2018 ForestSAT

Entering a New Era in Forest Observation and Analysis

UNIVERSITY OF MARYLAND

Goddard SPACE FLIGHT CENTER

1-5 OCTOBER 2018

College Park, Maryland, USA

Conference Map

Hotel at the University of Maryland

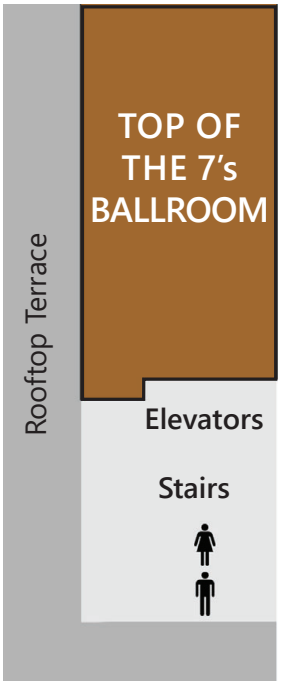
TOP OF THE 7'S BALLROOM - Sessions

CALVERT BALLROOM - Keynotes/Panel, Sessions, Lunch

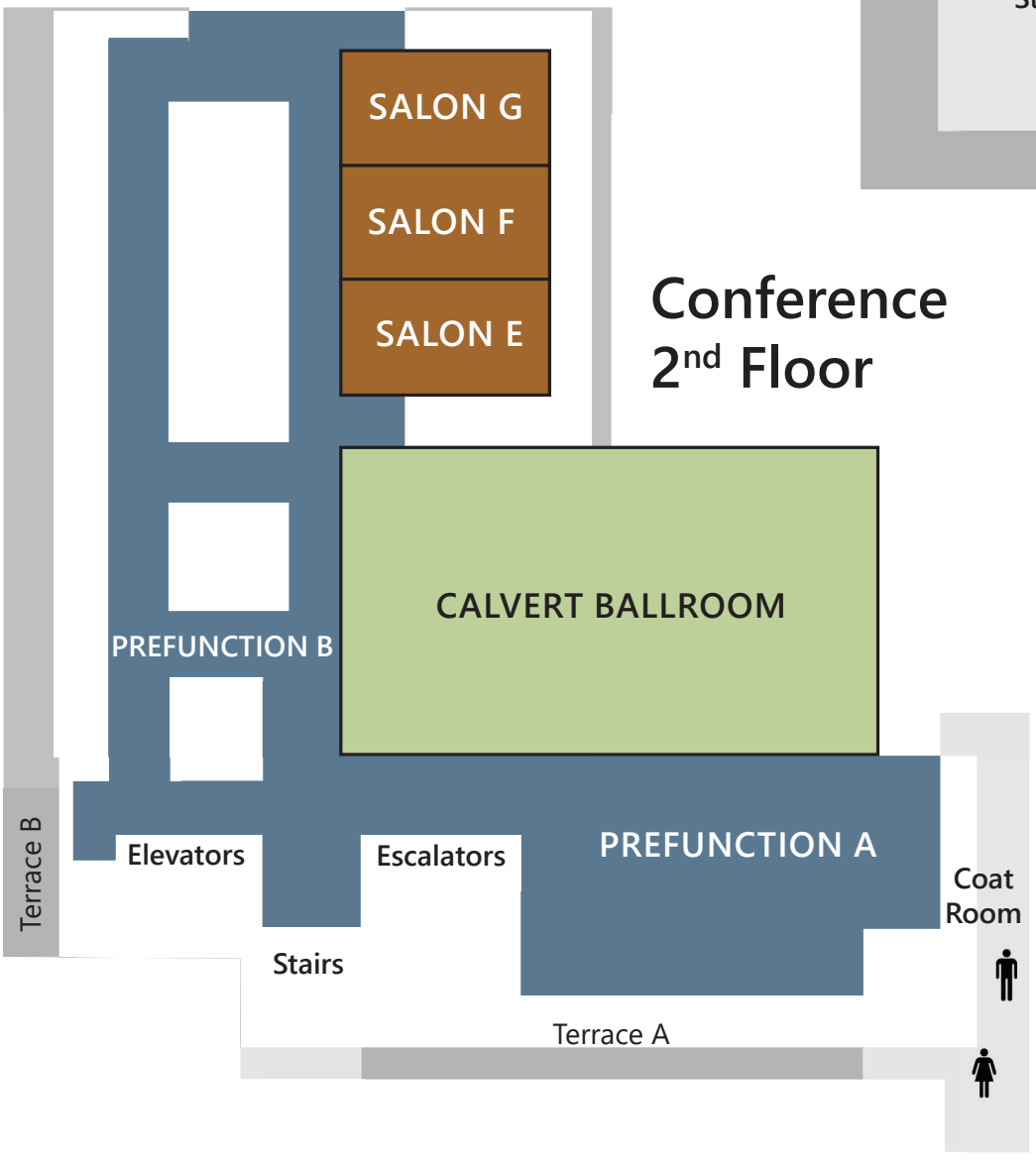
SALONS E, F, G – Sessions

PREFUNCTION A & B - Registration, Poster Sessions, Exhibitors, Breakfast/Breaks

Penthouse 10th Floor



Conference 2nd Floor



Welcome to ForestSAT 2018

The University of Maryland, NASA Goddard Space Flight Center and Science Committee warmly welcome you to ForestSAT 2018, the conference of the Association for Forest Spatial Analysis Technologies (ForestSAT). ForestSAT 2018 marks the eighth meeting of our biennial conference, with a goal of providing a vibrant and dynamic forum for discovery and discussion of the latest research in remote sensing and geomatics for forestry applications.

Echoing the theme of our conference, we are entering a new era in forest observation and analysis. New remote sensing missions, airborne and in-situ platforms, and the explosion in data fusion and cloud computing technologies are revolutionizing how we monitor and model forests around the world. At the same time, there is a new urgency among various scientific, governmental and NGO organizations to expand our understanding and use of forests with respect to ecosystem services, such as carbon storage, biodiversity, water quality, human livelihoods and others.

Both the University of Maryland and NASA GSFC provide important centers for the development and application of new technology for forestry. Likewise, Washington D.C. is a key center of activity, with its confluence of the US federal government, International, and non-profit organizations. We are thus especially pleased to be hosting ForestSAT 2018 here at the University of Maryland at such an important time.

We have organized a compelling program of keynote speakers, presentations and posters around our five themes: (1) Global Forest Observation; (2) New Approaches to Forest Ecosystem Modeling; (3) The Revolution in Remote Sensing Fusion; (4) Forest Mapping and Inventory, and; (5) Forest Management and Policy. We hope each of you find new insights, develop new connections with those you do not know and strengthen existing bonds with those you do. We encourage you to take full advantage of the amazing resources of the Washington D.C. area while you are here. Its monuments and memorials, eclectic neighborhoods, exceptional culinary opportunities, and rich cultural history have transformed what was once a staid and formal city to one of the great destinations in the world.

Lastly, ForestSAT 2018 would like to thank NASA's Terrestrial Ecology and Landcover programs, the Department of Geographical Sciences at the University of Maryland and the Biospheric Sciences Laboratory at NASA GSFC for their generous support of the conference.

ForestSAT 2018 Organizing Committee

Co-Chair: Ralph Dubayah, University of Maryland
Co-Chair: Jeffrey Masek, NASA Goddard Space Flight Center
Lead Conference Manager: Maureen Duane, Oregon State University
John Armston, University of Maryland
Shannon Corrigan, University of Maryland
Laura Duncanson, University of Maryland/NASA Goddard Space Flight Center

Conference Quick View

	MONDAY 1 OCTOBER			
10:00-16:00	Optional Excursion to National Arboretum			
16:00-18:00	PREFUNCTION A & B: Exhibitor and Poster set up			
18:00-20:00	PREFUNCTION A & B: **Registration** and **Posters** (1st session) on display **Welcome Ice Breaker** Sponsored by ecometrica			
	TUESDAY	**WEDNESDAY**	**THURSDAY**	**FRIDAY**
8:00-9:00	PREFUNCTION A & B: **Registration** and **Breakfast**			
9:00 - 9:15	CALVERT BALLROOM: **Welcome and Announcements**	SilviaTerra Forest Basemap for the US		Thomas Hilker Award Presentation
9:15 - 10:15	CALVERT BALLROOM KEYNOTES: **F Seymour**	**T Crowther & JF Bastin**	**Industry Panel**	**P Scarth & D Schimel**
10:15-10:30	PREFUNCTION A & B: **Morning Break**			
10:30-12:10	SALONS E, F, G and TOP OF THE 7's BALLROOM: **Morning parallel sessions**			
12:10 - 13:30	CALVERT BALLROOM: **Lunch**			
13:30 - 15:10	SALONS E, F, G and TOP OF THE 7's BALLROOM: **Afternoon parallel sessions 1**			
15:10 - 15:30	PREFUNCTION A & B: **Afternoon Break**			
15:30 - 17:10	SALONS E, F, G, TOP OF THE 7'S and CALVERT BALLROOM (Thursday & Friday) **Afternoon parallel sessions 2**			
17:15 - 18:45	PREFUNCTION A & B: **Poster Reception #1**	PREFUNCTION A & B: **Poster Reception #2**	17:45 - Board bus to dinner 18:00 - Buses depart	
18:45		Women of ForestSAT Reception (MilkBoy ArtHouse)	Conference Dinner Cruise	
	SATURDAY 6 OCTOBER			
10:00-17:00	Optional Excursion to Smithsonian Environmental Research Center			

PREFUNCTION A & B: 8:00-9:00
Breakfast and Registration

CALVERT BALLROOM: 9:00-9:15 Welcome & Announcements

9:15-10:15 Keynote: Frances Seymour

PREFUNCTION A & B: 10:15-10:30
Morning Break

10:30 - 12:10

Salon E

Satellite Product Calibration and Validation

1. Terrestrial Laser Scanning for calibration and validation of satellite image data products across Queensland, Australia | N Goodwin, J Armston*, F Watson
2. Validation of the GEDI simulator for pre-launch calibration and validation | S Hancock*, J Armston, H Tang, M Hofton, JB Blair, S Luthcke, X Sun, JR Kellner, S Marselis, D Minor, S Healey, P Patterson, R Dubayah
3. Influence of reference data accuracy in remote sensing studies | HJ Persson*, G Ståhl, N Lindgren
4. Validation of the operational SNPP VIIRS GVF product using high resolution Google Earth images in urban areas in U.S. | Z Jiang*, Y Yu
5. ESA-NASA Multi-Mission Analysis Platform | A Whitehurst*, K Murphy, R Ramachandran, K Bugbee, H Laur, C Albinet

SALON F

Multi-Date Lidar Applications

1. Monitoring adaptation to wind in Sitka spruce plantations using time-series analysis of airborne Lidar | J Suarez*, R Manso
2. Modelling top height growth and stand volume increment using repeated laser scanning data | J Socha*, M Pierzchalski, K Stereńczak, P Hawryło, S Miścicki, G Krok
3. Direct and indirect site index determination for Norway spruce and Scots pine using bitemporal airborne laser scanner data | L Noordermeer*, OM Bollandsås, T Gobakken, E Næsset
4. Canopy structural metrics for quantifying landscape level forest degradation | G Parker*, A Anand, J Nagol
5. Airborne Lidar detection of tropical forest degradation through simulations of selective logging disturbance using individual tree segmentation | V Meyer*, S Saatchi, A Ferraz, M Longo, J Bastin, M Keller

SALON G

Large Area Mapping and Forest Management

1. Comparison of single (C- and L-band) and multi-frequency satellite SAR-based tropical forest mapping in the Mai-Ndombe district in DRC | J Haarpaintner*
2. Climate Resilient Forest Management in Nepal | V Chitale*, M Matin, S Thapa, S Adhikari
3. Post-hoc change detection- making the best of point-in-time map products | G Liknes*, S Bender
4. Entering the Third Dimension, Can We Nationalize Tree Canopy Height? | J Ellenwood*
5. Comparison of Tree Canopy Cover Geospatial Datasets for the Conterminous United States | S Bender, G Liknes*

TOP OF THE 7'S

Special Session: Forests in the Global Carbon Cycle 1: Connecting Remote Sensing and Forest Models

