Conference Agenda

9th ForestSAT 2022 Conference Berlin, Germany

Date: Monday, 29/Aug/2022

9:00am - 5:30pm	**Workshops: please sign in as soon as possible - limited number of participants**
9:15am - 12:30pm	**WS-03: Planet Labs Workshop (Morning)** Location: **KL 32/123 (Corner Room 1)**
10:00am - 12:00pm	**WS-01: Hands-on EnMAP Box (Morning)** Location: **JK 28/112 (Small Room)** Chair: **Akpona OKUJENI**
10:00am - 5:00pm	**WS-04: Hands-on TLS workshop** Location: **Telegrafenberg (Potsdam)** Chair: **Guenther BRONNER** Chair: **Bernhard GROISS**
1:15pm - 5:30pm	**WS-03a: Planet Labs Workshop (Afternoon)** Location: **KL 32/123 (Corner Room 1)**
2:00pm - 4:00pm	**WS-01a: Hands-on EnMAP Box (Afternoon)** Location: **JK 28/112 (Small Room)** Chair: **Akpona OKUJENI**
2:00pm - 5:00pm	**WS-02: Google Earth Engine Hands-On** Location: **J 32/102 (Corner Room 2)** Chair: **Noel Scott GORELICK**
6:00pm - 9:00pm	**Icebreaker: Icebreaker** Location: **Icebreaker Location (inner courtyard)**

Date: Tuesday, 30/Aug/2022

8:00am - 9:30am	**CF 1: Registration** Location: **Foyer**
9:30am - 10:15am	**Opening: Opening ceremony** Location: **Lecture Hall 2** Chair: **Fabian FASSNACHT** Chair: **Piotr WĘŻYK**
10:15am - 11:30am	**Keynote: Nicholas Coops: Towards near real time forest inventory using satellite and laser scanning data** Location: **Lecture Hall 2** Chair: **Michael FÖRSTER** Chair: **Fabian Ewald FASSNACHT**
11:30am - 12:00pm	**CF 2: Coffee Break** Location: **Foyer**

12:00pm - 1:00pm

PS 1 - SpS 08: Near-real-time forest change alerting from space
Location: **Lecture Hall 2**
Chair: **Johannes REICHE**
Chair: **Juan DOBLAS**

Live Oral Presentation

RADD forest disturbance alerts – updates and next steps

Johannes Reiche, Adugna Mullissa, Bart Slagter, Ovidiu Csillik, Yaqing Gou, Johannes Balling, Anne-Juul Welsink, Sietse van der Woude, Andreas Vollrath, Mikaela Weisse, Martin Herold

Live Oral Presentation

Operational detection of forest Loss in Vietnam, Laos, Cambodia, Gabon, French Guiana, Suriname and Guyana Using Sentinel-1 Data

Stéphane MERMOZ, Alexandre BOUVET, Thierry KOLECK, Marie BALLERE, Thuy LE TOAN

Live Oral Presentation

Near-real-time deforestation alerts from Sentinel-2 with machine learning

Heiko BALZTER, Ana Maria Pacheco Pascagaza, Yaqing Gou, Valentin Louis, Roberts John F., Pedro Rodriguez-Veiga, Polyanna da Conceição Bispo, Fernando D.B. Espirito-Santo, Caroline Upton, Ciaran Robb, Gustavo Galindo, Edersson Cabrera, Indira Paola Pachón Cendales, Jamleck Ndambiri, Miguel Angel Castillo Santiago, Oswaldo Carrillo Negrete, Marco Iñiguez, Carmen Meneses

Live Oral Presentation

Addressing user needs for near-real-time deforestation monitoring systems

Mikaela WEISSE, Anika BERGER, Fred STOLLE, Sarah CARTER, David GIBBS, Nancy HARRIS

1:00pm - 2:30pm	**Lu 1: Lunch**

2:30pm - 4:00pm

PS 1 - SpS 08a: Near-real-time forest change alerting from space	PS 2 - RegS 07: Remote Sensing for Forest Management
Location: **Lecture Hall 2** Chair: **Johannes REICHE** Chair: **Juan DOBLAS**	Location: **JK 28/112 (Small Room)** Chair: **Piotr WĘŻYK** Chair: **Henrik PERSSON**
Live Oral Presentation	*Live Oral Presentation*
Monitoring of Forest disturbances: added value of a near-real-time approach based on the combination of Sentinel-2 and Sentinel-1 time series to enhance the detections of forest disturbances Justine HUGE, Antoine MASSE, Johannes Reiche, Daniela Requena Suarez, Gregoire Simonnet, Anne-Juul Welsink, Hervis Ghomsi, Martin Herold, Carlos De Wasseige	**Evaluating fine-scale forest competition and structural assessments with drone based lidar; A case study in dense Canadian operational conditions before and after thinning treatments** Liam Irwin, Nicholas Charles Coops, Jean-Romain Roussel, Alexis Achim, Martin Queinnec, Dominik Roeser
Live Oral Presentation	*Live Oral Presentation* **Extracting operational forest management information at the single tree level from airborne laser scanning data using advanced machine learning techniques** Adrian STRAKER, Paul Magdon

PRECISIONPOP: a multi-scale monitoring system for poplar plantations integrating field, aerial and satellite remote sensing

Francesca GIANNETTI, Francesco Chianucci, Clara Tattoni, Nicola Puletti, Achille Giorcelli, Claudio Bisaglia, Elio Romano, Pier Mario Chiarabaglio, Giovanni D'Amico, Massimo Brambilla, Massimo Gennaro, Piermaria Corona, Gherardo Chirici

Live Oral Presentation

DETER-R: An operational near-real time deforestation warning system based on Sentinel-1 time series analysis

Juan Doblas, Mariane Reis, Amanda Belluzzo, Camila Quadros, Douglas Moraes, Claudio Almeida, Sidnei Sant'Anna, Yosio Shimabukuro

Live Oral Presentation

Inter-comparison of SAR-based forest disturbance alert systems in the Amazon

Juan DOBLAS, Lucas LIMA, Stephan Mermoz, Alexandre Bouvet, Johannes Reiche, Manabu Watanabe, Sidnei Sant'Anna, Yosio Shimabukuro

Online Oral Presentation

MapBiomas Alerta: a system to validate and refine alerts using high-resolution images to hinder deforestation in Brazil.

Julia Shimbo, Leandro Parente, Carolina Del Lama, Marcos Rosa, Lana Texeira, Artur Lupinetti, Eduardo Velez, Magaly Oliveira, Tasso Azevedo

PS 3 - SpS 06: Forest and vegetation spectroscopy
Location: **J 32/102 (Corner Room 2)**
Chair: **Miina RAUTIAINEN**
Chair: **Michael FÖRSTER**

Online Oral Presentation

Tower and drone measurements of sun-induced fluorescence (SIF) in a northern forest

Jon Atherton, Neus Sabater, Teemu Hakala, Eija Honkavaara, Zhang Chao, Albert Porcar-Castell

Live Oral Presentation

Stem bark reflectance properties of boreal and temperate tree species

Jussi JUOLA, Aarne HOVI, Miina RAUTIAINEN

Live Oral Presentation

Investigation of hyperspectral UAV image data with regard to the detection of bark beetle early infestation in spruce forests

Alexander Marx, Ahuvit Trumper, Jonannes May, Simon König, Dr. Michael Förster

Live Oral Presentation

Intraspecific variation in leaf optical properties explained by abiotic environment and genetic structure

Ewa A. Czyż, Meredith C. Schuman, Cheng Li, Bernhard Schmid, Michael E. Schaepman

Live Oral Presentation

Tree species specific volume imputations using harvester and remotely sensed data

Jon Andreas Söderberg, Liviu Theodor Ene

Live Oral Presentation

Empirical growth model based on bitemporal aerial laser scans as an alternative to site index estimation. Case study in the National Park Bohemian Switzerland.

Zlatica Melichová, Dana Vébrová, Róbert Marušák, Elmar Csaplovics, Peter Surový

Live Oral Presentation

Classification of pines according to management intensity in the southeastern United States

Valerie Thomas, Randolph Wynne

Live Oral Presentation

New forest inventories in Britain using remote sensing and proximal data collection methods.

Juan SUAREZ

PS 4 - SpS 01: Forests in the global carbon cycle: connecting remote sensing, forest models and artificial intelligence
Location: **KL 32/123 (Corner Room 1)**
Chair: **Rico FISCHER**
Chair: **Nikolai KNAPP**

Live Oral Presentation

Developing real-time tree measurement with a low cost mobile laser for i-Tree data collection

Akira KATO

Live Oral Presentation

LIGNUM-tls: A model for simulating forest productivity using TLS-derived tree architecture

Hannah Julia O'SULLIVAN, Jari PERTTUNEN, Risto SIEVANEN, Kim CALDERS, Iain Colin PRENTICE

Live Oral Presentation

Characterizing aboveground biomass and tree cover of regrowing forests in Brazil using multi-source remote sensing data

Na Chen, Nandin-Erdene Tsendbazar, Daniela Requena Suarez, Jan Verbesselt, Martin Herold

Live Oral Presentation

Large-scale tree detection and species classification from LiDAR: Combining mean shift clustering with random forest and deep learning

Hauke GRONENBERG, Jan-Peter Mund, Nikolai Knapp

Live Oral Presentation

Spectral beta-diversity captures plant community composition across biomes

Anna K Schweiger, Etienne Laliberté

Live Oral Presentation

Effect of lidar coverage and field plot data numerosity on forest growing stock volume estimation

Giovanni D'AMICO, Ronald E. McRoberts, Francesca Giannetti, Elia Vangi, Saverio Francini, Gherardo Chirici

Live Oral Presentation

Improvements in forest reflectance modelling enabled by new hyperspectral in situ measurements

Eelis Halme, Matti Mõttus

4:00pm - 4:30pm	**CF 3: Coffee Break** Location: **Foyer**
4:30pm - 5:30pm	

PS 1 - SpS 03: Applications of drones in forestry: lessons learnt and way forward
Location: **Lecture Hall 2**
Chair: **Stefano PULITI**
Chair: **Louise TERRYN**

Live Oral Presentation

UAV-LS for monitoring tropical ecosystems: possibilities and limitations

Louise Terryn, Kim Calders, Harm Bartholomeus, Benjamin Brede, Sruthi M. Krishna Moorthy, Hans Verbeeck

PS 2 - SpS 11: Citizen and community science to support forest monitoring
Location: **JK 28/112 (Small Room)**
Chair: **Dmitry SCHEPASCHENKO**
Chair: **Myroslava LESIV**

Live Oral Presentation

Potential of citizen science to support forest monitoring

Myroslava LESIV, Dmitry Schepaschenko, Linda See

Live Oral Presentation

Tree height-growth trajectory estimation using uni-temporal UAV laser scanning data and deep learning

Stefano Puliti, Paul McLean, Nicolas Cattaneo, Carolin Fischer, Rasmus Astrup

Live Oral Presentation

Mapping global forest management intensity with the power of local experts and crowd

Dmitry Schepaschenko, Myroslava Lesiv, Marcel Buchhorn, Martina Dürauer, Ivelina Georgieva, Linda See, Ian Mccallum, Steffen Fritz

Online Oral Presentation

Integrating UAV and space-borne data to describe tree decline

Marziye GHASEMI, Hooman Latifi

Live Oral Presentation

Drivers of forest loss over the past decade: A Geo-Wiki crowdsourcing campaign overview

Juan Carlos LASO BAYAS, Linda SEE, Ivelina GEORGIEVA, Dmitry SCHEPASCHENKO, Martina DUERAUER, Steffen FRITZ

Live Oral Presentation

Oblique Multi-view angle UAV flight plans - an analysis of the potential for ground surface visibility and 3D stand structure mapping in dense deciduous forests

Sören HESE

Live Oral Presentation

Alert-driven Community-based forest monitoring: A case of the Peruvian Amazon

Arun Pratihast, Christina Cappello, Alonso Pérez Ojeda del Arco, Johannes Reiche, Veronique De Sy, Martin Herold

Live Oral Presentation

Transferability of a deep learning model for individual tree crown delineation and classification.

