vanderwel, John Caspersen

066- **Estimating land use by two-phase schemes.**Maria ChiaraPagliarella, Lorenzo Fattorini

076- **The Ecosystem Disturbance and Recovery Tracker (eDaRT) system prototype for high-fidelity near-real time ecosystem monitoring.**Alexander Koltunov, Carlos Ramirez

079- **Investigating robustness and accuracy of different radiometric correction approaches for RapidEye imagery employed for operational forest monitoring of scots pine stands.** Alexander Marx

090- **Evaluation of different scan configurations for an effective field procedure on a Terrestrial LiDAR Scanner in Tropical Forest.**Alvaro Ivan Lau Sarmiento, Harm Bartholomeus, Jose Gonzalez de Tanago

091- **Investigation of the relationship between MODIS-derived Vegetation Indices (VI) and evapotranspiration (ET) in annual vegetation systems and evergreen forests**. David Helman, Itamar M Lensky, Eyal Rotenberg, YagilOsem, Dan Yakir

105- Early detection of changes in health status of Norway spruce using hyperspectral data. Markus Immitzer, Kathrin Einzman, Wai-Tim Ng, Lea Henning, Nicole Pinnel, AdelheidWallner, Matthias Frost, Monika Kanzian, Rudolf Seitz, Clement Atzberger

111- **Estimating forest structural information to support stand-wise growth simulator prediction using RapidEye satellite data.**AdelheidWallner, Thomas Schneider, Thomas Knoke

113- Improved forest site productivity estimates using high-density LiDAR data: application in the uneven-aged mixed forests of high karts terrain. David Hladnik, Milan Kobal

114- **Extracting digital terrain models under tropical forest canopy using LiDAR data.**Almasi S Maguya, VirpiJunttila, TuomoKauranne

119- **Disturbance trends in the pan-boreal forest derived from Landsat observations.**Paul D Pickell, Nicholas C Coops

126- Majorforest-forming tree species in Central Siberia under climate change of the 21st Century. Elena Parfenova, NadezhdaTchebakova

128- **Gis based conservation studies on thecritically endamgeredKemerOrhid (OphrysclimacisHeimeier&Perschke).** Ismail GökhanDeniz, CandanAykurt, Mehmet Ali Basaran

129- **Making accurate biomass maps: How do DEM and the size of ground plots affect woody carbon estimation from ALOS PALSAR images in Miombo Woodlands?**Yaqing Gou, Casey Ryan, Iain McNicol

130- **Validation of satellite-based fPAR in a boreal forest site.**TittaMajasalmi, MiinaRautiainen, Pauline Stenberg, TerhikkiManninen

133- Potential of WorldDEM to estimate forest canopy height in a tropical peat swamp forest. Michael Schlund, Felicitas von Poncet, Steffen Kuntz, Simon D. Hennig, HanjoKahabka

134- **Modelling studies on critically endangered species-olympos saffron (*Crocus wattiorum* (B.Mathew) B.Mathew).**CandanAykurt, Ismail GökhanDeniz, Mehmet Ali Başaran

136- **Can full-waveform metrics help predict forest variables in tropical forests?**Francesco Pirotti, Antonio Vettore, Gaia Vaglio Laurin, Ruggero Avezzano, Roberto Cazzolla-Gatti, Riccardo Valentini

137- Mapping urban forest leaf area index using LiDAR at field plot and individual crown scales. Michael Alonzo, Joseph P McFadden, BodoBookhagen, Dar A. Roberts, Alex Sun

146- **Estimation of forest characteristics from ALS data in Estonia.**TauriArumäe, Mait Lang

162- **Workflow description for making laser scanning data collected with experimental remote sensing platforms openly accessible.**EetuPuttonen, Paula Litkey

167- **An efficient Python-based application for forest vitality & change monitoring**. Gideon OkpotiTetteh

172- **Creation of a degradation baseline under verify carbon standard in the Mediterranean native forest from Chile.**Javier Cano, Paulina Vidal, Pablo Cruz, Jesus Torralba

