EVENT

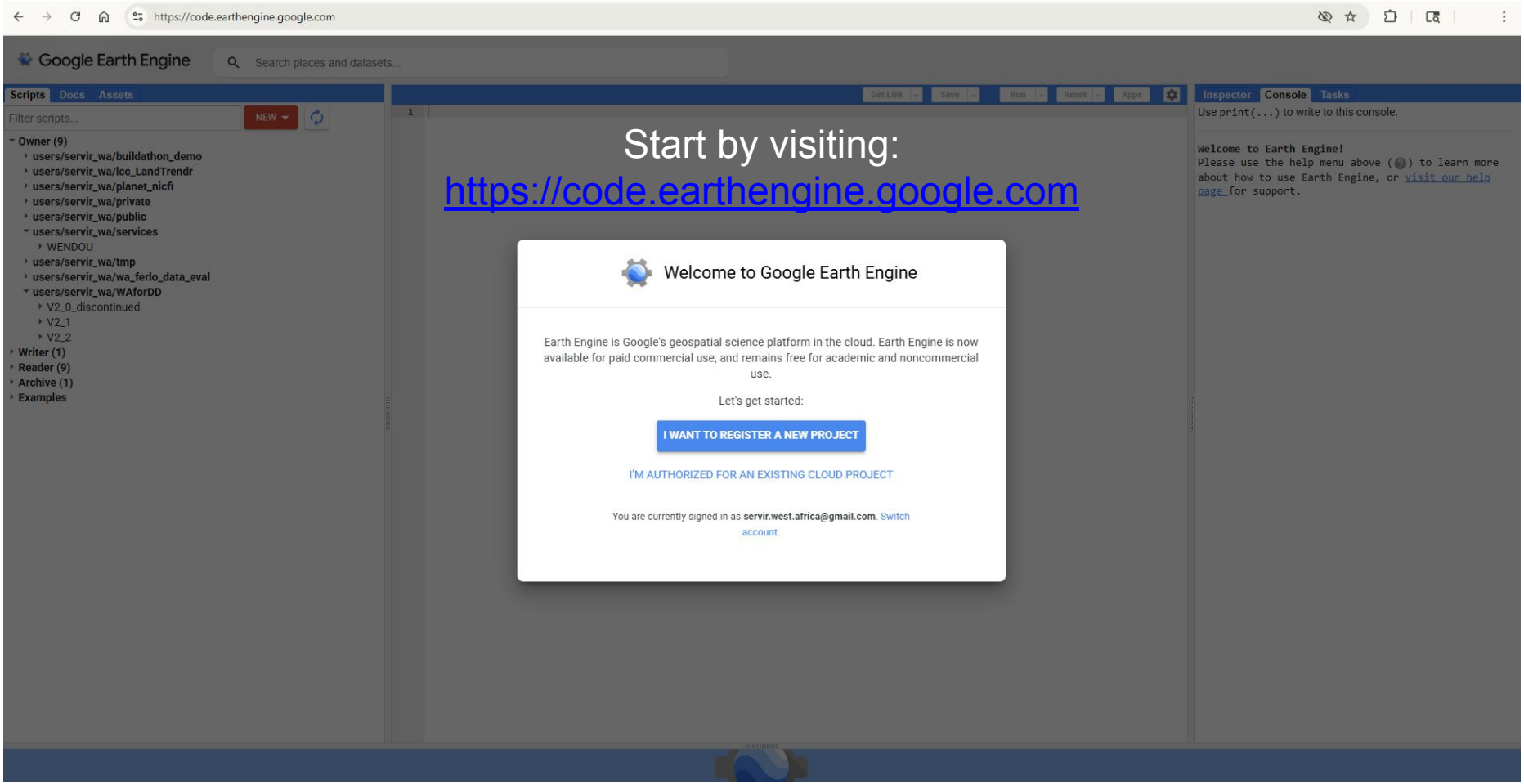
Fundamentals to Use Hyperspectral and Thermal NASA Earth Observations

Join us for a two-day webinar covering the fundamentals necessary to work with NASA's high-spectral resolution land-based Earth observation data from NASA's EMIT, ECOSTRESS, and PACE missions.

Overview of Registering Cloud Projects for Google Earth Engine

NASA EarthData webinar: Hyperspectral & Thermal Fundamentals

07.2025


https://code.earthengine.google.com
Google Earth Engine
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Scripts
Docs
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Filter scripts...
NEW
Owner (9)
users/servir_wa/buildathon_demo
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Writer (1)
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Examples
Get Link
Save
Run
Reset
Apps
Inspector
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Use print(...) to write to this console.
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Start by visiting:
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Welcome to Google Earth Engine
Earth Engine is Google's geospatial science platform in the cloud. Earth Engine is now available for paid commercial use, and remains free for academic and noncommercial use.
Let's get started:
I WANT TO REGISTER A NEW PROJECT
I'M AUTHORIZED FOR AN EXISTING CLOUD PROJECT
You are currently signed in as servir.west.africa@gmail.com. Switch account.

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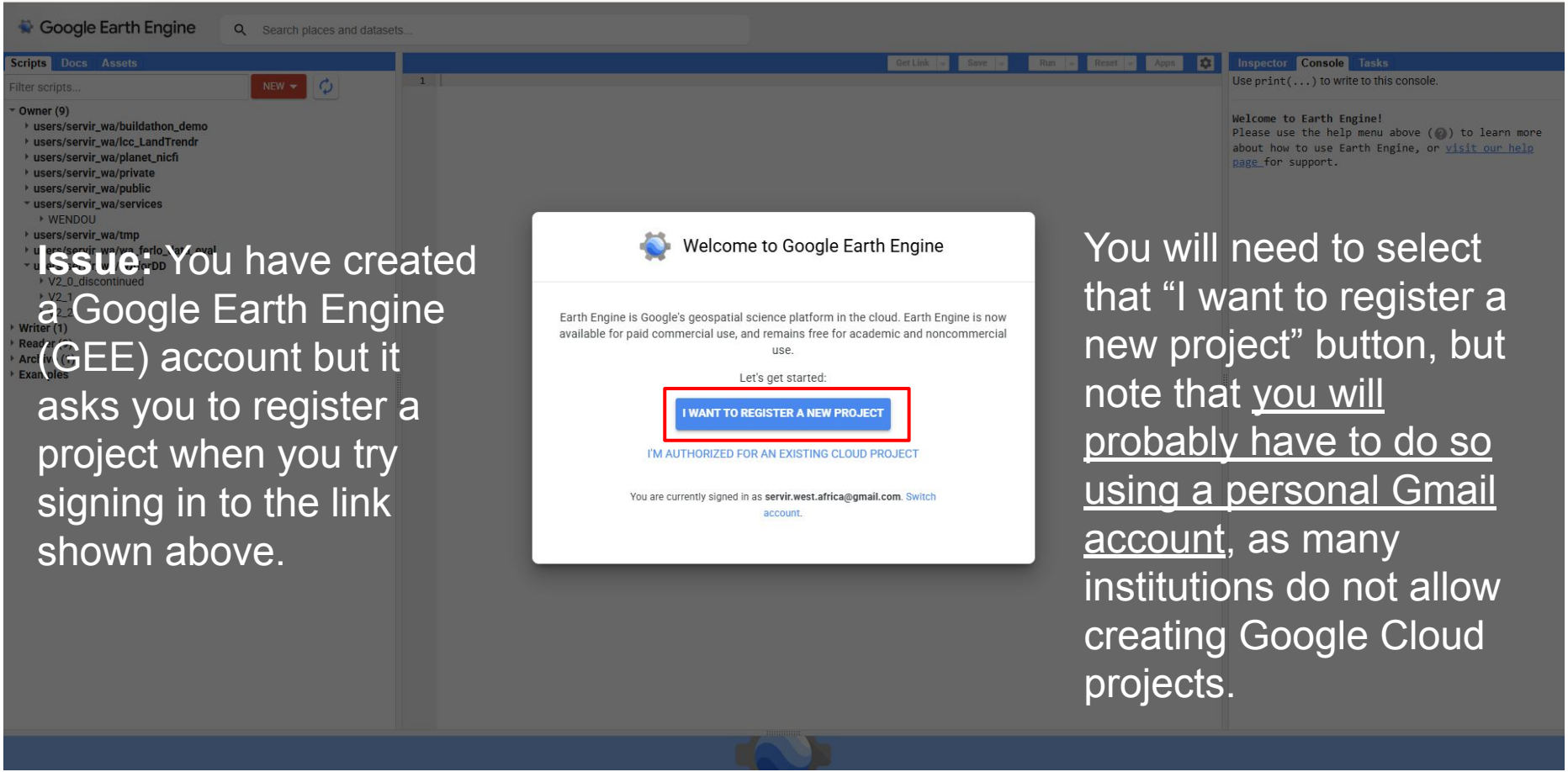
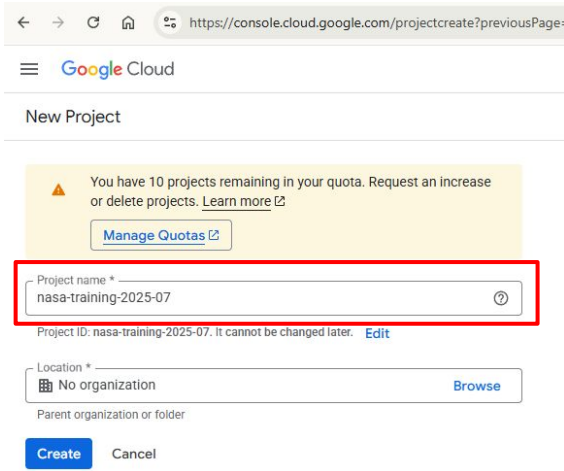
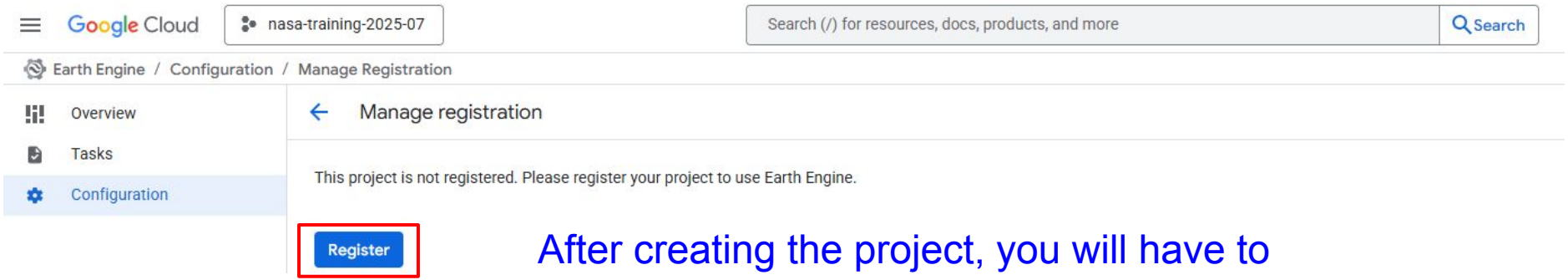


