



A conference promoting science-based applications of remote sensing and other spatial data in forested systems

**September 11 - 14, 2012
Oregon State University
Corvallis, Oregon USA**

2012forestSAT.com


ForestSAT 2012 Conference at-a-Glance

Tuesday, September 11, 2012

6:00 PM • WELCOME RECEPTION and REGISTRATION in Giustina Gallery, LaSells Stewart Center

Wednesday, September 12, 2012

7:30 - 8:30 AM • BREAKFAST and REGISTRATION in Giustina Gallery

8:30 - 9:20 AM	A Plenary: Opening Remarks , Warren B. COHEN and Thomas MANESS Keynote Speaker, Curtis WOODCOCK, <i>The Use of Landsat for Monitoring Forests: Carbon Applications and Evolving Methodologies</i>			
9:30 - 10:50 AM	A Disturbance Ecology: Insect & Fire (Invited)	B Characterizing Uncertainty 1	C Identifying Tree Species and Forest Type	
BREAK - coffee, tea, refreshments served in Giustina Gallery				
11:15 AM - 12:55 PM	A Disturbance Detection 1 (Invited)	B Characterizing Canopy Cover	C Carbon and Water Cycling	
LUNCH - served in the Giustina Gallery				
2:10 - 3:50 PM	A Applications of Spectroscopy (Invited)	B Forest Health 1	C Nearest Neighbor Techniques 1	
BREAK - coffee, tea, refreshments served in Giustina Gallery				
4:15 - 5:55 PM	A Deforestation and Land Use Change	B Sampling and Estimation	C Recovery and Growth	D Stand Level Analyses 1
6:00 PM • Poster Reception in Giustina Gallery • Sponsored by Esri				

Thursday, September 13, 2012

7:30 - 8:30 AM • BREAKFAST and REGISTRATION in Giustina Gallery

8:30 - 9:15 AM	A Plenary: NASA Satellite Observations for Forest Science and Monitoring , Jeffrey MASEK Keynote Speaker, Jacqueline ROSETTE, <i>Using LiDAR Remote Sensing to Understand the Seasonal Dynamics of Forests</i>			
9:25 - 10:45 AM	A Characterizing Uncertainty 2 (Invited)	B Forest Monitoring 1	C Fire Effects	D Science and Decision Support 1
BREAK - coffee, tea, refreshments served in Giustina Gallery				
11:10 AM - 12:50 PM	A Characterizing Ecophysiological Processes (Invited)	B Structure Characterization 1	C Land and Forest Cover Mapping	D Habitat Characterization
LUNCH - served in the Giustina Gallery				
1:50 - 3:10 PM	A Biodiversity (Invited)	B Characterizing Cover and Biomass Change	C Stand Level Analyses 2	D Large Area Attribute Characterization
BREAK - coffee, tea, refreshments served in Giustina Gallery				
3:30 - 5:10 PM	A Nearest Neighbor Techniques 2 (Invited)	B Disturbance Detection 2	C Forest Species Classification	D Climate-Vegetation Interactions
5:50 PM • Bus to dinner at Paradise Springs				

Friday, September 14, 2012

7:30 - 8:30 AM • BREAKFAST and REGISTRATION in Giustina Gallery

8:30 - 9:15 AM	A Plenary: Future satellite missions by ESA and DLR - The Sentinels and EnMAP , Patrick HOSTERT Keynote Speaker, Thomas SPIES, <i>Forests from above: How remote sensing has changed the science and management of forests in the Pacific Northwest</i>			
9:25 - 10:45 AM	A Forest Monitoring 2 (Invited)	B Forest Health 2	C Science and Decision Support 2	
BREAK - coffee, tea, refreshments served in Giustina Gallery				
11:10 AM - 12:50 PM	A Spatial Implementation of Process Models (Invited)	B Disturbance Characterization	C Structure Characterization 2	
LUNCH - served in the Giustina Gallery				
2:05 - 3:25 PM	A Precision Forestry (Invited)	B Local Attribute Characterization	C Analytical Methods	
BREAK - coffee, tea, refreshments served in Giustina Gallery				
4:00 PM • Future of ForestSAT				

Welcome to ForestSAT 2012

ForestSAT 2012 is the 5th in a series of international conferences promoting scientifically based understanding of how Spatial Analysis Technologies (the SAT in ForestSAT) can help describe and monitor forested systems. Recognized is an inherent need to integrate data from an array of remote sensing systems, and other spatial information, using a variety of approaches. Numerous uses of spatial data are relevant, from addressing the needs of local forest managers, to informing forest ecosystem models, to establishing monitoring systems in support of international agreements. Delegates represent research organizations, universities, agencies, and the private sector.

We are pleased to host ForestSAT 2012 in the United States for the first time. Oregon State University, the conference venue, is located in an active and often controversial forest science, management, and policy environment. In the Pacific Northwest region of the US, we have big trees, old forests, and iconic wildlife species; we also have an active and important forest products industry. Recognized is the need to work closely together so that we can protect irreplaceable ecosystems while maintaining a forest economy that supports livelihoods, rural communities, and an expanding global population requiring forest resources. To fit the pieces of this region's complex puzzle together, we need better information to drive science and policy. ForestSAT 2012 highlights the value of spatial data and analysis technologies in providing that information.

The processes and challenges of determining how our forests should be managed are ongoing and have facilitated the development of a rich research and education environment at the University and associated US government labs. Spatial analysis technologies, and especially remote sensing and ecosystem modeling, are now highly integrated components of our total forestry experience. Regionally, we depend on these technologies to understand how our forests are changing; without these we simply could not adapt our policy and management approaches fast enough to keep up with the driving forces of change. ForestSAT 2012 comes along at a time when we have achieved a certain level of maturity in our understanding and in our scientific capabilities to support that understanding. Several of the talks at ForestSAT 2012 and one keynote address will provide greater context about our large and important social forest experiment. We expect that you will gain a deep appreciation of our forests and our education, research, management, and policy perspectives.

But, of course, local forest flavor is only a small part of the conference. What, you, the delegates, bring to the conference experience is far more important. At ForestSAT 2012 we will *all* share our own forestry knowledge and experience, and together learn much more than we possibly could otherwise. With approximately 275 delegates representing over 30 countries there will be a lot to learn.

So, welcome to ForestSAT 2012, Corvallis, Oregon, and be prepared to give as much as you take while here. Thank you for joining us,

ForestSAT 2012 Organizers

Warren B. COHEN

USDA Forest Service, PNW Research Station, Corvallis, OR, USA and Director of the Laboratory for Applications of Remote Sensing in Ecology (LARSE)

Maureen V. DUANE

Department of Forest Ecosystems and Society, Oregon State University

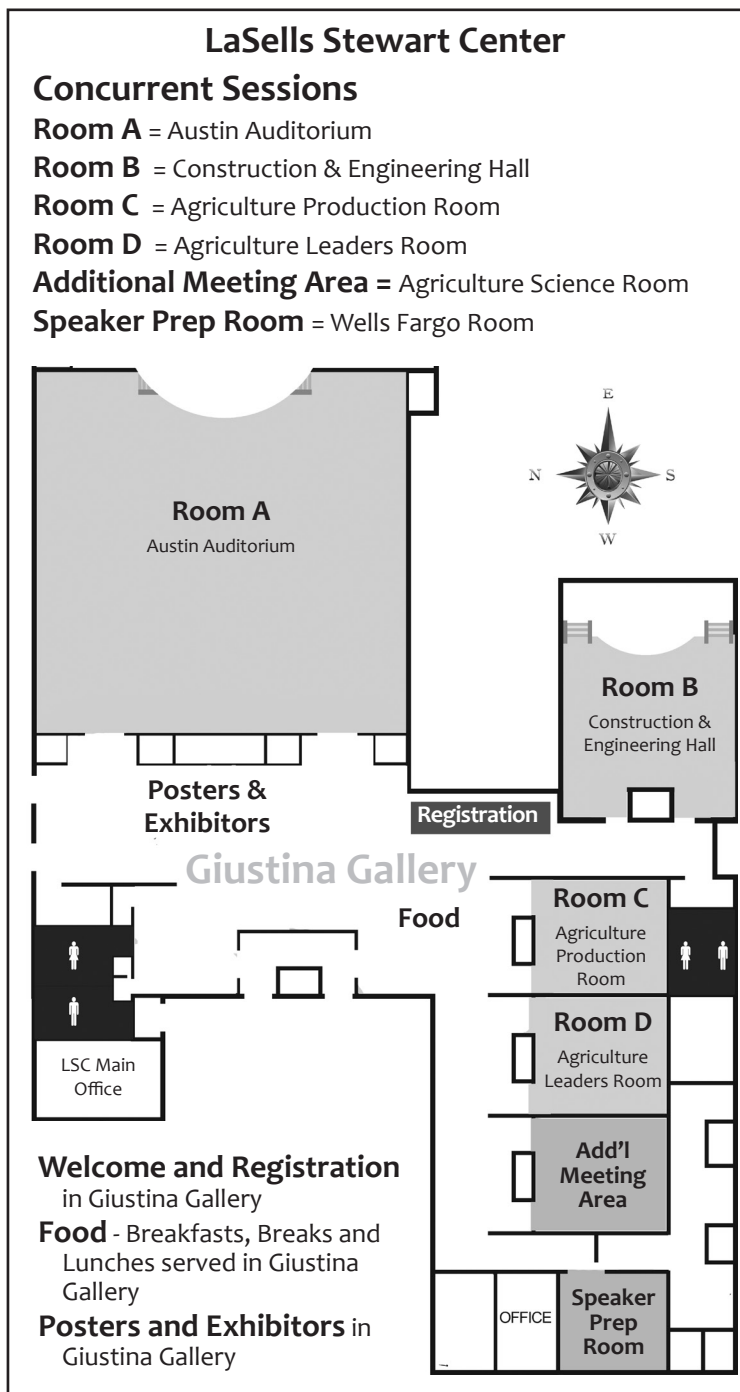
Michael G. WING

Department of Forest Engineering, Resources, and Management, Oregon State University