179- **Investigating the relationship between airborne laser scanning derived forest canopy vertical structure and Landsat ETM+ derived indices**. Phil Wilkes, Simon Jones, Lola Suarez, Andrew Skidmore, Andrew Haywood, Andrew Mellor, Will Woodgate, Mariela Soto-Berelov

186- **Mapping forest allometric variability: implications for allometric scaling theory and biomass mapping**. Laura Duncanson, Ralph Dubayah

189- Interactions between macro and micro climate and anthropogenic disturbance on the distribution of aspen near its northern edge in Quebec: implications for climate change related range expansions. Kristen Lee Whitbeck

195- **Development of an automatic method by remote sensing of chronological deforestation-afforestation. The case of Southern Chile**.Nicolas Maestripieri, Gilles Selleron, Martin Paegelow

196- **Classification trees to discriminate forest structural clusters through metrics extracted from discrete return airborne laser scanner data**. Chiara Torresan, Gianfranco Scrinzi, Piermaria Corona, Joan VallsMarsal

200– Development of a Remote sensing based fast response system for the handling of calamities in forests. Oliver Bauer, Rudolf Seitz, Clement Atzberger, Kathrin Einzmann, Andreas Müller, Anne Reichmuth, Andreas Hirner, Matthias Frost, Monika Kanzian

202- **A Comparison of Simulated Leaf Area Index values and Satellite-derived LAI values from an Oak-Hickory Forest Complex in southwestern Virginia, USA**. John Shepherd Iiames, Ellen Cooter

203- **Suitability analysis: application to Mâamora forest**. Said lahssini, BM Bagaram

205- **Characterisation and monitoring of forest disturbance in Ireland from active microwave satellite platforms.** Preethi Malur Balaji, Fiona Cawkwell, Ned Dwyer, Brain Barrett

219– Assessing dendrometric parameters in urban forest areas using airborne LiDAR and field data. Vincenzo Giannico, RaffaeleLafortezza, Giuseppe Colangelo, Giovanni Sanesi

223 - Estimation of forest stem volume using ALS data and field data collected with relascopic technique. Mathilde Erfurt, Michele Dalponte, DamianoGianelle

225- **TARGETSTARS: an accuracy performance evaluation system for GNSS technologies in forest environments.**Gianfranco Scrinzi, FabrizioClementel, Giacomo Colle, Antonio Floris

226- **Large-area estimation of forest variables with spaceborne SAR: recent applications of Envisat ASAR and ALOS PALSAR**. Maurizio Santoro

231- The application of remote sensing data and GIS-based automated classification for mapping permanent and reversible paludification in boreal black spruce forests. Ahmed Laamrani, Osvaldo Valeria, Yves Bergeron, Nicole Fenton, Li-Zhen Cheng

236- **Estimating forest attributes through k-Nearest Neighbours methods using Landsat imagery and forest monitoring plots**. Andrew Haywood, Andrew Mellor, Phil Wilkes, Will Woodgate, Mariela Soto-Berelov, Lola Suarez, Simon Jones

237- Forest cover mapping and estimation along the FAO forest definition using RapidEye and MODIS imagery, a case study for the dry landscapes of Burkina Faso. Christoph Fischer, Paul Magdon, ChristophKleinn, Hans Fuchs, Lutz Fehrmann

238- **Filtering methods and interpolation routines assessment for generating Digital Elevation Models to normalize LiDAR point clouds in forestry applications in a Mediterranean environment**. Antonio Luis Montealegre, María Teresa Lamelas, Juan de la Riva

240- Towards complete operational inventories of regeneration forest using airborne laser scanning. Hans Ole Ørka, TerjeGobakken, Erik Næsset

241- **Combining remote sensing and sampling-based forest inventory data to improve volume estimates of mature forest stands.**DonatasJonikavicius, GintautasMozgeris, GintarasKulbokas