Issue: You have created a Google Earth Engine (GEE) account but it asks you to register a project when you try signing in to the link shown above.

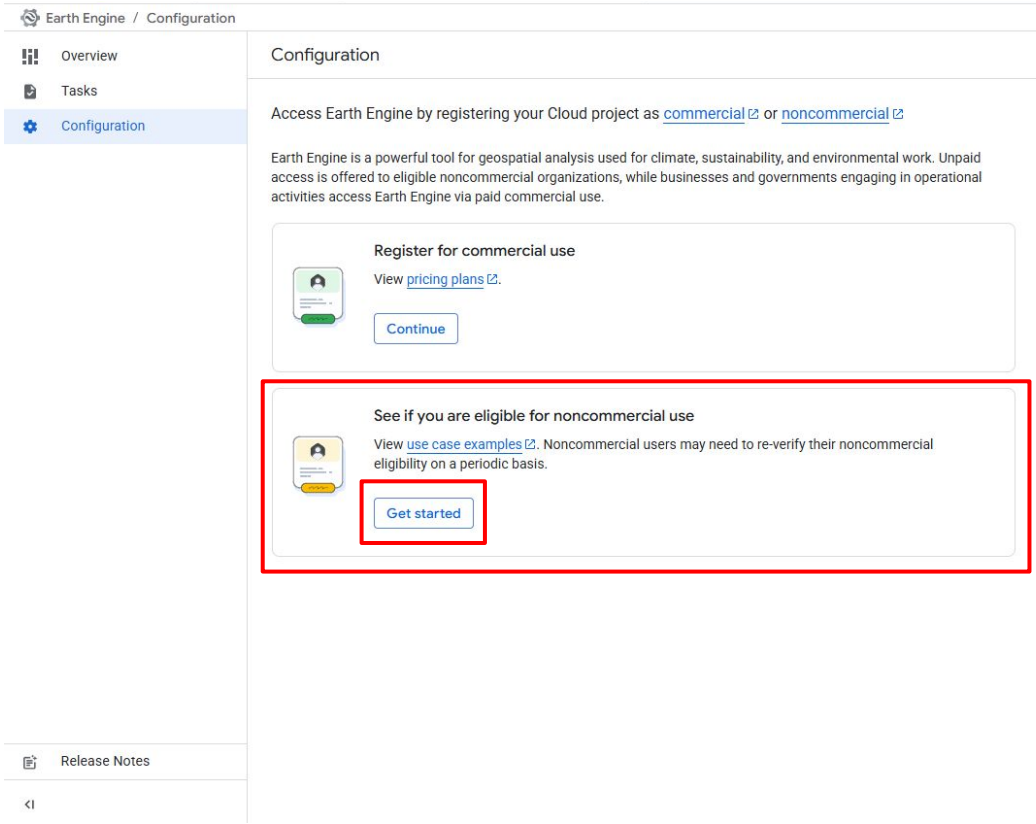
You will need to select that “I want to register a new project” button, but note that you will probably have to do so using a personal Gmail account, as many institutions do not allow creating Google Cloud projects.



Clicking the registration button will open a new tab where you will have to create a new project. For illustrative purposes, we are using, “nasa-training-2025-07” but you can choose whichever name you prefer.

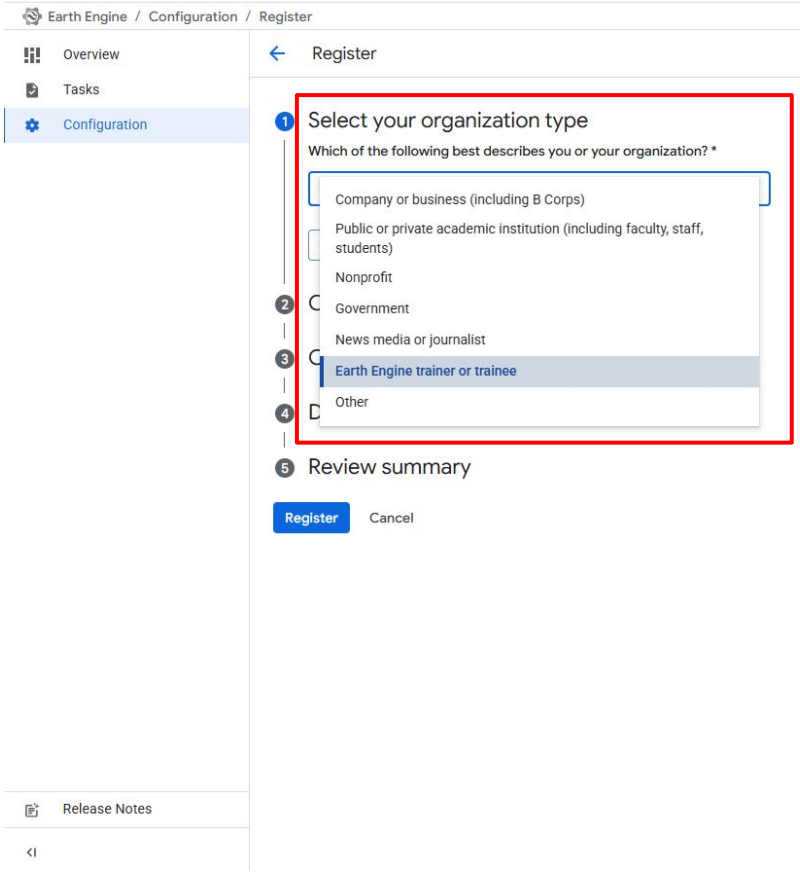


After creating the project, you will have to register it.