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Wednesday Sessions	4-6
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Scientific Committee

Name	Affiliation	Country	Name	Affiliation	Country
Belward, Alan	Joint Research Centre	Italy	Takao, Gen	Forestry and Forest Products Research Institute	Japan
Berterretche, Mercedes	Engineering Consultant Assoc.	Uruguay	Townsend, Phil	University of Wisconsin	US
Birdsey, Richard	USDA Forest Service	US	Turner, David	Oregon State University	US
Corona, Piermaria	University of Tuscia	Italy	Van Coillie, Frieke	Ghent University	Belgium
Chuvieco, Emilio	University of Alcalá	Spain	Vogelmann, James	USGS Earth Resources Observation and Science (EROS) Center	US
Dubayah, Ralph	University of Maryland	US	Watt, Pete	Indufor Asia Pacific Ltd	NZ
Finco, Mark	Red Castle Resources	US	Woodcock, Curtis	Boston University	US
Fournier, Richard	University of Sherbrooke	Canada	Wulder, Michael	Canadian Forest Service	Canada
Friedl, Mark	Boston University	US	Wynne, Randolph	Virginia Tech	US
Galeas, Raul	Ministry of Environment	Ecuador	Yang, Zhiqiang	Oregon State University	US
Galindo, Gustavo	Ministry of Environment	Colombia			
Goetz, Scott	Woods Hole Research Center	US			
Hais, Martin	University of South Bohemia	Czech Republic			
Hansen, Matthew	University of Maryland	US			
Hayes, Daniel	Oak Ridge National Lab	US			
Healey, Sean	USDA Forest Service	US			
Hill, Ross	Bournemouth University	UK			
Hirata, Yasumasa	Forestry and Forest Products Research Institute	Japan			
Hostert, Patrick	Humboldt University Berlin	Germany			
Huang, Chengquan	University of Maryland	US			
Ifo, Suspense	Marien Ngouabi University	Congo			
Iames, John	Environmental Protection Agency	US			
Lee, Kyu-Sung	Inha University	Korea			
Kennedy, Robert	Oregon State University	US			
Krankina, Olga	Oregon State University	US			
Liu, Shuguang	USGS Earth Resources Observation and Science (EROS) Center	US			
Lopes, Domingos	Dept. of Forest Sciences and Landscape Architecture, UTAD	Portugal			
Magnussen, Steen	Canadian Forest Service	Canada			
Manzanera, José Antonio	Polytechnic University of Madrid	Spain			
Masek, Jeffery	NASA Goddard Space Flight Center	US			
Maslov, Alexander	Institute of Forest Science and SCANEX	Russia			
McRoberts, Ronald	USDA Forest Service	US			
Meigs, Garrett	Oregon State University	US			
Miranda, David	University of Santiago de Compostela	Spain			
Moisen, Gretchen	USDA Forest Service	US			
Nelson, Peder	Oregon State University	US			
Nelson, Ross	NASA Goddard Space Flight Center	US			
Olofsson, Pontus	Boston University	US			
Olsson, Håkan	Swedish University of Agricultural	Sweden			
Pflugmacher, Dirk	Humboldt University Berlin	Germany			
Phinn, Stuart	University of Queensland	Australia			
Rosette, Jacqueline	NASA Goddard Space Flight Center	US			
Schleeweis, Karen	USDA Forest Service	US			
Sen, Susmita	Oregon State University	US			
Shimabukuro, Yosio	National Institute For Space Research	Brazil			
Song, Conghe	University of North Carolina	US			
Sonnenschein, Ruth	Humboldt University Berlin	Germany			
Stehman, Steve	Syracuse Univeristy of New York	US			
Suarez, Juan	Forestry Commission	UK			



Wednesday, September 12

7:30 - 8:30 AM • BREAKFAST & REGISTRATION in Giustina Gallery

Welcome to ForestSAT 2012
Warren B. COHEN, USDA Forest Service

Welcome to Oregon State University

Thomas MANESS, Dean of College of Forestry, Oregon State University

Keynote: *The Use of Landsat for Monitoring Forests: Carbon Applications and Evolving Methodologies*

Curtis WOODCOCK, Boston University, Boston, Massachusetts, USA

8:30 - 9:20 AM



Curtis Woodcock's keynote address is sponsored by NASA

*PRESENTER (when different from first author)

Room A

Disturbance Ecology: Insects and Fire, Invited

Garrett MEIGS, *organizer and moderator*

Remote Sensing of Forest Disturbances: Insect Infestation and Wildfire. Michael WULDER, Nicholas COOPS

Change detection and insect disturbance: synthesis from five systems. Philip TOWNSEND, Aditya SINGH, Clayton KINGDON, Martin SIMARD, Wesley FOX

Fire severity following the 2006 Tripod Complex Fires: effects of fuel treatment, landform, and weather. Susan PRICHARD, Maureen KENNEDY, Robert NORHEIM

Spatial and temporal analysis of insects and wildfires: Seeking a general conceptual model of multiple disturbance interactions. Garrett MEIGS, Robert KENNEDY

Room B

Characterizing Uncertainty 1

Steve STEHMAN, *moderator*

Uncertainty of mean values of forest variables, calculated combining field plots and ALS data for a 300 ha area. Estimation of possibilities for fieldwork reduction. Francisco MAURO, Rubén VALBUENA, Susana MARTÍN-FERNÁNDEZ, José Antonio MANZANERA*, Elena PERAL

Spatial Scaling and Error Propagation in Estimating Tropical Forest Structure and Biomass from Lidar Altimetry. Sassan SAATCHI, Jerome CHAVE, Victoria MEYER, Stephanie BOHLMAN

Scoping study of present and planned NASA missions to reduce uncertainty in the assessment of U.S. carbon stock. Charles WEISBIN, William LINCOLN, Sassan SAATCHI

Comparison of biomass allometric approaches for regional scale carbon mapping. Scott POWELL, Robert KENNEDY, Janet OHMANN, Warren COHEN, Matthew GREGORY, Heather ROBERTS, Van KANE, Jim LUTZ

Room C

Identifying Tree Species and Forest Type

Janet OHMANN, *moderator*

Leaf level spectral variability of native tree plantations in northern Costa Rica. J.Pablo ARROYO-MORA, Sienna SVOB, Margaret KALACSKA, Matthew FAGAN, Carlos CAMPOS

Verification of the accuracy of a new tree species counting method using high-resolution satellite data in an old-growth Chamaecyparis obtusa forest in central Japan. Masato KATOH, François A. GOUGEON, Shin-ichi YAMAMOTO, Naoyuki NISHIMURA, Daisuke HOSHINO, Yunqing LI

Enhanced forest type classification by multi-angular information retrieved from digital aerial photos. Tatjana KOUKAL, Clement ATZBERGER

Hyperspectral feature selection for forest type classification. Glenn NEVNHAM, Neil SIMS, Andrew ROBINSON, Darius CULVENOR, David LAZARIDIS

9:30 - 10:50 AM

BREAK - coffee, tea and refreshments served in Giustina Gallery

Room A

Disturbance Detection 1, Invited

Sean HEALEY, organizer and moderator

Toward a Global Annual Analysis of Ecosystem Disturbance: Development and Status of the MODIS Global Disturbance Index. David MILDREXLER, Maosheng ZHAO, Steven RUNNING

Mapping US Forest Disturbance History Using Landsat Time Series Observations. Chengquan HUANG, Samuel GOWARD, Karen SCHLEEWEIS, Mary LINDSEY, Jeffrey MASEK, Ramakrishna NEMANI, Warren COHEN

Forest Disturbance Monitoring using Landsat Time Series Data. James VOGELMANN, George XIAN, Brian TOLK