Rico Fischer & Andreas Huth, Session Chairs

1. Beyond MRV: High-Resolution Forest Carbon Monitoring and Modeling at Regional-National scales | G Hurtt*, E Campbell, K Dolan, R Dubayah, V Escobar, S Ganguly, W Huang, N Hultman, K Johnson, R Lamb, A Lister, L Ma, R Nemani, J O'Neill Dunne, D O'Leary, L Ott, B Poulter, R Sahajpal, E Sepulveda, H Tang, M Zhao
2. Model-assisted estimation of tropical forest biomass change: a comparison of approaches | N Knapp*, R Fischer, K Papathanassiou, A Huth
3. Variability in canopy turnover and crown plasticity from repeat airborne Lidar | D Morton*, B Cook, M Keller, M Alonzo, H Andersen, M Longo, R Meng, S Martinuzzi, D Lagomasino
4. Assessing the contribution of forest disturbances to global forest dynamics and carbon cycling | T Pugh*, A Arneth, M Kautz, B Poulter, B Smith
5. Productivity and carbon fluxes of the Amazon rainforest: linking remote sensing and vegetation modeling | A Huth*, E Rödig, F Taubert, A Rammig, M Cuntz, R Fischer

CALVERT BALLROOM: 12:10-13:30 Lunch

13:30 - 15:10

Salon E

Special Session: Plantation Management with High-Resolution Remote Sensing

Yong Pang, Session Chair

1. Integrated use of time series satellite observations and field inventory data to monitor the life cycle of plantation forests | C Huang*
2. A case study on integration of aerial and ground observations in forested areas via object-based coregistration of backpack and UAV based Lidar Point Clouds | W Yao, P Polewski*, L Cao
3. Estimation of forest variables from VHSR Remotely Sensed Imagery | J Yim*, J Park
4. Forest biometrics with UAV Lidar, machine learning and Monte Carlo ray tracing simulations | O Roberts*, P Bunting, A Hardy
5. Larch plantation management monitoring using high resolution remote sensing data | Y Pang*, W Jia, W Wang, J Li, Z Ma, L Si, Z Li, C Li, X Liang

SALON F

Airborne Laser Scanning Method Development

1. Evaluating unmanned aerial vehicle based Lidar for the support of forest inventory | M Sumnall*, C Hession, R Wynne, V Thomas
2. Stand level estimates of forest attributes with different Lidar point densities | F Mauro*, C Pascual, A Garcia-Abril, JA Manzanera, E Ayuga-Tellez, R Valbuena
3. Towards high throughput assessment of canopy dynamics: the estimation of leaf area variation in Amazonian forests with multi-temporal multi-sensor discrete return Lidar | G Shao*, S Stark, D Almeida
4. Multispectral Lidar data for the prediction of forest stand attributes | M Dalponte*, LT Ene, T Gobakken, E Næsset, D Gianelle
5. Multispectral airborne Lidar data in the prediction of boreal tree species using area-based methods | M Kukkonen*, M Maltamo, L Korhonen, P Packalen

SALON G

Forest Inventory and Decision Support

1. Comparing airborne laser scanning and digital aerial photogrammetry for large scale operational forest management inventories | T Gobakken*, HO Ørka, OM Bollandsås, E Næsset
2. Value of airborne laser scanning and digital aerial photogrammetry data in forest decision making | A Kangas*, T Gobakken, S Puliti, M Hauglin, E Næsset
3. Transferability of ALS-derived Forest Resource Inventory Variables from Eastern to Western Mixedwoods in the Canadian Boreal Forest | K van Ewijk*, P Tompalski, P Treitz, N Coops, M Woods, D Pitt
4. Updating Lidar Forest Inventory Integrating Already Available Information | J Esteban*, A Fernández-Landa, N Algeet-Abarquero, ML Guillen-Climent
5. The Use of Deep Learning and Three-Dimensional Convolutional Neural Networks to Interpret Lidar Data for Forest Inventory | E Ayrey*, D Hayes, A Weiskittel, S Fraver, J Kershaw, B Cook

TOP OF THE 7'S

Special Session: Forests in the Global Carbon Cycle 2: Connecting Remote Sensing and Forest Models

Rico Fischer & Andreas Huth, Session Chairs

1. The challenge of detecting size and light environment structured forest dynamics: testing models with a multitemporal multisite Amazon forest dataset | SC Stark*, G Shao, SM McMahon, DR Almeida, MN Smith
2. Design and application of a next-generation forest biogeochemistry model, Sortie-BGC | A Erickson*, N Strigul
3. Global Patterns of Tropical Forest Fragmentation and its Impact on the Global Carbon Cycle | R Fischer*, F Taubert, K Brinck, M Müller, J Groeneveld, S Lehmann, M Dantas De Paula, JO Sexton, D Song, T Wiegand, A Huth
4. A Multi-scaled analysis of Forest Structure using Individual-Based Modeling in a Costa Rican Rainforest | A Armstrong*, R Fischer, B Osmanoglu, G Sun, K Ranson, A Huth
5. Spatio-temporal modelling of the light regime: tropical vs. temperate forest | D Kükenbrink*, FD Schneider, A Hueni, ME Schaepman, F Morsdorf

Tuesday Highlights

Keynote Address:

Why ForestSAT? Why Now? What Next for Forest Management and Policy?

Frances Seymour
Distinguished Senior Fellow, World Resources Institute

CALVERT BALLROOM: 9:15-10:15

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TUESDAY, 2 October

15:30 - 17:10

17:15 - 18:45

Evening Poster Reception #1
PREFUNCTION A&B: 17:15 - 18:45

PREFUNCTION A & B: 15:10 - 15:30 **Afternoon Break**

SALON E

Agroforestry Applications

1. Three Phase Forest Inventory Design with 1) wall-to-wall ALS, 2) very dense ALS on sample stripes and 3) fieldwork sample plots | G Bronner*, M Hirschmugl, R Wack, B Jawecki
2. Mapping Smallholder Forest Plantation Establishment in Andhra Pradesh | R Wynne*, V Thomas, S More, P Williams
3. Mapping forest management intensity and land use transitions in the southeastern US with multitemporal Landsat | V Thomas*, R Wynne, J Kauffman, E Brooks, Q Thomas, L Chini, R Mei, D Wear
4. Growing up on the frontier: assessing the impact of forest age and edge age on forest structure in the southeastern US | M Fagan*, D Morton, B Cook, J Masek, F Zhao, C Huang, R Nelson
5. Post-stratified estimation of harvest area by combining Global Forest Change and National Forest Inventory data | J Breidenbach*, S Puliti, S Solberg, R Astrup

SALON F

Airborne Laser Scanning Applications

1. Spatial variations of tree size-frequency distributions and 3D structure across elevations and soil type in a tropical rainforest | A Ferraz, S Saatchi*, J Kellner, D Clark
2. Effects of plot size, stand density, and scan density on the relationship between airborne laser scanning metrics and the Gini coefficient of tree size inequality | S Adnan*, M Maltamo, D A. Coomes, R Valbuena
3. Mapping tree clump and opening patterns following fire with airborne Lidar data | B Bartl-Geller*, H Wiggins, J Kane, M North, V Kane
4. Optimization of primary extraction routes prior to forest operations using Lidar data | E Willén*, G Friberg, P Flisberg, M Frisk, M Rönnqvist
5. Prediction of forest stand characteristics based on Airborne Laser Scanning data in the managed forests in Central Europe - Polish case study | K Stereńczak*, S Miścicki, K Parkitna, G Krok, M Lisańczuk, P Rysiak, Ł Jełowicki, K Mitesztedt, P Mroczek, A Markiewicz

SALON G

Sampling and Statistical Inference

1. Using remote sensing to support forest inventory in interior Alaska - demonstration of a two-phase, model-assisted sampling design | H Andersen*, C Babcock, B Cook, D Morton, AQ Finley, M Alonzo, J Strunk
2. Wall-to-wall spatial prediction of growing stock volume in Italy by coupling large-scale field sampling plots and remotely sensed data | G Chirici*, F Giannetti, D Travaglini, RE McRoberts, F Maselli, M Chiesi, M Pecchi, P Corona
3. FIESTA: A big party for small areas | T Frescino*, G Moisen, C Toney
4. Bamboo kNN: applications for national forest inventory with remote sensing imagery | B Wilson*, G Meeden, R McRoberts, J Knight
5. Estimators for Photo-Based Measurements | P Patterson*, M Finco, K Tenneson, K Megown, S Bender, N Pugh

TOP OF THE 7'S

Special Session:
Humid Tropical Forest Monitoring with Time-Series Landsat Data

Matt Hansen, Session Chair

1. Sample-based assessment of forest loss trends and drivers in three major humid tropical forest regions using Landsat time-series data | A Tyukavina*, M Hansen, S Stehman, P Potapov, D Parker, C Okpa, S Turubanova, I Kommareddy, A Tosiani, M Yazid, I Sari, T Kartika, R Firmansyah, Z Said, Z Kustiyo, A Wijaya, J Purwanto, S Nugroho
2. Reconstructing Historical Land Use and Land Cover of the Amazon region with Earth Engine, Landsat Data Archive and Machine Learning | C Souza Jr.*, AV Fonseca, JV Siqueira
3. Integrating time-series multi-spectral Landsat and Lidar data in mapping tree height in DR Congo | E Bongwele*, P Lola, P Potapov, M Hansen
4. Monitoring of Indonesia Tropical Rainforests and Land Cover Change using Time Series Landsat Data | A Wijaya*
5. Annual monitoring of forest structure in the Lower Mekong region | P Potapov*, A Tyukavina, S Turubanova, Y Talero, M Hansen, D Saah, A Aekakkararungroj, KS Aung, NH Quyen

PREFUNCTION A & B 17:15-18:45 Poster Reception #1

Visit with authors of the posters on display in the 1st poster session. Meet with one of our many conference exhibitors. Mingle and unwind. Light refreshment and beverages provided. Posters in Session #1 can be found on pages 19-21.

PREFUNCTION A & B: 8:00-9:00
Breakfast and Registration

CALVERT BALLROOM: 9:00-9:15 SilviaTerra Forest Basemap for the US - Zack Parisa

9:15-10:15 Keynotes: Tom Crowther and Jean-François Bastin

PREFUNCTION A & B: 10:15-10:30
Morning Break

10:30 - 12:10

SALON E

Special Session: Early Detection of Plant Stress

Juan Suarez, Session Chair

1. Potential of Sentinel-1 Time Series to Detect Bark Beetle Outbreaks | M Hollaus*, B Bauer-Marschallinger, M Löw, K Schadauer, W Wagner
2. Monitoring and assessment of Mediterranean forest health using hyperspectral and thermal remote sensing imagery | ML Guillen-Climent*, H Más, A Nur, F Alfredo, J Peñalver, I Etxebeste Larrañaga, D Gallego, P Zarco-Tejada, JL Tomé
3. Leaf water content as a tree health indicator - Experiences from greenhouse and field | S Junttila*, M Vastaranta, R Linnakoski, P Henttonen, M Holopainen, P Lyytikäinen-Saarenmaa, H Hyyppä
4. Early detection of forest health stress through fusion of the Ecosystem Disturbance and Recovery Tracker system (eDaRT) and remotely sensed canopy water content | M Slaton*, A Koltunov, C Ramirez, G Asner, E Haunreiter, T Kohler, P Brodrick
5. Using time-varying sensitivity analysis to clarify the effects of two source energy balance model formulation on model behavior | C Houser*

SALON F

SAR Interferometry, Tomography and Applications

1. Forest structure monitoring by means of multi-baseline SAR configurations | K Papathanassiou*, M Tello Alonso, V Cazcarra Bes, M Pardini, J Kim
2. Vegetation structure and biomass via spaceborne radar tomography: A case study using X-band over Indian forests | M Lavalle*, U Khati, G Shiroma, G Singh
3. Spaceborne GEDI and TanDEM-X fusion for large-scale three-dimensional forest structure parameter retrieval | S Lee*, T Fatoyinbo, W Qi, S Hancock, J Armston, R Dubayah
4. GEDI-TanDEM-X fusion for enhanced forest structure observation: a comparison of InSAR height profiles and Lidar full waveforms | C Choi, M Pardini*, K Papathanassiou
5. Potential of multi-temporal ALOS-2 PALSAR-2 ScanSAR data to estimate forest parameters in tropical dry and wet forests | M Urbazaev*, F Cremer, C Schmullius, C Thiel