Andrew Joel CHADWICK, Nicholas C COOPS, Chris W BATER, Lee A MARTENS

Live Oral Presentation

App-based citizen science for tree species suitability assessment under future climate change

Florian KRAXNER, **Dmitry SCHEPASCHENKO**, Andrey KRASOVSKIY

PS 3 - SpS 06a: Forest and vegetation spectroscopy
Location: **J 32/102 (Corner Room 2)**
Chair: **Miina RAUTIAINEN**
Chair: **Michael FÖRSTER**

Live Oral Presentation

PS 4 - SpS 01a: Forests in the global carbon cycle: connecting remote sensing, forest models and artificial intelligence
Location: **KL 32/123 (Corner Room 1)**
Chair: **Rico FISCHER**
Chair: **Nikolai KNAPP**

Live Oral Presentation

Advances in the 3D discrete anisotropic radiative transfer model for optical remote sensing of forests

Zbyněk Malenovský, Omar Regaieg, Růžena Janoutová, Yingjie Wang, Tiangang Yin, Abdelaziz Kallel, Nicolas Lauret, Jordan Guilleux, Eric Chavanon, Jean-Philippe Gastellu-Etchegorry

Improving national forest attribute maps and estimates based on ALS, Sentinel-2 and NFI data using deep learning

Johannes BREIDENBACH, Lei LI, Stefan Oehmcke, Saheba Bhatnagar, Stefano Puliti, Johannes Schumacher, Thomas Nord-Larsen, Marius Hauglin, Rasmus Astrup, Christian Igel

Live Oral Presentation

Genetic associations with drought and its spectral signatures in European beech forests

Cheng LI, Lucienne de Witte, Aboubakr Moradi, Ewa A. Czyż, Andreas Hueni, Kimberley Mason, Michael E. Schaepman, Bernhard Schmid, Meredith C. Schuman

Live Oral Presentation

Individual tree characterization across diverse forest types of the US National Ecological Observatory Network: cross-site approaches yield information about multi-scale drivers

Stephanie BOHMAN, Sergio Marconi, Ben Weinstein, Sarah Graves, Dylan Stewart, Ritesh Chowdhry, Meilun Zhou, Ira Harmon, Matt Wein, Aditya Singh, Daisy Zhe Wang, Alina Zare, Ethan White

Live Oral Presentation

Tracking individual tree dynamics across tropical forest landscapes using deep convolutional neural networks and multitemporal, multimodal remote sensing data sources

James George Clifford Ball, Sebastian Hickman, Tobias Jackson, Grégoire Vincent, Nicolas Barbier, Jean-Louis Smock, Ilona Clocher, Benoit Burban, Philippe Verley, David Coomes

Live Oral Presentation

Towards a Digital Twin of the Earth's Forests

Matti Mõttus

Live Oral Presentation

Detecting tree species-specific forest health anomalies using Sentinel-2 time series

Maximilian Lange, Anne Reichmuth, Sebastian Preidl, Daniel Doktor

Live Oral Presentation

How does species diversity affect light quality and the metabolism of forest trees?

Aboubakr Moradi, Jakob Lang, Laura Williams, Kyle Kovach, Artur Stefanski, Raimundo Bermudez, Ethan Butler, Peter Hajek, Johanna Klama, Christian Messier, Alain Paquette, Maria Park, Karen Rice, Zihui Wang, Laurent Bigler, Peter Reich, Philip A Townsend, Michael Scherer-Lorenzen, Jeannine Cavender-Bares, Meredith C Schuman

Live Oral Presentation

Amazon forest productivity estimation by fusing GEDI lidar waveforms with a forest model

Rico Fischer, André Bogdanowski, Michael Müller, Luise Bauer, Nikolai Knapp, Andreas Huth

Live Oral Presentation

Same but different: how does local environment alter the appearance of European beech?

Meredith C SCHUMAN, Sofia van Moorsel, Aboubakr Moradi, Marylaure de la Harpe, Alexander Damm-Reiser, Michael Scherer-Lorenzen, Mike Werfeli, Harald Auge, Jeannine Cavender-Bares, Bernhard Schmid, Andreas Hueni, Michael E. Schaepman

5:30pm - 7:00pm	**Pos 1: Poster Session 1**

Location: **Foyer**

Live Poster Presentation

Digital forest inventory based on UAV imagery

Steffen Dietenberger, Marlin M. Mueller, Markus Adam, Felix Bachmann, Friederike Metz, Maximilian Nestler, Alexander Born, Sören Hese, Christian Thiel

Live Poster Presentation

Upscaling UAV-based hyperspectral and lidar derived canopy traits of urban forests to high-resolution satellite images

Matheus Pinheiro FERREIRA, Vinicius Bizzo LOPES

Live Poster Presentation

Multi-sensor UAS-based approach for European Aspen detection in boreal forest

Anton KUZMIN, Lauri Korhonen, Janne Mäyrä, Topi Tanhuanpää, Matti Maltamo, Petteri Vihervaara, Timo Kumpula

Live Poster Presentation

AI for Climate Sensitive Tree Growth Modelling and Maximum Carbon Segregation (AI4Trees)

<u>Jasmin LAMPERT</u>, Refiz DURO, Günther BRONNER, Vanessa BERGER, Hanns KIRCHMEIR, Martin GRITSCH, Dominic HEWITT, Anahid JALALI, Anita ZOLLES, Andreas WINDISCH

Live Poster Presentation

An assessment of forest vitality along an elevation gradient in the Czech Republic based on satellite products

<u>Antonin KUSBACH</u>, Matthias Forkel, Lucie Homolova, Daniel Karthe

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Live Poster Presentation

An ecosystem at the tipping point—What's the status of Central Asia's Tugay forests?

<u>Christian SCHULZ</u>, Birgit KLEINSCHMIT

Live Poster Presentation

The potential of AVIRIS-NG imaging spectroscopy data to complement the mapping of urban tree species for tree cadastres – A case study for the Swiss Canton of Geneva

<u>Tiziana L. KOCH</u>, Mike WERFELI, Carmen MEILLER, Bastian BUMAN, Andreas HÜNI, Gregory GIULIANI

Online Poster Presentation

Spatial pattern dynamics of Dendroctonus armandi infestation in Shennongjia based on multi-source remote sensing data

<u>Zhang YaHao</u>, Dian YuanYong, Hu Yue

Online Poster Presentation

Identification of Dendroctonus Armandi diseased wood based on aerial remote sensing images

<u>Haoran LIN</u>, Yuanyong Dian

Live Poster Presentation

Intra-Annual Identification of Local Deforestation Hotspots in the Philippines Using Earth Observation Products

<u>Arnan Araza</u>, Gem Castillo, Eric Buduan, Lars Hein, Martin Herold, Johannes Reiche, Yaqing Gou, Maya Gabriela Villaluz, Ramon Razal

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Live Poster Presentation

Bringing Earth Observation closer to each citizen with the Satiladu service

Lea HALLIK, <u>Martin MENERT</u>

Live Poster Presentation

Drone-acquired multispectral indices for individual-tree-crown assessment: a tool for quantifying forest responses to climate change

<u>Samuel Grubinger</u>, Nicholas C Coops, Greg O'Neill

Live Poster Presentation

Can smartphone photography support the deployment of TreeTalker-based below canopy spectroscopy?

<u>Enrico Tomelleri</u>, Luca DaRos, Michele Torresani, Luca Belelli Marchesini, Damiano Gianelle, Riccardo Valentini

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Live Poster Presentation

Mapping temperate forest tree species using dense Sentinel-2 time series

<u>Jan Hemmerling</u>, Dirk Pflugmacher, Patrick Hostert

Live Poster Presentation

Drones in forestry of Czech Republic – current situation and perspectives

Peter SUROVÝ

Live Poster Presentation

ANALYZING THE IMPLICATIONS OF FOREST MAPS PRODUCTION USING WORLDVIEW-3 AND SENTINEL-2 IMAGES

Laura ALONSO, Juan PICOS, Julia ARMESTO

Live Poster Presentation

Integrated framework for assessment and spatial prediction of humus properties

Felix Thomas, Carina Becker, Rainer Petzold, Ulrike Werban, Thomas Scholten

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Live Poster Presentation

Tree volume in temperate forest inventories: evaluating terrestrial laser scanning based approaches with destructive measurements

Aline Bornand, Meinrad Abegg, Nataliia Rehush, Felix Morsdorf

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Live Poster Presentation

Spectral properties of dominant Sphagnum moss species in boreal peatlands

Sini-Selina Salko, Jussi Juola, Iuliia Burdun, Harri Vasander, Miina Rautiainen

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Live Poster Presentation

Potential of GEDI to estimate tree canopy height on local scale

Barbora NAVRATILOVA, Jan NOVOTNY, Filip HAJEK, Petr LUKES, Jan HANUS, Lucie HOMOLOVA, Olga BROVKINA

Live Poster Presentation

Retrieval of leaf chlorophyll content from very high spatial resolution hyperspectral images

Olli Ihalainen, Matti Mõttus

Live Poster Presentation

Mapping of natural old forest and forest biodiversity parameters in Natura 2000 sites by remote sensing

Tatjana KOUKAL, Alexandra FREUDENSCHUSS

Live Poster Presentation

The accuracy of determination of forest stands height in the temperate zone based on SLS GEDI (NASA) measurements

Wojciech KRAWCZYK, Piotr WĘŻYK

Live Poster Presentation

Planning of Commercial Thinnings Using Machine Learning and Airborne Lidar Data

Tauri ARUMÄE, Mait Lang, Allan Sims, Diana Laarmann

Live Poster Presentation

Classification of large forest areas using Sentinel 2 time series

Daniele MARINELLI, Michele Dalponte, Damiano Gianelle

Live Poster Presentation

Using an Unmanned Aerial System to analyse environmental impacts of charcoal production on tropical savanna ecosystems in northwestern Kenya

Maike Petersen, Marcus Nüsser

Live Poster Presentation

ForestWatch and FirSt 2.0: new methods for monitoring forest condition in Germany

Annett FRICK, Randolf KLINKE, Benjamin STÖCKIGT, Kai JÜTTE

Live Poster Presentation

Tree species discrimination and classification in Wales using PlanetScope data.

Richard LUCAS, Patryk POSLAJKO, Suvarna PUNALEKAR

Live Poster Presentation

Detection of mistletoe (Viscum album ssp. austriacum L.) in Scots pine stands using the MS and RGB UAV high resolution orthophoto

Jakub Michał MISZCZYSZYN, Piotr WĘŻYK

Live Poster Presentation

Characterization of Southern Yellow Pine Spectral Recovery Subsequent to Stand-Clearing Disturbance Across Spatial & Temporal Scales

Daniel Putnam, Randolph Wynne, Valerie Thomas, Todd Schroeder, Karen Schleeweis

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Live Poster Presentation

Biodiversity mapping based on Sentinel-1 and Sentinel-2

Michael Lechner, Alena Dostálová, Markus Hollaus, Markus Immitzer, Clement Atzberger

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Live Poster Presentation

Apparent land cover change produced by El Niño event

Fernando Francisco TROYA, Paulo Negri Bernardino, Ben Somers

Live Poster Presentation

What is the Story in the Understorey: Does Boreal Forest Trees Diversity Affect Diversity Below the Canopy?