Detection and characterization of diverse landscape change agents through temporal segmentation of the Landsat archive. Robert KENNEDY, Zhiqiang YANG, Justin BRAATEN, Peder NELSON, Warren COHEN, David THOMA

Assessing the quality of Landsat time series forest change maps using the TimeSync visualization tool. Warren COHEN, Zhiqiang YANG, Peder NELSON, Susmita SEN, Chengquan HUANG, Karen SCHLEEWEIS, Gretchen MOISEN, Todd SCHROEDER, Steve STEHMAN

Room B

Characterizing Canopy Cover

Randolph WYNNE, moderator

Modeling percent tree canopy cover across the United States: prototype results. John COULSTON, Kenneth BREWER, B. Ty WILSON, Robert BENTON, Gretchen MOISEN*

Evaluation of tree canopy cover based on photointerpretation and LIDAR-derived information. Demetrios GATZIOLIS, John CHASE

Large Area Estimation of Continuous Forest Characteristics by Means of Satellite Remote Sensing Data. Mathias SCHARDT, Heinz GALLAUN, Martin STEINEGGER, Markus PROBECK

Delineation of forests based on airborne LIDAR data. Lothar EYSN, Markus HOLLAUS, Klemens SCHADAUER, Norbert PFEIFER

Mangrove canopy cover and spatial distribution in the mangrove ecosystem community of Florida. Dennis JACOBS, Dumitru SALAJANU

Room C

Carbon and Water Cycling

Olga KRANKINA, moderator

Assessing the Spatial and Temporal Distribution of Net Ecosystem Exchange over North America. David TURNER, David RITTS, Weiwei WANG, Ramakrishna NEMANI

Incorporation of disturbance and seasonality in terrestrial carbon flux upscaling. Kusum NAIETHANI, Erica SMITHWICK, Kenneth DAVIS, Klaus KELLER, Robert KENNEDY, Jeffrey MASEK

Estimation of Italian forest carbon fluxes through the integration of ground and satellite data. Gherardo CHIRICI, Fabio MASELLI, Marta CHIESI, Piermaria CORONA

Large-scale forest disturbances, LAI and phenology: Implications for regional hydrological modeling. Brian BUMA, Carol WESSMAN, Jeff DEEMS, Leanna LESTAK

Remote sensing based soil water balance for ET estimates in holm oak under water stress conditions. Julio VILLODRE, Isidro CAMPOS, Amaud CARRARA, Alfonso CALERA

LUNCH served in Giustina Gallery

Applications of Spectroscopy, Invited

Phil TOWNSEND, organizer and moderator

Drivers of spectral differences between and within species: Important considerations in practical application. Philip TOWNSEND, Gregory ASNER, Shawn SERBIN, Aditya SINGH, Brenden MCNEIL

Crown-level canonical discriminant analysis and lidar fusion for urban tree species classification. Michael ALONZO, Dar ROBERTS, Keely ROTH, Bodo BOOKHAGEN

Issues in scaling forest functional traits across space and time: Inter-comparability in multi-date and multi-date airborne spectroscopic imagery. Aditya SINGH, Shawn SERBIN, Clayton KINGDON, Huan GU, Philip TOWNSEND

Characterization of forest ecosystem functioning using imaging spectroscopy and thermal IR imagery. Shawn SERBIN, Aditya SINGH, John COUTURE, Clayton KINGDON, Eric KRUGER, Philip TOWNSEND

Mapping Forest Composition and Properties Using Imaging Spectroscopy. Susan USTIN

Forest Health 1

Robert KENNEDY, moderator

Assessing the role of drought in quaking aspen mortality using a satellite-derived drought index and forest inventory data. Greg LIKES, Patrick ZIMMERMAN, Charles PERRY, Christopher WOODALL

Tree Mortality in Forests of the Lake Tahoe Basin from 1985-2010: Influences of Tree Density, Forest Type, and Climatic Variability Jane VAN GUNST, Peter WEISBERG

Landsat spectral trajectories may aid in detecting precursors to insect outbreaks. Martin HAIS, Robert KENNEDY, Justin BRAATEN, Dirk PFLUGMACHER

Change detection and biomass quantification following a heterogeneous defoliation event using sequential LIDAR (ALS) acquisitions. Nicholas SKOWRONSKI, Kenneth CLARK, Michael GALLAGHER, John HOM, Richard BIRDSEY

The USDA Forest Service Real-Time Forest Disturbance Program. Robert CHASTAIN, Frank SAPIO, Jim ELLENWOOD, Mark FINCO, Vernon THOMAS

Nearest Neighbor Techniques 1

Piermaria CORONA, moderator

Forestry database update in Aegviidu test site, Estonia, using multi source KNN. Mait LANG, Johannes ANNISTE, Tõnu LÜKK, Tauri ARUMÄE

Imputation of stand-level forest attributes using Landsat and LIDAR data. Andrew HUDAK, Tod HAREN, Robert LIEBERMANN, Nicholas CROOKSTON, Janet OHMANN

Landscape Vegetation Inventory (LVI): A new low-cost, strategic forest inventory using multi-scale remotely sensed imagery in the Province of British Columbia, Canada. Christopher BUTTS, Xiaoping YUAN, Ann MORRISON

A near-neighbor imputation approach to moderate resolution mapping and estimation of forest carbon pools for the contiguous United States. B. Tyler WILSON, Christopher WOODALL

Developing methods for the next generation of nationwide wall-to-wall raster databases of forest variables in Sweden. Mikael EGBERTH, Mats NILSSON, Jörgen WALLERMAN, Håkan OLSSON

*PRESENTER (when different from first author)

Room A

Deforestation and Land Use Change

Patrick HOSTERT, *moderator*

Object-based tree cover and forest land use classification for a global systematic sample of Landsat from 1990-2000-2005: the FAO zero Remote Sensing Survey. Erik LINDQUIST, Rémi D'ANNUNZIO

Mapping and modelling landuse changes and its impact on carbon pools in Nepal. Him Lal SHRESTHA, MSR MURTHY, M. Roshan BAJRACHARYA, Bishal SITAULA

Tracking deforestation and tree plantation expansion in a Costa Rican biological corridor using a Landsat time series. M.FAGAN, S. SESNIE, J. ARROYO, W. WALKER, C. SOTO, R. CHAZDON, A. SANCHUN, R. DEFRIES

Annual multi-resolution detection of forest conversion to oil palm in the Peruvian Amazon. Victor GUTIERREZ-VELEZ, Ruth DEFRIES

Projecting Future Unplanned Deforestation for a REDD Feasibility Study in Cameroon. Robert ROSE, Francis OKEKE, Christian BURREN, Olivier SENE, Marisa ARPELS

Room B

Sampling and Estimation

Gretchen MOISEN, *moderator*

A Global Forest Biomass Inventory Using Space-Based Lidar. Sean HEALEY, Erik LINDQUIST, Paul PATTERSON, Michael LEFSKY, Sassan SAATCHI, Michael HERNANDEZ

Model-based estimation of forest compartment standing volume by exploiting canopy height model from airborne laser scanning: a design-based investigation. Piermaria CORONA, Lorenzo FATTORINI, Sara FRANCESCHI, Gianfranco SCRINZI, Chiara TORRESAN

From the plot to the landscape: characterizing forest structure and gap-size frequency in Peruvian Amazonia using LiDAR data. Doreen BOYD, Ross HILL*, Chris HOPKINSON, Tim BAKER

A regression estimator to improve the precision of the U.S. National Forest Inventory volume estimation. Vicente MONLEON, Bianca ESKELSON*, TEMESGEN Hailemariam

Application of the regression estimator to derive Gabon forest cover area estimates at national level. Christophe SANNIER, Louis-Vincent FICHET, Etienne MASSARD K MAKAGA

Room C

Recovery and Growth

Kevin BRIGGS, *moderator*

Tree growth and change detection using terrestrial laser scanning. Anssi KROOKS, Sanna KAASALAINEN, Pasi RAUMONEN, Mikko KAASALAINEN, Harri KAARTINEN, Antero KUKKO, Eetu PUTTONEN, Jari LISKI, Markus HOLOPAINEN, Mikko VASTARANTA

Modeling tree size distribution as a function of stand age: an application of novel remote sensing datasets. Laura DUNCANSON, Ralph DUBAYAH, Chenghuan HUANG, Katelyn DOLAN, Nalara PINTO, Justin FISK, Bruce COOK, George HURTT

Stratified Estimates of Forest Growth Using Multitemporal Landsat Clusters. Randolph WYNNIE, John COULSTON, Christine BLINN, Evan BROOKS, Valerie THOMAS

Monitoring forest regrowth following large scale fire using satellite data: a case study of Yellowstone National Park. Shannon FRANKS, Jeffrey MASEK