246- **Drought assessment in the alpine forest of South Tyrol – EOF analyses of MODIS derived time series of vegetation indices**. KatarzynaEwaLewińska, Eva Ivits, Mathias Schardt, Marc Zebisch

251- **Limits and potentialities of gridded LiDAR data in the forest context: the case of the new Piemonte Region dataset.** Vanina Fissore, Enrico Borgogno Mondino, Renzo Motta

253- Combining field survey with LIDAR and hyperspectral airborne data to map timber volume at forest stand level. Ugo Chiavetta, Nicola Puletti, Francesco Pelleri, Marcello Miozzo, Piermaria Corona

254- **Potential of terrestrial laser scanning in Mediterranean broadleaf trees.**Grazia Pellizzaro, Roberto Ferrara, Andrea Ventura, Tiziano Ghisu, Bachisio Arca, Angelo Arca, Pierpaolo Masia, Pierpaolo Duce

255- Characterizing gap dynamics in forest areas from time series of archive aerial images for biodiversity monitoring

and management. Sylvie Durrieu, Xavier Lucie, EloiGrau, Frédéric Gosselin

261- **Use of operational airborne and satellite remote sensing to Forest Fire Mapping in Catalonia: lessons learned.** Lydia Pineda, Anna Tardà, VicençPalà, Jordi Corbera

267The Copernicus *in-situ* component - requirements, challenges and opportunities. Gunter Zeug

274- **sCASE: a primary productivity monitoring system for the forests of North Pindus National Park (Epirus, Greece).**Stavros Stagakis, Nikos Markos, TheofilosVanikiotis, Angelos Tzotsos, Olga Sykioti, Aris Kyparissis

275- **Investigation of forest vegetation dynamics before and after fire by using GIS on the base of aerospace data.** Nataliya Stankova, Roumen Nedkov

276- Modelling land surface interactions at forested ecosystems: results from the global validation of a 1-D SVAT model. Matthew Robert North, Daisy Veronica Rendall, Stefania Amici, Patrick N.L Lamptey, George P Petropoulos, Salim Lamine

281- **Forest opening up in mountainous Greek (Mediterranean) conditions.**Sarantis-Angelos G Liampas, Vasileios C Drosos, Aristotelis – Kosmas G Doucas, Vasileios J Giannoulas

282- **The effect of the canopy and foliage of Scots pines (*P. sylvestris*) in positioning accuracy utilizing the Network of Permanent GPS reference stations of the HEllenicPOsitioning System(HEPOS)**. Vasileios C. Drosos, Chrysanthi Argiropoulou, Kosmas-Aristotelis G Doucas, Vasileios J Giannoulas

284- **Land use changes in periurban and mountainous forest areas of Greece**. Vasileios C. Drosos, ApostolosKantartzis, Kosmas-Aristotelis G Doucas

290- **Mapping and Monitoring Large Forest Fire Vulnerability for western U.S**.Zhiqiang Yang, Raymond J. Davis, Warren B. Cohen, Cole Belongie

294- **Using Full-Waveform Airborne LiDAR to Analyze ASAR Time-Series over Forest.** MilutinMilenkovic, Alena Dostalova, Markus Hollaus, Wolfgang Wagner, Norbert Pfeifer

298- **Mapping undisturbed forest for biodiversity conservation in Haiti.** Zhiqiang Yang, Warren B. Cohen, Erik Haunreiter, Blair Hedges

302- Implementation of an adaptive morphological filter for LiDAR data in the free GRASS GIS software: comparison of results with other software alternatives on the ISPRS benchmark dataset and field data from fast-growing forests of northwestern Spain. Miguel Cordero, Sandra Buján, Rafael Crecente, David Miranda

310- **Object-based image metrics for modeling Forest attribute parameters**. Mustafa El-Abbas, ÖElmarCsaplovics

312- **Hierarchical multi-scale object-based for mapping categorical patterns**. Mustafa El-Abbas, ÖElmarCsaplovics, Taisser H. H. Deafalla