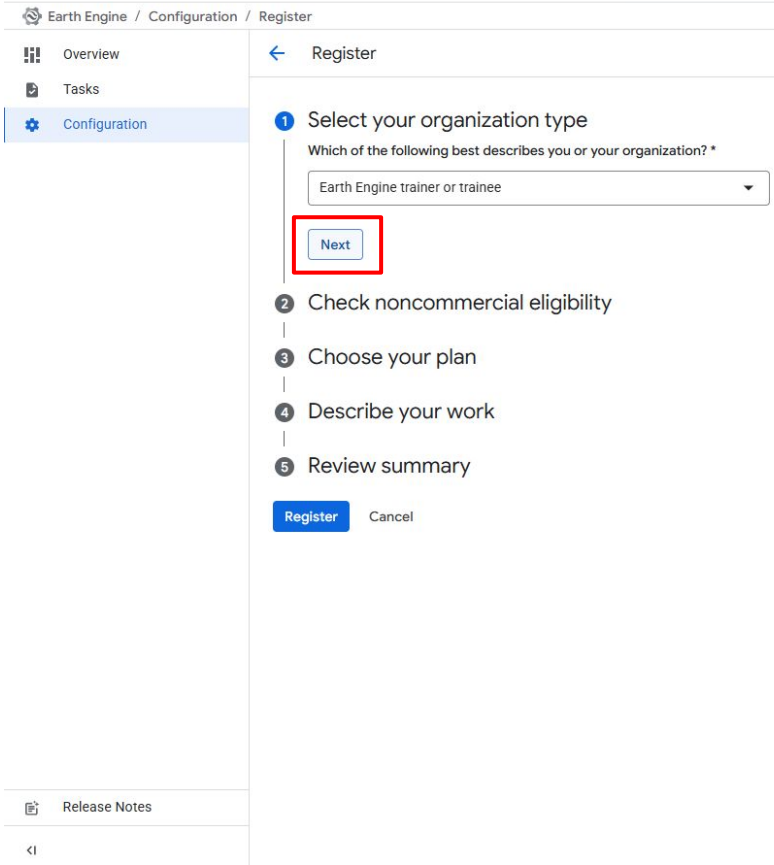


Because you are using this project for this training webinar, this qualifies for non-commercial use.

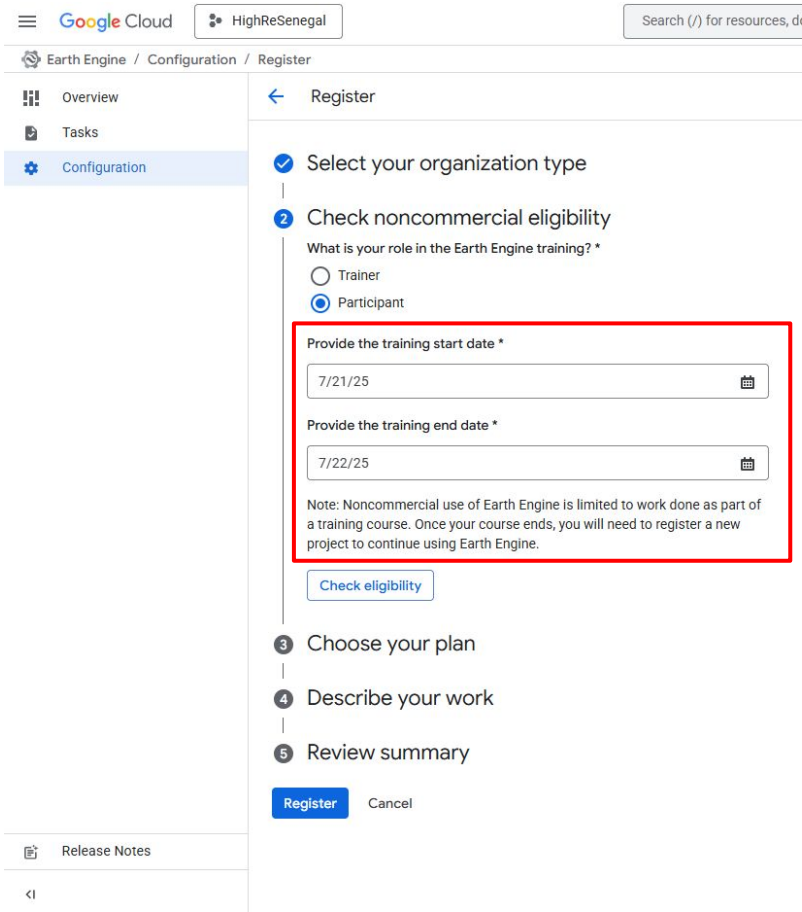
So click the “Get started” button at the bottom.



Select “Earth Engine trainer or trainee” for the Organization Type option.

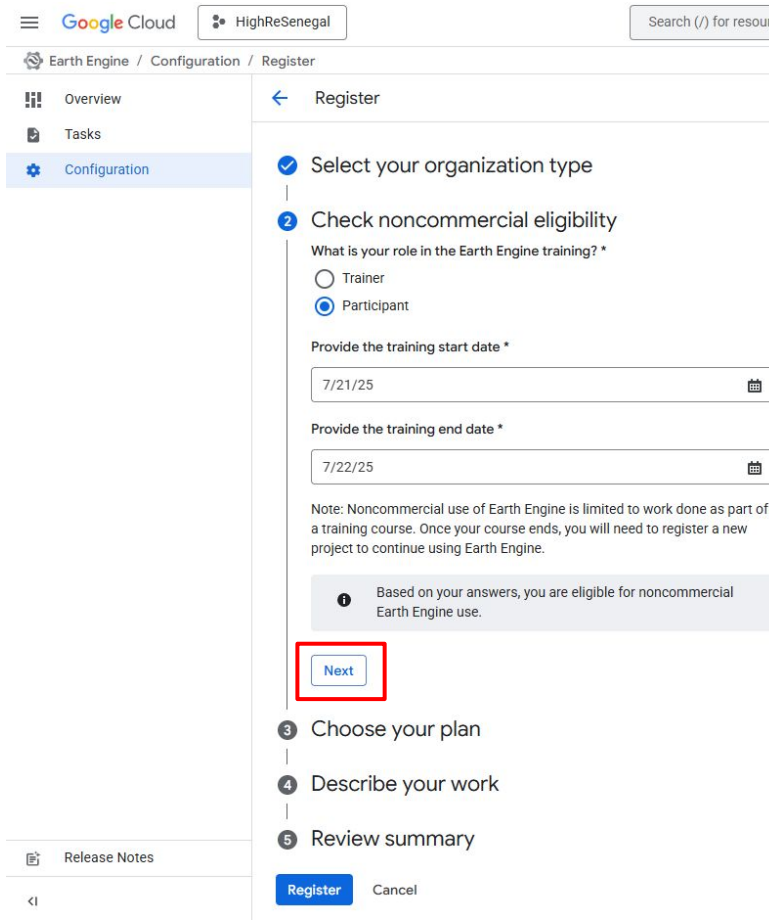


With that selected, click “Next” to continue.