Amanda N. COOPER, Julia K. Koricheva

Live Poster Presentation

Evaluation of the temporal development of ash decline with hyperspectral imagery in North-East Germany

Ahuvit Trumper, Anne Clasen, Michael Förster, Pieter Beck

Live Poster Presentation

AI to obtain tree species and forest condition information from remotely sensed data - the FutureForest project

Christopher SCHILLER, Jonathan Költzow, Tamalika Chakraborty, Fabian Ewald Fassnacht

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Live Poster Presentation

Characterizing old-growth forests from multisource remote sensing

Devara Prawira Adiningrat, Andrew Skidmore, Michael Schlund, Tiejun Wang

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Live Poster Presentation

PROTEST project: multidisciplinary methodology for territorial forest analysis

Jean-Matthieu Monnet, Raphael Aussenac, Sylvie Durrieu, Arnaud Sergent, Patrick Vallet

7:00pm **-** **9:30pm**	*Live Poster Presentation* **Near Real-Time Monitoring of forest disturbance to reduce the illegal logging in the countries** **Naila Yasmin**, Andreas Vollrath, Pierrick Rambaud, Inge Jonckheere, Mathieu VanRijn **LOL and UP42 ForestSAT Social: After Hours ForestSAT Social - Brought to you by Ladies of Landsat and UP42** Location: **UP42**

Date: Wednesday, 31/Aug/2022

Time		
9:00am - 9:30am	**CF 4: Morning Coffee** Location: **Foyer**	
9:30am - 11:00am	**Panel discussion: Dr. Kate Fickas, Ladies of Landsat: Community over Competition** Location: **Lecture Hall 2** Chair: **Michael FÖRSTER** Chair: **Fabian Ewald FASSNACHT**	
11:00am - 11:30am	**CF 5: Coffee Break** Location: **Foyer**	

Time	PS 1 - SpS 03a	PS 2 - RegS 10a
11:30am - 1:00pm	**PS 1 - SpS 03a: Applications of drones in forestry: lessons learnt and way forward** Location: **Lecture Hall 2** Chair: **Stefano PULITI** Chair: **Louise TERRYN**	**PS 2 - RegS 10a: Biodiversity** Location: **JK 28/112 (Small Room)** Chair: **Birgit KLEINSCHMIT** Chair: **Pieter S A BECK**

PS 1 - SpS 03a:

Live Oral Presentation

Direct measurements of stem curve and volume using a drone laser scanner

Eric HYYPPÄ, <u>Juha HYYPPÄ</u>, Antero KUKKO, Harri KAARTINEN, Xiaowei YU, Jesse MUHOJOKI, Teemu HAKALA

Live Oral Presentation

Efficient UAS remote sensing techniques for the spruce bark beetle management

<u>Eija HONKAVAARA</u>, Heini Kanerva, Raquel Alves de Oliveira, Samuli Junttila, Kirsi Karila, Niko Koivumäki, Roope Näsi, Mikko Pelto-arvo, Ilkka Pölönen, Päivi Lyytikäinen-Saarenmaa

Live Oral Presentation

Low-cost information feed with UAVs for forest operations can be a reality, but is the sector ready for a radical shift?

<u>Udaya VEPAKOMMA</u>, Denis Cormier, Jili Li, Giuseppe Costanzo, Peter Sigurdson

Live Oral Presentation

UAV hyperspectral, thermal, and lidar applications in characterizing forest dynamics

<u>Temuulen Tsagaan SANKEY</u>

Live Oral Presentation

Mapping mistletoe infestation using UAV

<u>Azim Missarov</u>, Yulia Krasylenko, Martin Krucek, Kamil Kral, Bulat Nutfullin

PS 2 - RegS 10a:

Live Oral Presentation

Assessing forest edge structure on national scale for spatial and temporal edge quality change assessments

<u>Moritz Bruggisser</u>, Zuyuan Wang, Lars T. Waser, Christian Ginzler

Live Oral Presentation

Assessing the effect of airborne laser scanning derived forest stands characteristics in red-listed plant species habitat suitability analysis

<u>Parvez RANA</u>, Anne Tolvanen

Live Oral Presentation

Tree-based approach to detect the presence of standing dead trees using remotely sensed data

<u>Marie-Claude Jutras-Perreault</u>, Erik Næsset, Terje Gobakken, Hans Ole Ørka

Live Oral Presentation

Modelling habitat suitability for woodland birds in Brecon Beacons National Park, Wales, using Earth Observation datasets and the MAXENT species distribution model.

<u>Suvarna M Punalekar</u>, Richard Lucas, Hefin Williams, Cem Gulacar, Carole Planque, Sebastien Chognard

Live Oral Presentation

Monitoring the mangrove vertical structure in Bangka island using GEDI

<u>Suci Puspita SARI</u>, Nico Koedam, Frieke Van Coillie

Live Oral Presentation

Validation of geospatial model of vocation to forest restoration with ground data

<u>Felipe Maraue Marques Tieppo</u>, Ana Flavia Boeni, Karina Cavalheiro Barbosa, Desiree Ayume Lopes Meireles, Jose Almir Jacomelli Junior, Giorgio Vieira Peixoto, Wagner Elisio Tonon, Raoni Rajão, Arthur Telles Calegário, Clívia Dias Coelho, Demetrius David da Silva, Elpidio Inácio Fernandes Filho, José Ambrósio Ferreira Neto, Lucas Vieira Silva Silva, Manuelle de Freitas Galvão, Mariane Paulina Batalha Roque

PS 3 - SpS 12a: Terrestrial laser scanning in environmental monitoring
Location: **J 32/102 (Corner Room 2)**

PS 4 - RegS 12a: Forest Health
Location: **KL 32/123 (Corner Room 1)**

Live Oral Presentation

Quantifying Wildland Fire Fuel Moisture Content with Terrestrial Laser Scanning

<u>Jonathan Lamont BATCHELOR</u>, Eric Rowell, Susan Prichard, Deborah Nemens, James Cronan, Monika Moskal

Live Oral Presentation

Modeling the probability of forest mortality risk using wall-to-wall aiborne laser scanning and field inventory data

<u>Jaroslaw Socha</u>, Pawel Hawrylo, Luiza Tyminska-Czabanska

Live Oral Presentation

Reaching for new heights: canopy laser scanning in the Peruvian Amazon

<u>Barbara D'hont</u>, Kim Calders, Maurice Leponce, Olivier Pascal, Hans Verbeeck

Live Oral Presentation

UAS based multitemporal detection of drought induced deciduous tree degradation in historical landscape parks of Berlin/Potsdam.

<u>Sören HESE</u>, Michael Rhode, Katharina Matheja, Steffen Dietenberger

Online Oral Presentation

A Portable LiDAR System for Online Forestry Mapping

<u>Nived CHEBROLU</u>, Sundara Tejaswi DIGUMARTI, Maurice FALLON

Live Oral Presentation

Monitoring forest disturbance dynamics across Europe

<u>Cornelius Senf</u>, Rupert Seidl

Live Oral Presentation

Fusing high-resolution terrestrial and UAV LiDAR with historical airborne LiDAR for the quantification of fire management outcomes for tropical savanna carbon storage

Shaun Robert LEVICK

Live Oral Presentation

Early infestation detection using microsatellite data series

<u>Demetrios GATZIOLIS</u>, Konstantinos MERAKOS, Georgios EFTHIMIOU, Aristeidis MERTZANIS, Zhiqiang YANG

Live Oral Presentation

Tree Trunk Diseases Mapping using Hyperspectral LiDAR

<u>Peilun Hu</u>, Yuwei Chen, Zhipei Sun, Wei Li, Huaguo Huang, Samuli Junttila, Shuanghui He, Yanan Zhao, Markus Holopainen, Juha Hyyppä

Live Oral Presentation

Assessing the relationship of post-disturbance spectral recovery on loblolly pine stand heights using Landsat time series stacks, ICESat-2 data, and statewide digital aerial photogrammetry

<u>Randolph Hamilton WYNNE</u>, Valerie Anne THOMAS, Todd A. SCHROEDER, Karen G. SCHLEEWEIS, Matthew N. HOUSE, Alison L. RITZ, Daniel J. PUTNAM, Sonia S. BANJADE

Live Oral Presentation

RIEGL's integrated Automatic Registration of Terrestrial Laser Scan Data in Forestry Environments

<u>Bernhard GROISS</u>, Günther BRONNER

Live Oral Presentation

Detectability of European spruce bark beetle green-attack using multispectral drone images

<u>Langning Huo</u>, Eva Lindberg, Jonas Bohlin, Henrik Jan Persson

1:00pm - 2:30pm	**Lu 2: Lunch**
2:30pm - 4:00pm	

PS 1 - SpS 03b: Applications of drones in forestry: lessons learnt and way forward
Location: **Lecture Hall 2**
Chair: **Stefano PULITI**
Chair: **Louise TERRYN**

Live Oral Presentation

Drone-based LiDAR and multispectral investigations of fire impact on Siberian Larch forests in Yakutia, Russia

<u>Robert Jackisch</u>, Stefan Kruse, Birgit Heim, Ulrike Herzschuh, Alexey Kolmogorov, Luidmila Pestryakova, Michael Förster, Birgit Kleinschmit

PS 2 - RegS 10: Biodiversity
Location: **JK 28/112 (Small Room)**
Chair: **Birgit KLEINSCHMIT**
Chair: **Pieter S A BECK**

Live Oral Presentation

Prediction of Canada Lynx Habitat. Upscaling TLS Ground Cover Classifications to Landscape Level ALS.

<u>Jonathan Lamont BATCHELOR</u>

Live Oral Presentation

Live Oral Presentation

How laser properties affect canopy characterisation with Unoccupied Aerial Vehicle Laser Scanning

<u>Benjamin Brede</u>, Nicolas Barbier, Grégoire Vincente, Harm Bartholomeus, Ilona Clocher, François Pimont, Philippe Verley, Martin Herold

Online Oral Presentation

Early detection of nematode-induced wilt using hyperspectral drone images

<u>Niwen Li</u>, Langning Huo, Xiaoli Zhang

Live Oral Presentation

3D odor maps in forest ecosystems for early stress detection

<u>Tereza Hüttnerová</u>, Peter Surový, Anna Jirošová, Antonioni Moliterno, Barbora Stříbrská, Martin Leiner

Live Oral Presentation

UAV LiDAR data supported monitoring of protected forests

<u>Markus HOLLAUS</u>, Lorenz Schimpl

PS 3 - SpS 12b: Terrestrial laser scanning in environmental monitoring
Location: **J 32/102 (Corner Room 2)**
Chair: **Samuli JUNTTILA**
Chair: **Ninni SAARINEN**

Live Oral Presentation

TLS-quantified forest structure and its relationship to forest reflectance from a photon recollision probability perspective

<u>Daniel SCHRAIK</u>, Di Wang, Aarne Hovi, Miina Rautiainen

Live Oral Presentation

The impact of pulse repetition speed on TLS data quality in forest research

<u>Tom Eric VERHELST</u>, Kim CALDERS, Joanne NIGHTINGALE, Miro DEMOL, Barbara D'HONT, Hans VERBEECK, Pieter DE FRENNE, Andrew BURT

Live Oral Presentation

Towards a worldwide structural economics spectrum

<u>Xi PENG</u>, Kim Calders, Louise Terryn, Niall Origo, Joanne Nightingale, Mathias Disney, Marijn Bauters, Tobias Jackson, Alexander Shenkin, Stéphane Momo Takoudjou, Jose Gonzalez de Tanago, Jose Antonio Guzmán Quesada, Hannah Weiser, Alvaro Lau, Hans Verbeeck

Towards an automatic, satellite-based mapping of wilderness areas

<u>Burak Ekim</u>, Michael Schmitt

Live Oral Presentation

Combining Satellite and Airborne Remote Sensing Data for Habitat Classification and Monitoring in Forest Landscapes

<u>Anna Iglseder</u>, Markus Immitzer, Alena Dostálová, Andreas Kasper, Norbert Pfeifer, Christoph Bauerhansl, Stefan Schöttl, Markus Hollaus

Live Oral Presentation

Monitoring forest structural representation across a network of protected areas.