Toward a National View of Forest Recovery from Disturbance Using Landsat Time Series. Jeffrey MASEK, Khalidoun RISHMAWI, Christopher NEIGH, Chengquan HUANG, Samuel GOWARD

Room D

Stand Level Analyses 1

José Antonio MANZANERA, *moderator*

Airborne Laser Scanning prediction of Lorenz curves for stratifying the forest area into structural types. Rubén VALBUENA, Matti MALTAMO, Susana MARTÍN-FERNÁNDEZ, Petteri PACKALÉN, Gert-Jan NABUURS, Antonio GARCÍA-ABRIL

Using the PNOA low-density lidar data for assessing Pinus radiata D. Don stand volume. Eduardo GONZÁLEZ-FERREIRO, Ulises DIÉGUEZ-ARANDA, Ibán GÓMEZ-VÁZQUEZ, Felipe CRECENTE-CAMPO, David MIRANDA*, Sandra BUJÁN, Laura BARREIRO-FERNÁNDEZ, Fernando CASTEDO-DORADO

The influence of LiDAR pulse density and plot size on the accuracy of plantation stand volume equations. Michael WATT, Thomas ADAMS, Susana GONZÁLEZ-ARACIL, Hamish MARSHALL, Pete WATT, David PONT*

Fusion of Airborne Laser Scanner, L-band SAR/INSAR and Optical Remote Sensing for Estimating Canopy Height and Growing Stock Volume. Oliver CARTUS, Josef KELLNDORFER, Markus RONBACH, Sergio GONZALES

Estimation of forest variables using TanDEM-X data in combination with a high resolution DEM. Henrik PERSSON, Maciej SOJA, Maurizio SANTORO, Johan FRANSSON, Lars ULANDER

4:15 - 5:55 PM

6:00 PM

Poster Reception in Giustina Gallery

Poster reception partially sponsored by



Thursday, September 13

7:30 - 8:30 AM • BREAKFAST & REGISTRATION in Giustina Gallery

8:30 - 9:15 AM

Plenary: NASA Satellite Observations for Forest Science and Monitoring

Jeffrey MASEK, Biospheric Sciences Laboratory, NASA Goddard Space Flight Center, Greenbelt, Maryland

Keynote: Using LiDAR Remote Sensing to Understand the Seasonal Dynamics of Forests
Jacqueline ROSETTE, NASA Goddard Space Flight Center and Department of Geographic Sciences, University of Maryland, College Park, Maryland

Thursday morning plenary session is sponsored by BLM



*PRESENTER (when different from first author)

9:25 - 10:45 AM

Room A

Characterizing Uncertainty 2, Invited

Ronald MCROBERTS and Pontus OLOFSSON, organizers and moderators

Making better use of accuracy data in land change studies: estimating accuracy and area and quantifying uncertainty. Pontus OLOFSSON, Giles FOODY, Stephen STEHMAN, Curtis WOODCOCK

Estimating Area using the Accuracy Assessment Error Matrix. Stephen STEHMAN

Efficiency of LiDAR-assisted regional sample surveys of forest resources and biomass. Erik NÆSSET, Liviu ENE, Terje GOBAKKEN, Timothy GREGOIRE, Ross NELSON, Göran STÅHL

Post-classification approaches to estimating deforestation. Ronald MCROBERTS

Room B

Forest Monitoring 1

Karen SCHLEEWEIFS, moderator

Contribution of National Near Real Time MODIS Forest % Maximum NDVI Change Products to the U.S. ForWarn System. Joseph SPRUCE, William HARGROVE, Gerald GASSER, James SMOOT, Philip KUPER

Capabilities of the DMC constellation and applications of its imagery for tropical forest mapping and monitoring. Katarzyna WISNIEWSKA

Attributing Causal Agents to Nationwide Maps of Forest Disturbance. Gretchen MOISEN, Todd SCHROEDER, Karen SCHLEEWEIFS, Chris TONEY, Warren COHEN, Samuel GOWARD

Large area change detection based on pixel based compositing – 25 years of forest cover change in the Carpathians. Patrick GRIFFITHS, Patrick HOSTERT, Tobias KUERMERLE

Room C

Fire Effects

Matt REILLY, moderator

Comparison of Post-fire Forest Structure using Field, Stereo-Photo, and Lidar Estimates. Susan HUMMEL, Kevin HALVERSON*, Jeremy WEBB

Fusion of Landsat and Airborne LiDAR Data to Study Landscape-scale effects of Fire Severity in Yosemite National Park. Van R. KANE, James LUTZ

Assessment of fire severity in tropical peatswamp forests of Central Kalimantan, Indonesia. Kevin TANSEY, Matthew WALDRAM, Susan PAGE, Agata HOSCILO

Impact of Forest Fire and Intensity Rainfall on Mass Movement Occurrence in Lebanon. Rouba ZIADI, Chadi ABDALLAH, Nicolas BAGHDADI

Room D

Science and Decision Support 1

Zhiqiang YANG, moderator

Opportunistic use of available LiDAR data: Rapid integration and Continuous Improvement in Native Forest Management. Tony BROWN

3D-Vegetation Laboratory: Science and modeling support for accuracy assessment and prototyping of EO data and products. Felix MORSORF, Reik LEITERER, Michael SCHAEPMAN, Norbert PFEIFER, Markus HOLLAUS, Phillip LEWIS, Mathias DISNEY, Jean-Phillipe GASTELLUE-ETCHEGORRY, Jason BRAZILE, Benjamin KOETZ

Decision support for strategic forest-fuels management in the Pacific Northwest. Keith REYNOLDS, Paul HESSBURG, Robert KEANE, James DICKINSON

An online tool for forest project monitoring, reporting and verification activities. Karin VIERGEVER, Tipper RICHARD

BREAK - coffee, tea and refreshments served in Giustina Gallery

Room A

Characterizing Ecophysiological Processes, Invited

Christopher WILLIAMS, organizer and moderator

Innovative Multi-angle Imaging Spectrometer and Analysis Approach to Remotely Quantify Ecosystem-Atmosphere Carbon and Water Exchange. Forest HALL, Thomas HILKER

Remote Sensing of Tropical Ecosystems using MODIS: Results from a novel surface reflectance product. Thomas HILKER, Alexei I LYAPUSTIN, Compton TUCKER, Forrest HALL, Piers SELLERS, Yujie WANG

Combining ensemble modeling and imaging spectroscopy for mapping canopy nitrogen concentration of forest ecosystems. Achilleas PSOMAS, Christian GINZLER, Niklaus ZIMMERMANN

Lidar and Hyperspectral Remote Sensing for Canopy Structure and Physiology. Valerie THOMAS, KHOMIK, GOKKAYA, NOLAND, TREITZ, MCCAUGHEY, ARAIN

Ecosystem physiology in a post-clearcut New England environment: Understanding processes and assessing climate implications. Christopher WILLIAMS, Melanie VANDERHOOF, Myroslava KHOMIK, Bardan GHIMIRE

Room B

Structure Characterization 1

Conghe SONG, moderator

Forest structure analysis of a virgin beech forest in the Ukrainian Carpathians: a WorldView-2 canopy height model combined with terrestrial inventory data. Martina HOBI, Christian GINZLER, Brigitte COMMARMOT, Harald BUGMANN

Predicting forest structure and fibre attributes of insular Newfoundland using airborne laser scanner (ALS) data. Joan LUTHER, Randy SKINNER, Wade BOWERS, Richard FOURNIER, Oliver van LIER, Jean-François CÔTÉ, Suzanne MONETTE, Trevor MILNE, Chris HOPKINSON

A Comparison of SRTM and GLAS Derived Tree Heights for Tropical and Semiarid Forests in Puerto Rico and the U.S. Virgin Islands. John IIAMES, Ross LUNETTA, Ben RIEGEL

Using leaf-on and leaf-off 3D point clouds generated using computer vision and hobbyist remote controlled aircraft to estimate forest canopy height. Jonathan DANDOIS, Erle ELLIS

Extracting vegetation 3D structure from repeat-pass polarimetric-interferometric radar data: The RMoG model. Marco LAVALLE, Scott HENSLEY, Ralph DUBAYAH

Room C

Land and Forest Cover Mapping

Lars WASER, moderator

A comparison between standard maximum likelihood classification techniques and polytomous logistic regression. John HOGLAND, Nedret BILLOR

Land cover mapping of Colombia S.A. based on phenology and remote sensing. Jesus ANAYA, Germán VALENCIA

A new framework for standardized forest cover mapping based on the FAO forest definition. Paul MAGDON, Christoph FISCHER, Hans FUCHS, Christoph KLEINN

Using random forest decision tree classification for large area forest extent mapping with multi-source remote sensing and GIS data. Andrew MELLOR, Simon JONES, Andrew HAYWOOD, Phil WILKES

Importance of bistatic SAR features from TanDEM-X for forest mapping and monitoring. Michael SCHLUND, Felicitas von PONCET, Steffen KUNTZ, Christiane SCHMULLIUS