313- **Cross-border comparison of forest cover changes in Northeastern Europe caused by clear-cutting and afforestation of former agricultural land**. Julia Budenkova, Anton Kardakov, JaanLiira, Urmas Peterson

317- **Spatio-temporal analysis for forest planning and management in Sahel region.**Taisser H. H. Deafalla, Elmar Csaplovics, Mustafa M. El Abbas

318 - Land cover change of the small area of Balikpapan Bay, Indonesia, between from 1989 to 2014 using Landsat imagery: pixel versus object based classification. Helena Soumarová, Milan Lazecký, Stanislav Lhota, ZuzanaPohanková

320- **The use of funds for restoring forestry production potential damaged by natural disasters and introducing appropriate prevention instruments in Poland in the period 2007–2013**. Hubert Kryszk, krystynakurowska

321- **The impact of forest management and climate change on forest entomofauna in north-eastern Poland.** KrystynaKurowska, Hubert Kryszk, Tadeusz Bieniaszewski, ZbigniewBrodzinski, JanuszSzwałkiewicz

324 - Landsat Based Woody Vegetation Change Detection using the Google Earth Engine. Kasper Johansen, Peter Scarth, Stuart Phinn, Martin Taylor

330- **HemisSPherical Project Manager - a software to calculate forest canopy transmittance from hemispherical images without thresholding.** Mait Lang, Ave Kodar, TauriArumäe

331- **Estimation of mountain forest using Landsat data in the Republic of Tyva.** KhulermaaBolat-oolovnaKuular

332- **Mapping of forest stem volume with k-nearest neighbor technique, medium spatial resolution multispectral images and stand-wise forest inventory data in Kurzeme, Latvia.** Mait Lang, Linda Gulbe, AgrisTraškovs, ArtūrsStepčenko

342- **Comparison of estimation accuracy for forest stand stock using aerial photograph and LiDAR in Japanese plantation and natural forest**. Tomoko Furuta

346- **Benefits of a multi-temporal approach to forest mapping and change detection in a highly dynamic area of China**. Giovanni Buzzo, Joachim Hill, Thomas Udelhoven

350 - Characterizing Tropical Montane Forest Structure Using IKONOS-2 and Airborne LiDAR data. Mui-How How Phua, Keiko Ioki

353- **A comparison of Terrestrial Laser Scanning instruments for assessing forested ecosystems.**John Armston, Glenn Newnham, Alan Strahler, Crystal Schaaf, Mark Danson, Zhan Li, Rachel Gaulton, Zhenyu Zhang, Mathias Disney, Michael Schaefer, Andrew Burt, Angela Erb, Steven Hancock, Jasmine Muir, Ian Paynter, Stuart Phinn, Edward Saenz, Peter Scarth, Ben Sparrow, Lucy Walker, William Woodgate

355- **Comparison of carbon stock estimates for Kakamega Forest (Kenya) based on VHR imagery and SAR data.** Inés Martínez, Luis A. Ruiz, Gertrud Schaab

356- **Validation of optical and SAR Satellite-based forest maps with field data in the Mai NdombeDiscrict, Democratic Republic of Congo.** JörgHaarpaintner, Miguel Kohling, Fabian Enssle, PawanjeetDatta, André Mazinga, Joseph Likunda

359- Remote sensing of forests CO2 uptake. Karolina Sakowska, Edoardo Cremonese, Marta Galvagno, Radoslaw Juszczak, Umberto Morra di Cella, Janusz Olejnik, Micol Rossini, Matteo Sottocornola, Marek Urbaniak, Loris Vescovo, Damiano Gianelle

362 - LiDAR data processing with SPDlib in QGIS. Roberto Antolin, Juan Suárez, Peter Bunting, Georgios Xenakis

367 - The potential of WorldDEMTM for forest related applications. HanjoKahabka, Michael Schlund, Felicitas von Poncet, Gertrud Riegler, Marek Tinz

371- Design-based three-phase regression estimation in continuous inventory designs: applications to the Swiss National Forest Inventory. Alexander Massey, Daniel Mandallaz, Adrian Lanz