<u>Evan R Muise</u>, Nicholas C. Coops, Txomin Hermosilla, Stephen S. Ban

Live Oral Presentation

Detection of standing retention trees in boreal forests with airborne laser scanning point clouds and multispectral imagery

<u>Alwin Antoni HARDENBOL</u>, Lauri KORHONEN, Mikko KUKKONEN, Matti MALTAMO

Live Oral Presentation

Trait-based functional diversity in temperate forest ecosystems using Sentinel-2

<u>Isabelle S. Helfenstein</u>, Fabian D. Schneider, Michael E. Schaepman, Felix Morsdorf

PS 4 - RegS 12b: Forest Health
Location: **KL 32/123 (Corner Room 1)**
Chair: **Cornelius SENF**
Chair: **Dirk PFLUGMACHER**

Live Oral Presentation

AN ON-LINE MULTISCALE SYSTEM BASED ON SENTINEL 2 IMAGERY AND ECOPHYSIOLOGICAL SENSORS TO MONITOR FOREST HEALTH IN POPLAR PLANTATIONS

<u>Flor Alvarez-Taboada</u>, Lander Sánchez-Berasategui, Youssef Arhrib, Fernando Castedo-Dorado, Joaquín Garnica-López, Saverio Francini, Giovanni D'Amico

Live Oral Presentation

LiDAR waveform features in detecting tree mortality in standing trees

<u>Antti Petteri POLVIVAARA</u>, Samuli Junttila, Ilkka Korpela, Mikko Vastaranta

Live Oral Presentation

Interpreting Sentinel-2 images through radiative transfer models to monitor forest health

<u>Carlos Camino</u>, Keith Araño, Loic Dutrieux, Corentin Bolyn, Jose Antonio Berni, Alberto Hornero, Ladislav Šigut, Marián Pavelka, Natalia Kowalska, Nicola Arriga, Petr Lukeš, Uwe Rascher, Pablo Jesus Zarco-Tejada, Mirco Migliavacca, Pieter S.A. Beck

Live Oral Presentation

Structural characterization of Sardinian Mediterranean forest stands by terrestrial laser scanning

<u>Roberto Ferrara</u>, Stefano Arrizza, Michele Salis, Bachisio Arca, Pierpaolo Masia, Andrea Ventura, Angelo Arca, Pierpaolo Duce, Grazia Pellizzaro

Live Oral Presentation

LiDAR PHENOLOGY STATION DATA REVEALS THAT LiDAR CALIBRATED INTENSITY RESPONSE TIME-SERIES CAN BE USED FOR TREE SPECIES CLASSIFICATION

<u>Anna Shcherbacheva</u>, Mariana Batista Campos, Xinlian Liang, Antero Kukko, Juha Hyyppä, Samuli Junttila, Anna Lintunen, Ilkka Korpela, Eetu Puttonen, Yunsheng Wang

Live Oral Presentation

A self calibrating remote sensing approach for vitality loss detection based on Sentinel-2 time seriesapproach for vitality loss detection based on Sentinel-2 time series

<u>Sascha RABINOWITSCH</u>

Live Oral Presentation

An adaptively intelligent defoliation detector (AIDD) for early intervention of spruce budworm epidemic

<u>Udaya VEPAKOMMA</u>, Rahul Chandail, Denis Cormier

Live Oral Presentation

Detecting standing dead trees in mountain fir forest, an indicator for health status and maturity

<u>Jean-Philippe DENUX</u>, Véronique CHERET

4:00pm - 4:30pm

CF 6: Coffee Break
Location: **Foyer**

4:30pm - 6:00pm

PS 1 - ReS 13: GEDI
Location: **Lecture Hall 2**
Chair: **Laura DUNCANSON**
Chair: **Manuela HIRSCHMUGL**

Live Oral Presentation

Vegetation Structure Modelling and Explorative Statistics based on Sentinel-1, Sentinel-2 and GEDI in the Paraguayan Chaco

<u>Patrick Kacic</u>, Andreas Hirner, Emmanuel Da Ponte

Live Oral Presentation

Assessing post-harvest forest recovery using Landsat time series and GEDI data in temperate forests

<u>Katsuto SHIMIZU</u>, Hideki SAITO, Tomohiro NISHIZONO

Live Oral Presentation

Forest Height Heterogeneity derived from LiDAR data: its application for forest stability in strong wind events and the role of the GEDI mission.

<u>Michele Torresani</u>, Duccio Rocchini, Enrico Tomelleri

Live Oral Presentation

High Resolution Tree Height Maps of the Landes Forest (France) based on GEDI, Sentinel-1 and Sentinel-2 data : a Deep Learning Approach

<u>Martin SCHWARTZ</u>, Philippe Ciais, Catherine Ottlé, Jean-Pierre Wigneron, Aurélien De Truchis, Martin Brandt, Rasmus Fensholt, Alexandre D'Aspremont, Cédric Vega, Nicolas Baghdadi, Ibrahim Fayad, François Morneau, Dominique Guyon, Sylvia Dayau

Live Oral Presentation

Characterizing forest biomass recovery using 50 years of chronosequence derived from long term Landsat data and GEDI

PS 2 - RegS 14: TreeSpecies
Location: **JK 28/112 (Small Room)**
Chair: **Ewa GRABSKA-SZWAGRZYK**
Chair: **Matheus Pinheiro FERREIRA**

Live Oral Presentation

Exploring the temporal fingerprints of sixteen mid-European forest types from Sentinel-1 and Sentinel-2 time series

<u>Christian SCHULZ</u>, Michael FÖRSTER, Stenka VULOVA, Tobias GRÄNZIG, Birgit KLEINSCHMIT

Live Oral Presentation

Tree species classification in a Brazilian tropical forest remnant using LiDAR data and hyperspectral images

<u>Rorai MARTINS-NETO</u>, Antonio TOMMASELLI, Nilton IMAI, Hassan DAVID, Milto MILTIADOU, Eija HONKAVAARA

Live Oral Presentation

Large scale tree species identification using AI-methods with very high-resolution remote sensing data

<u>Steffen GÜNSTER</u>, Adelheid WALLNER, Nicole SCHMEITZNER, Peter SCHAUER

Live Oral Presentation

Tree species classification using mobile laser scanner along boreal forest roads

Raul de Paula Pires, Eva Lindberg, <u>Henrik J. Persson</u>, Johan Holmgren, Kenneth Olofsson

Live Oral Presentation

Time series-based machine learning algorithms for mapping dominant tree species in Flanders from Sentinel data

Nidhi JHA, Sean P. Healey, Zhiqiang Yang, Matthew G. Betts

Margot VERHULST, Stien HEREMANS, Matthew BLASCHKO, Ben SOMERS

Live Oral Presentation

Tree species mapping at national scale: Linking Sentinel-2 and Sentinel-1 time series to national forest inventory data

Lukas Blickensdörfer, Katja Oehmichen, Dirk Pflugmacher, Niklas Langner, Birgit Kleinschmit, Patrick Hostert

Live Oral Presentation

Tree species recognition using RGB imagery and Deep Learning in mixed forests

Lucca Heinzmann, Mirela Beloiu, Verena Griess

PS 3 - Sps 15: Synthetic forests for sensitivity analyses and scenario building in forest inventory and 3D-forest applications
Location: **J 32/102 (Corner Room 2)**
Chair: Fabian Ewald FASSNACHT

PS 4 - SpS 05: Remote sensing of forest resilience: from recovery to early warning
Location: **KL 32/123 (Corner Room 1)**
Chair: **Cornelius SENF**
Chair: **Wanda DE KEERSMAECKER**

Live Oral Presentation

Hybrid 3D-explicit/voxel forest models for simulating light regime in forest ecosystems

Chang Liu, Kim Calders, Félicien Meunier, Jean-Philippe Gastellu-Etchegorry, Joanne Nightingale, Mathias Disney, Niall Origo, William Woodgate, Hans Verbeeck

Live Oral Presentation

European satellite-based forest health monitoring systems

Tamás Molnár, Svein Solberg, Géza Király

Online Oral Presentation

Application of the Mask R-CNN to canopy gap detection and recovery assessment in mangrove forests using WorldView imagery

Guillaume LASSALLE, Carlos Roberto de Souza Filho

Live Oral Presentation

Close-range technologies for three-dimensional forest ecosystem monitoring and better understanding - why we need to unite

Martin MOKROS, Markus Eichhorn, Krzysztof Sterenczak

Live Oral Presentation

Shifts in post-fire forest cover composition from Landsat fraction images using machine learning regression-based unmixing

Alba Viana Soto, Akpona Okujeni, Dirk Pflugmacher, Mariano García, Inmaculada Aguado, Patrick Hostert

Live Oral Presentation

Assessing the potential of multi-temporal country-wide airborne laser scanning for estimating plant diversity across Denmark

Zsofia KOMA, Jesper E. Moeslund, Pil B. M. Pedersen, Jakob J. Assmann, Derek Corcoran, Urs A. Treier, Signe Normand

Online Oral Presentation

Remote sensing and tree-ring analyses to assess forests resilience: the case of late spring frosts affecting European beech stands in Southern Europe

Alessandro Vitali, Enrico Tonelli, Francesco Malandra, J. Julio Camarero, MIchele Colangelo, Angelo Nolè, Francesco Ripullone, Marco Carrer, Carlo Urbinati

Live Oral Presentation

TLS-based forest canopy reconstruction for 3D radiative transfer: An approach for a tall Eucalypt forest in SE Australia

Ruzena JANOUTOVA, Timothy DEVEREUX, William WOODGATE, Krishna LAMSAL, Lucie HOMOLOVA, Zbynek MALENOVSKY

Live Oral Presentation

Global-scale Changes in Vegetation Resilience Mapped with Satellite Data

Taylor Smith, Niklas Boers

Live Oral Presentation

Applications of synthetic airborne laser scanning data of forests

Jannika SCHÄFER, Hannah WEISER, Lukas WINIWARTER, Bernhard HÖFLE, Fabian FASSNACHT

Live Oral Presentation

The impact of different hydrological drivers on forest drought response: An assessment in Switzerland using Sentinel-2

Joan T. Sturm, Vincent Humphrey, Maria J. Santos, Alexander Damm

Live Oral Presentation

Utilizing multispectral, radar, and lidar satellite data to evaluate post-disturbance recovery of the Amazon Rainforest

Milutin MILENKOVIC, Wanda De Keersmaecker, Pablo Rodríguez-Sánchez, John Armston, Amy Neuenschwander, Johannes Reiche, Martin Herold, Jan Verbesselt

8:00pm - 11:00pm

Conference Dinner: Conference Dinner
Location: **Conference Dinner Location (Rost- und Silberlaube)**

Date: Thursday, 01/Sept/2022

Time	Session
9:00am - 9:30am	**CF 7: Morning Coffee** Location: **Foyer**
9:30am - 11:00am	**Keynote 2: Laura Duncanson: Global forest biomass budgets from GEDI and ICESat-2 - how can satellite data inform forest conservation and policy?** Location: **Lecture Hall 2** Chair: **Michael FÖRSTER** Chair: **Fabian Ewald FASSNACHT**
11:00am - 11:30am	**CF 8: Coffee Break** Location: **Foyer**

Time		
11:30am - 1:00pm	**PS 1 - ReS 13a: GEDI** Location: **Lecture Hall 2** Chair: Laura DUNCANSON	**PS 2 - RegS 03a: Big data and deep learning** Location: **JK 28/112 (Small Room)** Chair: Nicholas COOPS Chair: Mathias Inguar DISNEY
	Live Oral Presentation **The potential of GEDI spaceborne lidar to assess the structure and dynamics of mountain forests** Ana Stritih, Lisa Mandl, Rupert Seidl, <u>Cornelius Senf</u>	*Live Oral Presentation* **The impacts of dataset quality on tree cover segmentation using deep convolutional neural networks** <u>Tao JIANG</u>, Maximilian Freudenberg, Nils Nölke, Christoph Kleinn
	Live Oral Presentation **Bias correction of GEDI biomass estimates during leaf-off season** <u>Tiago DE CONTO</u>, Jamis BRUENING, John ARMSTON, Ralph DUBAYAH	*Live Oral Presentation* **From historical aerial images to informative woody plant changes in long term mountain treeline ecotones research using CNNs** <u>Zuyuan WANG</u>, Christian Ginzler, Nataliia Rehush, Lars T. Waser
	Live Oral Presentation **GEDI and ICESat2 data for forest parameter retrieval for Alpine regions** <u>Markus HOLLAUS</u>, Nan Li, Alena Dostalova, Ruxandra-Maria Zotta, Norbert Pfeifer	*Live Oral Presentation* **Individual Tree Crown Delineation in High Resolution Optical Remote Sensing Images based on U-Net** <u>Maximilian Freudenberg</u>, Paul Magdon, Karolina Pietras-Couffignal, Sebastian Schnell
	Live Oral Presentation **Results and Challenges for Mapping Vertical Forest Structure from GEDI and Sentinel data** <u>Manuela HIRSCHMUGL</u>, Florian LIPPL, Hannah Scheicher, Carina Sobe	*Live Oral Presentation* **A deep learning approach for automatic mapping of poplar plantations using Sentinel-2 imagery** <u>Giovanni D'Amico</u>, Saverio Francini, Francesca Giannetti, Elia Vangi, Davide Travaglini, Francesco Chianucci, Walter Mattioli, Mirko Grotti, Nicola Puletti, Piermaria Corona, Gherardo Chirici
		Live Oral Presentation **Improving ABA models for forest attribute prediction by accounting for scan angle and topography effects on 3D lidar point clouds via deep learning approaches** <u>Karun Reuel Dayal</u>, Sylvie Durrieu, Kamel Lahhsini, Jean-Matthieu Monnet, Dino Ienco
		Live Oral Presentation **Obtaining forest road geometry features from airborne laser scanning using deep learning** <u>Johannes Rahlf</u>, Matthias Göhl, Stefano Puliti
	PS 3 - SpS 04: Remote sensing-based field-data supported countrywide forest attribute maps - nice to have or must haves? Location: **J 32/102 (Corner Room 2)**	**PS 4 - ResS 12c: Forest Health** Location: **KL 32/123 (Corner Room 1)** Chair: Michael FÖRSTER Chair: Tatjana KOUKAL

Live Oral Presentation

Country-wide forest stand species classification with Sentinel-2 and Google Earth Engine

Ewa GRABSKA-SZWAGRZYK

Live Oral Presentation

Development of an open reference database for tree species classification using the German national forest inventory

Paul Magdon, Maximilian Freudenberg, Karolina Pietras-Couffignal, Sebastian Schnell

Live Oral Presentation

Spatially explicit modelling of forest attributes for Switzerland: Do we need vegetation height models?

