ForestSAT 2026

Association for Forest Spatial Analysis Technologies

May 4-8, 2026 | Gainesville, Florida, USA

Title: Introduction to NASA's GEDI and rGEDI: An R Package for Accessing, Handling, and Processing GEDI Data

Instructors/Affiliation:

- Dr. Caio Hamamura, Federal Institute of Education, Science and Technology of São Paulo
- Dr. Inacio Bueno, University of Florida

Description: This workshop introduces NASA's GEDI LiDAR mission and the rGEDI R package. Participants will learn how to find, download, and process GEDI data products (Level 1B, 2A, and 2B), extract key metrics such as elevation, canopy height, PAI, and PAVD, and generate plots, clipped datasets, and summary statistics. The workshop also covers simulating GEDI full-waveform data from airborne laser scanning (ALS) point clouds and extracting canopy-derived metrics for validation and analysis. By the end, attendees will be equipped to integrate GEDI and ALS-simulated data into ecological and environmental research.

Learning Objectives:

- NASA's GEDI mission and its main data products.
- Identify and access GEDI data relevant to a specific study area.
- Process GEDI Level 1B, 2A, and 2B data to extract forest structure and vegetation profile metrics.
- Visualize GEDI waveforms and metrics profiles.
- Summarize GEDI data using subsets, descriptive statistics, and spatial grids.
- Simulate GEDI data from ALS point clouds and derive canopy metrics.

Target audience:

Researchers, graduate students, and professionals in forestry, ecology, remote sensing, and environmental sciences who want to learn how to access, process, and analyze NASA GEDI LiDAR data using R. It is especially relevant for those working with forest structure, biomass estimation, or ecosystem monitoring who may also integrate ALS data into their studies. A basic familiarity with R is recommended.

Format & Activities:

- Short lecture introducing GEDI mission and data products.
- Live demonstrations of the rGEDI package in R.
- Hands-on exercises for accessing, processing, and visualizing GEDI data.
- Guided practice in clipping datasets and generating statistics and grids.
- Simulation of GEDI full-waveform data from ALS point clouds and extraction of canopy metrics.
- Interactive Q&A and discussion.

Expected outcomes:

Participants will understand GEDI data products and workflows, gain practical experience using the rGEDI package, and be able to extract, visualize, and summarize forest structure metrics. They will also acquire skills in simulating GEDI full-waveform data from ALS point clouds, preparing them to apply both GEDI and simulated outputs in ecological and environmental research.

Language: English.

Requirements: Computer with R studio installed.

Instructor Biography: Dr. Caio Hamamura is an associate professor at the Federal Institute of Education, Science and Technology of São Paulo, Brazil, with a background in remote sensing, GIS, data science, software, and package development for scientific computing in R, QGIS, and Python.

Dr. Inacio Bueno is a postdoctoral researcher at the University of Florida with expertise in remote sensing, data science and forest modeling.

Schedule: March 26, 9:00 AM – 2:00 PM (EST)

Duration: 4 hours.

Agenda

Eastern Time (ET)	**Topic**	**Instructor**
9:00 – 10:00 AM	Introduction and data access	Caio and Inacio
10:00 – 11:00 AM	GEDI data products	Caio
11:00 – 12:00 AM	**Break**	
12:00 – 1:00 PM	Visualization and clipping	Caio
1:00 – 2:00 PM	GEDI simulation from ALS	Inacio