SALON G

Large Area Observation Networks

1. Forest-Observation-System.net - towards a global in-situ data repository for biomass datasets validation | D Schepaschenko*, J Chave, O Phillips, S Davies, S Fritz, S Lewis, P Sist, M Réjou-Méchain, C Perger, C Dresel, K Scipal
2. ForC: a global database characterizing carbon cycling in mature and regrowth forests | K Anderson-Teixeira*, V Herrmann, J McGarvey, M Wang, N Kunert, B Bond-Lamberty, H Muller-Landau
3. GLOBE Observer: citizen science in support of forest cover mapping and monitoring | P Nelson*, B Campbell, H Kohl, D Overoye, MJ Hughes, J Braaten, R Kennedy
4. Forest Inventory for the Entire Continental US - 1/20 acre resolution with DBH, Species, and Height | Z Parisa*
5. An open source HPC PYCUDA algorithm for processing waveform Lidar observations | T Goulden*

TOP OF THE 7'S

Special Session: Advances in Satellite Fire Monitoring and Characterization 1

Louis Giglio, Chris Justice, David Roy & Krishna Vadrevu, Session Chairs

1. Characterizing Mass Fire Events Using MODIS and VIIRS Hotspots - the British Columbia Fire Season of 2017 | C Stockdale*, P Englefield, N McLoughlin, M Parisien, D Perrakis
2. Fire Detection, Characterization, and Monitoring with GOES-16/-17 | C Schmidt*
3. Enhancing the GOES Early Fire Detection (GOES-EFD) algorithm prototype to assist wildfire response and management | A Koltunov*, B Quayle, S Ustin
4. Using the NASA polar orbiting fire product record to enhance and expand the Global Wildfire Information System (GWIS) | L Boschetti*, D Roy, A Sparks
5. The Use of Multi-temporal MODIS Satellite Data to Map Veld Fire Hazards in Limpopo Province, South Africa | F Dondofema*, T Mudau, B Odhiambo

CALVERT BALLROOM: 12:10-13:30 Lunch

13:30 - 15:10

SALON E

Special Session: Forest Biodiversity Monitoring and Assessment from Remote Sensing 1

Gherardo Chirici & Ronald McRoberts, Session Chairs

1. Long-term Landsat time series - a new opportunity for forest diversity monitoring | W Graf*, C Kleinn, P Schall, T Nauss, F Detsch, P Magdon
2. Comparing Sentinel-2 data and airborne imaging spectroscopy for mapping tree species diversity in Białowieża forest | B Rombouts*, L Put, W De Keersmaecker, B Jaroszewicz, K Stereńczak, O Bouriaud, B Muys, B Somers
3. Spatial analysis of remote sensing-based land cover data for assessing representativeness of biological inventories | B Tavernia, M Nelson*, J Garner, C Perry
4. Habitat mapping in a tropical dry forest through multispectral imagery | AP Ochoa-Franco, JR Valdez-Lazalde*, HM de los Santos-Posadas, JL Hernandez-Stefanoni, JI Valdez-Hernández, G Ángeles-Pérez.
5. The added value of multi-temporal Sentinel-2 data for tree species classification in the Wienerwald Biosphere Reserve | M Immitzer*, M Neuwirth, S Böck, F Vuolo, H Brenner, C Atzberger

SALON F

Biomass Mapping

1. Estimation of Tropical Forest Structure and Biomass Airborne P-band TomoSAR and Lidar Measurements | S Saatchi*, A Ferraz, J Chave, S Tabaldini, S Quegan, T LeToan, P Dubois, K Papathanassiou, H Shugart
2. Different sensitivity of X-band phase height to the vertical and horizontal dimensions of growing stock | S Solberg*
3. Benchmarked small area estimation of forest biomass change using stochastic optimization | V Strimbu*, E Næsset
4. Biomass mapping of deciduous forest over mountains areas using the penetration depth extracted by the fusion of spaceborne stereo imagery of leaf-on and leaf-off | W Ni*, Z Zhang, G Sun
5. OBI-WAN: Online Biomass Inference using Waveforms And iNventory | S Healey*, P Patterson, S Saarela, Z Yang, N Gorelick, J Armston, L Duncanson, J Kellner, S Hancock, W Cohen, R Dubayah

SALON G

Near Real Time Monitoring

1. Historical and Near-Real Time Forest Disturbance Detection Based on Full-Archive Data | F Thonfeld*
2. Monitoring land surface phenology in near-real-time: eMODIS, Forests, and NDVI | C Schrader-Patton*, N Grulke
3. Rapid Assessment of Forest Storm Damages with PlanetScope and Sentinel-2 Images in North-East Germany | M Foerster*, A Clasen, K Juette
4. Early warning system for the detection of changes in the native vegetation of Chile | M Castro*, P Acevedo, V Sandoval, Y Martinez
5. Near-real time forest disturbances detection in the Amazonian wet forest using Sentinel-1 images | S Mermoz*, M Ballère, A Bouvet, T Koleck, C Lardeux, T Le Toan

TOP OF THE 7'S

Special Session: Advances in Satellite Fire Monitoring and Characterization 2

Louis Giglio, Chris Justice, David Roy & Krishna Vadrevu, Session Chairs

1. Combined Landsat-8 and Sentinel-2 burned area mapping | D Roy*, H Huang, H Zhang, L Yan, Z Li
2. Forest Fire Disaster Assessment using ALOS 2 and Terrestrial Laser Scanner | A Kato*, H Wakabayashi, A Osawa, M Watanabe, L Moskal, A Hudak
3. L-band SAR sensitivity to prescribed burning effects in eucalypt forests of Western Australia | A Fernandez-Carrillo*, L McCaw, MA Tanase
4. Assessing economic damage of Wildland–Urban Interface (WUI) fires with economic model and high-resolution Planet Labs satellites constellation images | Y Michael*, I Lensky, S Brenner, A Tchetchik, N Tessler, D Helman
5. Remote sensing of live fuel moisture content in Mediterranean fire-prone shrubland: comparison of different satellite imagery and RTM simulations | E Marino del Amo*, M Yebra, N Algeet, M Guillen-Climent, A Fernández, J Esteban, JL Tomé, C Hernando

Wednesday Highlights

Keynote Address:

An interdisciplinary approach to understanding global ecological systems

Tom Crowther
Assistant professor of Global Ecosystem Ecology, ETH Zürich

CALVERT BALLROOM: 9:15-9:45

Keynote Address:

Global perspectives on forests and woodlands from remote sensing

Jean-François Bastin
Remote Sensing and Global Change Ecology, ETH Zürich

CALVERT BALLROOM: 9:45-10:15

Sponsored by

Evening Poster Reception #2

PREFUNCTION A&B: 17:15 - 18:45

Women of ForestSAT: Mission To #STEMinism

18:45 - 22:00

A Night for Networking Presented by the Ladies of Landsat at Milkboy Arthouse (7416 Baltimore Ave, College Park)

WEDNESDAY, 3 October

15:30 - 17:10

PREFUNCTION A & B 15:10 - 15:30 Afternoon Break

SALON E

Special Session:
Forest Biodiversity Monitoring and Assessment from Remote Sensing 2

Gherardo Chirici & Ronald McRoberts, Session Chairs

1. Essential Biodiversity Variables obtained from airborne and spaceborne Lidar | R Valbuena*, B O'Connor, F Zellweger, F Morsdorf, P Vihervaara, W Simonson, M Maltamo, F Danks, G Chirici, N Coops, D Coomes
2. Estimation of spatial indices for forest biodiversity from remote sensing | H Häbel*, A Balázs, M Myllymäki
3. Tree species classification using plant functional traits from Lidar and hyperspectral data | Y Shi*, A K. Skidmore, T Wang, S Holzwarth, U Heiden, X Zhu, M Heurich
4. Incorporating simulated GEDI Lidar into bird species distribution predictions for Sonoma County, CA, USA | P Burns*, S Goetz, P Jantz, M Clark, L Salas, S Hancock
5. Forest biodiversity estimated from remote sensing data through the new Rao's Q heterogeneity index: testing the Spectral Variation Hypothesis with a NDVI time-series derived from Landsat 8 and Sentinel 2, and the Height Variation Hypothesis with Lidar data | M Torresani*, D Rocchini, R Sonnenschein, M Zebisch, G Tonon

SALON F

Forest Structure and Biomass

1. A multi-scale remote sensing approach to derive a London-wide estimate of AGB | P Wilkes*, M Disney, M Boni Vicari, K Calders, A Burt, O Baines
2. The relationship between simulated and remotely sensed forest parameters | B Osmanoglu, AH Armstrong*, G Sun, P Montesano, KJ Ranson
3. Estimation of coniferous forest parameters by combining observations from optical and radar spaceborne sensors | D Morin*, M Planells, D Guyon, S Mermoz, A Bouvet, L Villard, T Le Toan, G Dedieu
4. Photogrammetrically Derived Forest Canopy Data to Assess and Monitor Forests Across States | VR Kane*, T O'Mara, J Kane, J Strunk, P Gould, C Maki, D Churchill, LM Moskal
5. Improving the performance of an area-based approach derived from DAP point clouds | P Tompalski*, J White, N Coops, M Wulder

SALON G

Drought and Tree Mortality

1. Assessment of Forest Response and Sensitivity to the Millennium Drought in Australia | T Jiao, C Williams*
2. Quantifying Impacts of Drought and Disturbance on Forest Water Use in North Carolina, USA Using Long-Term Daily ET Estimated with Multi-Satellite Data Fusion Method | Y Yang*, M Anderson, F Gao, C Hain, W Kustas, A Noormets, G Sun, R Wynne, V Thomas
3. Widespread tree mortality mapping suggests size-dependent risk for extreme drought stress | A Stovall*, X Yang, H Shugart, A Khuu, J Smith
4. Multiple years of monthly ground-based profiling Lidar data in the Amazon reveal seasonal and drought related changes in leaf area with surprising dependencies on height and light environment | M Smith*, S Stark, T Taylor, T Woodcock, M Ferreira, E de Oliveira, L Alves, N Restrepo-Coupe, M Figueira, L Aragao, P de Camargo, R de Oliveira, D Falk, S McMahon, T Huxman, S Saleska
5. Combining airborne and spaceborne optical, and Lidar datasets for tree mortality monitoring in the Polish part of Białowieża Forest | K Stereńczak*, B Kraszewski, M Mielcarek, A Modzelewska, Ż Piasecka, M Białczak, R Sadkowski, A Kamińska, M Lisiewicz, R Wilkowska, S Miścicki, FE Fassnacht

TOP OF THE 7'S

Special Session:
Near Real-Time Forest Monitoring

Johannes Reiche & Michele Martone Session Chairs

1. The SAR shadowing effect: a new indicator of forest disturbances for near-real time deforestation monitoring with Sentinel-1 | A Bouvet*, S Mermoz, M Ballère, T Koleck, T Le Toan
2. Understanding user needs for Early Warning deforestation systems | M Weisse*, B Mora, T Harvey, R Petersen
3. The Dry Chaco Forest Near Real-Time Deforestation Detection System | F Grings, E Roitberg*, V Barraza, P Perna, M Salvia
4. Dense Sentinel-1 time series to support tropical forest cover loss alerting and characterization | J Reiche*, E Hamunyela, J Verbesselt, M Herold, R Verhoeven, N Wielaard
5. Fast Monitoring of Amazonas Deforestation by combining Sentinel-1 and TanDEM-X Interferometric SAR Data | P Rizzoli, A Pulella, F Sica, J Bueso-Bello, M Martone*, M Zink

17:15 - 18:45

PREFUNCTION A & B 17:15-18:45

Poster Reception #2

Visit with authors of the posters on display in the 2nd poster session. Meet with one of our many conference exhibitors.