Bronwyn Price, Lars T Waser, Christian Ginzler

Live Oral Presentation

Enhancing the precision of field-based (sub)national AGB estimates with support of global biomass maps within the tropics

Natalia Málaga, Sytze de Bruin, Ronald E. McRoberts, Daniela Requena Suarez, Arnan Araza, Martin Herold

Live Oral Presentation

Assessing the nationwide forest attribute map of Norway constructed by using airborne laser scanning data and field data from the national forest inventory

Ana de Lera Garrido, Terje GOBAKKEN, Erik Næsset, Ole Martin Bollandsås

Live Oral Presentation

Improving estimations of the French national forest inventory by stratification spaceborne LiDAR

Anouk Schleich, Maxime Soma, Olivier Bouriaud, Jean-Pierre Renaud, Cédric Véga, Sylvie Durrieu

Live Oral Presentation

Detecting the cascade effect between drought stress and bark beetle attacks by using Sentinel-2 time series

Chunyan XU, Michael Foerster, Tobias Gränzig, Birgit Kleinschmit

Live Oral Presentation

Surface temperature trajectories detecting bark beetle disturbance and recovery

Karola Anna Barta, Martin Hais, Marco Heurich

Live Oral Presentation

Detecting Bark Beetle Infestations with Dense Landsat, Sentinel-2, and Sentinel-1 Time Series

Simon König, Frank Thonfeld, Michael Förster, Olena Dubovyk, Marco Heurich

Live Oral Presentation

Mapping and monitoring bark beetle infestation in Central Europe with Sentinel-2 time series

Janik Deutscher, Martin Puhm, Andreas Wimmer, Laura Costa, Julia Rechberger, Tobias Jäger, Fabian Gärtner, Johannes Nothdurft

Live Oral Presentation

Near real-time monitoring of bark beetle damages in boreal forests using Sentinel2 imagery

Marius HAUGLIN, Johannes Schumacher, Holger Lange, Svein Solberg

Live Oral Presentation

Early detection of bark beetle outbreak on Spruce forest with Sentinel-2 time-series analysis: an open-source framework for operational monitoring

Kenji OSE, Raphael DUTRIEUX, Florian DE BOISSIEU, Jean-Baptiste FERET

1:00pm - 2:30pm	Lu 3: Lunch
2:30pm - 4:00pm	

PS 1 - SpS 17: Satellite data for assessing forest-related GHG emissions: progress for national and international reporting and the way forward
Location: **Lecture Hall 2**
Chair: **David GIBBS**
Chair: **Anika Katherine BERGER**

Live Oral Presentation

An assessment of data sources, data quality and changes in national forest monitoring capacities in the Global Forest Resources Assessment 2005-2020

Karimon NESHA, Martin Herold, Veronique De Sy, Amy E. Duchelle, Christopher Martius, Anne Branthomme, Monica Garzuglia, Orjan Jonsson, Anssi Pekkarinen

PS 2 - RegS 03b: Big data and deep learning
Location: **JK 28/112 (Small Room)**
Chair: **Nicholas COOPS**
Chair: **Mathias Inguar DISNEY**

Online Oral Presentation

Convolutional Neural Network Model for Ash Tree Defoliation Assessment

Khunsa FATIMA, Rachel Gaulton, Ankush Prashar, Andrew Crowe, Paul Brown

Online Oral Presentation

Single tree delineation by Mask R-CNN in a temperate forest using UAV-based multispectral imagery

Online Oral Presentation

Integration of remotely sensed and ground-based observations for estimation of emissions and removals of greenhouse gases in forests.

Carly GREEN

Live Oral Presentation

Mind the Gap: Reconciling Forest carbon flux estimates from Global Earth Observation and National Reporting

Viola Heinrich, David Gibbs, Nancy Harris, Martin Herold, Giacomo Grassi, Roberta Cantinho, Thais Rosan, Anita Ganesan, Tristram Hales, Stephen Sitch, Luiz Aragão, Jo House

Live Oral Presentation

Use of satellite data in spatially explicit GHG reporting systems for forests and the land sector

Robert Michael WATERWORTH, Philipp Kilham, Geoff Roberts, Robert deLigt

Live Oral Presentation

Key messages from REDD+ MRV on the role of satellite data and derived products in supporting contributions from the land use sector to the Global Stocktake

Joana MELO

Live Oral Presentation

Next Generation MRV (MRV 2.0) for Land Use Emission Reduction Programs

Elitsa Ilieva PENEVA-REED, Andres ESPEJO

PS 3 - SpS 04a: Remote sensing-based field-data supported countrywide forest attribute maps - nice to have or must haves?
Location: **J 32/102 (Corner Room 2)**
Chair: **Lars T. WASER**
Chair: **Johannes BREIDENBACH**

Live Oral Presentation

Smart Forest Tools - a country-wide RS-based forest management support system

Guenther BRONNER, Andreas Rechenmacher, Boris Jawecki, Kornél Cimber

Live Oral Presentation

Forest tree species distribution for Europe 2000-2020: mapping potential and realized distributions using spatiotemporal Machine Learning

Carmelo BONANNELLA, Tomislav Hengl, Johannes Heisig, Leandro Leal Parente, Marvin N. Wright, Martin Herold, Sytze de Bruin

Live Oral Presentation

From single trees to country-wide maps: Regionalization of the German crown condition survey

Nikolai KNAPP, Nicole WELLBROCK

Sebastian Dersch, Alfred Schöttl, Peter Krzystek, Marco Heurich

Live Oral Presentation

Applying Sentinel-1 and Sentinel-2 data for classifying peatland site types

Timo P. PITKÄNEN

Live Oral Presentation

Mapping tree species composition in mixed forest stands using deep learning

Corentin BOLYN, Philippe LEJEUNE, Adrien MICHEZ, Pieter S.A. BECK, Nicolas LATTE

Live Oral Presentation

Mapping canopy mortality using aerial images and Convolutional Neural Networks. A case study for the summer droughts 2018/19 in Luxembourg.

Selina SCHWARZ, Christian Werner, Fabian Ewald Fassnacht, Stefan Hinz, Nadine Ruehr

Live Oral Presentation

Analyzing effects of establishment fertilization on leaf area development of loblolly pine plantation stands in the southeastern United States using Landsat time series

Matthew N. HOUSE, Randolph H. WYNNE, Valerie A. THOMAS, Rachel L. COOK, David R. CARTER, Jennifer H. VAN MULLEKOM, Jim RAKESTRAW, Todd A. SCHROEDER

PS 4 - SpS 16: Precision methods to monitor forest degradation and mortality
Location: **KL 32/123 (Corner Room 1)**
Chair: **Krzysztof STEREŃCZAK**
Chair: **Peter SUROVÝ**

Live Oral Presentation

Detection of wood decay in Norway spruce trees using airborne hyperspectral data

Michele DALPONTE, Alvar J. I. KALLIO, Hans Ole ØRKA, Erik NÆSSET, Terje GOBAKKEN

Live Oral Presentation

Deciduous forest mortality analysis in the Hainich national park following the 2018/2019 summer droughts using UAV data, aerial images and Sentinel-2 data

Sören Hese, Christian Thiel, Andreas Henkel, Manfred Grossmann

Online Oral Presentation

Deep Learning-based detection of standing dead trees in a natural forest using Mask R-CNN and CIR imagery

Sebastian BRIECHLE

	Live Oral Presentation **National forest attribute maps enhance avalanche hazard terrain classificationAbstract** Johannes SCHUMACHER, Håvard TOFT, J. Paul MCLEAN, Marius HAUGLIN, Rasmus ASTRUP, Johannes BREIDENBACH	*Live Oral Presentation* **BeechSAT: Detection of damaged beech individuals by using aerial and satellite imagery** Javier GONZALEZ, Christoph STRAUB, Rudolf SEITZ	

Live Oral Presentation

The need to integrate phenological knowledge into large-scale tree species mapping

Tiziana Li KOCH, Martina HOBI, Felix MORSDORF, Alexander DAMM, Marius RÜETSCHI, Lars T. WASER

Live Oral Presentation

Multi-scale sensing and citizen science for tree health monitoring in UK treescapes.

Rachel Gaulton, Barbara Agstner, Laura Braunholtz, Lee Butler, Jen Clements, Andrew Crowe, Glyn Jones, Adam Kleczkowski, Paul McMenemy, Michael Pocock, Jon Stokes, Moray Taylor, Sam Village, Paul Brown

Live Oral Presentation

Towards a national integration of high-resolution sensors and forest inventory: a path forward in the United States

James ELLENWOOD

Live Oral Presentation

Using Sentinel-2 and PlanetScope SuperDove monitoring of the pine sawfly (Diprion pini L.) in scots pine stands in northern Poland

Piotr WEŻYK, Artur GOLASZ, Wojciech Krawczyk

4:00pm - 4:30pm

CF 9: Coffee Break
Location: **Foyer**

4:30pm - 5:30pm

PS 1 - SpS 07: Large area forest biomass monitoring from space
Location: **Lecture Hall 2**
Chair: **Martin HEROLD**
Chair: **Frank Martin SEIFERT**

PS 2 - EFINET: Forest monitoring combining ground surveys and remote sensing from local to pan-European experiences
Location: **JK 28/112 (Small Room)**
Chair: **Gherardo CHIRICI**

Online Oral Presentation

Advancing global forest carbon modeling with spaceborne lidar observations: integrating data on forest structure with an advanced ecosystem model for improving carbon stock mapping

Lei MA, George Hurtt, Rachel Lamb, Hao Tang, Quan Shen

Live Oral Presentation

Creating a forest ecological base map of Norway – challenges and opportunities

Hans Ole Ørka, Marie-Claude Jutras-Perreault, Erik Næsset, Jānis Gailis, Mathias Vege, Kenneth Hauglund, Terje Gobakken

Live Oral Presentation

An exploratory assessment of the past-decade changes in above-ground biomass from four multi-temporal global maps

Arnan Araza, Martin Herold, Sytze de Bruin, Philippe Ciais, Maurizio Santoro, David Gibbs, Nancy Harris, Pedro Rodriguez Veiga, Hugh Brown, Olga Brovkina, Adriane Esquivel, Thomas Pugh, Dmitry Shchepashchenko., Mart-Jan Schelhaas, Krzysztof Stereńczak, Zlatomir Dimitrov, Mariano García, Natalia Malaga Duran, Karimon Nesha, Lars Hein

Online Oral Presentation

Mapping Mediterranean Forest Types with satellite data and Artificial Intelligence – harmonizing NFI and vegetation databases to feed the models

Virginia GARCIA MILLAN, Cristobal Barba-Gonzalez, Antonio M. Burgueño, Jose F. Aldana-Martin, Maria Vazquez-Pendon, Maria Luisa Antequera, Ana I. Marin, Antonio Sanchez-Espinosa, Christopher Schroder, Ismael Navas-Delgado, Dania Abdul Malak, Anne Marie Bastrup-Birk

Live Oral Presentation

Development and Application of an Agri-Forest Satellite (CAS 500-4) in the Forest Sector of Republic of Korea

Jongsu YIM, Joongbin LIM, Junghwa CHUN, Myoungsoo WON

Live Oral Presentation

The practical application of remote sensing data in forest monitoring and inventory in Poland

Krzysztof STEREŃCZAK

Live Oral Presentation

Integrating GEDI data in a multi-sensor process to improve the representativeness of forest height maps

David MORIN, Milena PLANELLS, Nicolas BAGHDADI, Alexandre BOUVET, Ibrahim FAYAD, Thuy LE TOAN, Stéphane MERMOZ, Ludovic VILLARD

Live Oral Presentation

Toward an integrated system for monitoring European forests based on remote sensing: first results from European Forest Information Network (EFINET)