Room D

Habitat Characterization

Ross HILL, moderator

Towards operative habitat mapping using airborne laser scanning. Werner MÜCKE, András ZLINSZKY, Norbert PFEIFER, Markus HOLLAUS

3D modeling bird habitat resources in terms of vegetation structure in southwestern Australian temperate woodlands, using multiple satellite-borne datasets. Peter LEE, Brendan MACKEY, Chris MCELHINNY, Sandra BERRY

Habitat Modeling, Mapping, and Monitoring for Northern Spotted Owls. Raymond DAVIS, Katie DUGGER

Linking FIA Data and Satellite Imagery to Build a Habitat model for the Marbled Murrelet. Martin RAPHAEL, Gary FALXA

Characterizing vegetation phenology and nutritional value for wildlife management using digital time-lapse photography. Wiebe NIJLAND, Michael WULDER, Gordon STENHOUSE, Nicholas COOPS

Room A	Room B	Room C	Room D
<p>Biodiversity, Invited Andy HANSEN, organizer and moderator</p> <p>Assessing the occurrence, vulnerability and expansion of forest tree species of the Pacific Northwest in response to recent climate variation. Nicholas COOPS, Richard WARING</p> <p>Using species distributions models as a basis to test fragmentation effects on biodiversity. Matthew BETTS</p> <p>Mapping Patterns of Bird Diversity using Multi-sensor Imagery and Canopy Structure Metrics of Habitat Heterogeneity. Scott GOETZ, Andy HANSEN, Ralph DUBAYAH, Richard PEARSON, Linda PHILLIPS, Anu SWATATRAN, Matthew BETTS, Richard HOLMES</p> <p>Interactive effects of forest structure and productivity on bird diversity. Andy HANSEN</p>	<p>Characterizing Cover and Biomass Change Jeffrey MASEK, moderator</p> <p>Monitoring selective logging impacts in western Amazonia with repeat LIDAR flights. Marcus D'OLIVEIRA, Hans-Erik ANDERSEN*, Robert MCCAUGHEY, Stephen REUTEBUCH, Michael KELLER</p> <p>Generation of a Multi-temporal Forest Cover and Change Product for San Martin, Peru. Jenny HEWSON, Hatzel ORTIZ, Marc STEININGER, Ethel RUBIN DE CELIS, Victor BARRENA</p> <p>Evaluating recent expansions, removals, and historic distributions of western juniper (<i>Juniperus occidentalis</i>) in eastern Oregon. Matt NOONE, Eric NIELSEN, Jimmy KAGAN</p> <p>Using Landsat-derived disturbance and recovery history and lidar for mapping forest biomass dynamics. Dirk PFLUGMACHER, Warren COHEN, Robert KENNEDY, Zhiqiang YANG</p>	<p>Stand Level Analyses 2 David MIRANDA, moderator</p> <p>Automatic stand mapping based on ALS data object segmentation for forest management. Susana MARTÍN-FERNÁNDEZ, Ana HERNÁNDO, Mauro FRANCISCO, Rosario TEJERA, María Victoria NUÑEZ</p> <p>A Flexible Object-Based Approach to Generating Forest Stand Polygons Using LIDAR and High-Resolution Aerial Imagery Data. Jordan GOLINKOFF</p> <p>Delineating and Classifying Forest Stands Based on Three-Dimensional Structure and Pattern. Monika MOSKAL, Jeffrey RICHARDSON*</p> <p>Assigning diameter distribution typologies to an ALS data grid map. María Victoria NUÑEZ, Francisco MAURO*, Cristina PASCUAL, Luis Gonzaga GARCÍA-MONTERO, Warren COHEN</p>	<p>Large Area Attribute Characterization Sassan SAATCHI, moderator</p> <p>Quantifying forest growing stock volume in the boreal zone using spaceborne Envisat ASAR observations. Maurizio SANTORO, Carsten PATHE, Julian SCHWILK, Christiane SCHMULLIUS, Anatoly SHVIDENKO, Dmitri SCHEPASCHENKO, Ian MCCALLUM, Johan FRANSSON, Andre BEAUDOIN, Ron HALL & Oliver CARTUS*</p> <p>Mapping large areas of northern boreal forest using satellite images at two scales. Antoine LEBOEUF, Richard FOURNIER</p> <p>Mapping Global Forest Aboveground and Belowground Biomass. Yifan YU, Sassan SAATCHI, Michael LEFSKY</p> <p>Statewide Mapping of Forest Height and Aboveground Biomass in North Carolina Using Small Footprint Lidar and FIA Data. Yong PANG, Chengquan HUANG, Chris TONEY, Ralph DUBAYAH, Zengyuan LI, Min FENG, Zhiliang ZHU</p>
<p>BREAK - coffee, tea and refreshments served in Giustina Gallery</p>			

Room A

Nearest Neighbor Techniques 2, Invited

TEMESGEN Hailemariam and Ronald McROBERTS, organizers and moderators

Imputing potential productivity of Pacific Northwest forests in a changing climate. TEMESGEN Hailemariam , G. LATTI, T. BARRETT, Darius SIGGINS

Improved Precision of Forest Inventory Variables Using a New Distance Metric for Multivariate Nearest Neighbour Imputation. Valerie LEMAY, Ian MOSS*, TEMESGEN Hailemariam

Mapping change in live and dead forest biomass with Landsat time-series, re-measured plots, and nearest-neighbor imputation. Janet OHMANN, Matthew GREGORY, Heather ROBERTS, Robert KENNEDY, Zhiqiang YANG, Justin BRAATEN, Scott POWELL, Warren COHEN, Van KANE, Jim LUTZ

An Evaluation of Selected Three-Phase Forest Mapping Approaches with Landsat, Lidar Strip Sampling, and Ground Plots on the Kenai Peninsula, Alaska. Jacob STRUNK, TEMESGEN Hailemariam, Hans-Erik ANDERSEN

Assessing the utility of optimized nearest neighbors distance metrics. Ronald McROBERTS, Erkki TOMPPA, Erik NÆSSET, Terje GOBAKKEN

Room B

Disturbance Detection 2

Chengquan HUANG, moderator

Toward near real time automated monitoring of anomalous sub-annual scale changes in natural ecosystem development. Alexander KOLTUNOV, Carlos RAMIREZ

Detection of clear-cuts using decomposition of NDVI-MODIS time series and breakpoint detection. Jonas LAMBERT, Jean-Philippe DENUX, Anne JACQUIN, Veronique CHÉRÉ

Evaluating forest change maps derived by two Landsat-based automated disturbance mapping algorithms. Todd SCHROEDER, Robert KENNEDY, Chengquan HUANG, Gretchen MOISEN, Warren COHEN, Zhiqiang YANG

The Vegetation Monitoring and Analysis Tool: enabling forest growers to interpret MODIS time series image data on the fly. Neil SIMS, Darius CULLENOR, Anders SIGGINS, Jan VERBESSELT, Christine STONE, Peter WORSLEY

Temporal patterns of PALSAR backscatter change related to deforestation and degradation in tropical Peat Swamp forests. Matthew WALDRAM, Kevin TANSEY, Sue PAGE

Room C

Forest Species Classification

Glenn NEWNHAM, moderator

Tree species classification in boreal forests with hyperspectral data. Michele DALPONTE, HansOle ØRKA, Terje GOBAKKEN, Damiano GIANELLE, Erik NÆSSET

Monitoring of a forest reserve with different remotely sensed data. Géza KIRÁLY

Analysis of the Impact of Input Data Sources and Resolutions on Tree Species Classification Accuracy. Petra KRAHWINKLER, Jürgen ROSSMANN

Characterizing forest species composition using multiple sensors and inventory approaches. HansOle ØRKA, Michele DALPONTE, Terje GOBAKKEN, Erik NÆSSET, Liviu ENE

Full-automated nationwide prediction of tree species and composition by combining airborne digital sensor data and NFI sample plots. Lars WASER, Christian GINZLER, Meinrad KUECHLER, Rolf MEILE

Room D

Climate-Vegetation Interactions

Scott POWELL, moderator

Modeling dry season deciduousness in Mexican Yucatán forest using MODIS EVI data (2000-2011). Nicholas CUBA, John ROGAN, Zachary CHRISTMAN, Christopher WILLIAMS, Laura SCHNEIDER, Deborah LAWRENCE

Climate change and forestry in South Africa: using spatially developed tools to support the forestry industry through the change. Ilaria GERMISHUIZEN

Cloudcover and fog distributions in the California Channel Islands: Influence on coastal forest biogeography and biogeochemistry. Christopher STILL, Michael TOOMEY, Park WILLIAMS, Bharat RASTOGI, Burke GREER, Doug FISCHER, Sara BAGUSKAS, Mariah CARBONE