Mingle and unwind. Light refreshment and beverages provided. Posters in Session #2 can be found on pages 22-24

18:45 - 22:00

MilkBoy ArtHouse 18:45-22:00

7416 Baltimore Ave, College Park

Women of ForestSAT: Mission to #STEMinism

Join us for an evening of networking, comradery and pushing the boundaries of STEMinism. All are welcome. Cash bar and light hors d'oeuvres provided

Sponsored in part by ForestSAT

PREFUNCTION A & B: 8:00-9:00
Breakfast and Registration

CALVERT BALLROOM: 9:00-9:15 Welcome and Announcements

9:15-10:15 Industry Panel

PREFUNCTION A & B: 10:15-10:30
Morning Break

10:30 - 12 :10

SALON E

Model-Data Integration

1. An Integrated Framework for Greenhouse Gas Satellites and Forest Structure Remote Sensing to Estimate Emissions from Land Use, Land Use Change and Forestry (LULUCF) | B Poulter*, L Calle
2. Application of remote sensing and ecosystem modeling products to inform land-use decisions | R Lamb*, G Hurtt
3. Climate Benefits of Potential Avoided Emissions from Forest Conversion Diminished by Albedo Warming: Comprehensive, Data-Driven Assessment for the US and Beyond | C Williams*, H Gu, T Jiao
4. Using Landsat, Aerial Surveys, Weather Modeling, and Agent-based Models of Outbreak Insect Phenology and Migration to Explore the Topographic Concentration Hypothesis | M Garcia*, B Sturtevant, J Régnière, Y Boulanger, R St-Amant, B Cooke, G Achtemeier, J Charney, P Townsend
5. Combining high-resolution Lidar and forest modeling to improve predictions of future forest state across interior Alaska | A Foster*, A Armstrong, J Shuman, KJ Ranson, H Shugart, BM Rogers, S Goetz

SALON F

UAVs for Forest Structure Mapping

1. An extensible framework for small unmanned aerial system sensor integration with Lidar and satellite remote sensing | D Krofcheck*, M Hurteau, H Zald
2. DTM-independent variables to predict forest inventory variables using 3D UAV photogrammetric data | F Giannetti*, G Chirici, T Gobakken, E Næsset, D Travaglini, S Puliti
3. Combining UAV and Sentinel-2 auxiliary data for forest growing stock volume estimation through hierarchical model-based inference | S Puliti*, S Saarela, T Gobakken, G Ståhl, E Næsset
4. Technical and operational considerations for the implementation of UAVs for forest mapping and inventories and their role in the validation of satellite land products | JP Arroyo-Mora*, M Kalacska, O Lucanus
5. Assessment of below-canopy forest structure using UAV Structure from motion (SfM) Point Clouds | S Hillman*, L Wallace, K Reinke, B Hally, S Jones, R Taneja

SALON G

Hurricanes and Mangroves

1. Global and Regional patterns of mangrove forest structure | M Simard*, L Fatoyinbo, C Smetanka, M Denbina, V Rivera-Monroy
2. Greenness Trends and Carbon Stocks of Mangroves across Mexico | A Vazquez-Lule*, R Colditz, J Herrera-Silveira, M Guevara, M Rodriguez-Zuniga, I Cruz, R Ressl, R Vargas
3. Structural gradients of hurricane damage across the mangrove forests of South Florida | D Lagomasino*
4. Determining coarse woody debris in mangrove forest of the Florida Everglades after Hurricane Irma using airborne Lidar imagery | S Chavez*, D Lagomasino, L Fatoyinbo, B Cook, D Morton, E Castaneda, R Moyer, K Radabaugh, JM Smoak
5. Effects of Hurricanes Irma and Maria on the Puerto Rican forests measured by the NASA G-LiHT Airborne Imager | S Martinuzzi*, B Cook, D Morton, L Corp, E Helmer, M Keller

TOP OF THE 7'S

Special Session: Next Generation Large Area Forest Monitoring 1: Context and Science

Mike Wulder & Sean Healey, Session Chairs

1. Towards a satellite derived change, cover, and structure data cube: Satisfying large-area information needs for forest monitoring | M Wulder*, J White, N Coops, T Hermosilla, G Hobart
2. Trends and patterns of temperate forest disturbance dynamics in Europe from Landsat time series | D Pflugmacher*, C Senf, Z Yang, J Knorn, J Sebald, R Seidl, P Hostert
3. New opportunities for high-resolution countrywide tree species mapping | L Waser*, B Price, N Rehush, D Small, M Rüetschi, C Straub
4. LANDFIRE: Updating a national vegetation and fuels dataset using next-generation data | B Peterson, K Nelson. S Sathyachandran*
5. Monitoring Land Disturbance based on Landsat Time Series | Z Zhu*, Z Yang

CALVERT BALLROOM: 12:10-13:30 Lunch

13:30 - 15:10

SALON E

Data Fusion and Integration

1. Multi-scale and multi-sensor detection and monitoring of invasive exotic tree species | J Dash*, G Pearse, M Watt, T Paul, J Morgenroth
2. Data assimilation of forest variables based on several remote sensing sources | N Lindgren*, E Lindberg, A Grafström, S Saarela, M Nyström, HJ Persson, H Olsson, G Ståhl
3. Space-series wavelet analysis and time-series of SAR data to characterise tropical forest | EC De Grandi*, E Mitchard, D Hoekman, F De Grandi
4. Bidirectional Mixing Effects of the Spectral Signal in Deciduous Forest Canopies | A Clasen*, B Somers, S Itzerott, B Kleinschmit, M Foerster
5. Updating Lidar-derived Forest Attributes with Sentinel-2 Data | M Schardt*, J Deutscher, M Hirschmugl

SALON F

UAVs for Forest Monitoring

1. Using Unmanned Aerial System (UAS) Lidar to characterise ecohydrological properties of eucalypt forests | D Jaskierniak*, A Lucieer, G Kuczera, R Benyon, P Lane
2. Assessing degraded forest structures using UAV and SAR remote sensing data | C Bourgoin*, J Betbeder, P Couteron, L Blanc, N Baghdadi, L Reymondin, P Läderach, P Sist, V Gond
3. Digital aerial photogrammetry and unmanned aerial systems for assessing forest regeneration | T Goodbody*, N Coops, T Hermosilla, P Tompalski, A Hervieux, P Crawford
4. Estimating the height of conifer seedlings in recovering linear disturbances with UAV photogrammetry | G Castilla*, M Filiatrault, M Gartrell, MF Wu, G McDermid
5. Measuring savanna structure using multi-sensor drone data to derive closure criteria for mine site revegetation | R Bartolo*, P Erskine, T Whiteside, L Hernandez Santin, M Rudge, S Levick

SALON G

Land Cover and Land Use Change

1. Characterizing Forty Years of Forest Change in Minnesota: Applications in Forest and Wildlife Science | J Vogeler*, M Falkowski, R Slesak
2. Extrapolating forest biomass dynamics through space and time using Landsat time series and inventory data | T H.Nguyen*, S Jones, M Soto-Berelov, A Haywood, S Hislop
3. Novel Map-to-Image Change Detection for Mapping Forest Change: Case Study for Wales, UK | M Philip*, P Bunting, A Hardy, R Jensen
4. Three Decades of Hyrcanian Forest Canopy Density Change in Iran | M Taefi Feijani*, A Tavakoli, A Alimohammadi Sarab
5. The Past and Future Land Use Footprint of Global Palm Oil | I Collins, E Goldman*

TOP OF THE 7'S

Special Session: Next Generation Large Area Forest Monitoring 2: Sensor Fusion

Mike Wulder & Sean Healey, Session Chairs

1. Fusion of GEDI, ICESAT2 & NISAR data for above ground biomass mapping in California and Gabon | L Duncanson*, A Neuenschwander, M Simard, N Thomas, S Hancock, J Armston, R Dubayah, M Hofton, S Marselis, S Saatchi, C Silva, L Fatoyinbo
2. Cross-validation and transferability performance of GEDI footprint aboveground biomass models | J Kellner*, J Armston, J Blair, L Duncanson, S Hancock, S Healey, M Hofton, S Luthcke, S Marselis, D Minor, P Patterson, H Tang, R Dubayah
3. Generalized hierarchical model-based estimation for biomass assessment using GEDI and Landsat data | S Saarela*, S Holm, SP Healey, H Petersson, W Prentius, PL Patterson, E Næsset, TG Gregoire, G Ståhl
4. National-scale aboveground biomass geostatistical mapping with FIA inventory and GLAS data: Preparation for sparsely sampled Lidar assisted forest inventory | C Babcock*, A Finley, H Andersen, D Morton, B Cook
5. Early Spring Radiative Forcing Dynamics in North American Boreal Forests Using Albedo Products from Landsat and Sentinel-2 | A Erb, Z Wang, B Rogers, S Healy, D Hall

Thursday Highlights

Keynote Address: Industry Panel

CALVERT BALLROOM: 9:15-9:45

Iain Woodhouse
Carbomap

Tara O'Shea
Planet

Noel Gorelick
Google

Geospatial data, tools, and information are increasingly being provided by a newly energized commercial sector. These services include all elements of the value chain, from raw imagery products derived from commercial cubesats and UAVS, to higher-level products and analytics obtained from cloud computing and machine learning approaches. The combination of widespread remote sensing inputs and commercial cloud computing has "democratized" access to land management information, while allowing services tailored to targeted markets.

In recognition of the increasing number of collaborative projects between public/academic researchers and industry, this plenary panel is comprised of several industry representatives. Following a brief introduction by each panelist summarizing the main forestry activities of their organization, there will be a moderated Q&A session. This panel will discuss some of the new directions afforded by the rise of commercial remote sensing and geospatial analytics.

Sponsored by

quantum SPATIAL

Conference Dinner Cruise

17:45 - Board buses in front of hotel

18:00 - Buses depart

THURSDAY, 4 October

15:30 - 17:10

17:45 -

PREFUNCTION A & B: 15:10 - 15:30 Afternoon Break

SALON E

Ground-Based and Proximal Sensing

1. Vegetation change in response to an extreme snowfall event using multitemporal terrestrial laser scanning | J Greenberg*, Z Hou, R Hart, N Marchi, A Parra, R Tompkins, A Harpold, B Sullivan, P Weisberg, C Ramirez
2. Rigorous assessment of sub-canopy structural dynamics in global savanna systems at landscape scales through long-range terrestrial laser scanning (LR-TLS) | S Levick*, M Guderle, J Singh, G Cook, L Hutley, S Trumbore
3. Using Zeb1, a highly-mobile terrestrial laser scanner, to assess and measure trees in an eastern hemlock-dominated forest | D Crawford*, T Jovanovic, C Brack, A Stovall, D MacFarlane, J Frank, T Condon, A Strahler, C Schaaf, A Barker-Plotkin, D Orwig
4. Quantifying forest structure, complexity, and biomass using the Leica BLK360 terrestrial laser scanner | J Atkins*, A Stovall, G Clark, B Hardiman, C Gough
5. Forest Inventory and Mapping with a Photo Point Cloud and FIA Plots for WA State | J Strunk*, H Andersen, P Gould, C Maki, B McGaughey, D Gatziolis

SALON F

High Spatial Resolution Mapping

1. Assessing the height and density of subarctic lichen woodlands using stereo measurements performed on WorldView 3 images | B St-Onge*, S Grandin
2. Canopy height models from very high resolution Pléiades stereo images over mountain regions | L Piermattei*, M Marty, W Karel, M Hollaus, C Ginzler, N Pfeifer
3. Classification of dominant forest tree species by multi-source very high spatial resolution remote sensing data | B Del Perugia, D Travaglini*, A Barzagli, F Giannetti, S Nocentini, G Chirici
4. D-SAR: A Novel Drone-Based SAR System for the Radar Characterisation of Forest Canopies | K Morrison*, N Fox, L Bassett, P Minchinton
5. Validating the Dynamics of JPSS VIIRS Green Vegetation Fraction (GVF) Product with High-Frequency Planet CubeSat Imagery | F Zhao*, Z Jiang, M Chen, Y He, Y Yu, I Csiszar