Gherardo CHIRICI, Saverio FRANCINI, Francesca GIANNETTI, Gert-Jan NABURS, Cornelius SENF, Rupert SEIDL, Thomas Pugh, Terje GOBAKKEN, Ollie STOCK, Erik NAESSET, Susanne SUVANTO, Lars WASER, Krzysztof Stereńczak, Giovanni D'AMICO, Ruben VALBUENA

PS 3 - RegS 01a: Global Monitoring
Location: **J 32/102 (Corner Room 2)**
Chair: Heiko BALZTER
Chair: Flávia DE SOUZA MENDES

Live Oral Presentation

NICFI Satellite Data Program - lessons learned from the user community

Luisa Teixeira, Timothy Gituma, Pooja Pandey, Tara O'Shea, Charlotte Bishop, Laura Abuja Conde

Live Oral Presentation

The Forest Observation System – global harmonised in-situ data repository for forest biomass maps validation

Dmitry SCHEPASCHENKO, Jérôme Chave, Oliver L. Phillips, Simon L. Lewis, Stuart J. Davies, Maxime Réjou-Méchain, Plinio Sist, Martina Dürauer, Steffen Fritz, Klaus Scipal

Live Oral Presentation

Exploring the Relationship between Forest Canopy Height and Canopy Density from Spaceborne LiDAR Observations

Heather Kay, Maurizio Santoro, Oliver Cartus, Pete Bunting, Richard Lucas

Live Oral Presentation

Quantifying global vegetation water content dynamics of forest biomes using L- and X-band vegetation optical depth

Samuli Junttila, Adria Descals, Iolanda Filella, Josep Peñuelas, Ninni Saarinen, Martin Brandt, Jean-Pierre Wigneron, Mikko Vastaranta

Live Oral Presentation

Hybrid approach to identify global mangrove drivers of change

Federico Adolfo KINDGARD, Valeria CONTESSA, Javier De Lamo Rodriguez

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Live Oral Presentation

Catalyzing Europe-wide forest monitoring; initiatives of the EU Forest Observatory

Pieter S A Beck, Keith Arano, Corentin Bolyn, Carlos Camino, Samuele Capobianco, Giovanni Caudullo, Guido Ceccherini, Bernd Eckhardt, Agata Elia, Giovanni Forzieri, Jonas Viehweger, Alessandro Cescatti, Loic Dutrieux

PS 4 - SpS 14: Advances in Global Forest Monitoring - Addressing Evolving User Needs and R&D Priorities
Location: **KL 32/123 (Corner Room 1)**
Chair: Sarah CARTER
Chair: Ruben VAN DE KERCHOVE

Live Oral Presentation

WorldCover - A new baseline global land cover map at 10 m resolution based on Sentinel-1/2 data

Ruben Van De Kerchove, Daniele Zanaga, Wanda De Keersmaecker, Carsten Brockmann, Ralf Quast, Jan Wevers, Alex Grosu, Audrey Paccini, Sylvain Vergnaud, Oliver Cartus, Maurizio Santoro, Steffen Fritz, Ivelina Georgieva, Myroslava Lesiv, Sarah Carter, Martin Herold, Myke Koopmans, Nandika Tsendbazar, Fabrizio Ramoino, Olivier Arino

Live Oral Presentation

Tropical Forest Monitoring: Research and Development Priorities for use of Earth Observation data

Sarah CARTER, Martin HEROLD, Fred STOLLE, Mikaela WEISSE

Live Oral Presentation

Copernicus High Resolution Layer Forest 2018: Forest Change 2015-2018 at Pan-European Scale

Nathalie M. MORIN, André STUMPF, Alexandre PENNEC, David HERRMANN, Loïc FAUCQUEUR, Pierre-Yves REMY, Antoine MASSE, Inès RUIZ, Markus PROBECK, Carlos DE WASSEIGE

Live Oral Presentation

Validation of recent global forest canopy height maps

Vitezslav MOUDRY

Live Oral Presentation

Data democratization for improved forest monitoring, research, and development: FAO SEPAL Platform

Erik Jon LINDQUIST, Daniel Wiell, Luca Paolini, Pierrick Rambaud, Andreas Vollrath, Daniel Guerrero Machado, Yelena Finegold, Remi D'Annunzio

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5:30pm - 7:00pm

Pos 2: Poster Session 2
Location: **Foyer**

Live Poster Presentation

A Comparative study on the accuracy and efficiency of data between LiDAR devices for the acquisition of forest resource information

Jintaek KANG, Chiung KO, Jeongmook PARK, Jongsu YIM, Joungwon YOU, Minwoo LEE

Live Poster Presentation

Optimal plot size, sample size, and point density selection for airborne laser scanning assisted basal area larger than mean (BALM) estimation

<u>Syed ADNAN</u>, Rubén Valbuena, Tuomo Kauranne, Ranjith Gopalakrishnan, Matti Maltamo

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Live Poster Presentation

Assessment of Essential Biodiversity Variables in monitoring forest biodiversity change and its Implication for Forest Management using Remote Sensing Techniques: A case study of Ghana and the Czech Republic

<u>Elisha Njomaba</u>, Robert Marusak, Peter Surovy

Live Poster Presentation

ForestCare : Monitoring Forest Quality Using Satellite And Drone Data

<u>Hauke GRONENBERG</u>, Dorothea Sommer, Ali Doosthosseini, Julian Kunkel

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Online Poster Presentation

Selective logging detection with deep learning, cloud computing and high resolution imagery in the Peruvian Amazon

<u>Lucio Villa Ramos</u>, Osmar Yupanqui Carrasco, Sidney Novoa Sheppard

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Live Poster Presentation

Towards consistent forest aboveground biomass and biomass change products from satellite imagery

<u>Heiko BALZTER</u>

Live Poster Presentation

Large-scale high resolution yearly modeling of forest growing stock volume and above-ground carbon pool

<u>Elia VANGI</u>, Giovanni D'Amico, Saverio Francini, Costanza Borghi, Francesca Giannetti, Piermaria Corona, Marco Marchetti, Bruno Lasserre, Davide Travaglini, Guido Pelliis, Marina Vitullo, Gherardo Chirici

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Live Poster Presentation

3D tree structure from TLS for non-destructive biomass estimation

Wanxin Yang, <u>Mathias Disney</u>, Phil Wilkes, Matheus Boni Vicari

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Live Poster Presentation

Estimating VAIA Windstorm Damaged Forest Area in Italy Using Time Series Sentinel-2 Imagery and Continuous Change Detection Algorithms

<u>Francesca GIANNETTI</u>, Matteo Pecchi, Davide Travaglini, Saverio Francini, Giovanni D'Amico, Elia Vangi, Claudia Cocozza, Gherardo Chirici

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Online Poster Presentation

Accurate large scale forest change detection with GEE based time series analysis

<u>Camila Marques</u>, Akira Kato

Online Poster Presentation

Rapid assessment of post-fire forest regeneration in Coniferous ecosystems in Cyprus using the Google Earth Engine.

<u>Maria PRODROMOU</u>, Ioannis GITAS, Kyriacos THEMISTOCLEOUS, Chris DANEZIS, Diofantos HADJIMITSIS

Live Poster Presentation

Integrating photo-interpreter variability in FRA2020-RSS estimates

<u>Federico Adolfo KINDGARD</u>, Javier Gallego, Javier De Lamo Rodriguez

AUTOMATED DETECTION OF SHADOW IN FOREST AREAS FROM AERIAL IMAGERY PRODUCTS

<u>Katarzyna ZIELEWSKA-BUETTNER</u>, Johannes BRAENDLE, Sven KOLBE, Petra ADLER, Veronika BRAUNISCH

Monitoring health status of chestnut forest stand using Sentinel-2 images

<u>Véronique CHERET</u>, Jean-Philippe DENUX, Michel GOULARD, Michel CHARTIER, Julie VIGOUROUX

An open benchmark data set for the estimation of forest parameters from Sentinel-1 and -2 time series with Machine Learning Methods

<u>Sarah Hauser</u>, Andreas Schmitt, Peter Krzystek

A joint look at the Forest Resource Assessment Remote Sensing Survey (FRA2020-RSS) and some global forest maps.

<u>Federico Adolfo KINDGARD</u>, Javier Gallego, Javier De Lamo Rodriguez

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Allometric equations based on terrestrial LiDAR data for above-ground biomass estimation in the Miombo forests of the DRC

<u>Stéphane MOMO TAKOUDJOU</u>, Jonathan Ilunga Muledi, Pierre Ploton, Augustin Lamulamu, Blaise Mupari, David Nkulu, Benoit Mushabaa Amisi, Bonaventure Sonké, Nicolas Barbier

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Dynamics of changes in land cover classes in subalpine Norway spruce stands in Gorce National Park (Poland) in 1977-2020 period using archive aerial orthophotos and Landsat satellite imagery

<u>Wojciech KRAWCZYK</u>, Piotr WĘŻYK

Assessing Land-Use Following Deforestation at the Pantropical and National Scale Using Remote Sensing Time Series and Deep Learning

<u>Robert Masolele</u>, Veronique De Sy, Martin Herold, Diego Marcos, Adugna G. Mullisa, Fabian Gieseke, Christopher Martius, Kalkidan Ayele Mulatu, Yitebitu Moges

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Monitoring the presence of trees in cities and rural landscape at the Pan-European Scale

Loic FAUCQUEUR, Tanja GASBER, <u>Nathalie MORIN</u>, Pierre-Yves REMY, Mirjam ZISELSBERGER, Christian SCHLEICHER, Carlos DEWASSEIGE

Spatiotemporal characterization of forest disturbance in the Hunsrück-Hochwald National Park, Germany

<u>Enmanuel RODRIGUEZ PAULINO</u>, Dr. Achim Röder, Dr. Martin Schlerf, Dr. Johannes Stoffels, Prof. Dr. Thomas Udelhoven

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Estimation of tropical forest aboveground biomass in Nepal using multiple remote sensor data and deep learning

<u>Parvez RANA</u>, Sorin Popescu, Basanta Gautam, Shruthi Srinivasan, Anne Tolvanen, Timo Tokola

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Complex Network Algorithm for Forest Fire Spread Modelling
Monika Sharma, Arijit Roy

Live Poster Presentation
Comparison of Random Forest and Convolutional Neural Network for dead trees detection in unmanaged zone of natural park Bohemian Switzerland
Júlia MATEJČÍKOVÁ, Dana VÉBROVÁ, Peter SUROVÝ

Online Poster Presentation
Point Patterns and Structural Diversity – ITD and resampling corrections
Joel KOSTENSALO

Live Poster Presentation
The Bohemian Forest Ecosystem – An International Hotspot for Forest Remote Sensing
Simon König, Stefanie Holzwarth, Hooman Latifi, Marco Heurich

Online Poster Presentation
Bamboo Mapping in part of North East India using Support Vector Machine and Sentinel-2 data
Muna Tamang, Subrata Nandy

Live Poster Presentation
Unblocking the bottleneck of field observed and remotely sensed forest biomass by considering the horizontal distribution of forest biomass
Nils Griese, Nils Nölke, César Pérez-Cruzado, Christoph Kleinn

Live Poster Presentation
Novel field dataset collected in two regions of China for producing large scale forest biomass change maps
Wenquan DONG, Edward MITCHARD

Live Poster Presentation
Countrywide mapping of shrub forest using multi-sensor data, active learning and object growing
Marius RÜETSCHI, Dominique WEBER, Tiziana L. KOCH, Lars T. WASER, David SMALL, Christian GINZLER

Live Poster Presentation
The use of EO based Tree Cover Density for Tropical Dry Forest Mapping to support countries in the REDD+ reporting
Fabian ENSSLE, Helena DITE, Sharon GOMEZ, Christoff FOURIE, Thomas HAEUSLER

Online Poster Presentation
Urban Tree Cover Change to Sao Paulo city, Brazil
Bruna Lara Arantes, Dexter H Locke, J Morgan Grove, Demóstenes Ferreira da Silva Filho

Online Poster Presentation
Developing a framework for mapping canopy cover with ICESat-2 for southern US forests
Lana Landra Narine, Sorin Popescu, Lonesome Malambo

Live Poster Presentation
Global suitability mapping of forest ecosystem services in urban and peri-urban areas
Saverio FRANCINI, Gherardo CHIRICI, Stefano MANCUSO

