

# **8th International Workshop on Retrieval of Bio- & Geo-physical Parameters from SAR Data for Land Applications**

**Wednesday, 15 November 2023 - Friday, 17 November 2023**

**Rome, Italy**

## **Programme**

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# Wednesday, 15 November 2023

## Welcome (09:00 - 09:20)

## Forestry I: Modelling and Retrieval (09:20 - 10:40)

-Conveners: Carlos López-Martínez; Marco Lavalle

time	title	presenter
09:20	Quantifying forest aboveground biomass globally with spaceborne SAR datasets: the CCI Biomass CORE algorithm	SANTORO, Maurizio
09:40	Combining Multi-Mission Datasets and Structure Measurements to Estimate Tropical Forest Biomass in the Scope of the ESA BIOMASS Mission	HARTWEG, Benedikt
10:00	Estimating the properties of tropical dryland forests with ALOS L-band polarimetric data	QUEGAN, Shaun
10:20	Insights of MIPERS-4D simulations for the retrieval of forest height and biomass: study cases related to the BIOMASS mission	VILLARD, Ludovic

## Comfort break (10:40 - 11:00)

## Forestry II: InSAR applications (11:00 - 12:00)

-Conveners: Stefano Tebaldini; Laurent Ferro-Famil

time	title	presenter
11:00	Boreal Forest Characterization with Sentinel-1 Coherence	HERRERA-GIMÉNEZ, Marc
11:20	POLARIMETRIC-INTERFEROMETRIC TEMPORAL SAR COHERENCE: PHYSICAL MODELS AND RETRIEVAL ALGORITHMS FOR FOREST PARAMETER ESTIMATION	LAVALLE, Marco
11:40	Analysis of the SAOCOM L-Band System Capabilities for Forest Height Estimation	LÓPEZ-MARTÍNEZ, Carlos

## Lunch break (12:00 - 13:40)

## Forestry II: InSAR applications (13:40 - 14:40)

-Conveners: Laurent Ferro-Famil; Stefano Tebaldini

time	title	presenter
13:40	Combining AI Techniques with Physical Models: Forest Height Inversion from TanDEM-X InSAR Data Using a Hybrid Modeling Approach	MANSOUR, Islam
14:00	TanDEM-X and Sentinel-1 InSAR Coherence for Mapping Forests using Deep Learning	RIZZOLI, Paola
14:20	Applications and challenges of deep learning approaches for forest height estimation from InSAR products	CARCERERI, Daniel

## INTERACTIVE SESSION (14:40 - 15:40)

title	presenter	board
Machine learning and Sentinel-1 and Sentinel-2 multi-temporal Analysis-Ready-Data (ARD) for estimating mixed pixel woody and herbaceous vegetation in South African protected savannas: Benfontein Nature Reserve	NGHIYALWA, Hilma	

<b>BIOMASS Forest Products: Evolutions and Perspectives</b>	BANDA, Francesco	
<b>Forest Vertical Structure Characterization Using SAR Tomography and Deep Learning</b>	AGHABABAEI, Hossein	
<b>WIMEX (Wave Interaction Models EXploitation)</b>	RIVOLTA, Giancarlo	
<b>Project Office BIOMASS – Build a user community for ESA BIOMASS Mission</b>	YANG, Hui	
<b>Supporting Open Science with the BIOMASS Mission Algorithm and Analysis Platform (MAAP)</b>	ALBINET, Clément QUEUNE, Tamara	

### **Forestry III: Change and Disturbances (15:40 - 17:20)**

-Conveners: Maurizio Santoro; Shaun Quegan

time	title	presenter
15:40	Sensitivity of SAR Tomographic Reconstructions to Forest Structure Changes	PARDINI, Matteo
16:00	Understanding Forest Change from P-band Polarimetric and Interferometric SAR Data	ROMERO-PUIG, Noelia
16:20	New Near Real-Time Deforestation Monitoring Technique Based on Bayesian Inference	BOTTANI, Marta
16:40	Retrieve of disturbance regime from high-resolution biomass observations	WANG, Siyuan
17:00	Estimate phenological metrics and identify forest disturbance from Sentinel-1 C-SAR time series	FILIPPONI, Federico

### **ROUND TABLE (17:20 - 18:00)**

### **Ice breaker (18:00 - 19:00)**

# Thursday, 16 November 2023

## **Soil and Hydrology I (09:00 - 10:40)**

-Conveners: Francesco Mattia; Jörg Haarpaintner

time	title	presenter
09:00	Studying the effects of forest water dynamics using the BorealScat-2 tower-based multi-frequency and tomographic radar	ULANDER, Lars
09:20	Analysing the sensitivity of Sentinel-1 SAR to water dynamics in vegetation in a combined model approach	KRANZ, Johanna
09:40	Sub-daily Land Atmosphere INTERactions (SLAINTE) from sub-daily SAR	STEELE-DUNNE, Susan
10:00	HIGH RESOLUTION MAPPING OF SOIL MOISTURE AND VEGETATION BIOMASS USING X- AND C- BAND SAR AND MACHINE LEARNING	SANTI, Emanuele
10:20	High spatio-temporal soil moisture retrieval over agricultural fields using a microwave radiative transfer model framework	WEISS, Thomas