376 - Delineation of Individual Tree Crowns from ALS and Hyperspectral data: a comparison among four methods. Francesco Reyes

378- **Spatio-temporal monitoring of *Acacia longifolia* invasion in Portuguese coastal forest areas: assessment of its distribution before biological control release**. Nuno César de Sá

384- **Investigation of Forest Inversion Using RVoG and ERVoG models**. Sofiane TAHRAOUI, Mounira OUARZEDDINE, Youcef SMARA

385-New methods of the Cross-country movement analysis. Marie Brenova, Lucie Ceplova

389- **Estimation of standardized vegetation index in a semideciduous seasonal forest remnants region of the Atlantic Forest, Brazil**. Marcos CicariniHott, Luis Marcelo Tavares Carvalho, PolyanneAguiar Santos, TássiaBorges Arantes, João César Resende

391- **Evaluating the vegetation change tracker for mapping forest cover changes in mountain environments using RapidEye imagery**. Ruth Sonnenschein, Ruben Remelgado, Marc Zebisch

403- **Hedge detection in surface models using weak spatial constraints**. RuediBoesch

404- **Upscaling spectral reflectance of Afromontane forest species in Eastern Cape, South Africa: amultiscale approach to species discrimination**. Vhusomuzi Blessing Sithole, Vincent Kakembo

407- **Spatial dynamics of the Sundarbans study between 1973 and 2014: a robust remote sensing approach.**Abu RJ Mahmood

415 - Data assimilation for forest inventory using series of digital aerial photos. MattiasNyström, JörgenWallerman, Nils Lindgren, Sarah Ehlers, Anton Grafström, Anders Muszta, Kenneth Nyström, Johan Sonesson, Johan E. S. Fransson, Jonas Bohlin, Håkan Olsson, GöranStåhl

417- **Towards an understanding of shifting cultivation systems as a form of forest degradation: a case study in Western Mexico**. Lucia Morales

419- **Towards the Evaluation of the SEVIRI Evapotranspiration Operational Product Accuracy on a Continental scale: Findings Over Diverse European ecosystems.**Gareth Ireland, Alexander Cass, George P. Petropoulos, Salim Lamine, Prashant K. Srivastava

422– Vegetation response to drought and its subsequent recovery across the Yucatan peninsula, Mexico. Betsabé De la Barreda-Bautista, Doreen Boyd, Sarah Metcalfe

423- **Developing a Forest Naturalness map for Europe: a case study for Beech dominated forests**. Gherardo Chirici, Dania Abdul Malak, Jeannette Eggers, Michael den Herder, Marcus Lindner, Anna Barbati, Katarzyna Biala, Ivone Pereira Martins, Catherine Zolli, Marco Marchetti, Annemarie Bastrup-Birk

425- **Monitoring the urban growth in Tuxtla Gutierrez (Chiapas, Mexico) using remote sensing to optimize the correct planning**. Moisés Silva

426- **LiDAR Point Cloud Analysis using 3D Shape Descriptors with Zernike Moments.**StewartHe, Nina Amenta

428- **Area estimation of Trees Outside Forest: searching for effective sampling strategies on the basis of aerial photo imagery.** Gherardo Chirici, Piermaria Corona, Cristina Gazzarri, Marco Marchetti, Matteo Mura, Lorenzo Fattorini

429- **Is a Canopy Height Model enough for estimating forest biomass with Airborne Laser Scanning?**Gherardo Chirici, Matteo Mura, Giovanni Lopez, Ronald E. McRoberts, Lorenzo Fattorini, Marco Marchetti

430– Change detection analysis over tropical Peatlands in central Kalimantan with Bi-temporal airbornLiDAR measurements. Viktor Boehm

432- **Framework and principles of the EFI project centre MOUNTFOR**. Roberto Tognetti, Giorgio Alberti, Franco Miglietta

438- **Mapping above ground biomass, uncertainty, and forest area using Multi-Platform Earth Observation datasets**. Pedro Rodriguez Veiga, HeikoBalzter, Kevin Tansey, SassanSaatchi