Live Poster Presentation

Spectral UAV monitoring of the condition of mountain coniferous forests

Paweł Bronisław DĄBEK

Live Poster Presentation

The Framework on Ecosystem Restoration Monitoring for Monitoring and Reporting Global Forest Restoration

Yelena Finegold, Julian Fox, Zhuo Cheng, Pablo Martin, Matieu Henry, Amit Ghosh, Pierrick Rambaud, Rashed Jalal, Erik Lindquist, Inge Jonckheere

Online Poster Presentation

Gridding ICESat-2 Data for Regional Forest Canopy Height Modeling

Lonesome MALAMBO, Sorin POPESCU

Live Poster Presentation

The 1st ESA CCI Biomass Change Workshop – Outcomes of a global virtual event

Carsten Pathe, Heather Kay, Richard Lucas, **Christiane Cornelia Schmullius**

Live Poster Presentation

Geo-monitoring of tree species, vitality, and maintenance condition of fruit trees in meadow orchards using UAV technology

Judith Eisenbacher, Sarah Pflüger, **Maike Petersen**, Mira Hansch, Alexander Siegmund

Live Poster Presentation

Remote sensing helps to understand the mechanisms of bark beetle disturbance: Fusion of optical and SAR data

Arunima Singh, Prosper Washaya, **Martin Mokroš**, Tomáš Hlásny

Live Poster Presentation

A multilevel approach to assess the impact of drought on urban tree physiology and ecosystem services: a case study on the city of Karlsruhe

Rocco PACE, Marco CIOLFI, Francesca CHIOCCHINI, Marcel GANGWISCH, Nadine K. RÜHR, Rüdiger GROTE

Live Poster Presentation

Age-height relationships for pines in the Southeastern U.S. using ICESat-2 and Landsat products

Sonia SHARMA BANJADE, Randolph Wynne, Valerie Thomas, Corey Green

Live Poster Presentation

Assessing the dependencies between tree crown characteristics and wood density using UAV point clouds

Reinis Cimdins, Ville Kankare, Ninni Saarinen, Jiri Pyörälä, Tuomas Yrttimaa, Jari Hynynen, Saija Huuskonen, Juha Hyyppä, Mikko Vastaranta

Live Poster Presentation

Countrywide forest attribute maps for Germany based on canopy height models and national forest inventory data

Sebastian SCHNELL

Live Poster Presentation

Forest disturbance mapping with Sentinel-1

Svein SOLBERG, Yngvar Larsen

Live Poster Presentation

Remote sensing monitoring of post-fire forest stands in Kuźnia Raciborska (Southern Poland) using time series of satellite imageries and Bi-temporal ASL LiDAR point clouds

Artur Wilibald GOLASZ, Piotr WĘŻYK

Live Poster Presentation

Fuel type maps development for East Macedonia and Thrace Region, in northeastern Greece using passive and active Sentinel imagery

Giorgos MALLINIS, Irene CHRYSAFIS, Christos DAMIANIDIS, Moschos Vogiatzis, Vassileios GIANNAKOPOULOS, Ioannis DOKAS

Live Poster Presentation

Using nationwide LIDAR data to assess vertical forest structure on National Forest Inventory plots in Slovenia

Mitja SKUDNIK, Anže Martin PINTAR, Andrej KOBLER

Live Poster Presentation

Product use, data validation, networks – unused opportunities

Tanja GM SANDERS, Stuart KRAUSE, Allan BURAS, Daniel DOKTOR, Fabian FAßNACHT

Live Poster Presentation

iPad Pro vs. HLS and TLS technology in daily measurement of timber stacks

Grzegorz Marek MAKUCH, Piotr WĘŻYK

Live Poster Presentation

Classification of common boreal tree species using UAS LiDAR data

Mikko KUKKONEN, Timo Lähivaara, Petteri Packalen

Live Poster Presentation

Challenges and opportunities for timber assortments evalua-tion through LiDAR. A systematic literature review

Cesar Ivan ALVITES DIAZ, Marco Marchetti, Bruno Lasserre, Giovanni Santopuoli

9:00am - 9:30am	**CF 10: Morning Coffee** Location: **Foyer**
9:30am - 11:00am	(see below)

PS 1 - SpS 07a: Large area forest biomass monitoring from space
Location: **Lecture Hall 2**
Chair: **Martin HEROLD**
Chair: **Frank Martin SEIFERT**

Live Oral Presentation

Analysing Aboveground Woody Biomass Dynamics in Africa

Pedro Rodriguez-Veiga, Joao Carreiras, Shaun Quegan, Janne Heiskanen, Petri Pellikka, Hari Adhikari, Arnan Araza, Martin Herold, Thomas Luke Smallman, Mathew Williams, Casey Ryan, Thom Brade, Chukwuebuka Nwobi, Narumasa Tsutusmida, Oliver Cartus, Maurizio Santoro, Heiko Balzter

Live Oral Presentation

Efforts for Global Harmonisation of Satellite-based Forest Above-ground Woody Biomass Products

Heather KAY, Clement Albinet, Arnan Araza, John Armston, Aimee Barciauskas, Ralph Dubayah, Laura Duncanson, Björn Frommknecht, Masato Hayashi, Sean Healey, Martin Herold, Neha Joshi, Veronika Leitold, Richard Lucas, Ronald McRoberts, Joana Melo, David Minor, Erik Næsset, Osamu Ochiai, Benjamin Poulter, Shaun Quegan, Pedro Rodríguez-Veiga, Ake Rosenqvist, Sassan Saatchi, Klaus Scipal, Frank Martin Seifert, Takeo Tadono, Sylvia Wilson

Live Oral Presentation

Synergetic Use of SAR and Optical Satellite Imagery and Machine Learning Models for Forest Aboveground Biomass Estimation

Fardin Moradi, Vahid NASIRI, Samaneh Afshari, Mirela Beloiu, Verena C Griess, Lars T Waser

Live Oral Presentation

Qualification of ICESat2 ground elevation and canopy height products: evaluating the potential of 100 m and 20 m resolution products for forest inventory in temperate heterogeneous forests

Maxime Soma, Anouk Schleich, Cédric Véga, Sylvie Durrieu

Live Oral Presentation

ESA's CCI Biomass: An update on global efforts towards quantifying forest biomass states and dynamics from Earth observation data.

Richard LUCAS, Oliver CARTUS, Maurizio SANTORO, Heather KAY, Martin HEROLD, Sytze DE BRUIN, Jerome CHAVE, Nicolas LABRIERE, Thuy LE TOAN, Shaun QUEGAN, Heiko BALTZER, Pedro RODRIGUEZ-VEIGA

PS 3 - RegS 01b: Global Monitoring
Location: **J 32/102 (Corner Room 2)**
Chair: **Flávia DE SOUZA MENDES**
Chair: **Luisa TEIXEIRA**

Live Oral Presentation

European-Wide Forest Mapping and Classification Using the Sentinel-1 Data

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PS 2 - RegS 04a: Precision Forestry
Location: **JK 28/112 (Small Room)**
Chair: **Daniel KÜKENBRINK**
Chair: **Markus HOLLAUS**

Live Oral Presentation

Remote sensing and transforming tree phenotyping

Michael Stuart WATT, Grant Pearse, Tomas Poblete, Robin J. L. Hartley, Peter D. Massam, Dilshan de Silva, Honey Jane C. Estarija, Ellen Mae C. Leonardo, Warren Yorston, Henning Buddenbaum, Pablo J. Zarco-Tejada

Live Oral Presentation

Towards an operational implementation of close-range remote sensing within the framework of the Swiss National Forest Inventory

Daniel KÜKENBRINK, Mauro Marty, Ruedi Bösch, Christian Ginzler

Live Oral Presentation

LiDAR-derived structural descriptors help identify differences in tree structure across life strategies and biomes in Central Africa

Stéphane MOMO TAKOUDJOU, Pierre Ploton, Jonathan Muledi Ilunga, Bonaventure Sonké, Nicolas Barbier

Live Oral Presentation

Lianas reduce forest-level carbon accumulation and storage more than previously thought

Xingyan Cao, Sruthi Krishna Moorthy, Félicien Meunier, Hans Verbeeck, Frieke Van coillie

Live Oral Presentation

Monocular Depth Estimation In Forest Environments

Hristina HRISTOVA, Meinrad Abegg, Christoph Fischer, Nataliia Rehush

PS 4 - SpS 10: Upscaling of lidar assessments of forest structure - Terrestrial to Aerial to Satellite
Location: **KL 32/123 (Corner Room 1)**
Chair: **Andrew Thomas HUDAK**
Chair: **Jonathan Lamont BATCHELOR**

Live Oral Presentation

Alena Dostalova, Wolfgang Wagner, Markus Hollaus

Online Oral Presentation

Characterising the structure of wind-related forest disturbances across the world

Nezha Acil, Joseph Wayman, Jonathan Sadler, Susanne Suvanto, Cornelius Senf, Thomas Pugh

Upscaling stakeholder-contributed, plot-level aboveground biomass observations to regional, annual aboveground biomass maps using airborne lidar and Landsat time series

Andrew HUDAK, Patrick FEKETY, Francisco MAURO, Ethan EMICK, Chad BABCOCK, Arjan MEDDENS, Steve FILIPPELLI, Jody VOGELER, Astrid SANNA, Benjamin BRIGHT, Van KANE, Robert KENNEDY, Grant DOMKE

Live Oral Presentation

Overview of the ICESat-2 Mission for Forest Applications

Amy NEUENSCHWANDER

Live Oral Presentation

ForestScan: developing new above ground biomass (AGB) reference measurements in tropical regions

Mathias Inguar DISNEY, Cecilia Chavana-Bryant, Alfred Ngomanda, Amy Bennett, Andrew Burt, Benjamin Brede, Dan Clewley, David Burslem, Declan Cooper, David Moffat, David Coomes, Edward Mitchard, Geraldine Derroire, Gregoire Vincent, Harm Bartholomeus, Iain McNicol, Joe Cutler, Katherine Abernethy, Klaus Scipal, Loic Makaga, Laetitia Proux, Martin Herold, Nicolas Barbier, Noreen Majlap, Oliver Phillips, Phil Wilkes, Reuben Nilus, Simon Lewis, Stephan Ntie, Toby Jackson, Vincent Medjibe, Wanxin Yang

Live Oral Presentation

L-band SAR Long-term Pantropical Forest Monitoring by ALOS-2 – A Paradigm Shift in Global Forestry Observation

Christian Koyama, Masanobu Shimada, Masato Hayashi, Edson Sano, Ake Rosenqvist, Daniel Freitas, Takeo Tadono

Online Oral Presentation

The WildFireSat satellite mission will support innovative forest fire monitoring and management in Canada

Morgan A. Crowley, Alan S. Cantin, Joshua M. Johnston, Colin McFayden, Mark de Jong, Miriam Micael, Didier Davignon, Dan K. Thompson

Live Oral Presentation

Mapping seasonal change in LAI in dense tropical evergreen forest using UAV-LS

Grégoire Laurent VINCENT, Ilona CLOCHER, Benoit BURBAN, Jean-Louis SMOCK, Philippe VERLEY, james BALL, Nicolas BARBIER

Live Oral Presentation

sgsR: A structurally guided sampling toolbox for lidar-based forest inventories

Tristan R.H. GOODBODY, Nicholas C. COOPS, Martin QUEINNEC, Joanne C. WHITE, Piotr TOMPALSKI, Andrew T. HUDAK, Ruben VALBUENA, Antoine LEBOEUF, Ian SINCLAIR, Grant MCCARTNEY, Jean-Francois PRIEUR, Murray WOODS

Live Oral Presentation

A first-of-its-kind multi-scale lidar dataset for measurements of tropical tree biomass

Miro DEMOL, Gabija BERNOTAITE, Viginie BONNEFOND, Mathias DISNEY, Antonio FERRAZ, Allister FUREY, Elisabeth LAGNEAUX, Beisit LUZ PUMA VILCA, Hamid OMIDVAR, Ashleigh PARSONS, Robin VAN LOON, Harriet WILSON, Andrew BURT

Online Oral Presentation

From transects of laser photons to maps of vegetation biophysical parameters: ICESat-2 insights

Sorin POPESCU, Lonesome Malambo, Lana Narine, Meng Liu, Emre Akturk, Horia Olariu, Karsyn White, Justinn Jones