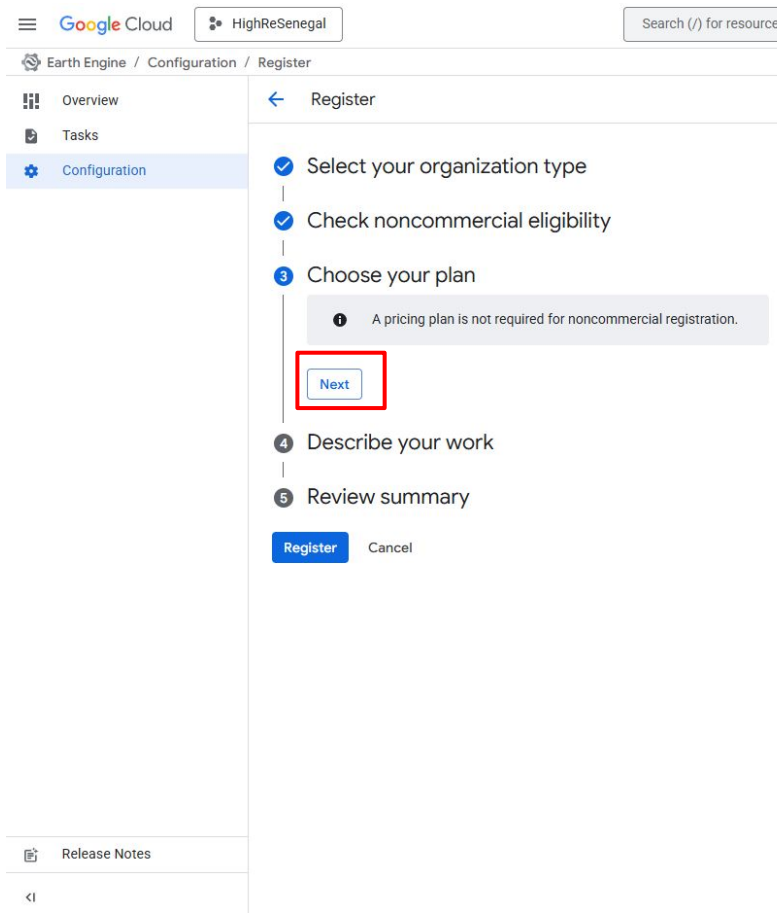


1. You can identify yourself as a “participant” to the training.

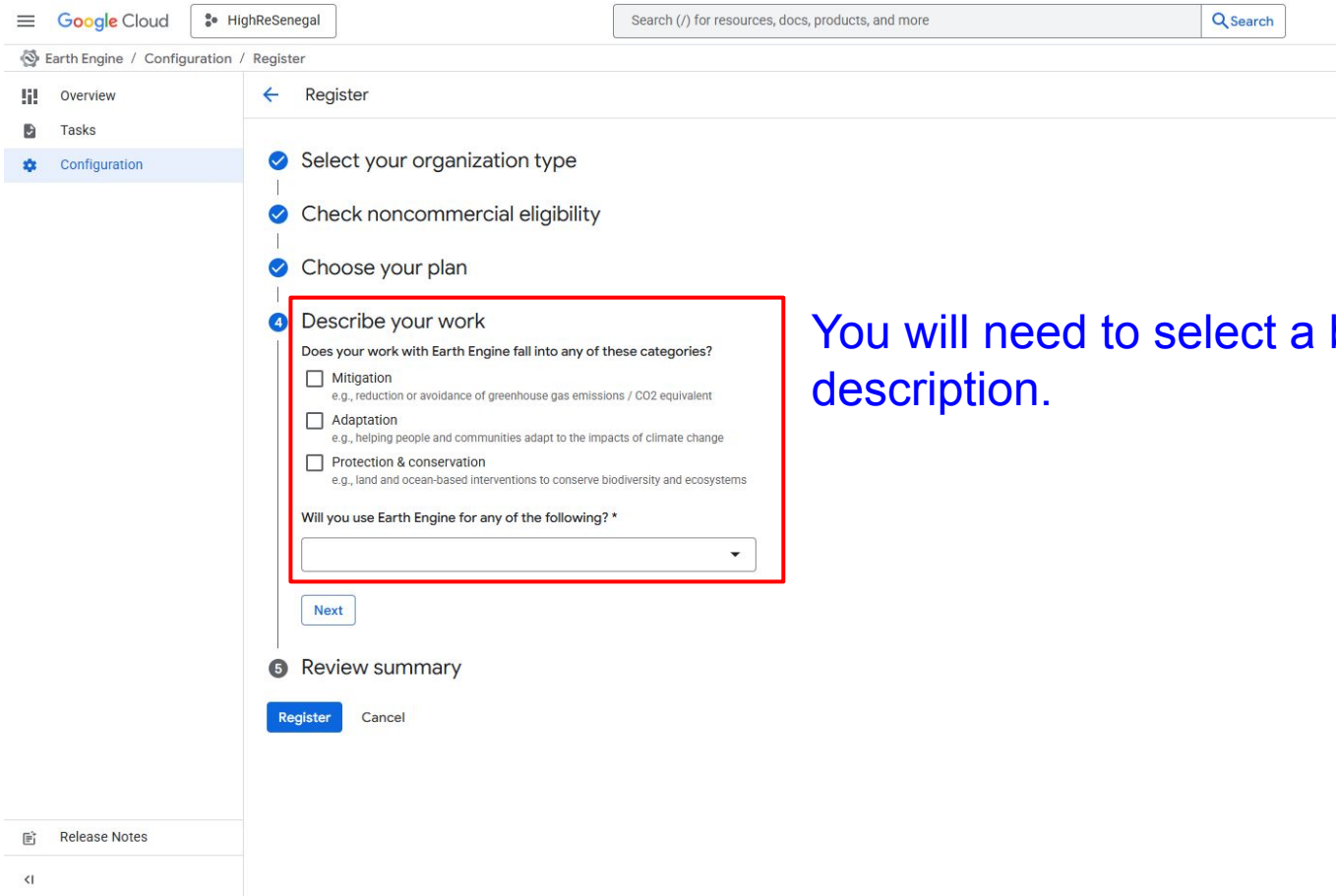
2. Since this specific training will run from 21 July through 22 July, you can select those as the start and end dates.



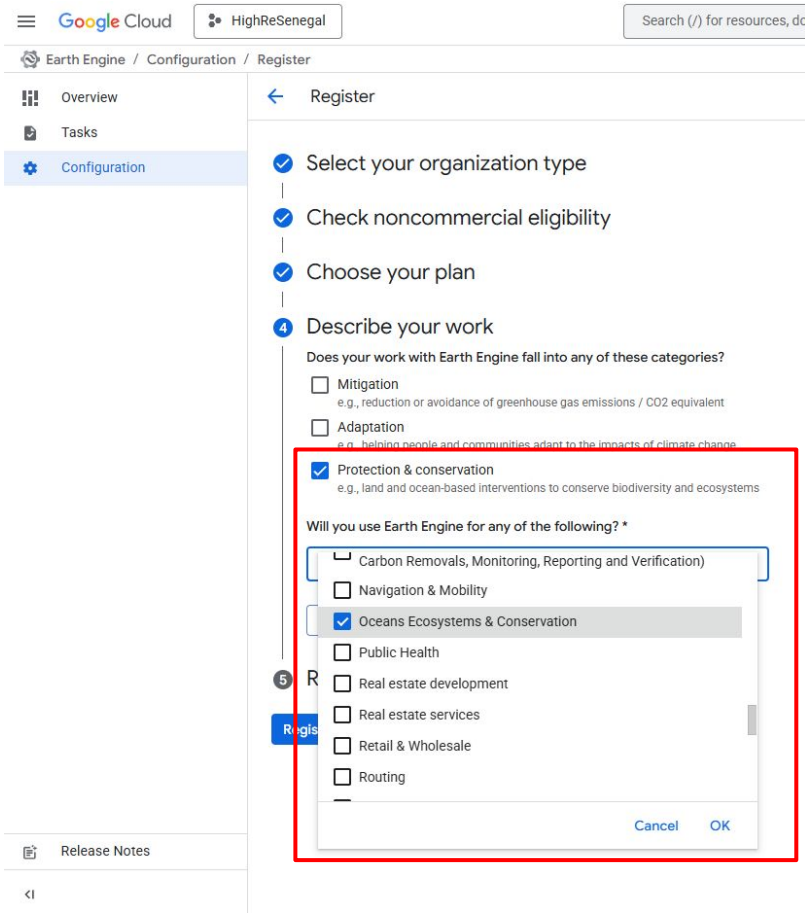
With that selected, click “Next” to continue.



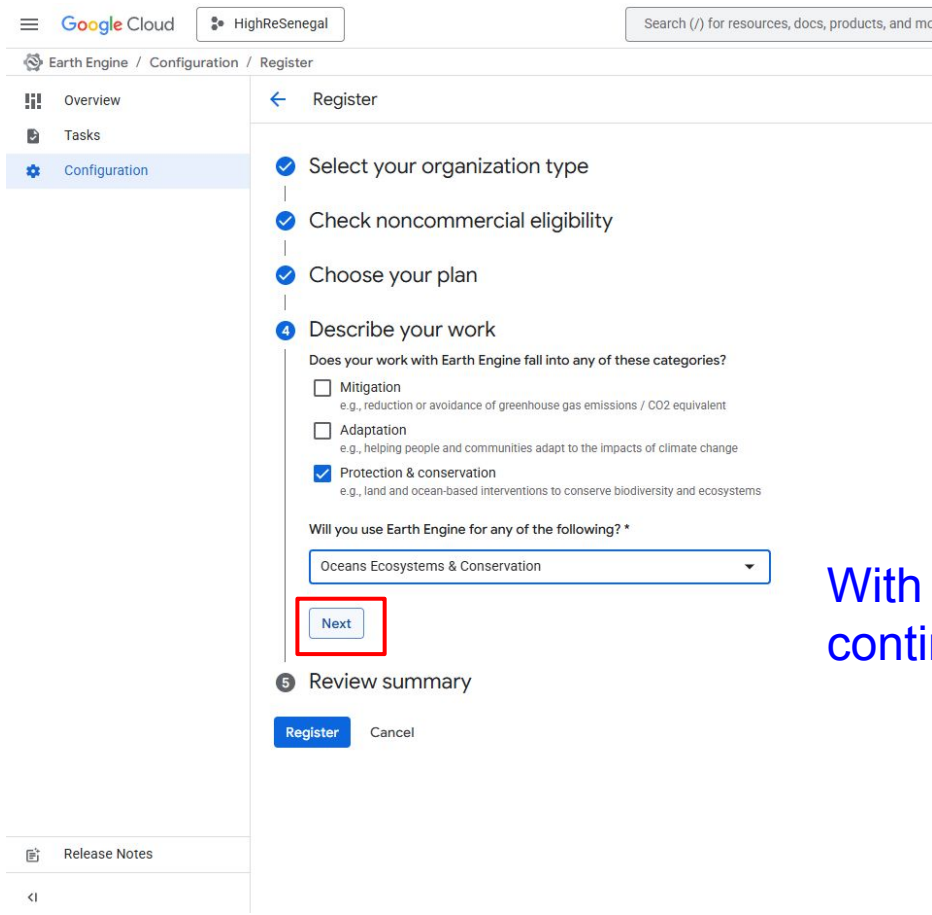
Since no pricing plan is required as this is a non-commercial activity, click “Next” to continue.