SALON G

Forest Composition, Dynamics and Phenology

1. Mapping forest species composition using FIA plot data and Landsat spectral-temporal features | V Pasquarella*, J Thompson, L Morreale
2. Tropical forest and land cover monitoring using optical and SAR data | M Hirschmugl, C Sobe, J Deutscher, M Schardt*
3. Is ground-based phenology of deciduous tree species consistent with the temporal pattern observed from Sentinel-2 time series? | N Karasiak*, D Sheeren, J Dejoux, J Féret, J Willm, C Monteil, D Sheeren
4. Monitoring Forest Degradation using Spectral Unmixing and Landsat Time Series Analysis in Rondonia, Brazil | E Bullock*, C Woodcock, P Olofsson
5. Wall to Wall Deforestation and Forest Degradation Detection: A Case Study in the Eastern Humid Forest Ecoregion of Madagascar | N Algeet-Abarquero*, A Fernández-Landa, ML Guillen-Climent, J Esteban, P Rodríguez-Noriega, A Espejo

TOP OF THE 7'S

Special Session: Next Generation Large Area Forest Monitoring 3: Applications

Mike Wulder & Sean Healey, Session Chairs

1. Opportunities for monitoring post-disturbance forest recovery over large areas | J White*, M Wulder, T Hermosilla, N Coops, G Hobart
2. Improving quality bands across Landsat sensors using convolutional neural networks | MJ Hughes*, J Braaten, S Hooper, R Kennedy
3. Monitoring Over a Decade of Carbon Flux in Pinyon-Juniper Woodlands | M Falkowski, S Filippelli*, A Hudak, P Fekety
4. Products of phenology, disturbance, and peak summer greenness for NASA's Arctic and Boreal Vulnerability Experiment | C Woodcock*, S Chen, M Friedl, Y Zhang, E Melaas
5. Annual estimates of forest biomass and forest cover for the continental U.S. | R Kennedy*, MJ Hughes, J Braaten, S Hooper

CALVERT BALLROOM

Special Session: Mangroves: New Perspectives from Earth Observations

Richard Lucas & Kate Fickas, Session Chairs

1. Ensuring a Long-Term Future for Mangroves: A Role for Remote Sensing | R Lucas*
2. The Global Mangrove Watch (GMW) | P Bunting, A Rosenqvist, R Lucas*, A Hardy, N Thomas, L Hilarides, L Rebelo
3. High-resolution 3-dimensional mapping of forest structure and aboveground biomass stocks in mangrove ecosystems in the Americas, Africa and South Asia | L Fatoyinbo*, D Lagomasino
4. Deciphering Mangrove Phenology: What, When and Where | N Younes*, K Joyce, L Lymburner, S Maier
5. EcoMap: An Interactive Early Warning System to Aid Global Mangrove Restoration and Policy | L Goldberg*, D Lagomasino, L Fatoyinbo

DINNER CRUISE

Upscale dining with friends and colleagues, drifting past iconic D.C. landmarks on the Potomac River.

17:45 - Board buses in front of the hotel
18:00 - Buses depart

Sponsored by

SILVIATERRA & Microsoft

PREFUNCTION A & B: 8:00-9:00
Breakfast and Registration

CALVERT BALLROOM: 9:00-9:15 Thomas Hilker Award Presentation

9:15-10:15 Keynote: Peter Scarth and David Schimel

PREFUNCTION A & B: 10:15-10:30
Morning Break

10:30 - 12 :10

SALON E

Spaceborne Missions

1. The BIOMASS mission: measuring forest height and above ground biomass from space | K Scipal, S Quegan, T Le Toan, J Chave, J Dall, P Paillou, K Papathanassiou*, S Tebaldini, S Saatchi, H Shugart, L Ulander, M Williams
2. Forest mapping with TanDEM-X: the global product and potentials for high-resolution classification | M Martone*, P Rizzoli, C Gonzalez, J Bueso-Bello, F Sica, M Zink, G Krieger, A Moreira
3. Understanding the Role of Ecosystem Structure in Carbon and Biodiversity: GEDI - The Global Ecosystem Dynamics Investigation | R Dubayah*
4. The development of vegetation Lidar mission 'MOLI' | R Mitsuhashi*, J Murooka, D Sakaizawa, T Imai, T Kimura, M Hayashi, K Mizutani, Y Sawada, T Endo, K Kajiwara, Y Honda, K Asai
5. Mapping global forests using data from NASA's ICESat-2 Mission | A Neuenschwander*, L Magruder

SALON F

Habitat and Biodiversity

1. Assessing habitat diversity in tropical forests using airborne Lidar scanning | N Labrière*, S Tao, F Fischer, C Bedeau, G Vincent, J Chave
2. Estimation of biodiversity relevant forest structure parameters using a multi-sensor and multi-scale remote sensing approach | K Mulatu*, M Decuyper, B Brede, L Kooistra, B Mora, J Reiche, M Herold
3. Combining 3D acoustic and Lidar data to assess biodiversity impacts of Amazon forest degradation | D Rappaport*, A Royle, D Morton, R Dubayah
4. Lessons Learned Identifying Wildlife Habitat Using Lidar | J Kane*, V Kane, J Jenkins, D Lesmeister, M North, G Asner, LM Moskal
5. Canadian Airborne Biodiversity Observatory | M Kalacska*, JP Arroyo-Mora, E Laliberté, A Bruneau, M Vellend, N Coops

SALON G

Forest Disturbance and Degradation

1. Comparison of Sentinel-1 and Sentinel-2 Time Series for Near-Real Time Deforestation and Forest Degradation Monitoring in Tropical Areas with Quasi-Permanent Cloud Coverage | N Algeet Abarquero*, A Fernández-Landa, ML Guillén Climent, J Esteban, P Rodríguez-Noriega
2. Using an ensemble approach with spatio-temporal variables from annual Landsat time series to detect forest disturbances and attribute driving agents in Myanmar | K Shimizu*, T Ota, N Mizoue, S Yoshida
3. Visual interpretation of the Landsat time series indicates that forest canopy decline represents heterogeneous forest structure and composition change | D Bell*, M Reilly, W Cohen, A Gray, T Spies, Z Yang
4. Mapping and monitoring fractional woody vegetation cover in the arid savannahs of northern Namibia using Lidar and SAR data | K Wessels*, F van den Bergh, R Mathieu, R Main, L Naidoo, N Knox, K Steenkamp
5. Using three decades worth of Landsat time series imagery to map disturbance dynamics across public forests in Victoria, Australia | M Soto-Berelov*, J Simon, H Andrew, N Trung, H Samuel, S Ahmad, L Costello

TOP OF THE 7'S

Special Session: Using Remote Sensing-Based Maps in Compliance with IPCC Good Practices for Greenhouse Gas Inventories

Ronald McRoberts & Erik Næssat Session Chairs

1. On the impact of omission errors on area estimates of activity data | P Olofsson*
2. The Contribution of Reference Data Variability to the Total Variance of Forest Cover and Change Area Estimates | S Stehman*, B Pengra, J Mousoupetros, R McRoberts, E Naesset, T Loveland
3. Comparison of GREG versus Stratified estimator for reporting forest activity data for REDD+ | C Sannier*, R McRoberts, L Faucqueur, J Hugé, H Ghomsi
4. Assessment of a global biomass map in miombo woodlands and rainforests in Tanzania | E Næsset*, T Gobakken, RE McRoberts, S Saatchi, E Zahabu
5. Using a finer resolution local biomass map as a source of reference data for assessing a coarser resolution regional biomass map | RE McRoberts*, E Næsset, GC Liknes, S Saatchi, Q Chen, BF Walters

CALVERT BALLROOM: 12:10-13:30 Lunch

13:30 - 15:10

Spaceborne Lidar

1. Satellite-based Forest Inventory in Northwestern Canada | G Castilla*, M Filiatrault, M Gartrell, R Skakun, R Hall, A Beaudoin, C Mahoney, L Smith, K Groenewegen
2. Estimation of Forest Aboveground Biomass and Canopy Cover with Simulated ICESat-2 Data | L Narine*, S Popescu, A Neuenschwander, T Zhou, S Srinivasan, K Walsh
3. NASA ICESat-2 for Wildland Fire Applications | S Delgado Arias*, B Peterson, N Glenn, W Ni-Meister, T Neumann, M Jasinski, M Brown, V Escobar
4. Development of the Global Ecosystem Dynamics Investigation (GEDI) Lidar Canopy Cover and Vertical Profile Metrics Algorithm and Validation Results | H Tang*, J Armston, S Hancock, S Marselis, S Luthcke, M Hofton, B Blair, R Dubayah
5. Forest biomass estimation using large-footprint Lidar data for algorithm development of MOLI spaceborne Lidar | M Hayashi*, R Mitsuhashi, J Murooka, D Sakaizawa, T Imai, T Kimura, K Mizutani, Y Sawada, T Endo, K Kajiwara, Y Honda, K Asai

Multi- and Hyperspectral Applications

1. Integration of NEON imaging spectroscopy and Lidar data for 3-dimensional canopy trait mapping | A Chlus*, Z Wang, E Kruger, P Townsend
2. Differentiating FIA Forest Types with Hyperspectral and Lidar Data | C Shoot*, LM Moskal, H Andersen
3. From pixels to function: Tree growth estimation from canopy hyperspectral reflectance | S Graves*, T Caughlin, S Marconi, S Bohlman
4. Foliar "trait space" from imaging spectroscopy | P Townsend*, K Cawse-Nicholson, Z Wang, T Zheng, D Thompson, A Chlus, R Pavlick, F Schneider, D Schimel, E Kruger
5. Mapping functional diversity of forests with remote sensing | F Schneider*, F Morsdorf, B Schmid, O Petchey, A Hueni, D Schimel, M Schaepman

Monitoring Forest Change & Deforestation

1. Deforestation's Impacts on Fragmentation and Connectivity of Colombian Forests | P Jantz*, S Goetz, A Hansen, J Watson, O Venter, M Hansen
2. Dry Chaco Forest deforestation map by using Random Forest with Landsat dataset on Google Earth Engine | V Barraza, P Perna, F Grings, E Roitberg*, M Salvia
3. The potential of dense Landsat time series for deforestation monitoring in human-modified rainforests of Indonesia | H Hadi*, A Krasovskii, V Maus, P Yowargana, S Pietsch, M Rautiainen
4. The Benefits of Time: Characterizing the Landsat Spectral-Temporal Domain in Forested Ecosystems | K Fickas*, V Pasquarella, P Arevalo, E Bullock, C Holden, P Olofsson, W Cohen, C Woodcock
5. Monitoring direct drivers of deforestation in Indonesia | K Austin*, Y Gu, P Kasibhatla, A Schwantes

Special Session: Terrestrial Laser Scanning 1: 3D Forest Measurements Structure, Function, and Satellite Cal/Val

Mathias Disney & Crystal Schaaf, Session Chairs

1. Developing new biomass allometric equations based on terrestrial laser scanning | K Calders*, M Disney, A Burt, N Origo, J Nightingale, Y Malhi, P Wilkes, P Raumonen, H Verbeeck
2. Comparing Lidar-Derived Quantitative Structure Models (QSM) with Direct Measurements of Tree Structure, Volume, and Biomass | P Radtke*, A Barker-Plotkin, P Boucher, A Burt, K Calders, D Walker, J Frank, Z Li, D MacFarlane, D Orwig, I Paynter, F Peri, P Raumonen, C Schaaf, A Stovall, A Strahler
3. Savanna vegetation 3D models: defining disturbance and resource constraints at multiple-scales | J Singh*, SR Levick, M Guderle, S Trumbore, C Schmullius
4. Quantifying tree crown-filling using new 3D terrestrial laser scanning measurements | M Disney*, L Bentley, A Burt, M Boni Vicari, K Calders, B Enquist, Y Malhi, P Wilkes
5. The single tree and forest stand 4-D monitoring using point clouds comparison approach from multi-temporal and multi-station terrestrial laser scanning | P Wezyk*, K Zieba-Kulawik, P Rysiak, M Starzyk

Friday Highlights

Keynote Address:

Point Intercepts to Policy: Building an ongoing full stack forest monitoring system across multiple government agencies

Peter Scarth
Senior Research Scientist, University of Queensland

CALVERT BALLROOM: 9:15-9:45

Keynote Address:

Tropical Forests and the Global Carbon Cycle from Space

David Schimel
Research Scientist, Jet Propulsion Laboratory, California Institute of Technology