11:00am - 11:30am	**CF 11: Coffee Break** Location: **Foyer**
11:30am - 1:00pm	**PS 1 - SpS 13a: Time series analysis: Method advancements and applications for continuous forest monitoring** Location: **Lecture Hall 2**	**PS 2 - RegS 04b: Precision Forestry** Location: **JK 28/112 (Small Room)** Chair: **Daniel KÜKENBRINK** Chair: **Markus HOLLAUS**

Live Oral Presentation

DETECTING RE-BURNS IN LANDSAT AND SENTINEL-2 TIME SERIES

Laura ALONSO, Julia ARMESTO, Juan PICOS, Cornelius SENF, Rupert SEIDL

Live Oral Presentation

New Opportunities for Precision Branch Diameter Profile Estimates from Terrestrial Laser Scanning: Leveraging Empirical Models in Incomplete Point Clouds

Muluken Nega BAZEZEW, Nils Nölke, Christoph Kleinn, Lutz Fehrmann

Live Oral Presentation

A remote sensing-based national forest damage monitoring system for Germany

Katja Oehmichen, Niklas Langner, Lea Henning, Janik Deutscher, Martin Puhm, Andreas Wimmer, Marius Rüetschi, Christian Ginzler, Lars Waser, Jens Wiesehahn, Jörg Ackermann, Andreas Uhl, Petra Adler, Eike Reinosch, Christoph Straub, Julian Backa, Karina Hoffmann, Simon Fleckenstein, Kristin Franz

Live Oral Presentation

The SilviLaser 2021 Benchmark Data Set – First Results

Markus HOLLAUS, Yi-Chen Chen, Günther Bronner

Live Oral Presentation

Point Cloud Co-registration Algorithm for Forestry Applications

Yi-Chen Chen, Markus Hollaus, Norbert Pfeifer

Live Oral Presentation

Mapping and characterizing forest fires in Central European forests using Sentinel-2 and Landsat time series

Dirk PFLUGMACHER, Jan Hemmerling, Kira Pfoch, Akpona Okujeni, Patrick Hostert

Live Oral Presentation

Defining tree species canopy niches in European temperate old-growth forest using TLS data

Kamil Král, Azim Missarov, Martin Krůček, Michal Petrov

Online Oral Presentation

Capturing post-disturbance spectral recovery in forested areas of Alberta, Canada, using Landsat time series and a Google Earth Engine workflow

Jennifer Nicole HIRD, Gregory MCDERMID, Cynthia MCCLAIN

Live Oral Presentation

Unlocking a TLS archive with an automated tree extraction pipeline

Phil WILKES, Mathias Disney, Wanxin Yang, Cecilia Chavana-Bryant, Daniel Clewley, David Moffat

Live Oral Presentation

Near real-time deforestation monitoring through fusion of Landsat, Sentinel-2, Sentinel-1, and daily Planet data: Testing the novel "Multi-Sensor Disturbance Index" in Madagascar

Eric L. Bullock, Sean P. Healey, Yang Zhiqiang, Rasmus Houborg, Carole Andrianirina

PS 3 - SpS 02: Quantifying uncertainty in remote sensing -based forest attribute mapping and inventory
Location: **J 32/102 (Corner Room 2)**
Chair: **Fabian FASSNACHT**

PS 4 - RegS 06a: Ecosystem modeling
Location: **KL 32/123 (Corner Room 1)**
Chair: **Mirela BELOIU**
Chair: **Marion STELLMES**

Live Oral Presentation

Can we transfer area-based forest biomass models from site to site?

Jan NOVOTNY, Barbora NAVRATILOVA, Olga BROVKINA, Emil CIENCIALA

Live Oral Presentation

Innovative methods for forest height growth modeling under changing climatic and site conditions

Luiza Tyminska-Czabanska, Jaroslaw Socha, Pawel Hawrylo

Live Oral Presentation

Loblolly pine leaf area estimation using Satellite data: avoiding error-in-variable problems.

Cristian Rodrigo MONTES, Spencer Peay, Stephen Kinane

Live Oral Presentation

Assessing land surface phenology in Araucaria-Nothofagus forests in Chile with Landsat 8/Sentinel-2 time series

Eric KOSCZOR, Matthias FORKEL, Jaime HERNÁNDEZ, Daniel KINALCZYK, Francesco PIROTTI, Erico KUTCHARTT

Live Oral Presentation

Circular or Square – does plot shape matter?

Petteri Packalen, Jacob Strunk, Matti Maltamo, Mari Myllymäki

Live Oral Presentation

		Live Oral Presentation	**The Effect of Digital Hemispherical Photograph Binarization Methods on the Estimation of Plant Area Index with Lidar data** Shaohui Zhang, Lauri Korhonen, Mait Lang, Jan Pisek, Gastón M. Díaz, Ilkka Korpela, Matti Maltamo

Live Oral Presentation

From Sentinel-2 data to forest disturbance mapping and area estimation

Saverio Francini, Ronald E. McRoberts, Giovanni D'Amico, Nicholas C. Coops, Txomin Hermosilla, Joanne C. White, Micheal A. Wulder, Marco Marchetti, Giuseppe Scarascia Mugnozza, Gherardo Chirici

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Live Oral Presentation

The Effect of Digital Hemispherical Photograph Binarization Methods on the Estimation of Plant Area Index with Lidar data

Shaohui Zhang, Lauri Korhonen, Mait Lang, Jan Pisek, Gastón M. Díaz, Ilkka Korpela, Matti Maltamo

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Live Oral Presentation

How to correctly determine the top height of forest stands from ALS point clouds?

Paweł HAWRYŁO, Jarosław SOCHA, Wojciech OCHAŁ, Piotr WĘŻYK, Wojciech KRAWCZYK, Jakub MISZCZYSZYN, Luiza TYMIŃSKA-CZABAŃSKA

Live Oral Presentation

Hierarchical hybrid estimation of boreal forest biomass using ICESat-2data

Petri Varvia, Svetlana Saarela, Matti Maltamo, Petteri Packalen, Terje Gobakken, Erik Næsset, Göran Ståhl, Lauri Korhonen

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Live Oral Presentation

Estimating biomass and soil carbon change at the level of forest stands using repeated forest surveys and airborne laser scanner data

Victor Felix STRÎMBU, Hans Ole ØRKA, Erik NÆSSET, Hans PETTERSON, Jari LISKI, Terje GOBAKKEN

1:00pm - 2:30pm | **Lu 4: Lunch**

2:30pm - 4:00pm

PS 1 - SpS 13b: Time series analysis: Method advancements and applications for continuous forest monitoring
Location: **Lecture Hall 2**
Chair: **Janik DEUTSCHER**
Chair: **Jens WIESEHAHN**

Live Oral Presentation

Sub-annual change detection and monitoring using Harmonized Landsat Sentinel-2 data

Christopher MULVERHILL, Nicholas C. Coops, Alexis Achim

PS 2 - SpS 09: Trees outside the forest: monitoring forest and landscape restoration
Location: **JK 28/112 (Small Room)**
Chair: **Jessica Rose ERTEL**
Chair: **David GIBBS**

Live Oral Presentation

se.plan: A decision support tool for forest restoration planning

Yelena Finegold, Jeff Vincent, Pierrick Rambaud, Yuanyuan Yi, John Dilger, Karis Tenneson, Marija Kono, Zhuo Cheng, Andrea Mcmahon, Marco Boscolo, Erik Lindquist

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Live Oral Presentation

Sentinel-1/2 times series for forest condition monitoring

Mihai Andrei TANASE, Juan Pedro Gonzales, Vanessa Domínguez, Eva Marino, Alejandro Cantero, Javier Madrigal, Merecedes Guijarro, Carmen Hernando, Cristina Aponte

Online Oral Presentation

Identification of most valuable trees based on both ecosystem services they provide and their actual usage by residents in the Racibórz case study

Patrycja Przewoźna, Adam Inglot, Karolina Zięba-Kulawik, Paweł Hawryło, Krzysztof Mączka, Marcin Mielewczyk, Piotr Wężyk, Piotr Matczak

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Live Oral Presentation

Semi-supervised multi-temporal forest mapping at the Swiss treeline ecotone

Thiên-Anh Nguyen, Benjamin Kellenberger, Devis Tuia

Live Oral Presentation

Mapping vegetation structure, following early regeneration in open boreal forests, using remotely piloted aerial systems (RPAS) based imaging.

Rik J.G. Nuijten, Nicholas C. Coops, Catherine Watson, Dustin Theberge

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Live Oral Presentation

Improved handling of artefacts and noise in structural time series modelling of forest dynamics

Martin Puhm, Janik Deutscher, Andreas Wimmer, Mathias Schardt

Live Oral Presentation

Monitoring temporal changes in water table position over the northern intact and restored peatlands with a SWIR-based moisture index

Iuliia Burdun, Michel Bechtold, Viacheslav Komisarenko, Mika Aurela, Paavo Ojanen, Kari Minkkinen, Elyn

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Live Oral Presentation

Operational near real-time detection system of native vegetation suppression on the Brazilian Cerrado using a hybrid thresholding-deep learning approach

Juan Doblas, Valderli Piontekowski, Dhemerson Costa, Ane Alencar, Julia Shimbo

Humphreys, Ankur R. Desai, Mats B. Nilsson, Eeva-Stiina Tuittila, Gabrielle De Lannoy, Evelyn Uuemaa, Hannu Marttila, Maarit Liimatainen, Santtu Kareksela, Sini-Selina Salko, Miina Rautiainen

Live Oral Presentation

Evaluating various data sources to estimate biomass levels for agroforestry areas of Uganda

Manuela HIRSCHMUGL, Petra MILETICH, Florian Lippl, Carina SOBE, Mathias SCHARDT

PS 3 - RegS 05a: Radar
Location: **J 32/102 (Corner Room 2)**
Chair: **Christian KOYAMA**

Live Oral Presentation

Effects of forest biomass and structure on VOD measurements

Nivedhitha Ajithkumar, Samuli Junttila, Ninni Saarinen, Mikko Vastaranta

PS 4 - RegS 02: Fire
Location: **KL 32/123 (Corner Room 1)**
Chair: **Giorgos MALLINIS**
Chair: **Shaun Robert LEVICK**

Live Oral Presentation

Fusing terrestrial and mobile laser scanning for rigorous assessment of fire management effects on tropical savanna 3D vegetation structure

Alyson M STOBO-WILSON, Anna E RICHARDS, Chris PAVEY, Shaun R LEVICK

Live Oral Presentation

Pol-InSAR Forest Height and Structure Estimation

Roman GULIAEV, Konstantinos Papathanassiou

Live Oral Presentation

Using multi-year TLS data to quantify fire impacts on canopy structure and carbon fluxes of a savanna woodland

Linda Luck, Lindsay Hutley, Kim Calders, Shaun Levick

Live Oral Presentation

Estimating the vertical distribution of above-ground biomass in tropical forests by combining GEDI and P-band TomoSAR observations

Xiao Liu, Christopher S.R. Neigh, Matteo Pardini, Matthias Forkel

Live Oral Presentation

Model-based estimation of live fuel moisture content using Sentinel-1 radar data

Johanna Kranz, Matthias Forkel, Ruxandra-Maria Zotta

Live Oral Presentation

Spatial and radiometric correction of dense Sentinel-1 time series for forest applications

Markus Joachim ZEHNER, Konstantin Schellenberg, Clémence Dubois, Alexander Brenning, Christian Thiel, Jussi Baade, Christiane Schmullius

Live Oral Presentation

How good are Worldview-3 stereo-image based canopy height models for boreal forest fuel load estimation?

Ranjith Gopalakrishnan, Lauri Korhonen, Petteri Packalen, Matti Maltamo

Live Oral Presentation

Rapid mapping of final fellings using Sentinel-1 data for a boreal forest test-site in Sweden

Ritwika Mukhopadhyay, Eva Lindberg, Magnus Ekström, Henrik J. Persson, Mats Nilsson

Live Oral Presentation

High contributions of fire to forest loss in sub-Saharan Africa using medium-resolution BA

Amin KHAIROUN, Emilio CHUVIECO

Time	
4:00pm - 4:30pm	**CF 12: Coffee Break** Location: **Foyer**
4:30pm - 5:30pm	**Closing Session** Location: **Lecture Hall 2** Chair: **Fabian FASSNACHT** Chair: **Michael FÖRSTER**

Date: Saturday, 03/Sept/2022

| 10:00am - 12:00pm | **Excursion: Excursion to the Botanical Garden**
Location: **Botanical Garden** |