Refining combustion completeness and carbon emissions from wildfires by combining remote sensing and modeling. Sander VERAVERBEKE, Simon HOOK

Remote sensing applications to quantify landscape change in semi-arid woodlands. Peter WEISBERG, Jian YANG, Thomas DILTS

Friday, September 14

7:30 - 8:30 AM • BREAKFAST & REGISTRATION in Giustina Gallery

Plenary: *Future satellite missions by ESA and DLR - The Sentinels and EnMAP*

Patrick HOSTERT, Geography Department, Humboldt-Universität zu Berlin, Germany

Keynote: *Forests from above: How remote sensing has changed the science and management of forests in the Pacific Northwest*

Thomas SPIES, USDA Forest Service PNW Research Station, Corvallis, Oregon

8:30 - 9:15 AM

Friday morning plenary session is sponsored by BLM



*PRESENTER (when different from first author)

Room A

Forest Monitoring 2, Invited

Scott GOETZ, organizer and moderator

High-Resolution Carbon Estimation in NASA's Carbon Monitoring System. Ralph DUBAYAH, Juan SUÁREZ, Ross NELSON, Jacqueline ROSETTE, Anuradha SWATANTRAN, Naiara PINTO, Richard BIRDSEY, Kristofer JOHNSON, Bruce COOK, Amanda ARMSTRONG, Chengquan HUAN, Laura DUNCANSON, George HURT

Tropical Vegetation Carbon Densities Mapped from Synergistic Satellite and Field Measurements for REDD+. Scott GOETZ, Alessandro BACCINI, Nadine LAPORTE, Wayne WALKER, Mindy SUN, Richard HOUGHTON, Ralph DUBAYAH

Large area forest monitoring with Landsat. Matthew HANSEN, Peter POTAPOV, Svetlana TURUBANOVA, Alexey EGOROV, Alexandra TYUKAVINA

Monitoring Strategies for REDD+: Integrating field, airborne, and satellite observations of Amazon Forests. Douglas MORTON, Carlos SOUZA Jr., Marcio SALES, Michael KELLER

9:25 - 10:45 AM

Room B

Forest Health 2

Martin HAIS, moderator

Validating a nationwide 30 meter forest parameter dataset for forest health risk assessments. James ELLENWOOD, Frank KRIST, Frank SAPIO

Using LandTrendr and TimeSync to Identify Vegetation Decline in Subalpine Forests Defoliated by Balsam Woolly Adelgid. Karen HUTTEN, Christian TORGERSEN, Andrea WOODWARD, Robert KENNEDY, Justin BRAATEN

Fusion of multi-temporal RapidEye and TerraSAR-X data to map bark beetle green attack. Sonia ORTIZ, Johannes BREIDENBACH, Gerald KÄNDLER

Modelling the susceptibility of South African pine forests to Sirex noctilio (Hymenoptera: Siricidae): a bioclimatic approach. Ilaria GERMISHUIZEN, Riyad ISMAIL, Philip CROFT

BREAK - coffee, tea and refreshments served in Giustina Gallery

Room C

Science and Decision Support 2

Peder NELSON, moderator

Modelling harvester productivity with LiDAR and multispectral imagery. Muhammad ALAM, Martin STRANDGARD, Mark BROWN, Julian FOX

Light UAS for forestry applications an operational experience. Lars BJÖRK

Mobile Remote Sensing of Forests by Volunteers. Colin FERSTER, Nicholas COOPS

The use of Ground Penetrating Radar (GPR) and Lidar data for mapping the organic layer-mineral subsoil interface in northern boreal forests of Canada. Ahmed LAAMRANI, Osvaldo VALERIA, Yves BERGERON, Li-Zhen CHENG

Room A

Spatial Implementation of Process Models, Invited

Dan HAYES and David TURNER, *organizers and moderators*

Using Remotely-sensed Data Sets for Model Evaluation and Benchmarking. Forrest HOFFMAN, James RANDERSON, Jiafu MAO

Remote sensing and geospatial data and tools for estimating pyrogenic carbon emissions. Nancy FRENCH, Donald MCKENZIE, Jessica MCCARTY, Tyler ERICKSON, Benjamin KOZIOL, Michael BILLMIRE

Mapping forest carbon from optical /radar fusion in North America. Oliver CARTUS, Josef KELLNDORFER, Wayne WALKER, Elizabeth LAPOINTE, Tina CORMIER, Jesse BISHOP, Greg FISKE

An Analysis of Roles of Remotely Sensed Surface Processes in A Regional Carbon Sequestration Assessment. Zhiliang ZHU, Shuguang LIU, Terry SOHL, Todd HAWBAKER, Sarah STACKPOOLE

Direct measurements of photosynthetic rate from satellites. Thomas HILKER, Forrest HALL, Nicholas COOPS

Room B

Disturbance Characterization

Dirk PFLUGMACHER, *moderator*

Estimation of biomass loss from charcoal production by kiln burn mark area extracted from Quickbird imagery in dry Miombo woodlands in Tanzania. Klaus DONS, Rasmus FENSHOLT, Henrik MELBY, Carsten SMITH-HALL

Evaluating large-scale forest disturbance caused by typhoon Songda using ICESat/GLAS data. Masato HAYASHI, Nobuko SAIGUSA, Hiroyuki OGUMA, Yoshiaki YAMAGATA, Gen TAKAO

Characterising anthropogenic disturbance patterns of an industrialised landscape in Alberta, Canada. Paul PICKELL, Nicholas COOPS, David ANDERSON

Attributing Forest Disturbance Type Across Different Landscapes. Karen SCHLEWEIS, Gretchen MOISEN, Todd SCHROEDER, Chris TONEY

Detecting Forest Disturbance in the Pacific Northwest from MODIS Time Series Using Temporal Segmentation. Damien SULLA-MENASHE, Zhiqiang YANG, Robert KENNEDY, Justin BRAATEN, Xiaoman HUANG, Olga KRANKINA, Xiaoman HUANG, Mark FRIEDL

Room C

Structure Characterization 2

Todd SCHROEDER, *moderator*

Improving plot-based prediction of live above ground biomass using point-filtered airborne lidar data. Brian WING, Martin RITCHIE, Kevin BOSTON, Warren COHEN

Monitoring Forest Biomass Change by ALOS PALSAR and LiDAR. Akira KATO, Manabu WATANABE, Yoshio YAMAGUCHI, Tatsunaki KOBAYASHI

Impact of Freezing on ALOS PALSAR Coherence Properties in Central Siberia and its Implication to Forest Growing Stock Volume Assessment. Christian THIEL, Christian HÜTTICH, Christiane SCHMULLIUS

Modelling woody biomass for Kirtland's warbler (Setophaga kirtlandii) conservation planning in northern Lower Michigan, USA. Mark NELSON, Todd SCHROEDER, Deahn DONNER, Kirk STUEVE, Sean HEALEY

Using Spatial, Spectral and Temporal Information for Mapping Forest LAI. Conghe SONG, Josh GRAY

LUNCH served in Giustina Gallery

Local Attribute Characterization

Andy HUDAK, *moderator*

Comparison of digital aerial images and airborne laser scanning data for timber volume estimation on plot level. Christoph STRAUB, Rudolf SEITZ, Lars WASER

Assessing forest standing volume and harvesting rates in Mediterranean broadleaved and coniferous stands using LiDAR data. Davide TRAVAGLINI, Francesca BOTTALICO, Piermaria CORONA, Susanna NOCENTINI

Analysis of factors for predicting shrub biomass in small stands using ALS data. Javier ESTORNELL, Luis RUIZ*, Borja VELÁZQUEZ-MARTÍ

L-band SAR backscatter sensitivity to forest structure in semi-arid environments: biomass retrieval error analysis at plot level. Mihai TANASE, Rocco PANCIERA, Kim LOWELL, Alberto GARCIA-MARTIN, Jeffrey P. WALKER

Analytical Methods

Gen TAKAO, *moderator*

Radiance changes of regenerating clear-felled areas. Anton KARDAKOV, Andres KIVISTE, Urmas PETERSON

Correction of Waveform Lidar Sub-canopy Elevation Model Using a Semi-automated Filter. Geoffrey FRICKER, Sassan SAATCHI, Victoria MEYER, Thomas GILLESPIE, Yongwei SHENG

Quantifying the effect of changing filtering algorithm key parameter on airborne LiDAR derived vegetation metrics. Han MENG, Bernard DEVEREUX, Gabriel AMABLE

Data reduction techniques for spatial modeling of remote sensing data. Maureen KENNEDY

Room A

Precision Forestry, Invited

Juan SUÁREZ, *organizer and moderator*

Valuation of information obtained from different forest inventory methods – a case study. Even BERGSENG, Hans Ole ØRKA, Erik NÆSSET, Terje GOBAKKEN*

Multi-sensor, high resolution remote sensing for forest assessment within NASA's Carbon Monitoring System initiative (CMS). Jacqueline ROSETTE, Bruce COOK, Ross NELSON, Larry CORP, Christopher FIELD, Jeff MASEK, Doug MORTON, Betsy MIDDLETON, Jon RANSON, Phil DECOLA, John DEGNAN

A Precision Forestry application obtained by the integration of modelling, sub-compartment data and airborne LiDAR in Sitka spruce stands in Great Britain. Juan SUÁREZ, John FONWEBAN, Barry GARDINER

FUSENSOR: a tool for combining airborne optical and laser sensors with back-projecting technique. Rubén VALBUENA, Alejandro DE BLAS, Francisco José ARJONILLA, Alfonso GÓMEZ, Daniel LÓPEZ, José Antonio MANZANERA

Poster Session

Posters will be displayed in Giustina Gallery throughout the entire conference. During the Poster Reception (Wednesday, Sept 12, 6 PM), authors will be available to answer questions.

