



Introduction to Google Earth Engine Training

Hosted at the Accra City Hotel
Accra, Ghana – 7th & 8th of June, 2017

Background:

A joint development initiative of NASA and USAID, **SERVIR** works in partnership with leading regional organizations world-wide to help countries use information provided by Earth observing satellites and geospatial technologies, focusing on disasters, agriculture, water, weather, climate, and ecosystems and land use.

SERVIR Science Coordination Office and SERVIR West Africa in collaboration with AfriGEOSS are organizing this training event focused on the used of open source technologies to process Earth observation datasets.

Training Overview:

Google Earth Engine is a free, cloud based, geospatial remote sensing processing platform. This platform allows for the collaborative development and execution of Earth observation data analysis workflows. The extensive, and regularly updated, data catalogue includes over 40 years of historic and current global Earth observation imagery.

The objectives of the workshop are to:

- Introduce participants to the Google Earth Engine, including the Code Editor;
- Explore basic JavaScript and Earth Engine programming concepts;
- Become familiar with a sample of basic geospatial applications in Earth Engine; and
- Introduce available resources for continued learning of Earth Engine concepts.

Expected Outcomes:

By the end of the training, participants will:

1. Understand basic JavaScript and Earth Engine syntax.
2. Use the Google Earth Engine Code Editor platform to perform example remote sensing exercises including image processing, image classification, and time series analysis.
3. Have an awareness of other Earth Engine resources.

Prerequisites:

- Fundamental understanding of basic remote sensing
- Prior understanding of the basic concepts of programming is not required but may be helpful

Required Materials:

- An approved Google Earth Engine Account (apply here using a Gmail account: <https://earthengine.google.com/>)
- Google Chrome Browser Installation (if you are planning to bring your own laptop, workstations will also be available)



**Agenda:
Day 1:**

Time:	Activity:
8:00 – 8:30	Registration
8:30 – 10:00	Introductions and Objective Overview <ul style="list-style-type: none">• Participant introductions• Introduction to SERVIR• Objectives overview
10:00 – 10:30	Presentation: Introduction to Google Earth Engine
10:30 – 11:00	Break
11:00 – 12:00	Exercise: Introduction to Google Earth Engine <ul style="list-style-type: none">• Introduction to JavaScript ('Hello World')• Objects, strings, and lists• GEE objects, strings, and lists• Visualizing satellite images• Computations using satellite images• Satellite Image collections
12:00 – 13:30	Lunch
13:30 – 15:00	Exercise: Image Processing <ul style="list-style-type: none">• Filtering• Compositing• Masking• Mosaicking
15:00 – 15:30	Break
15:30 – 16:45	Exercise: Calculating Indices <ul style="list-style-type: none">• Normalized Difference Vegetation Index (NDVI)• Normalized Difference Water Index (NDWI)• Burned Area Index (BAI)
16:45 – 17:00	Summary of the day

Day 2:

Time:	Activity:
8:00 – 8:30	Registration
8:30 – 8:45	Presentation: Overview of Day 1
8:45 – 9:15	Presentation: Using Google Earth Engine for Image Classification
9:15 – 10:30	Exercise: Image Classification
10:30 – 11:00	Break
11:00 – 12:00	Exercise: Image Classification, con't...
12:00 – 12:10	Group photo
12:10 – 13:30	Lunch
13:30 – 14:00	Presentation: Using Google Earth Engine for Time Series Analysis
14:00 – 15:00	Exercise: Time Series Analysis
15:00 – 15:30	Break
15:30 – 16:15	Presentation: Additional Resources, Next Steps, Summary of the Training
16:15 – 16:30	Closing Ceremony