

# Complete Guide to Accessing Google Earth Engine

## Pre-Workshop Setup Instructions

### Overview

Google Earth Engine (GEE) is a cloud-based platform for planetary-scale environmental data analysis. Before the workshop, all participants must complete these setup steps.

### Time Requirements:

- **Application process:** 30-45 minutes
  - **GEE approval wait:** 1-3 business days
  -  **IMPORTANT:** Complete Steps 1-3 at least **ONE WEEK** before the workshop to ensure approval!
- 

## Step 1: Prerequisites

### Required:

- **Modern web browser** (Chrome, Firefox, Edge, or Safari)
- **Stable internet connection**
- **Google account** (Gmail or Google Workspace)

### Check your browser:

1. Open your browser
  2. Navigate to: `chrome://version` (Chrome) or `about:support` (Firefox)
  3. Ensure you're using a version from the last 2 years
  4. **If your browser is older, please update it before proceeding**
- 

## Step 2: Create or Verify Google Account

### If you already have a Google account:

1. Go to <https://accounts.google.com>
2. Click "Sign in"
3. Enter your email and password
4. Verify you can access your account

## If you need a Google account:

1. Go to <https://accounts.google.com/signup>
  2. Fill in the form:
    - First and last name
    - Username (this will be your email)
    - Password (use a strong password)
    - Confirm password
  3. Add recovery information:
    - Phone number (recommended)
    - Recovery email (optional)
  4. Complete verification:
    - Enter the code sent to your phone
    - Accept terms and conditions
  5. **Important:** Write down your login credentials and keep them in a safe, private place!
- 

## Step 3: Sign Up for Google Earth Engine

### Access the signup page:

1. Open a new browser tab
2. Navigate to: <https://earthengine.google.com/signup/>
3. You should see "Sign up for Earth Engine" page

### Complete the registration form:

#### Section 1: Account Type

Select the account type that best fits your use. For this workshop, common choices are:

- **"Non-commercial / research project"**: If you are using GEE for personal projects, NGO work, or non-degree research (most common choice)
- **"Education"**: If you are a student using GEE for coursework or a university educator
- **"Government"**: If you work for a government agency

**Note:** The exact wording on the GEE form may differ slightly. Choose the option that best describes your participation in this non-commercial, educational/research-focused workshop.

## Section 2: Your Information

Fill in all required fields:

- **Email:** Use your Google account email
- **Name:** Your full name
- **Organization:** Your institution/company name
- **Country:** Select from dropdown
- **Intended use:** Select "Research" or "Education"

## Section 3: Project Details

Be specific but concise:

- **Project description:**

"Participating in a workshop on using GIS and AI for public health mapping in Uganda, focusing on malaria risk assessment using environmental variables"


- **Geographic area:** "Uganda, East Africa"
- **Time period:** "2024-2025"

## Section 4: Agreement

- Check the box: "I agree to the terms of service"
- Click "**Submit**"

## Wait for approval:

- **Typical wait time:** 1-3 business days
- **You'll receive an email** to your registered address
- Subject line: "Welcome to Google Earth Engine"
- **If urgent:** Contact the workshop organizer for expedited approval

 **CRITICAL:** Please complete Steps 1-3 (submitting your GEE application) **AT LEAST ONE WEEK** before the workshop to allow ample time for approval. If you sign up later, approval before the workshop cannot be guaranteed.

---

## Step 4: First Access to Code Editor

## Once approved, access the Code Editor:


1. **Direct URL:** <https://code.earthengine.google.com/>
2. **Alternative path:**
  - Go to <https://earthengine.google.com/>
  - Click "Platform" → "Code Editor"

## First-time login:

1. Click "**Sign in with Google**"
  2. Select your Google account
  3. Grant permissions:
    - "View your email address" → Allow
    - "View your basic profile info" → Allow
  4. You should see the Code Editor interface
- 

## Step 5: Understanding the Code Editor Interface

### Main Components:

 **Tip:** An annotated screenshot of the interface would be helpful here. Ask your instructor if one is available.

### Top Section:

- **Scripts tab** (left panel): Your saved scripts
- **Docs tab** (left panel): API documentation
- **Assets tab** (left panel): Your uploaded data