- 1 **Quantifying Vegetation Structure and Biomass in Eastern Australia: Science to Management.** John ARMSTON, Stuart PHINN, Peter SCARTH, Richard LUCAS, Dan CLEWLEY, Dan TINDALL
- 2 **Locally adjusted tree canopy match for nationwide forest inventories.** Ruedi BOESCHM, Christian GINZLER
- 3 **Blending MODIS and Landsat images to create a dense time-series for monitoring phenology and forest succession in the heterogeneous and fragmented forests of Oregon's western Cascade Mountains.** Kevin BRIGGS, Warren COHEN, Feng GAO
- 4 **Operational Forest Management using LiDAR derived Tactical Net Harvest Area in NSW Native Forests.** Tony BROWN
- 5 **The use of GIS in the management of wild edible mushrooms in Central Mexico.** Cristina BURROLA, Marivel HERNÁNDEZ, Roberto GARIBAY
- 6 **Time series classification of MODIS NDVI images to map forest types in Pyrénées Mountains (France-Spain).** Jean-Philippe DENUX, Véronique CHERET*, Emmanuelle CANO
- 7 **Spatial prediction of *Pinus pinaster* stands and shrubland aboveground biomass in a Mediterranean region.** Helder VIANA, José ARANHA, Domingos LOPES, Warren COHEN*
- 8 **Remote sensing of canopy chemistry and community composition in a mediterranean-type landscape using high-fidelity imaging spectroscopy from the Carnegie Airborne Observatory.** Kyla DAHLIN, Gregory ASNER, Christopher FIELD
- 9 **Synergy of hyperspectral and LiDAR data for tree species mapping within an unmanaged closed forest reserve in Flanders, Belgium.** Flore DEVRIENDT, Frieke VAN COILLIE, Robert DE WULF, Pieter KEMPENEERS, Kris VANDEKERKHOVE, Felix MORS DORF
- 10 **The use of LiDAR heights for treating missing data in forest inventories.** Lorenzo FATTORINI, Piermaria CORONA, Sara FRANCESCHI
- 11 **Estimating Biomass and Vegetation Structure in the Everglades National Park Mangrove Ecosystems using space-based Synthetic Aperture Radar.** Emanuelle FELICIANO, Shimon Wdowinksi, Matthew POTT
- 12 **Mapping Wetland and Land Use Change in the Willamette Valley from 1972-2012 using Landsat Time Series Imagery.** Kate FICKAS, Warren COHEN
- 13 **Dual-wavelength laser scanning for measurement of vegetation moisture content.** Rachel GAULTON, Mark DANSON, Alberto RAMIREZ-CARDOZO, Oliver GUNAWAN
- 14 **Using functional data analysis to estimate urban forest structure from discrete lidar data and hyperspectral imagery.** Huan GU, Aditya SINGH, Phil TOWNSEND
- 15 **Development of the forest biomass map using airborne LiDAR data in Yokohama City, Japan.** Masato HAYASHI, Nobuko SAIGUSA, Bagan HASI, Yoshiki YAMAGATA, Borjigin HABURA, Rikie SUZUKI
- 16 **Impacts of Prognostic Phenology and Land Cover Heterogeneity on Carbon Pools and Fluxes in North and South American Forest Regions.** Katherine CORBIN, Ian BAKER, Scott DENNING, Reto STOCKLI
- 17 **Mapping the type, magnitude, and extent of forest disturbance across the National Forest System, 1985-2011.** Alexander HERNANDEZ, Sean HEALEY, R. Douglas RAMSEY, Chenquan HUANG, Chris MCGINTY, Chris GARRARD
- 18 **Function modeling: improved raster analysis through delayed reading and function raster datasets.** John HOGLAND, Nathaniel ANDERSON, J. Greg JONES
- 19 **Estimates of C flux at landscape scale using process modeling, field data and LiDAR as part of a carbon monitoring system.** Kristofer JOHNSON, Richard BIRDSEY, Kenneth CLARK, Jason COLE, John HOM, Kevin Mccullough, Yude PAN, Nicholas SKOWRONSKI, Craig WAYSON
- 20 **Tree-scale forest structure for modeling of hydrodynamic stresses.** William KENNY, Gil BOHRER, Somayeh DODGE, Steven GARRITY, Ashley MATHENY, Kyle MAURER
- 21 **Detection of genetic diversity in aspen forests using AVIRIS and Landsat imagery.** Clayton KINGDON, Michael MADRITCH, John COUTURE, Karen MOCK, Richard LINDROTH, Aditya SINGH, Philip TOWNSEND
- 22 **Inventory of the Green Arboreal Areas in the Township of Sopron by means of different remotely sensed data.** Géza KIRÁLY, Péter BURAI, Kornél CZIMBER
- 23 **Modeling lidar-derived boreal forest crown cover with SPOT 4 HRVIR data.** Lauri KORHONEN, Janne HEISKANEN, Ilkka KORPELA
- 24 **Assessment of the 8 band WorldView-2 imagery to detect bark beetle infestation in Norway spruce forests.** Markus IMMITZER, Tatjana KOUKAL*
- 25 **Integrating spatial datasets to map forests with high carbon stores in the Pacific Northwest and southeast Alaska.** Olga KRANKINA, Jessica LEONARD, Dominich DELLASALA
- 26 **Comparisons of Leaf Area Index (LAI) measurements at various spatial scales over the Ordway Swisher Biological Research Station in Florida, USA.** Keith KRAUSE, Courtney MEIER, David BARNETT, Thomas KAMPE, Andrew FOX
- 27 **Linking structural with functional changes of a semi-arid woodland in central New Mexico using a time series of high resolution satellite imagery and eddy covariance measurements.** Dan KROFCHECK, Jan EITEL, Lee VIERLING, Marcy LITVAK
- 28 **Integrating high resolution satellite imagery and airborne lidar data sets as a means to improve crown delineation and classifications in semi-arid ecosystems.** Dan KROFCHECK, Amy NEUENSCHWANDER, Marcy LITVAK
- 29 **Creation of a Canopy Height Model from mini-UAV imagery.** Jonathan LISEIN, Stéphanie BONNET, Phillipe Lejeune
- 30 **Possible Shadowing Effects in Waveform LiDAR.** Craig MAHONEY, Steven HANCOCK, Sietse LOS, Eva VAN GORSEL, Natascha KLJUN
- 31 **Diametric distribution estimation based on ALS data, using finite mixture models.** Francisco MAURO, María Victoria NÚÑEZ, Susana MARTÍN-FERNÁNDEZ*, Antonio GARCÍA-ABRIL, Warren COHEN
- 32 **Tree height distribution estimation based on ALS data. Application possibilities using yield tables.** Francisco MAURO, Esperanza AYUGA, María Victoria NÚÑEZ, Concepción GONZÁLEZ- GARCÍA, María de los Ángeles GRANDE- ORTIZ
- 33 **Evaluation of methods linking field and remote-sensing vegetation data within the context of the National Ecological Observatory Network (NEON).** Courtney MEIER, David BARNETT, Eve-Lyn HINCKLEY, Keith KRAUSE

*PRESENTER (when different from first author)

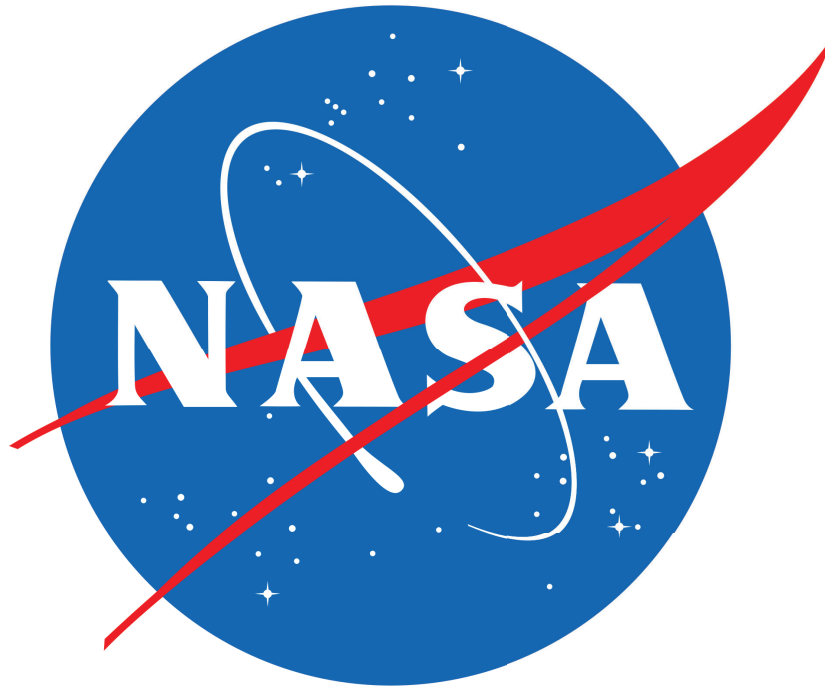
Poster Session

Posters will be displayed in Giustina Gallery throughout the entire conference. During the Poster Reception (Wednesday, Sept 12, 6 PM), authors will be available to answer questions.