439 – Comparing satellite images forestimation of forest burnt areas in Republic Mari EL. EldarKurbanov, Oleg Vorobiev, Sergey Lezhnin, AlexanderGubayev

443 - Effect of forest health and structure to the relative surface temperature captured by airborne thermal imagery – Case study in Norway Spruce-dominated stands in Southern Finland. SamuliJunttila, MikkoVastaranta, JarnoHämäläinen, Markus Holopainen

444-Making principled predictions: a truth serum for interrogating big data. Andrew Robinson

446-Operational Forest Monitoring in Siberia Using Multi-source Earth Observation Data. Christian Huttich

449- FORSAT: 3D forest monitoring with optical satellite images. Daniela Poli, Devrim Akca, Stratos Stylianidis, Martin Hofer

EXHIBITORS

Diessechem

Address:ViaMeucci, 61/b,
Milano, Italy, I-20128
Tel:+39 02 26305484
Mail:diesseinstrument@diessechem.com
Web:www.diessechem.com

Diessechem is exclusive distributor of many brands of analytical instruments for the chemical and pharmaceutical industries.We provide a complete range of high-tech equipments such as portable fiber-optic NIR spectrophotometers, spectroradiometers, and ultraportable Raman for specific industrial applications.Diessechem is proud to represent in Italy two major brands in their respective markets: Headwall Photonics for hyperspectral imaging and ASD Panalytical for NIR spectroradiometry.Airbornehyperspectral imaging is an exciting, evolving technology for the remote-sensing market. UAVs, fixed-wing aircraft and earth-orbiting satellites are all perfect platforms for small and light hyperspectral imagers that provide continuous spectral data for everything within the field of view.
Headwall's precision-packed hyperspectral sensors are based on aberration-corrected optics to deliver high SNR plus excellent spatial and spectral resolution across a very field of view.Ground-based reference measurements can be used to verify airborne hyperspectral data, which means the combination represents a very powerful solution for the remote-sensing community.

E-Geos
Your hub for geospatial solutions

e-geos
AN ASI / TELESPAZIO COMPANY

Address:Via Cannizzaro,71
00156 Roma, Italy
Tel.: +39 06 4079 3220
E-mail:communication@e-geos.it
Web:http://www.e-geos.it/

e-GEOS, an ASI (20%) / Telespazio (80%) company, is a leading international player in the Earth Observation and Geo-Spatial Information business.e-GEOS offers unique portfolio of application services thanks to the superior monitoring capabilities of COSMO-SkyMed constellation and provides, environmental monitoring, rush mapping in support to natural disaster management, specialized products for defence and intelligence, maritime surveillance, interferometric products for landslide and ground subsidence analysis, thematic mapping for agriculture and forestry.e-GEOS operates the Matera Space Centre for acquisition, archiving and processing of multi-mission satellite data.

Exelis Visual Information Solutions Italia s.r.l.

Address:Via Salvo D'Acquisto, 31
20863 Concorezzo (MB)
Tel: +39 039 6058605
E-mail: italia@exelisvis.com
Web: www.exelisvis.it

Exelis Visual Information Solutions provides solutions, desktop, mobile and cloud to help professionals from various industrial branches to transform images and geospatial data into useful information. More than 150,000 customers from over 80 Countries in the world using our services and our products – ENVI, IDL-to display, analyze quickly and easily, and deliver all kinds of data and images that allow you to take better decisions and greater awareness.

GAF AG

Address:Arnulfstr. 199
D-80634 Munich, Germany
Tel.: +49-89-121528-0
E-mail:info@gaf.de
Web:http://www.gaf.de

GAF AG is an e-Geos/Telespazio company based in Munich, Germany. It is a leading solutions provider with an international reputation as a skilled and reliable supplier of data, products and services in the fields of geo-information, satellite remote sensing, spatial IT and consulting for private and public clients. GAF is one of the most experienced European service providers in the EU/ESA Copernicus Programme and covers all thematic domains: Land, Marine, Atmosphere, Emergency Management and Security. The company has a proven track-record in performing complete technical assistance projects in the natural resources and environment sector including dedicated capacity building and institutional support.