### Middle Section:

- **Code Editor:** Where you write JavaScript code
- **Line numbers** on the left
- **Syntax highlighting** for easier reading

### Right Section:

- **Inspector tab:** Click map features to inspect
- **Console tab:** View print outputs and errors

- **Tasks tab:** Monitor exports and long-running tasks

## Bottom Section:

- **Map:** Interactive map display
  - **Geometry tools:** Draw points, lines, polygons
  - **Layer manager:** Toggle map layers on/off
- 

## Step 6: Initial Configuration

### Set up your workspace:

1. **Create a repository** for workshop scripts:

```
javascript

// Click "NEW" → "Repository" in Scripts panel
// Name it: "Uganda_Health_Workshop_2024"
```

2. **Configure map settings:** In the central Code Editor panel, you can type or paste JavaScript code.

This first script will set your default map view:

```
javascript

// Add this to your first script:
Map.setOptions('SATELLITE'); // or 'TERRAIN', 'ROADMAP'
Map.setCenter(32.5, 1.3, 7); // Center on Uganda
```

3. **Test your setup** with this simple script:

```
javascript

// Hello Earth Engine
print('Hello Earth Engine!');

// Load and display Uganda boundaries
var uganda = ee.FeatureCollection("USDOS/LSIB_SIMPLE/2017")
    .filter(ee.Filter.eq('country_na', 'Uganda'));

Map.addLayer(uganda, {color: 'red'}, 'Uganda Boundary');
Map.centerObject(uganda, 7);

// If you see Uganda outlined in red, your setup is complete!
```

4. **Run the test:**

- Click the **"Run"** button (top of code editor)

- Check the map for a red outline of Uganda
  - Look for "Hello Earth Engine!" in the Console
- 

## **Step 7: Troubleshooting Common Issues**

### **"Access Denied" or "Not Authorized"**

#### **Solution:**

- Ensure you're logged into the correct Google account
- Check if your Earth Engine registration is approved
- Try incognito/private browsing mode
- Clear browser cache and cookies for earthengine.google.com

### **"Script error" when running code**

#### **Solution:**

- Check for typos (JavaScript is case-sensitive)
- Ensure all parentheses and brackets are closed
- Look for red underlines in the code editor
- Check the Console tab for specific error messages

### **Map doesn't load or is blank**

#### **Solution:**

- Check internet connection
- Disable browser extensions (especially ad blockers)
- Try a different browser
- Zoom out to global view and look for layers

### **"Computation timed out"**

#### **Solution:**

- This is normal for complex operations
- Reduce the geographic extent
- Simplify your analysis
- Will cover optimization in the workshop

## Can't find the Code Editor

### Solution:

- Direct link: <https://code.earthengine.google.com/>
  - Bookmark this URL!
  - Ensure you're signed in to Google first
- 

## Step 8: Pre-Workshop Checklist

### Complete these tasks before the workshop:

- ☐ Google account created and password saved
- ☐ Earth Engine signup submitted
- ☐ Approval email received
- ☐ Successfully accessed Code Editor
- ☐ Run the test script (Uganda boundary)
- ☐ Created workshop repository
- ☐ Bookmarked Code Editor URL
- ☐ Tested in your preferred browser

### Recommended preparation:

- ☐ Watch "Introduction to Google Earth Engine" (YouTube)
  - ☐ Review JavaScript basics (optional but helpful - see [GEE's JavaScript intro](#))
  - ☐ Install a text editor (VS Code, Notepad++ ) for offline notes
- 

## Step 9: Workshop Day Setup

### 15 minutes before the workshop:

#### 1. Open required tabs:

- Tab 1: Google Earth Engine Code Editor
- Tab 2: ChatGPT (<https://chat.openai.com>)
- Tab 3: Workshop materials (Google Drive/website)
- Tab 4: Email (for sharing/receiving files)

#### 2. Check your environment:

```
javascript
```

```
// Run this script to verify everything works:  
print('Earth Engine Version:', ee.version());  
print('Current Date:', ee.Date(Date.now()));  
  
// This line extracts your username - just copy and run it  
print('User:', ee.data.getAssetRoots()[0].id.split('/')[1]);
```

### 3. Create Day 2 folder:

- In Scripts panel: Right-click your repository
  - Select "New Folder" → Name it "Day2\_GEE\_AI"
- 

## Step 10: Alternative Access Methods

### Dataset Consistency Note:

Throughout this workshop, we use the **USDOS/LSIB\_SIMPLE/2017** dataset for Uganda boundaries. This ensures consistency across all exercises and is a reliable, globally-available dataset.