- 34 **Detecting Tropical Forest Biomass Dynamics from Lidar Measurements.** Victoria MEYER, Sassan SAATCHI, Geoffrey FRICKER, Jerome CHAVE, Maxim NEUMANN, Stephanie BOHMAN, Jim DALLING
- 35 **Classification of a forest area using features derived from lidar data.** Laura BARREIRO-FERNÁNDEZ, Sandra BUJÁN, Eduardo GONZÁLEZ-FERREIRO, David MIRANDA*
- 36 **Implementing change detection pilot monitoring protocol on the Chugach National Forest, Alaska Region.** Katherine MOHATT, Charles WERSTAK, Robert DEVELICE
- 37 **Analysis of MISR nadir EVI time series in the Brazilian seasonal semideciduous forest.** Yhasmin MOURA, Lênio GALVÃO, João SANTOS, Fábio BREUNIG
- 38 **Upscaling carbon fluxes and uncertainty across the northern forest ecoregion using Bayesian fusion of eddy covariance and remote sensing observations.** Kusum NAITHANI, Kenneth DAVIS, Klaus KELLER
- 39 **Making remote sensing relevant in the classroom: A model for researcher-teacher partnerships through authentic research experiences.** Peder NELSON, Robert KENNEDY, Kari O'CONNELL, Nancee HUNTER, Jaimie RUMMAGE, Joan SWAFFORD, Jeanine HEMEL, Zhiqiang YANG, Warren COHEN, Patricia MORRELL
- 40 **Interpreting life histories of forest disturbance and recovery in southwest Oregon using the Landsat time series and TimeSync.** Eric PFAFF, Warren COHEN, Peder NELSON, Susmita SEN, Zhiqiang YANG
- 41 **Estimation of coniferous forest biomass change using a Landsat trajectory-based approach.** Magdalena MAIN-KNORN, Warren COHEN, Robert KENNEDY, Wojciech GRODZKI, Dirk PFLUGMACHER*, Patrick GRIFFITHS, Patrick HOSTERT
- 42 **Improved Tree Counts from Remotely Sensed Images of Planted Forests.** David PONT, Lania HOLT, Rod BROWNLIE, Chris GOULDING, Mark KIMBERLEY
- 43 **A trajectory based approach for developing a regional fire atlas in the Pacific Northwest.** Matthew REILLY, Tom SPIES, Robert KENNEDY
- 44 **Assessing the North American Bird Conservation Regions using remotely sensed environmental indicators.** Gregory RICKBEIL, Nicholas COOPS
- 45 **Gradient nearest neighbor forest vegetation maps for landscape analysis and planning.** Heather ROBERTS, Janet OHMANN, Matthew GREGORY, Emilie HENDERSON
- 46 **Methodology to Benchmark Forest Carbon Stocks.** Sassan SAATCHI, Yifan YU, Alexander FORE, Maxim NUEMANN, Ziad HADDAD, Michael LEFSKY, Sangram GANGULY, Gong ZHANG, Petr VOTAVA, Ramakrishna NEMANI
- 47 **Decision tree applied to multisensor data for land cover mapping of the Tapajos National Forest region, Brazilian Amazon.** Luciane SATO, Yosio SHIMABUKURO, Tatiana KUPLICH
- 48 **Efficient Preprocessing Tools for REDD Applications.** Manuela HIRSCHMUGL, Andreas WIMMER, Karl-Heinz GUTJAHR, Mathias SCHARDT*
- 49 **Use of TerraSAR-X very high resolution imagery for forest degradation monitoring.** Steffen KUNTZ, Felicitas VON PONCET, Diana WEIHING, presented by: Michael SCHLUND
- 50 **Cumulative tree mortality in PNW conifer stands and MODIS-based disturbance mapping.** Charlie SCHRADER-PATTON, Nancy GRULKE, Joe SPRUCE, Bill HARGROVE
- 51 **From multiple datasets to ecological prediction: The PecAn workflow and model-data assimilation.** Shawn SERBIN, Paul BOLSTAD, Bruce COOK, Ankur DESAI, Brent EWERS, Robert KOOPER, David LEBAUER, Jonathan MARTIN, Kenton MCHENRY, Philip TOWNSEND, Michael DIETZE
- 52 **Indiana Forest Cover Mapping with Multi-Stage Integrated Classification of Satellite and In-Situ Forest Inventory Data.** Gang SHAO, Guofan SHAO, Patrick ZOLLNER, Bryan PIJANOWSKI, Benjamin PAULI, Haulton SCOTT
- 53 **Efficiency of the fixed-angle sampling as a means of ground truthing for the forest biomass estimation in tropical forest.** Gen TAKAO, Yasumasa HIRATA, Hideki SAITO, Naoyuki FURUYA, Aziz KHALI, Omar HAMDAN, Faidi AZAHAR
- 54 **Assessment and Monitoring of Siberian Forest Resources in the Framework of the EU-Russia ZAPÁS Project.** Christian HÜTTICH, Christiane SCHMULLIUS, Christian THIEL*, Sergey BARTALEV, Kirill EMELYNAOV, Michael KORETS, Anatoly SHVIDENKO, Dmitry SCHEPASCHENKO
- 55 **Structural change monitoring of mangrove forest using multi-temporal remote sensing data.** Truong Thi Hoa BINH, Nguyen Manh HUNG
- 56 **Growth pattern analysis of northern boreal forest in northwestern Canada obtained by multi-temporal airborne laser altimetry.** Hayato TSUZUKI, Tatsuo SWEDA, Ross NELSON
- 57 **Combined use of VSWIR (0.4-2.5 µm) and MTIR (3.5-12.5 µm) data for post-fire assessments.** Sander VERAVERBEKE, Simon HOOK, Sarah HARRIS
- 58 **Statistical methods for mapping spatio-temporal change in radar backscatter over Peat-Swamp forests in Central Kalimantan.** Matthew WALDRAM, Kevin TANSEY, Sue PAGE
- 59 **Spatial Representativeness of 20 NEON Terrestrial Core Sites Assessed for Suitability in Validating the MODIS Albedo Product.** Xiaoyuan YANG, Jihyun KIM, Crystal SCHAFF, Miguel ROMÁN, Zhuosen WANG*, Alan STRAHLER, Courtney MEIER
- 60 **Mapping Quaking Aspen in the Interior West: A Comparison of Forest Inventory and Analysis Plot Data Derived From Pixels and Image Objects.** Charles WERSTAK, John SHAW
- 61 **Carbon Legacies from Forest Disturbances by Fires, Insects, and Harvests in the US.** Christopher WILLIAMS, James COLLATZ, Jeffrey MASEK, Samuel GOWARD, Bardan GHIMIRE, Melanie VANDERHOOF
- 62 **Individual snag detection using airborne lidar data and 3D local-area point-based intensity filtration.** Brian WING
- 63 **Growth of DMC Constellation: Data Continuity and New Sensors (NovaSar, DMC3).** Katarzyna WISNIEWSKA
- 64 **Characterizing Forest Recovery Process Using Landsat Imagery and Forest Inventory Analysis Data.** Zhiqiang YANG, Robert KENNEDY, Warren COHEN, Justin BRAATEN, Heather ROBERTS
- 65 **Change detection in forest management and forest stand volume by digital photogrammetry using time series aerial photographs.** Yasumichi YONE, Erina TAKAHASHI, Hiroyuki OGUMA
- 66 **Influence of inventory plot and Landsat imagery positional accuracies on nearest-neighbor imputation maps of vegetation composition and structure.** Harold ZALD, Janet OHMANN, Robert MCGAUGHEY, Heather ROBERTS, Matthew GREGORY, Robert KENNEDY
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