Over the past 29 years, GAF has been active in more than 100 countries throughout Europe, Africa, South America and Asia. Further information is available at http://www.gaf.de.

MicroGeo

Address:ViaPetrarca, 42
Campi Bisenzio,
50145 Firenze (Italy)
Tel.: 055-8954766
E-mail:info@microgeo.it
Web:http://www.microgeo.it/

MicroGeo is active in three important sectors concerning survey: 3D Laser Scanner, Thermography, Digital Photogrammetry. In thermography, it distributes brands NecAvio, Testo spa, and Optris. In the field of digital photogrammetry, it also employs drones, electrically-powered multirotors that can carry survey instrumentation such as thermal cameras, radar, laser scanner. In the field of laser scanners, it is exclusive distributor for Italy, Spain and Rumania for brands Riegl and Zoller+Fröhlich.

Oben

Address:I Trv. S. Anatolia 36
07100 Sassari (Italy)
Tel.: +39 328 2320752
E-mail:info@oben.it
Web:http://www.oben.it/

Oben realizes drone-based aerial surveys (mainly using multicopters, besides an airship), employing state-of-the-art technology for photogrammetry and laser scanning, and visibile- and infrared-imaging. It processes data also using internally-developed innovative application-specific methodologies, providing a complete, integrated, and accurately geo-referenced product, with detailed documentation on precision, and up to abstract meaning extraction (thematic maps, specific indicators).

---

rapidlasso GmbH

Address:FriedrichshafenerStraße 1
82205 Gilching
GERMANY
Tel:+49 176 34623245
E-Mail:info@rapidlasso.com
Web:http://rapidlasso.com

Technology start-up **rapidlasso GmbH** specializes in efficient LiDAR processing tools that are widely known for their high productivity. They combine robust algorithms with efficient I/O and clever memory management to achieve high throughput for data sets containing billions of points. The company's flagship product - the LAStools software suite - has deep market penetration and is heavily used in industry, government agencies, research labs, and educational institutions.

Skye Instruments Ltd

Address:21Ddole Enterprise Park
Llandrindod Wells
Powys
LD1 6DF, UK
Tel.: +44 (0)1597 824811
E-mail:adam@skyeinstruments.com
Web:www.skyeinstruments.com

Skye Instruments Ltd have been designing and manufacturing instrumentation for Remote Sensing, Environmental Monitoring, Plant and Agricultural Research for over 30 years. We have a range of Remote Sensing Instruments for ground, tower and airborne installations, which include Eddy Covariance/Flux Towers & UAV's. Our Multi-Spectral Sensors include wavelengths for LANDSAT, SPOT, NOAA, AVHRR, MODIS, plus many more Earth observation satellites.

SPONSORS

European Space Agency
Agence spatiale européenne

Associazione Italiana di Telerilevamento
ISPRS - ASITA

diessechem

SYSDECO

CON IL PATROCINIO DELLA

PROVINCIA AUTONOMA DI TRENTO

In collaboration with

Riva del Garda® Fierecongressi

In collaborazione con
PARCO NATURALE ADAMELLO BRENTA
Geopark

MARZADRO
Distillatori per passione dal 1949

Abstract book editors
Alberto Mattedi | Cristina Castellani

Editorial board
Gherardo Chirici | Alberto Mattedi | Gianantonio Battistel

Printing
Litotipografia Alcione
Printed in November 2014

Media partner:

GeoConnexion

Supported by:

SYSDECO

diessechem

JOANNEUM RESEARCH

AIT Associazione Italiana di Telerilevamento ISPRS - ASITA

esa

European Space Agency
Agence spatiale européenne

In coordination with:

IUFRO JRC EUROPEAN COMMISSION esa European Environment Agency ENVR ASA FAO UAS NASA