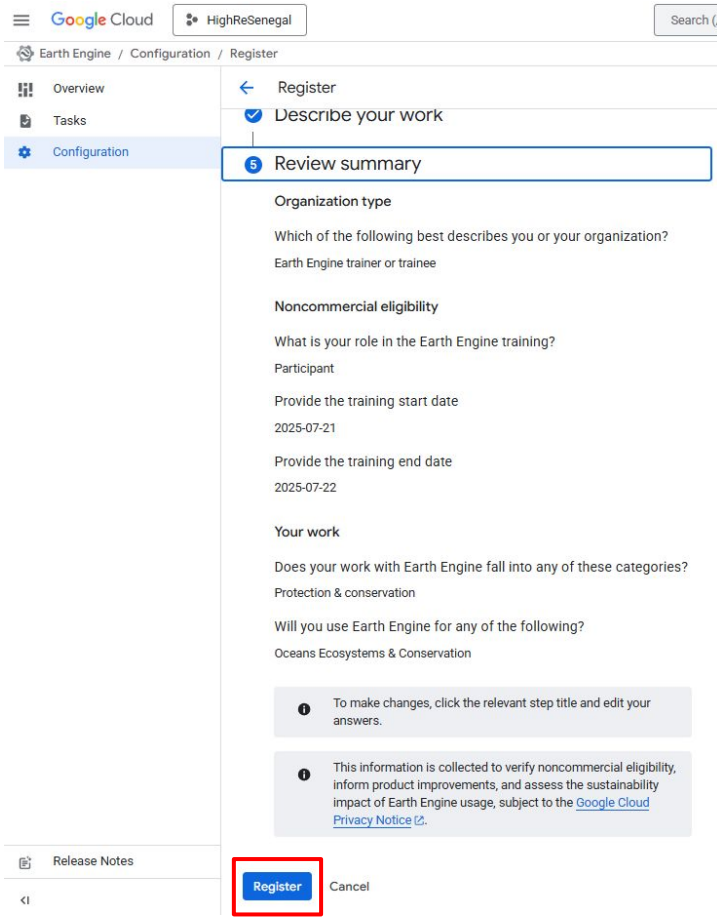
You will need to select a basic description.



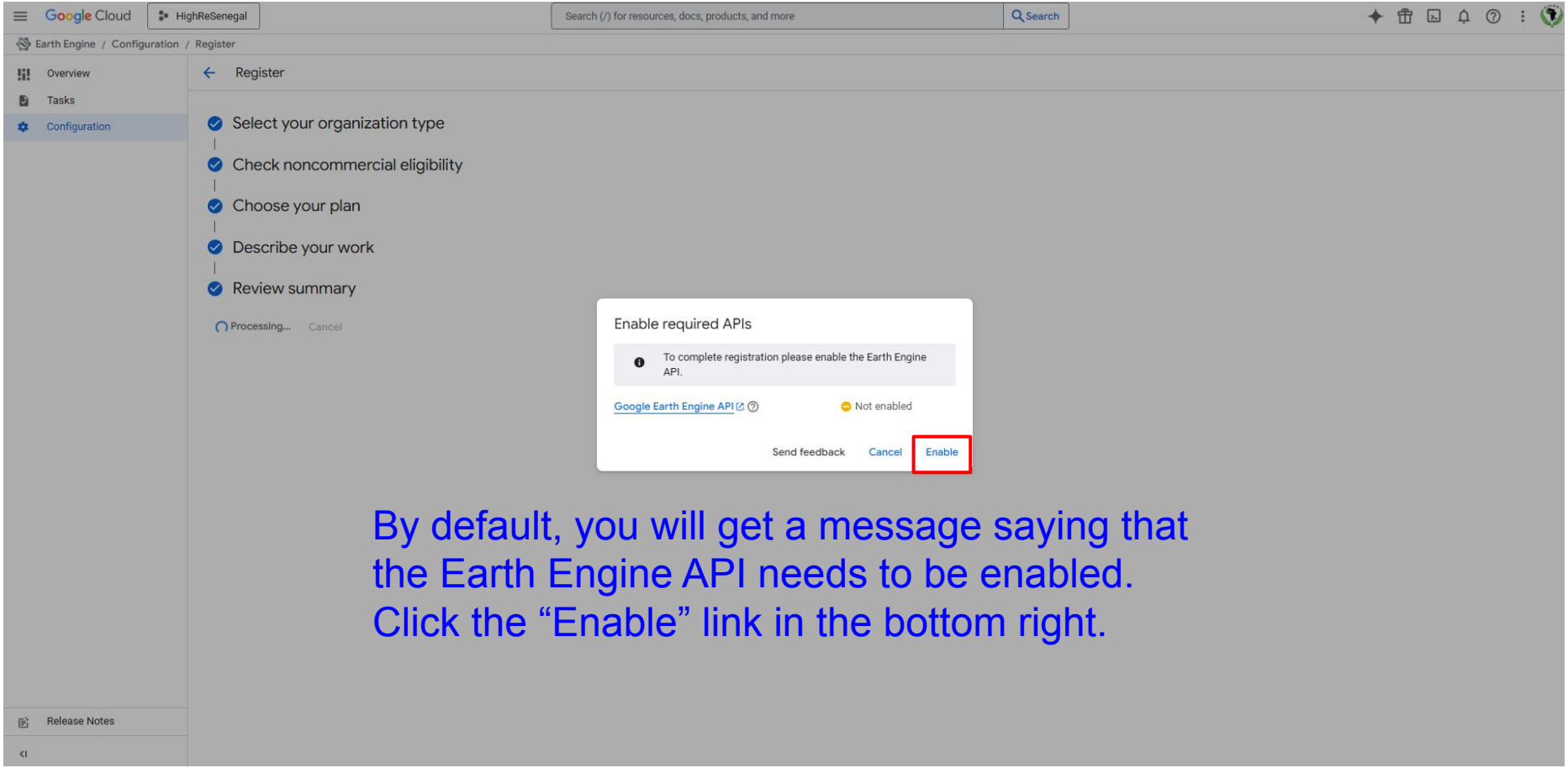
You might choose to indicate that this project is linked to “Protection & conservation” and specifically to “Oceans Ecosystems & Conservation.” If that doesn’t apply, you can select other options as appropriate.



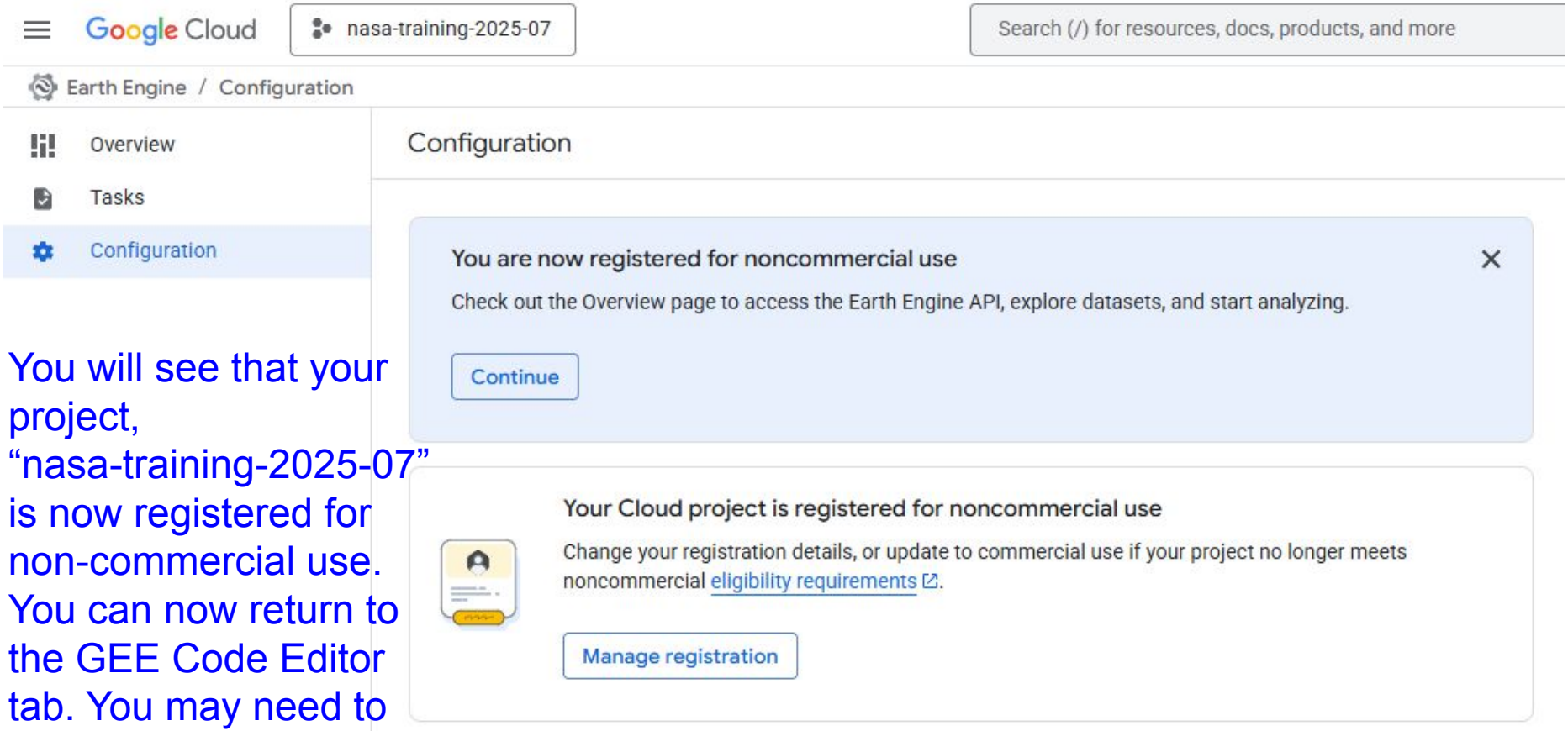
With that selected, click “Next” to continue.