CALVERT BALLROOM: 9:45-10:15

Sponsored by

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FRIDAY 5 October

15:30 - 17:10

Saturday, 6 October

Excursion: Smithsonian Environmental Research Center (SERC)

10:00 - 17:00

PREFUNCTION A & B: 15:10 - 15:30 Afternoon Break

SALON E

Fire, Burnt Area and Fuel Loads

1. Characterising Vegetation and Fuel Structure in Mallee Woodlands using Terrestrial Laser Scanning | L Wallace, S Hillman*, R Taneja, K Reinke, B Hally, S Jones
2. Development of 3-dimensional burn severity metrics | K Nelson, B Peterson*
3. Detecting burnt forest through applied machine learning techniques on combined high resolution remote sensing data | T de Conto*, GA Prata, LCE Rodriguez
4. Small area estimation of forest attributes within fire perimeters | G Moisen*, T Frescino, R Bush, K Megown, B Quayle, J Gregory, C Baker, C Toney
5. Implications of Peat Burn Severity on C Emissions and Post-Fire Successional Trajectories in Boreal Northwest Territories Canada | L Bourgeau-Chavez*, J Graham, M Battaglia, N French, E Kane, S Grelik

SALON F

Forest Cover Mapping

1. Boreal canopy surface estimates from spaceborne stereogrammetry | P Montesano*, C Neigh, W Wagner, M Wooten
2. How to apply forest definitions into multispectral imagery in the mountainous temperate forests? | E Grabska*, WS Keeton, B Price, P Tompalski, K Ostapowicz
3. A new tree extent and canopy height map for Bangladesh | N Thomas*, P Baltezar, D Lagomasino, S Lee, T Fatoyinbo, J Green, M Rahman
4. Multi-sensor data synthesis for forest classifications with the Bayesian Updating of Land Cover (BULC) algorithm | J Cardille*, M Crowley, X Giroux-Bougard, J Lee
5. Urban Tree Canopy Assessments | J O'Neil-Dunne*, M Grove, M Galvin, D Locke

SALON G

Forests and the Carbon Cycle

1. A Spatial Carbon Budget Bookkeeping Model for Forest Disturbances | W Gong*, F Zhao, C Huang, R Houghton, A Nassikas, K Schleeweis
2. Implications of errors in remote sensing-based maps on models of carbon emissions in the Colombian Amazon | P Arevalo*, C Woodcock, P Olofsson
3. Using InSAR based Wall-to-Wall Forest Carbon Change Mapping for Estimating Forest Carbon Gain and Loss in all Protected Areas and buffer zones in Uganda : Implications to the Carbon Benefits of Conservation | B Gizachew*, S Solberg, S Puliti
4. Sentinel-1 and -2 Data for optimized Forest Cover Detection in European Temperate Forests and South African Savanna: Investigation of sensor fusion and the impact of spatial autocorrelation | K Heckel*, M Urban, P Schratz, M Mahecha, C Schmullius
5. Unravelling the effects of inundation dynamics on methane cycling in forested wetlands using spaceborne optical and radar data | B DeVries*, KL Hondula, C Huang, CN Jones, MW Lang, MA Palmer

TOP OF THE 7'S

Special Session: Terrestrial Laser Scanning 2: 3D Forest Measurements Structure, Function, and Satellite Cal/Val

Mathias Disney & Crystal Schaaf, Session Chairs

1. Is UAS-Lidar the data acquisition method for future forest inventories? | M Hollaus*, D Wang, M Wieser, N Pfeifer, G Bronner
2. Investigating the above-ground competition effects of liana load on tree structure and allometry using TLS | SM Krishna Moorthy*, K Calders, E Kearsley, H Verbeeck
3. Application of a micro-TLS system to estimate woody shrub biomass | J Batchelor*, LM Moskal, V Kane, A Kato
4. Detecting tree-related microhabitats in TLS point clouds using machine learning | N Rehush*, M Abegg, L Waser, U Brändli
5. Benchmarking drone Lidar using TLS for landscape-scale sampling of individual tree structure in support of space-mission calibration and validation | M Krůček*, K Cushman, J Trochta, K Král, J Kellner

CALVERT BALLROOM

Special Session: Forest Carbon MRV and Role in Future Climate Mitigation

Ben Poulter, George Hurtt, Neil Pederson & Thomas Pugh, Session Chairs

1. Using NASA Carbon Monitoring System Data Products for Policy Applications in Maryland, USA | E Campbell*, R Marks, G Hurtt
2. Climate change will alter montane forests, but how fast? Fusing Landsat time series and spatially dynamic vegetation models to inform montane forest management | J Foster*, A D'Amato
3. A bottom-up, stakeholder-driven carbon monitoring system in the Northwestern USA | A Hudak*, P Fekety, S Filippelli, M Falkowski, V Kane, G Domke, N Crookston, A Smith
4. Satellite estimates of young North American boreal forest site-index for DGVMs | C Neigh*, P Montesano, J Sexton, M Feng, S Channan, N Carvalhais, M Forkel, L Calle

ForestSAT

On behalf of the ForestSAT 2018 Organizing Committee and the ForestSAT Board of Directors – THANK YOU!

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for announcements regarding ForestSAT 2020.

Safe travels. We hope to see you all again soon!

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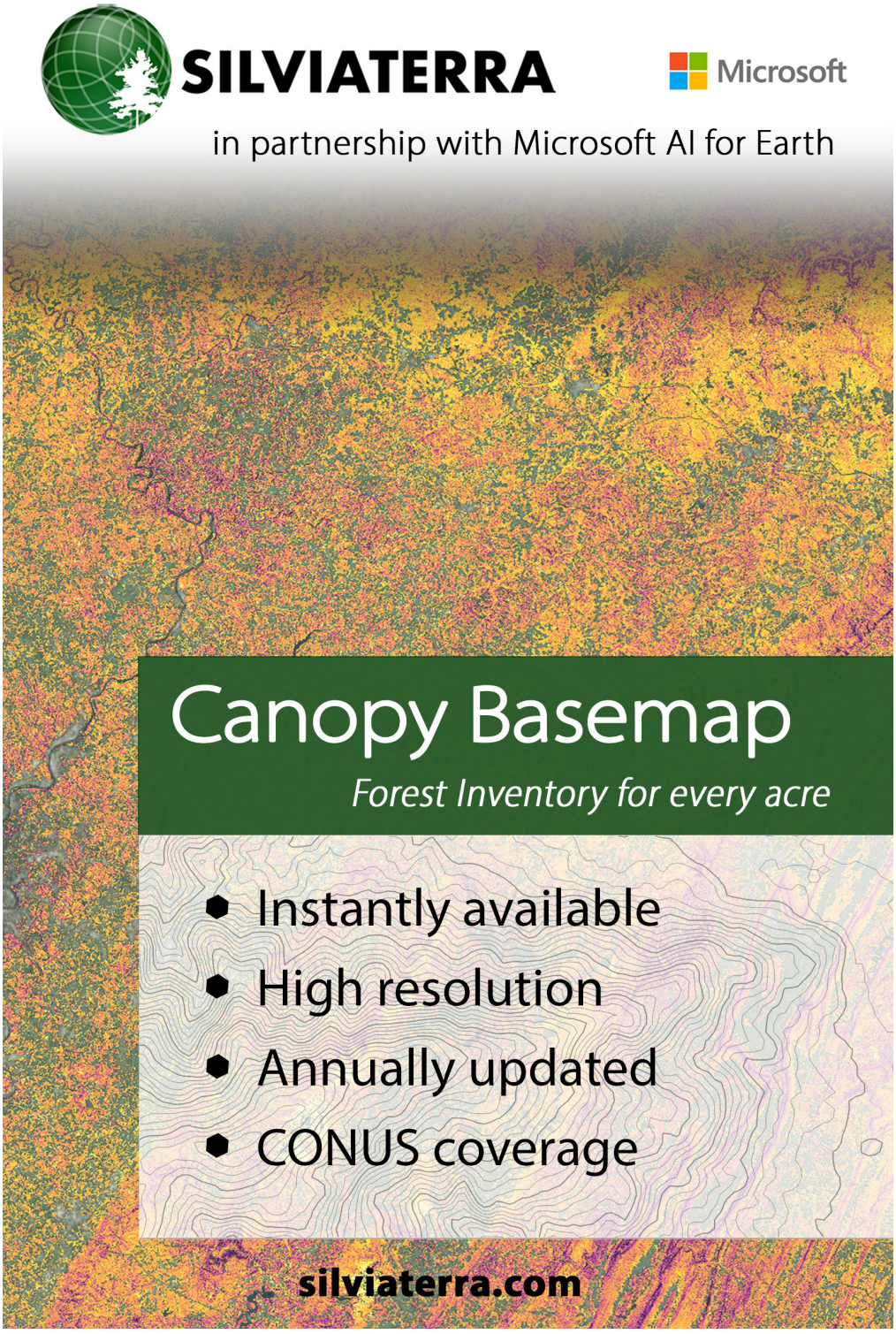
Thomas Hilker
Early Career Scientist Award

This year at ForestSAT we are announcing a new award for young scientists, in honor of the late Dr. Thomas Hilker. Thomas was an incredibly special member of our community, embodying the best of what it is to be a scientist and a human. He was a joy to work with and know, and his humor and skills were matched by his humility.

Thomas obtained his Bachelor and MSC degrees in Germany and his PHD in Canada (UBC). Following a postdoctoral research fellowship at NASA Goddard Space Flight Center, he joined Oregon State University as an Assistant Professor. In 2016, he was about to commence a new position at the University of Southampton when he died unexpectedly at the age of 40. Thomas was a well-loved colleague of many remote sensing researchers world-wide. He built a network of collaborators in Canada, the US, Brazil, Europe and Australia. He approached environmental questions and challenges with vigor and zeal and had an enormous curiosity and passion for science. He was respectful of others' opinions, eager to share ideas and approaches, and recognized science was a collaborative endeavor. In his short career he was prolific, authoring many papers covering a wide range of research topics mirroring his broad interests in terrestrial Earth Observation.

By creating this award, the ForestSAT community chooses to recognize early career scientists undertaking challenging research and starting to publish groundbreaking science. We recognize innovative individuals who we believe will become global leaders in the field. More importantly, these individuals undertake science collaboratively, with humility, and boost the work and spirits of their colleagues as Thomas did.

The award will be presented during the opening remarks on Friday, October 5th at 9:00 am.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Remote Sensing

an Open Access Journal by MDPI
Impact Factor: 3.406 (2017)

Forest Remote Sensing

Section Editor-in-Chief: Dr. Randolph H. Wynne

The section on Forest Remote Sensing's aim is to advance basic and applied remote sensing of forests and is committed to publishing timely, high quality manuscripts that become immediately pertinent to every scientist in the field — in short, to be the "go-to" journal for remote sensing of forests.