## **Comfort break (10:40 - 11:00)**

## **General Land Applications (11:00 - 12:00)**

-Conveners: Noelia Romero-Puig; Paola Rizzoli

time	title	presenter
11:00	Soil texture prediction using optical and radar remote sensing data in a random forest approach	MEYER, Swen
11:20	Sentinel-1 time-series to detect alluvial small-scale gold mining in the Dem. Rep. Congo	HAARPAINTNER, Jörg
11:40	Monitoring Soil Dynamics in the Netherlands Using Sentinel-1 Distributed Scatterer InSAR	CONROY, Philip

## **Lunch break (12:00 - 13:40)**

## **Soil and Hydrology II (13:40 - 15:00)**

-Conveners: Emanuele Santi; Lars Ulander

time	title	presenter
13:40	Model-based Tensor Decompositions for Bio- and Geophysical Parameter Retrieval	BASARGIN, Nikita
14:00	Extraction of different scattering mechanisms for soil moisture retrieval over agricultural fields	PAPALE, Lorenzo Giuliano
14:20	A comprehensive approach for Enhancing Sub-Surface Soil Moisture Assessment from SAR Quad-Pol Datasets in the San Francisco Area, California.	RANA, Divyeshkumar
14:40	Daily Monitoring of the May 2023 Emilia-Romagna Flood Using COSMO-SkyMed data	PULVIRENTI, Luca

## **Comfort break (15:00 - 15:20)**

## **Agriculture (15:20 - 17:20)**

-Conveners: Luca Pulvirenti; Susan Steele-Dunne

time	title	presenter
15:20	InSAR Closure Phases over South Spain Agricultural Areas: Observations and Modelling	YUAN, Yan
15:40	UNDERSTANDING THE IMPACT OF PLANT ROW ORIENTATION ON SENTINEL-1 BACKSCATTER TIME-SERIES OF AGRICULTURAL FIELDS	ARSLANOVA, Linara
16:00	Polarimetric Decomposition Using A Physics-Based ML Approach: A Sensitivity Analysis For Soil Moisture Retrieval	PAPALE, Lorenzo Giuliano
16:20	Modelling Biophysical Parameters of Alpine Grassland from Sentinel-1 SAR and Sentinel-2 Data using Spatial Gap-filling	GÖHNER, Caroline
16:40	Case studies on the retrieval and classification of agricultural parameters	MATTIA, Francesco
17:00	TanDEM-X for Tree Height Mapping in the Parklands of Burkina Faso	SOJA, Maciej

**ROUND TABLE (17:20 - 18:00)**

## Friday, 17 November 2023

### **Ice and Snow I: TomoSAR and Bistatic applications (09:00 - 10:40)**

-Conveners: **Thomas Nagler; Helmut Rott**

time	title	presenter
09:00	SNOW PARAMETER RETRIEVAL BY SPACEBORNE MIMO FDM SAR TOMOGRAPHY	TEBALDINI, Stefano
09:20	Snow Parameter Estimation by Simultaneous Multiple Squint Differential InSAR: A Study for the Harmony Mission	BENEDIKTER, Andreas
09:40	On the Potential of Bistatic SAR Features for Monitoring Snow Facies over Ice Sheets and Radar Penetration Estimation	BECKER CAMPOS, Alexandre
10:00	Monitoring Cryosphere Sub-Surfaces with BIOMASS mission	TAILLADE, Thibault
10:20	Pol-InSAR and TomoSAR for Subsurface Ice Sheet Information Retrieval with a Perspective on BIOMASS	FISCHER, Georg

### **Comfort break (10:40 - 11:00)**

### **Forestry IV: TomoSAR applications (11:00 - 12:00)**

-Conveners: **Ludovic Villard; Matteo Pardini**

time	title	presenter
11:00	Characterization of tropical forests using parametric SAR tomography: preparation of the upcoming ESA BIOMASS mission	BOU, Pierre-Antoine
11:20	Multi-Wavelength Mono- And Bi-Static Phenomenological Analysis of the Kermeter Temperate forest: Results From The Tomosense Campaign	TEBALDINI, Stefano
11:40	Performance of PolTomoSAR imaging for tropical forest characterization in the BIOMASS configuration	FERRO-FAMIL, Laurent

### **Lunch break (12:00 - 13:40)**

### **Ice and Snow II: Modelling and Retrieval (13:40 - 15:00)**

-Conveners: **Thibault Taillade; Georg Fischer**

time	title	presenter
13:40	Airborne experiment on SAR based observation of snow mass in Alpine terrain	ROTT, Helmut
14:00	RETRIEVAL OF SNOW WATER EQUIVALENT AND LIQUID WATER CONTENT WITH MACHINE LEARNING METHODS EXPLOITING X- AND C-BAND SAR DATA AND MODEL SIMULATIONS	PETTINATO, Simone
14:20	Monitoring ice sheet melt and refreeze using active microwave measurements	NAGLER, Thomas
14:40	Polarimetric and interferometric analysis of heterogeneous ice types in the ablation zone of Greenland	SCHLENK, Patricia

### **Comfort break (15:00 - 15:20)**

### **ROUND TABLE (15:20 - 16:00)**

### **Conclusions & closure (16:00 - 16:20)**