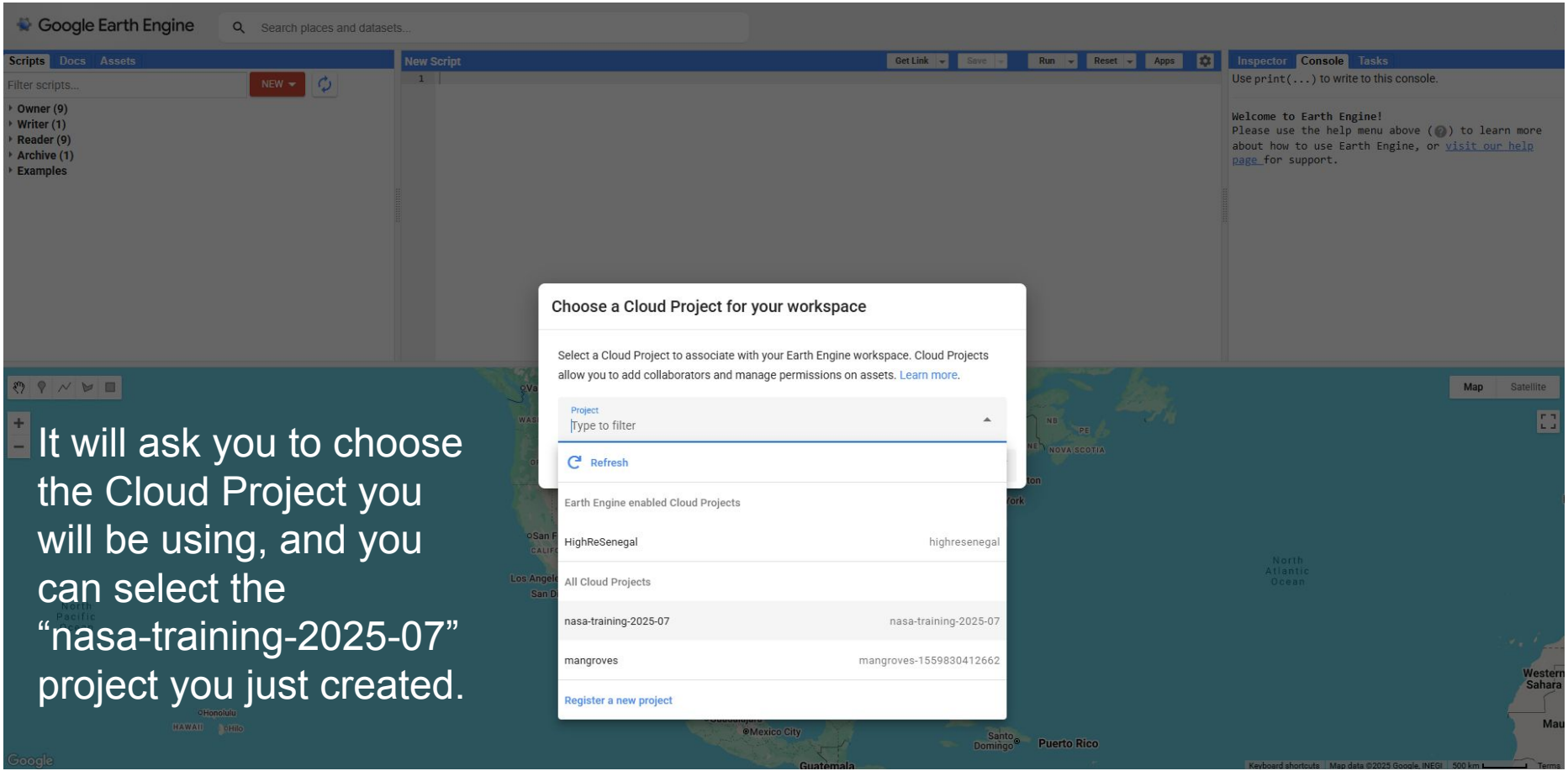
If you are fine with the summary, you can click “Register” to continue and finalize the process.



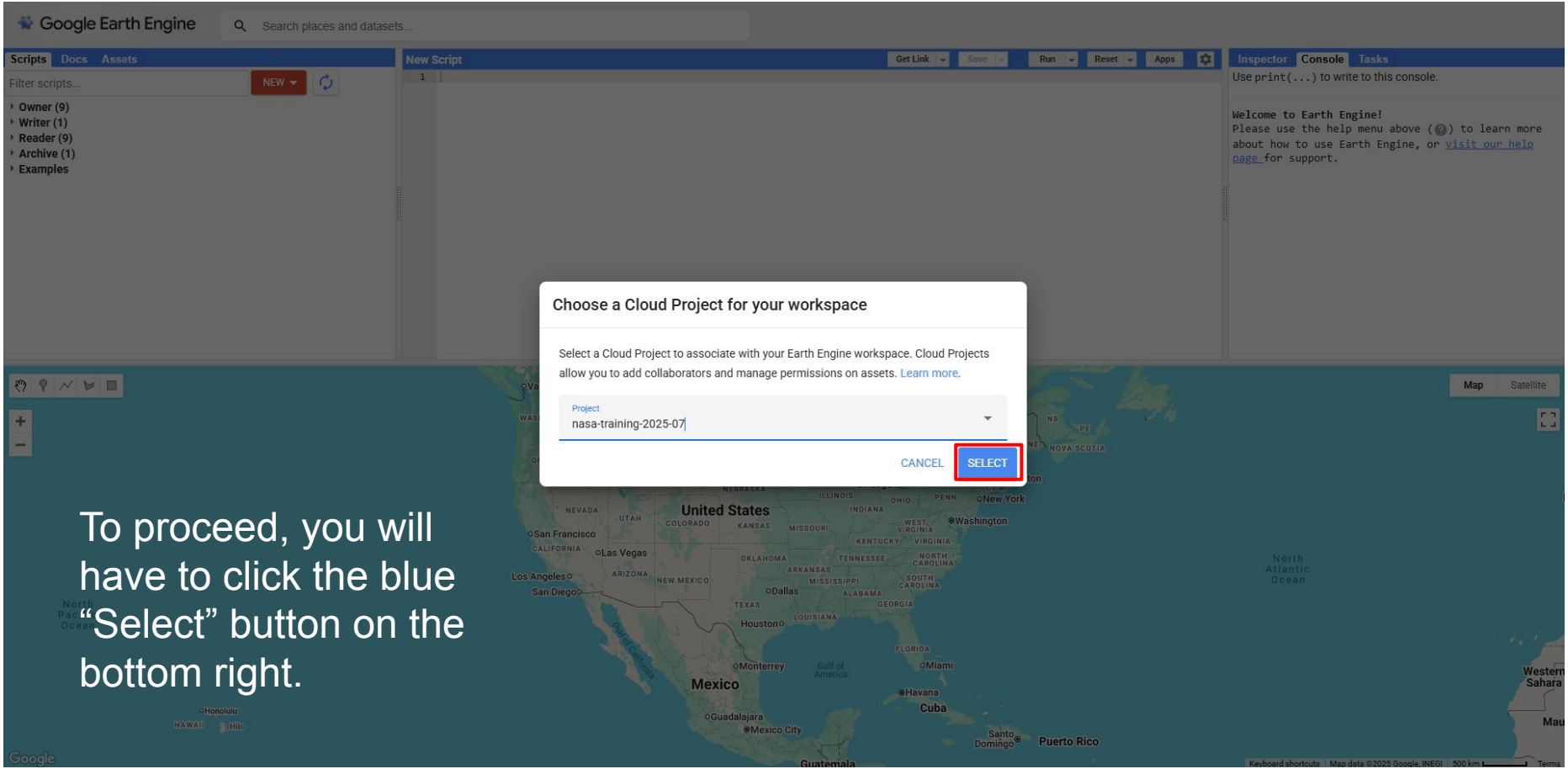
By default, you will get a message saying that the Earth Engine API needs to be enabled. Click the “Enable” link in the bottom right.