### If Code Editor is blocked:

#### Option 1: Python API (Colab)

1. Go to <https://colab.research.google.com>
2. Create new notebook
3. Run:

```
python  
  
import ee  
ee.Authenticate()  
ee.Initialize()
```

#### Option 2: QGIS Plugin

1. In QGIS: Plugins → Manage and Install Plugins
2. Search for "Google Earth Engine"
3. Install and configure with your credentials

#### Option 3: JavaScript API (local)

1. Requires Node.js installation



2. More complex setup (covered if needed)

---

## Additional Resources

### Essential Links:

- **Earth Engine Homepage:** <https://earthengine.google.com/>
- **Code Editor:** <https://code.earthengine.google.com/>
- **API Documentation:** <https://developers.google.com/earth-engine/>
- **Dataset Catalog:** <https://developers.google.com/earth-engine/datasets/>
- **Community Forum:** <https://groups.google.com/g/google-earth-engine-developers>

### Help Contacts:

- **Workshop Instructor:** [instructor email]
- **Earth Engine Support:** [earth-engine-support@google.com](mailto:earth-engine-support@google.com)
- **Workshop Slack/WhatsApp:** [group link]

### Backup Plan:

If you cannot get Earth Engine access by workshop date:

1. **Notify the instructor immediately**
2. You can still participate by:
  - Pairing with another participant
  - Using the instructor's shared screen
  - Working with exported datasets in QGIS

---

## Quick Reference Card

### Most Used Code Snippets:

javascript

```
// Center map on Uganda
Map.setCenter(32.5, 1.3, 7);

// Load Uganda boundaries
var uganda = ee.FeatureCollection("USDOS/LSIB_SIMPLE/2017")
  .filter(ee.Filter.eq('country_na', 'Uganda'));

// Print to console
print('Debug info:', variable);

// Add Layer to map
Map.addLayer(image, {min: 0, max: 1, palette: ['brown', 'yellow', 'green']}, 'Layer name');

// Common visualizations
var visNDVI = {min: 0, max: 1, palette: ['brown', 'yellow', 'green']}; // For scaled NDVI (0-1)
var visRain = {min: 0, max: 500, palette: ['white', 'blue', 'darkblue']}; // For rainfall in mm

// Note: Raw MODIS NDVI values need scaling (divide by 10000)
```

## Keyboard Shortcuts:

- **Run script:** Ctrl + Enter (Cmd + Enter on Mac)
- **Save script:** Ctrl + S (Cmd + S on Mac)
- **Comment line:** Ctrl + / (Cmd + / on Mac)
- **Auto-complete:** Ctrl + Space
- **New script:** Ctrl + Alt + N

---

## Notes for Instructors

### Common Bottlenecks:

#### 1. Earth Engine approval delay

- Have a list of approved "guest accounts" as backup
- Contact GEE team 2 weeks before workshop for bulk approval

#### 2. Slow internet

- Prepare offline alternatives
- Have key datasets pre-exported

- Use mobile hotspots as backup

### 3. **Browser compatibility**

- Chrome works best
- Firefox is good alternative
- Safari sometimes has issues with pop-ups

### **Success Metrics:**

- All participants can log in within 10 minutes
  - Test script runs successfully for everyone
  - Participants can navigate the interface
  - Basic comfort with running provided code
- 

### **Post-Access Next Steps**

Once everyone has access:

1. Brief interface tour (10 min)
2. Run 2-3 simple examples together
3. Ensure everyone has the same view
4. Begin Lab 3 exercises

Remember: **The goal is not to become JavaScript experts, but to use Earth Engine as a tool for public health analysis!**