The section is platform and sensor agnostic, but articles should make fundamental advances, be well written, and be a unique contribution. We are welcome to colleagues' suggestions for special issues at any time, but be sure that there is sufficient community demand prior to submitting a prospectus. We also welcome well-written review articles that help the community gain a synthetic understanding of the state-of-the-art and probable next steps in subfields of forest remote sensing.

www.mdpi.com/journal/remotesensing/sections/Forest_Remote_Sensing

Poster Session #1

Prefunction A & B

**Indicates presenting author*

Posters in this session on display from 18:00 Monday (Oct 1) to 13:30 Wednesday (Oct 3). Posters in session #1 must be taken down after lunch on Wednesday (Oct 3)

1. Forest health - using a multi-sensor UAV and satellite observations to monitor the state of UK forests and woodlands | E Cornforth*, M Williams, M Perks, E Mitchard
2. Constraints on the US forest carbon balance through the assimilation of above-ground biomass maps into CARDAMOM | AA Bloom*, S Saatchi, Y Yu, N Parazoo, M Williams, TL Smallman, J Exbrayat
3. Fusing GEDI lidar, TanDEM-X InSAR and Landsat data for improved forest structure mapping | W Qi*, P Wang, J Armston, R Dubayah
4. The Regional Scale Forest Aboveground Biomass Estimation of South Central Plains with the Calibrated Global Forest Canopy Height Map | N Ku, S Popescu*
5. A Comparison of Regression Techniques for Estimation of forest above ground biomass using Lidar and hyperspectral data | J Lv*, C Zhang
6. Linking lidar and forest modeling to assess biomass estimation across scales and disturbance states | N Knapp*, R Fischer, A Huth
7. Estimating tree biomass using crown parameters derived from airborne lidar | A Zielonka*, D Pflugmacher, K Ostapowicz
8. Stand volume estimation using tree-level UAV based approach in mature boreal forest | A Kuzmin*, L Korhonen, M Maltamo
9. Moratoria on land acquisitions reduce tropical deforestation: Evidence from Indonesia | B Chen*, C Kennedy, Y Jin, B Xu
10. Ongoing primary forest loss in Brazil, Democratic Republic of the Congo, and Indonesia | S Turubanova*, P Potapov, A Tyukavina, M Hansen
11. The use of Weibull coefficients as Lidar metrics to identify selective logging impacted areas in the Amazon | C Reis, T Abib, E Görgens, A Melo, LC Rodriguez*
12. Monitoring Black Wattle using GIS and Remote sensing techniques in Makhado Local Municipality, South Africa | N Nethengwe*, F Dondofema, K Mavhungu
13. Leaf- and stand-scale effects of age on canopy spectral signature dynamics in Chinese fir evergreen forests | Q Wu*, J Song, C Song, J Wang, S Chen, B Yu
14. Woody cover through the trees: How much woody cover are we overlooking in African savannas? | R Nagelkirk*, K Dahlin
15. Quantifying Forest Cover Loss based on Multi-Temporal L-Band SAR Intensity Value Representation | IEW Rachmawan*, T Tadono, Y Kiyoki
16. Estimation of Defoliation of Pine Trees by Using Single-scan Terrestrial Laser Scanning Data | L Huo*, X Zhang, N Zhang, Y Wu
17. Monitoring gap structure of plantation forests with high resolution remote sensing data | S Li*, Q Liu
18. Detecting of forest phenology and change trends for assessment of nature reserve in Tibetan Plateau during 2000-2016 | L Qian*, S Jinling
19. Individual tree size and stand volume estimation of Teak plantation using UAV | N Furuya*, W Himmapan, I Noda, G Hitsuma
20. Explorative Study of Allometric Relationships of Forest Above-Ground Biomass to Small Footprint Lidar Data | Q Wang*, Y Pang, Z Li, W Ni, E Chen, G Sun
21. Deep Learning uNet Method for Forest Types Classification Based on high resolution optical Remote Sensing Data | Y Guo*
22. Mapping tree species spatial distribution using discrete aerial laser scanning data | B Wu*, G Zheng
23. VUX1-LR Lidar specifications for forest inventory in virtual reality environment | B Del Perugia, D Travaglini*, G Chirici, S Gonzalez Aracil
24. Inventorying forests in transformation to Continuous Cover Forestry using of-the-shelf UAVs | MG Bennett*, DA Hardy, DP Bunting
25. The development of an automated tree detection tool using UAV-based datasets | AM Klein Hentz*, AP Dalla Corte, S Péllico Netto, M Strager, ER Schoeninger
26. Lidar360 individual tree detection performance in forest plantations from UAV-derived point clouds | AP Dalla Corte*, N Bonamichi Silva, M Klein Hentz, B Nascimento de Vasconcellos, MS Ruza
27. Estimation of pine cone counts using small unmanned aerial system (UAS) imagery | L Malambo*, S Popescu, B Bartlett, F Raley, T Byram, S Srinivasan
28. A Multi-Sensor Fusion Approach to Landsat Time Series Fitting | S Ghannam*, AL Abbott, ME Hussein, RH Wynne, VA Thomas
29. Assessing the relationships between stand characteristics and Landsat-based aboveground forest biomass mapping uncertainty | D Bell*, M Gregory, R Kennedy, D Saah, J Battles, B Collins, J Sanders

30. Inter-annual variation in springtime phenology of North American temperate and boreal forests | M Moon*, E Melaas, J Gray, M Friedl
31. Landsat-based Upper Great Lakes Forest Phenoclimatology, 1984-2013 | M Garcia*, P Townsend
32. Large-Scale trailcam networks enhance interpretation of satellite phenology for ecological studies | N Liu*, J Clare, C Anhalt-Depies, B Zuckerberg, P Townsend
33. Seasonal dynamics of forest albedo in European boreal region | A Hovi*, E Lindberg, M Lang, T Arumäe, J Peuhkurinen, S Sirparanta, S Pyankov, M Rautiainen
34. Customized web-based services to access the Daymet product: Analysis of user-based downloads provide insights into how scientists access large, complex data for their research needs | M Thornton*, Y Wei, A Boyer, P Thornton, S Vannan
35. Estimating clearcut area in Mediterranean forests on the basis of Landsat time series analysis | G Chirici*, R Pegna, F Giannetti, RE McRoberts, E Mazza, D Travaglini
36. Potential of Sentinel-1 time series for deforestation and forest degradation mapping in temperate and tropical forests | M Urbazaev*, F Cremer, C Schmullius, C Thiel
37. Validation and preliminary assessment of the Ecosystem Disturbance and Recovery Tracker (eDaRT) performance in forests of the Sierra Nevada, California | E Haunreiter*, A Koltunov, C Ramirez, M Slaton, K Evans, T Kohler, L Young, S Ustin
38. Time series data analysis for forest change-type attribution and applications for UK forest management and improving Hylobius abietis risk identification | I Bye, J Suárez, M Payne, J Rosette*, Z Yang, W Cohen, D Plugmacher
39. Structural Signatures of Forest Disturbance | J Atkins*, R Fahey, B Hardiman, E Stuart-Haëntjens, B McNeil, D Orwig, L Turner, A Stovall, C Gough
40. Integration of Landsat and simulated spaceborne Lidar data to estimate time since disturbance at the forest stand level | N Sanchez-Lopez*, L Boschetti, AT Hudak
41. Rapid Assessment of Post-Storm Windblow in Scotland using Sentinel-1 | S Fleming*, I Woodhouse, A Moyer, J Morel
42. National Maps Attributing Forest Canopy Loss Activities 1986-2010 | K Schleeweis*, G Moisen, C Toney, E Freeman, T Schroeder, C Huang, J Dungan
43. Mapping a changing fire frequency and carbon consumption in Alaskan black spruce forests | E Hoy*, K Barret, T Loboda, M Turetsky, E Kasischke
44. Advances of the identification and satellite monitoring system for forest fire danger zones (SIMPIF) originating from agricultural burning in southern Chile | P Acevedo*, M Castro, C Soto, C Carrasco
45. Variation in forest functional traits in tropical deciduous forests of India | T Zheng*, A Singh, N Krishnayya, P Townsend
46. Combining multi-temporal Sentinel-2 data and forest inventory plots to estimate the percent cover of tree species in a mixed European forest | C Straub*, LT Waser
47. Estimating the last disturbance year of forest stands in Coastal Georgia using all the available Landsat imagery with Google Earth Engine | S Obata*, C Cieszewski, P Bettinger, R C. Lowe III, S Bernardes
48. Identification of pine plantations with moderate management intensity using EWMA-CD on Landsat and harmonized Landsat-Sentinel (HLS) time series stacks | MN House*, VA Thomas, EB Brooks, RH Wynne
49. Global forest mapping through the integration of microwave and optical remote sensing | X Xiao*, Y Qin, J Dong, J Wang, B Chen
50. An Operational Remote Sensing Program for Conducting National Forest Health Surveys in the United States | W Monahan, F Krist, F Sapio*
51. Three-dimensional Mapping of Forest Canopy Water Content using Dual-wavelength Terrestrial Laser Scanning | A Elsherif*, R Gaulton, J Mills
52. Diurnal and seasonal cycles in leaf optical properties affect satellite-measured estimates of forest photosynthesis | M Mõttus*, R Hernández-Clemente, V Markiet
53. Mapping health status of chestnut forest stands using Sentinel-2 images | V Chéret*, Y Hamrouni, M Goulard, JP Denux, H Poilvé, M Chartier
54. Investigation of spectral and structural changes in Pinus contorta plantations following red band needle blight infection | M Smigaj*, R Gaulton, S Barr, J Suarez
55. Method analysis for early detection of spruce vitality loss with remote sensing data | K Einzman, C Glas, C Atzberger, R Seitz, N Pinnel, M Immitzer*
56. Fagus sylvatica L. presence and recent dynamics in its Spanish southernmost limit characterized with spectro-phenological traits captured by Landsat intra-annual time series | C Gómez*, I Aulló-Maestro, P Alejandro, L Hernández, R Sánchez de Dios, H Sainz, F Montes

57. Fusion of ALS and photogrammetric point cloud data in remote sensing of forest | A Kaasinen*, T Luostari, P Packalen, A Seppänen
58. Lidar collection methods compared through assessment and quantification of error in below-canopy forest structure characteristics in a fire-prone landscape | J Donager*, T Sankey
59. Classification of Tree Species and Oak Condition in a Mixed Broadleaf Forest Using Time Series of Hyperspatial Multispectral Unmanned Aerial System Imagery | J Iglhaut*, J Rosette
60. Processing PlanetScope time series images to detect post-fire regrowth | N Leach*, N Obrknezev
61. Establishing permanent large-scale forest dynamic plots of 100 ha at northeast China using UAV stereo imagery | W Ni*, Q Wang, D Zhang, Z Zhang, G Sun
62. A new approach to interpreting ICESat GLAS data for estimating canopy height in temperate woodlands in southwestern Australia | P Lee*, J Jeong
63. Estimation of growing stock volume of Scots pine stands using Sentinel-2 satellite imagery and airborne image-derived point clouds | P Hawryło*, P Wężyk
64. Characterizing Stem Volume in Mangrove Forests Using Terrestrial Lidar Scanning | A Rouzbeh Kargar*, A Fafard, R MacKenzie, J Van Aardt
65. Product generation for Calibration/Validation of the future NISAR mission biomass products | V Meyer*, S Saatchi, B Chapman
66. Accuracy of Plot-Level Forest Metrics from Terrestrial Photogrammetric Point Clouds | L Piermattei*, W Karel, D Wang, M Wieser, P Surový, J Tomaštík, M Mokroš, M Hollaus, N Pfeifer
67. Forest Biomass Retrieval Studies from Coupled Models and Data Fusion | G Sun*, B Osmanoglu, AH Armstrong, KJ Ranson
68. Estimating Effective Leaf Area Index (eLAI) in Heterogeneous Riparian Forest-Buffers: ALS vs. SfM | LM Moskal*, T Axe
69. Assessment of sustainable forest management of a mixed conifer-broadleaf forest by combinations of airborne Lidar and UAV observation | N Furuya*, Y Hirata, T Owari, D Sakaue, S Inukai, Y Nakagawa, M Tokuni
70. Mapping forest structure of Afromontane forest remnants by airborne laser scanning | H Adhikari, J Heiskanen, R Valbuena, P Pellikka
71. Comparing Sentinel-2 and Landsat 8 for detecting the invasive shrub species Ulex europaeus in South-Central Chile by using VHR UAV orthoimages | T Schmidt*, M Förster, A Clasen, F Fassnacht, B Kleinschmit
72. Individual Tree Mapping from Lidar point clouds based on topological tools | X Xu*, F Luricich, L De Floriani
73. Non-supervised individual trees segmentation of Lidar data in Amazonian forests with variable population densities | DDA Papa*, PHK Millikan, TH Abib, SDP Chaves e Carvalho, LCE Rodriguez
74. Detection of dead standing Eucalyptus camaldulensis without tree delineation for managing biodiversity in native Australian forest | M Miltiadou*, ND Campbell, S Gonzalez Aracil, T Brown, M Grant
75. Reuse of historical data in forest inventory | AM de Lera Garrido*, HO Ørka, T Gobakken
76. Potential of modern photogrammetry versus airborne laser scanning for estimating forest variables in a mountain environment | S Ullah*, M Dees, P Datta, P Adler, B Koch
77. Forest Field Inventories Through Terrestrial Point Cloud: Status And Outlook | X Liang*, J Hyyppä, X Yu, Y Wang
78. The accuracy of direct lidar-based estimation of forest canopy cover | L Korhonen*, P Packalen, I Korpela
79. Calibration of nationwide airborne laser scanning based stem volume models | E Kotivuori*, M Maltamo, L Korhonen, P Packalen
80. Predicting species-specific diameter distributions using a nearest neighbor imputation with various configurations - The effect of different ALS data | J Räty*, P Packalen, M Maltamo
80. Large Area Vegetation Mapping Using NASA's LVIS Facility | M Hofton*, JB Blair, D Rabine
82. Assessing the effects of multispectral aerial lidar viewing geometry on 3D and intensity features used for tree species identification | BC Budei*, B St-Onge
83. Feature standardization across areas of interest to optimize field sampling for individual tree species classification | P Rana, B St-Onge*, J Prieur, BC Budei
84. Evaluation of a method for yield forecasting produced using Lidar derived forest data and harvester data | J Söderberg*, JJ Möller, E Willén
85. The Integration of UAV and Backpack Lidar Systems for Forest Inventory | Y Su*, T Hu, H Guan, J Liu, Q Guo