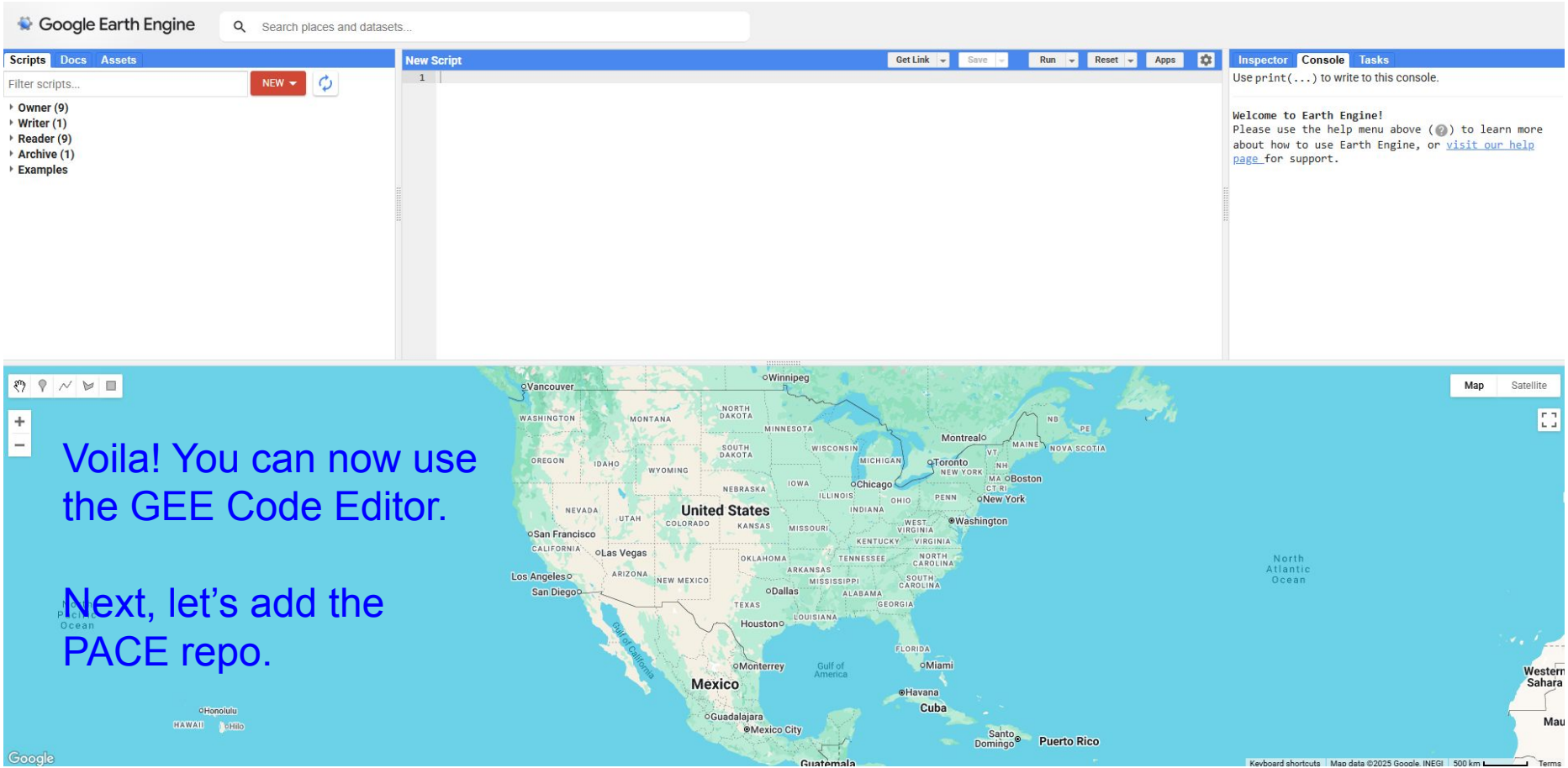
You will see that your project, “nasa-training-2025-07” is now registered for non-commercial use. You can now return to the GEE Code Editor tab. You may need to refresh the tab.



It will ask you to choose the Cloud Project you will be using, and you can select the “nasa-training-2025-07” project you just created.



To proceed, you will have to click the blue "Select" button on the bottom right.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Owner (9)
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Examples
New Script
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Apps
1
Inspector
Console
Tasks
Use print(...) to write to this console.
Welcome to Earth Engine!
Please use the help menu above (?) to learn more about how to use Earth Engine, or visit our help page for support.
Voila! You can now use the GEE Code Editor.
Next, let's add the PACE repo.
Map
Satellite
United States
Mexico
Cuba
Puerto Rico
Vancouver
Winnipeg
Montreal
Toronto
Chicago
New York
Boston
Washington
San Francisco
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the PACE OCI Toolkit

DOI 10.5281/zenodo.15873995 repo last updated last saturday visitors 251

GOOGLE EARTH ENGINE

Summary

This is a set of JavaScript-based Google Earth Engine (GEE) tools for accessing land data from the Ocean Color Instrument (OCI) sensor on NASA's Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) satellite. One of the dependency packages provides direct access to PACE OCI *provisional* surface reflectance (SR) and vegetation index (VI) data that have been loaded into GEE. Another dependency package provides data on the *hyperspectral* wavelengths of the PACE OCI surface reflectance bands, as well as the wavelengths of NASA's other spaceborne hyperspectral imagers, namely EO-1 Hyperion and the ISS EMIT, for comparison. Aside from the dependencies, example scripts are provided to allow users to interact with the data, and the geographic and temporal scopes of those examples can be modified to meet users' needs.

Functions

The scripts are divided into the following main functions:

(i) Data discovery (*for discovering which PACE OCI SR and VI data are available, as well as which EO-1 Hyperion and EMIT data are available*)

(ii) Data visualization (*for viewing PACE OCI SR and VI data are available, as well as viewing available EO-1 Hyperion and EMIT data*)

(iii) Spectral signature visualization (*for extracting and viewing the spectral signatures of specific land cover or vegetation features*)

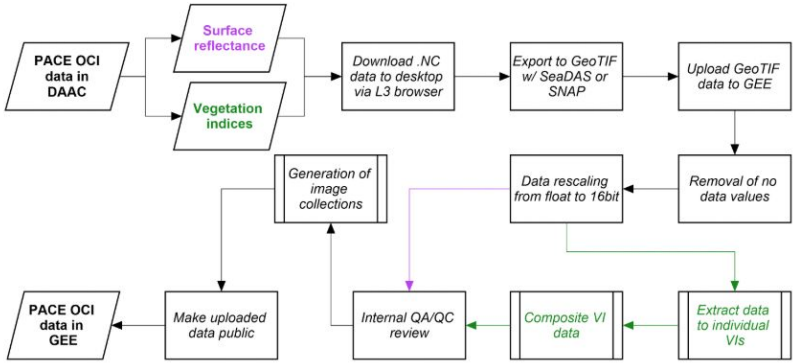
(iv) Data gap filling (*for filling data gaps using averages or using harmonic functions*)

(v) Time series analysis (*for viewing the time series of SR or VI data*)

(vi) Image classification (*for basic unsupervised learning classification of PACE OCI data*)

