ForestSAT 2026

Association for Forest Spatial Analysis Technologies

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

Title: Geospatial AI in Earth Engine: A hands-on introduction to AlphaEarth Foundations and the Satellite Embedding dataset

Instructors/Affiliation:

- Valerie Pasquarella, Google
- Katelyn Tarrio, Google
- **Description:**

Unlock the potential of geospatial AI for forest mapping and monitoring without the need for complex deep learning pipelines. This hands-on workshop introduces Google's Satellite Embedding dataset, a collection of analysis-ready geospatial embeddings produced by AlphaEarth Foundations, a deep learning model designed to assimilate and encode diverse geospatial data sources–including optical, radar, LiDAR, elevation, climate variables, gravity fields, and descriptive text–into compact, information-rich vector representations. Following a brief introduction to the AlphaEarth Foundations modelling approach and structure of the Satellite Embedding dataset, we will explore how embeddings represent complex landscapes, demonstrate how to perform pixel-based similarity searches, build supervised classification models using sparse labels and traditional ML classifiers like Random Forest, and apply embeddings to identify and track forest disturbances and land-cover shifts over time, all using the Earth Engine API. Join us to learn how AlphaEarth Foundations and the Satellite Embedding dataset can help accelerate your research and streamline your mapping and monitoring workflows!

Learning Objectives:

By the end of this workshop, participants will be able to:

- Explain the multi-modal architecture of AlphaEarth Foundations and specific advantages of the Satellite Embedding dataset for forest mapping and monitoring applications.
- Access the Satellite Embedding dataset and integrate into existing scripts.
- Explore the AlphaEarth Foundations embedding space to identify spatial patterns and landscape similarities.
- Build a supervised classification workflow using Satellite Embedding inputs, including training a traditional ML model on sparse label data, applying the trained model to map areas of interest, and evaluating the accuracy of outputs.

Expected outcomes:

- Gain practical experience using the Earth Engine API to work with the Satellite Embedding dataset.
- Leave with example scripts for embeddings-based similarity searches, classification, and change detection.
- Understand how to integrate the Satellite Embedding dataset into existing forest mapping and monitoring workflows.

Language: English

Requirements:

- Mastery level: This session is open to anyone interested in learning more about AlphaEarth Foundations and the Satellite Embedding dataset – no deep learning experience required.
- Prerequisites: General familiarity with satellite imagery, Earth Engine, and basic machine learning classification is helpful.
- Technical: A personal laptop and registered Google Earth Engine account is strongly recommended to participate in the hands-on activities. See earthengine.google.com for more information on how to sign up.
- Recommended reading:
    - AlphaEarth Foundations helps map our planet in unprecedented detail
    - AI-powered pixels: Introducing Google's Satellite Embedding dataset
    - AlphaEarth Foundations: An embedding field model for accurate and efficient global mapping from sparse label data

Schedule: Monday, May 4, 2026

Duration: 4 hours

Instructor Biographies:

- Valerie Pasquarella is a Senior Research Scientist at Google where she works on developing foundational geospatial datasets that make Earth Observation imagery more useful and usable to all. She has a background in ecological applications of remote sensing, with a specialization in time series analysis. She earned a PhD in Geography, an MA in Environmental Remote Sensing and GIS, and a BA in Environmental Science from Boston University, and served as a postdoctoral fellow with the Northeast Climate Adaptation Science Center at the University of Massachusetts Amherst. Prior to joining Google in 2022, she held Research Faculty appointments at Boston University and Harvard University.

- Katelyn Tarrio is an Earth Engine Solutions Scientist at Google focused on providing technical assistance, remote sensing expertise and in-country training to support national efforts to mitigate emissions from tropical deforestation. She holds a BA in Environmental Science and an MA in Environmental Remote Sensing and GIS from Boston University, where she is currently completing her PhD on satellite-based monitoring of commodity-driven deforestation.

Agenda

Topic	**Instructor**
Introduction to AlphaEarth Foundations and the Satellite Embedding dataset	Valerie Pasquarella
Exploring landscape patterns using embedding-based similarity search in Earth Engine	Valerie Pasquarella
Break	
Developing a supervised classification workflow Using Sparse Labels and Embedding Features	Katelyn Tarrio
Change detection: Identifying Forest disturbance using embeddings	Katelyn Tarrio
Applications and case studies	Valerie Pasquarella
Wrap up and Q&A	Valerie Pasquarella & Katelyn Tarrio