Ecometrica Booth. Forests 2020: Protecting and Restoring the World's Tropical Forests | N Moffat*, D Michelakis, P McGregor, S Middlemiss

Poster Session #2

Prefunction A & B

**Indicates presenting author*

Posters in this session on display from 13:30 on Wednesday (October 3) until end of conference in Prefunction A&B

1. **A Semi-Automated Burned Area Mapping Methodology Using Sentinel-2 Imagery** | N Georgopoulos, D Stavrakoudis, IZ Gitas*
2. **Regional burned area mapping based on Google Earth Engine** | JA Anaya*, AM Rodríguez-Montellano, MI Cruz López, LDL Manzo Delgado, WF Sione, N Mari, G López-Saldaña, F Morelli, W Schroeder, JC Beltrán, A Bastarrika
3. **Fusion of multiple and temporally dense remotely sensed data sources for refined near-real-time burned-area mapping** | M Crowley*, J Cardille, M Wulder, J White
4. **Leveraging VIIRS active fire data from the Suomi NPP and NOAA-20 satellites for improved global fire monitoring** | I Csiszar*, M Tsidulko
5. **A Hybrid Hyrcanian Forest Fire Detection Algorithm** | M Rahim Zadegan, M Taefi Feijani*, M Zohary, A Tavakoli
6. **Detection of forest fires in Southeast Asia and western United Sates with optical and radar satellite observations** | M Humber*, K Lasko
7. **Combination of Sentinel-2 and Landsat 8 Data for Monitoring Wildfire Progression Using Google Earth Engine: The Case of the Massive Thomas Fire** | X Hu*, A Nascetti, Y Ban, M Wulder
8. **Monitoring Long-term Variation in Mediterranean Burnt Forests Using Sentinel 1-SAR Time Series. The case of Doñana National Park** | J Ruiz-Ramos*, A Marino, CP Boardman, R Diaz-Delgado, J Suarez
9. **Examining Fire Background Temperature - Methods for Estimation of Obscured Pixel Values** | B Hally*, L Wallace, C Engel, C Wickramasinghe, K Reinke, S Jones
10. **Burned area detection using Sentinel-1 data and locally adaptive algorithms** | MA Belenguer-Plomer*, MA Tanase, A Fernandez-Carrillo, E Chuvieco
11. **Predicting tree diversity with full-waveform Lidar data in Gabon** | S Marselis*, H Tang, J Armston, R Dubayah
12. **An ensemble classifier approach for urban tree species classification from ground-based spectral references** | J Aval*, S Fabre, E Zenou, D Sheeren, M Fauvel, B Xavier
13. **Identifying cerulean warbler habitat from forest structure using airborne laser scanning** | R Wasson*, P Treitz
14. **Forest biodiversity estimated from the space: testing the Spectral Variation Hypothesis comparing Landsat 8 and Sentinel 2 using a multi-temporal Rao Q** | M Torresani*, D Rocchini, R Sonnenschein, M Zebisch, G Tonon
15. **Non-Native Spathodea campanulata in Puerto Rico, Pre and Post 2017 Hurricane Season** | I Paynter*, B Cook, D Morton, S Martinuzzi, S Serbin
16. **The use of Cloud-Computing Approaches for Land Cover/Use Mapping to Support Ecosystem Accounting in West Africa using High Resolution Optical Data** | C Sousa*, T Fatoyinbo, C Neigh, M Honzák, T Wright, T Larsen
17. **Remote sensing of forest structural attributes in restoration plantings** | N Camarretta*, A Lucieer, PA Harrison, B Potts, N Davidson, M Hunt
18. **Integration of ForeStereo-Lidar data using Universal Kriging models: a geostatistical approach for forest inventories** | I Aulló-Maestro*, C Gómez, A Vázquez, M Cabrera, F Montes
19. **Essential Biodiversity Variables obtained from airborne and spaceborne Lidar** | R Valbuena*, B O'Connor, F Zellweger, F Morsdorf, P Vihervaara, W Simonson, F Danks, G Chirici, N Coops, D Coomes
20. **Quantifying Multi-Source Carbon Cycle Model Uncertainties: Sensitivity Analysis, Perturbed Parameter Ensemble, and Uncertainty Attribution** | Y Zhou*, C Williams, H Gu
21. **Analysis of vegetative resilience and water use efficiency for the continental part of Ecuador using remote sensing and modelling** | JI Gamez-Badouin*, JM Madrigal-Gomez, GA Juarez Cansdales
22. **Assessing post-hurricane damage in mangrove forests of south Florida using repeat Lidar, Landsat imagery and U.S. Forest Service, Forest Inventory and Analysis (FIA) data** | T Schroeder*, M Brown, J Nowak, K Cummins, B Cook, C Giri
23. **Variations in mangrove canopy chlorophyll content with respect to species, submerged conditions and seasonality** | C Shi*, L Wang, X Cao
24. **Automated Quantification of Mangrove Change from Earth Observation Data, Matang Forest Mangrove Reserve, Malaysia** | R Lucas*, V Otero, R Van De Kerchove, B Satyanarayana, F Dahdouh-Guebas
25. **Mangrove forests of Ecuador: Extent, biomass and forty years of change** | N Thomas*, M Simard, S Howard, V Rivera-Monroy, E Castañeda-Moya, S Lee, T Fatoyinbo
26. **Mapping deforestation and forest structure deterioration: the potential of dense Sentinel-1 time series** | K Urban*, F von Poncet, L Fehrmann, M Freudenberg
27. **Validation of JICA-JAXA's deforestation monitoring system: JJ-FAST** | M Hayashi*, I Nagatani, T Watanabe, T Tadono, M Watanabe, C Koyama, M Shimada, T Ogawa, K Ishii, T Higashiuwatoko, M Miura, H Okonogi, T Morita

28. Using Sentinel-2 satellite images for automated detection of forest changes | T Pitkänen, A Kangas*, L Sirro, T Häme, L Häme
29. Improving near real time tropical forest change monitoring with multiple data sources | S Martin del Campo*, J Reiche, D Tuia, J Verbesselt, M Herold
30. The Ecosystem Disturbance and Recovery Tracker system (eDaRT) for large-area multi-satellite monitoring of forest dynamics | A Koltunov*, C Ramirez, S Ustin, M Slaton, E Haunreiter, ML Whiting
31. Development of a fuel loading database for calculating and mapping fire emissions from wildland fires within the United States | N French*, R Ottmar, S Prichard, M Billmire, M Kennedy, D McKenzie, E Kasischke, A Andreu, P Eagle, D Tanzer
32. EPIC-simulated and MODIS-derived Leaf Area Index (LAI) comparisons across multiple spatial scales | J liames*, E Cooter, A Pilant, Y Shao
33. Mapping forest management | D Schepaschenko*, F Kraxner, S Fuss, G Kindermann, M Dürauer, F Di Fulvio, A Krasovskii, M Lesiv
34. The value of fusing MODIS and Landsat data for analyzing phenology and mapping forest tree species | K Turlej*, V Radeloff, F Gao, M Ozdogan
35. Sentinel-2 image time series analysis for forest classification: On the way to a Germany-wide tree species map | S Preidl*, M Lange, D Doktor
36. Large spatial variation of leaf angle distribution quantified by terrestrial Lidar in natural European Beech forests | J Liu*, A Skidmore, T Wang, S Jones, M Heurich
37. Retrieving forest canopy leaf area index using terrestrial laser scanning data | L Ma*, G Zheng, W Ju
38. What is the effect of varying wood density on Lidar-derived above-ground biomass? | M Demol*, S Moorthy, K Calders, H Verbeeck, I Janssens, B Gielen
39. Terrestrial laser scanning to derive non-destructive estimates of liana AGB | SM Krishna Moorthy*, K Calders, H Verbeeck
40. A New Method of Equiangular Sectorial Voxelization of Single-scan Terrestrial Laser Scanning Data and Its Applications on Forest Defoliation Estimation | L Huo*, X Zhang
41. Novel TLS Device with Excentric Automotiv Scanner to avoid occlusion in single stand-point scanning | G Bronner*
42. Seasonal structure-function interactions: fusing solar induced fluorescence and terrestrial Lidar for holistic ecosystem measurement | A Stovall*, R Maini, R Nardacci, H Shi, H Shugart, X Yang
43. Instrument-based Lidar point cloud modeling with DART | T Yin, J Qi, B Cook*, J Gastellu-Etchegorry, S Wei, D Morton
44. Quantifying Riparian Buffer Zones and Floodplain Vegetation Roughness using a Drone-based Lidar | J Resop*, WC Hession
45. The operational application of airborne Lidar technology for forest stand-level inventory in the South of China | Y Pang*, C Li, H Dai, Z Li
46. Mapping smallholder forest plantations in Andhra Pradesh, India using Sentinel 2 | PT Williams*, S More, SA Cerv, RH Wynne
47. A review of field and laboratory spectral measurements of coniferous forest components | M Rautiainen*, P Lukeš, L Homolová, A Hovi, J Pisek, M Mõttus
48. Upscaling dorsiventral leaf optical properties in forest radiative transfer model | P Lukeš*, E Neuwirthová, R Janoutová, Z Lhotáková, L Homolová, J Albrechtová
49. A digital mapping method for linking high resolution remote sensing images to individual tree crowns | S Graves*, S Bohlman
50. Reforestation and Economic Security in a Developing World | D Oetter*
51. Multidecadal rates of arctic and boreal land cover change in ABoVE inferred from dense Landsat time series | J Wang*, D Sulla-Menashe, C Woodcock, O Sonnentag, M Friedl
52. Identifying and correcting biases in global tree cover products: a case study in Costa Rica | D Cunningham*, M Fagan, P Cunningham
53. Mapping human settlements and population density in the Democratic Republic of Congo using Landsat data | P Lola Amani*, P Potapov, A Pickens, M Steininger, M Hansen
54. Human-Guided v. Automated Classifications of Ponderosa Pine Plantations in the Willamette Valley, Oregon | A Riddell*, B Strimbu
55. Simulating Empirically Observed Forest Patterns Using a Hybrid Demand-Allocation Land Use Change Algorithm | E Brooks*, J Coulston, K Riitters, D Wear
56. Sentinel-1 CSAR Forest Land Cover Mapping of Troms County, Norway | J Haarpaintner*, HA Tømmervik
57. National wide CHM, deforestation areas and forest boundaries from airborne Lidar data in Estonia | A Vain*, K Sepp, J Raet, M Villoslada Peciña, M Lang
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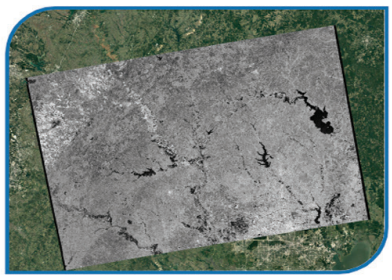

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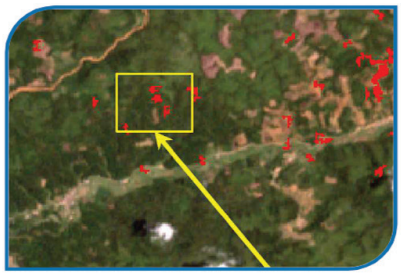

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