Methods: Workflow for getting PACE OCI land data into GEE

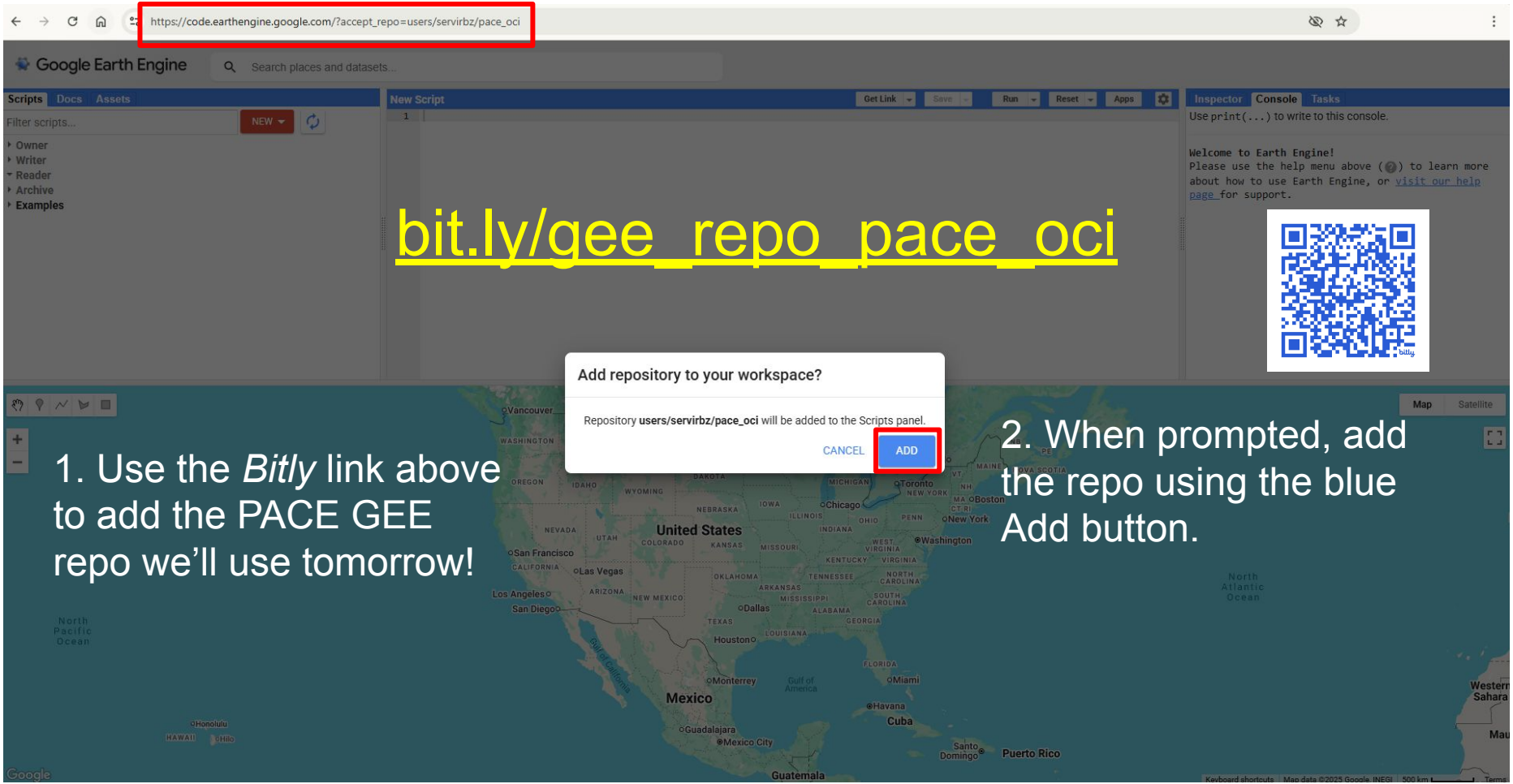
The following is a graphical representation of the process for ingesting the PACE OCI land data into GEE. An R script was used for batch processing of the PACE OCI vegetation index data that were ingested into GEE.



Acknowledgements

This work was initially soft-launched on 22 May 2025, during the virtual Technical Interchange Meeting of NASA's Surface Biology and Geology (SBG) mission. This work is being led by researchers from the Lab for Applied Science of the Earth System Science Center of the University of Alabama in Huntsville and has been supported by the NASA Earth Action / NASA Marshall Space Flight Center. This work is being done in the context of an Early Adopters project for PACE. The PACE Mission Applications Lead, Dr. Morgaine McKibben (NASA / SSAI), is acknowledged for her support, as are Skye Caplan (NASA / SSAI) of the PACE mission, and Dr. K. Fred Huemmrich of the PACE Science & Applications Team (NASA / UMBC). Kudos are also due to Kelsey Herndon (NASA / UAH), Prof. Rob Griffin, Dr. Africa-Flores-Anderson (NASA), Eric Anderson (NASA), Dr. Kevin Horn (NASA), Dr. Ashutosh Limaye (NASA), and Dan Irwin (NASA) of NASA MSFC.

bitly


https://code.earthengine.google.com/?accept_repo=users/servirbz/pace_oci
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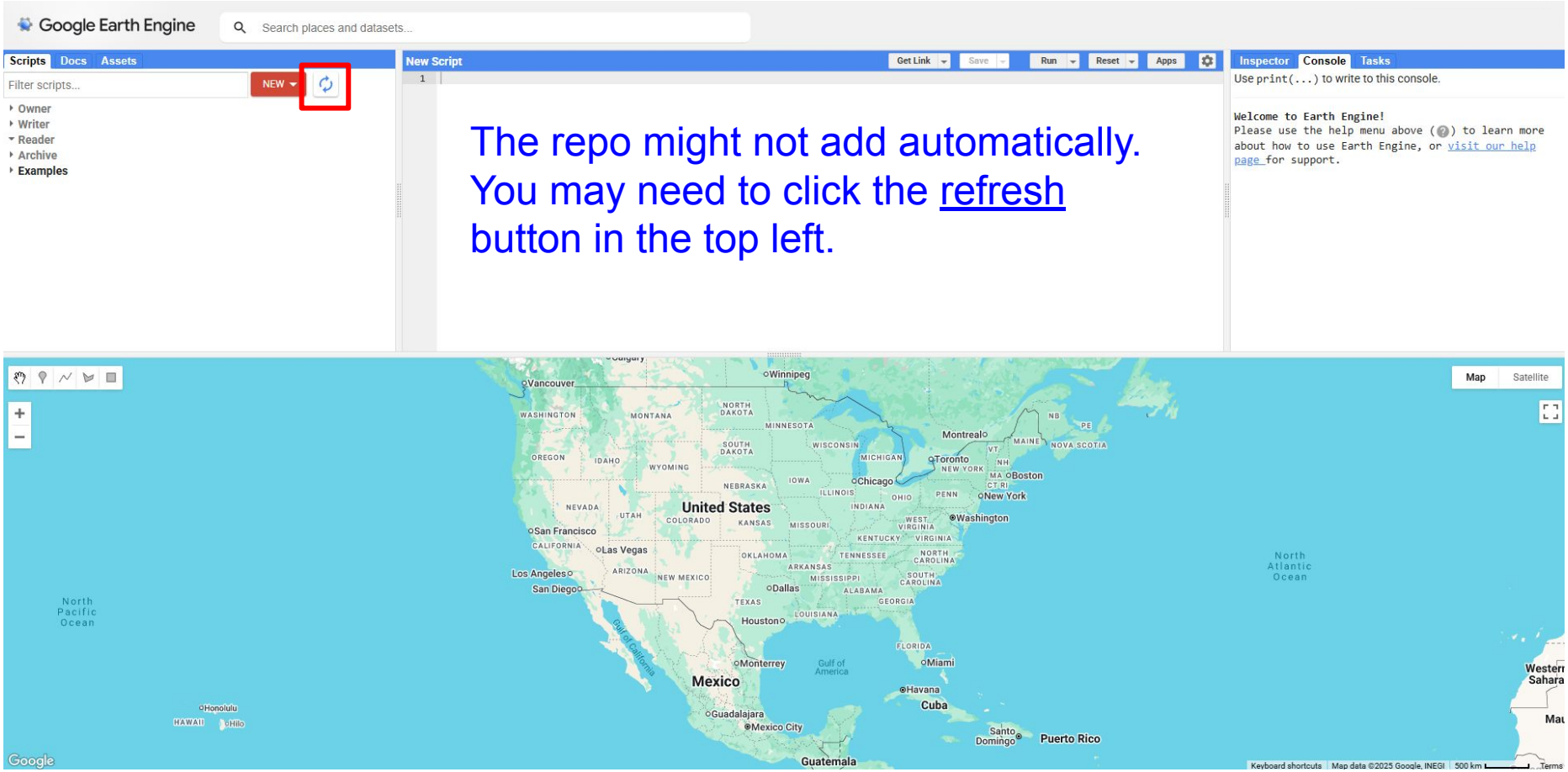
Tasks
Use print(...) to write to this console.
Welcome to Earth Engine!
Please use the help menu above ( ) to learn more about how to use Earth Engine, or visit our help page for support.
bit.ly/gee_repo_pace_oci
Add repository to your workspace?
Repository users/servirbz/pace_oci will be added to the Scripts panel.
CANCEL
ADD
1. Use the Bitly link above to add the PACE GEE repo we'll use tomorrow!
2. When prompted, add the repo using the blue Add button.
Map
Satellite
United States
Mexico
Cuba
Guatemala
Puerto Rico
Google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The repo might not add automatically.
You may need to click the refresh
button in the top left.
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Hilo
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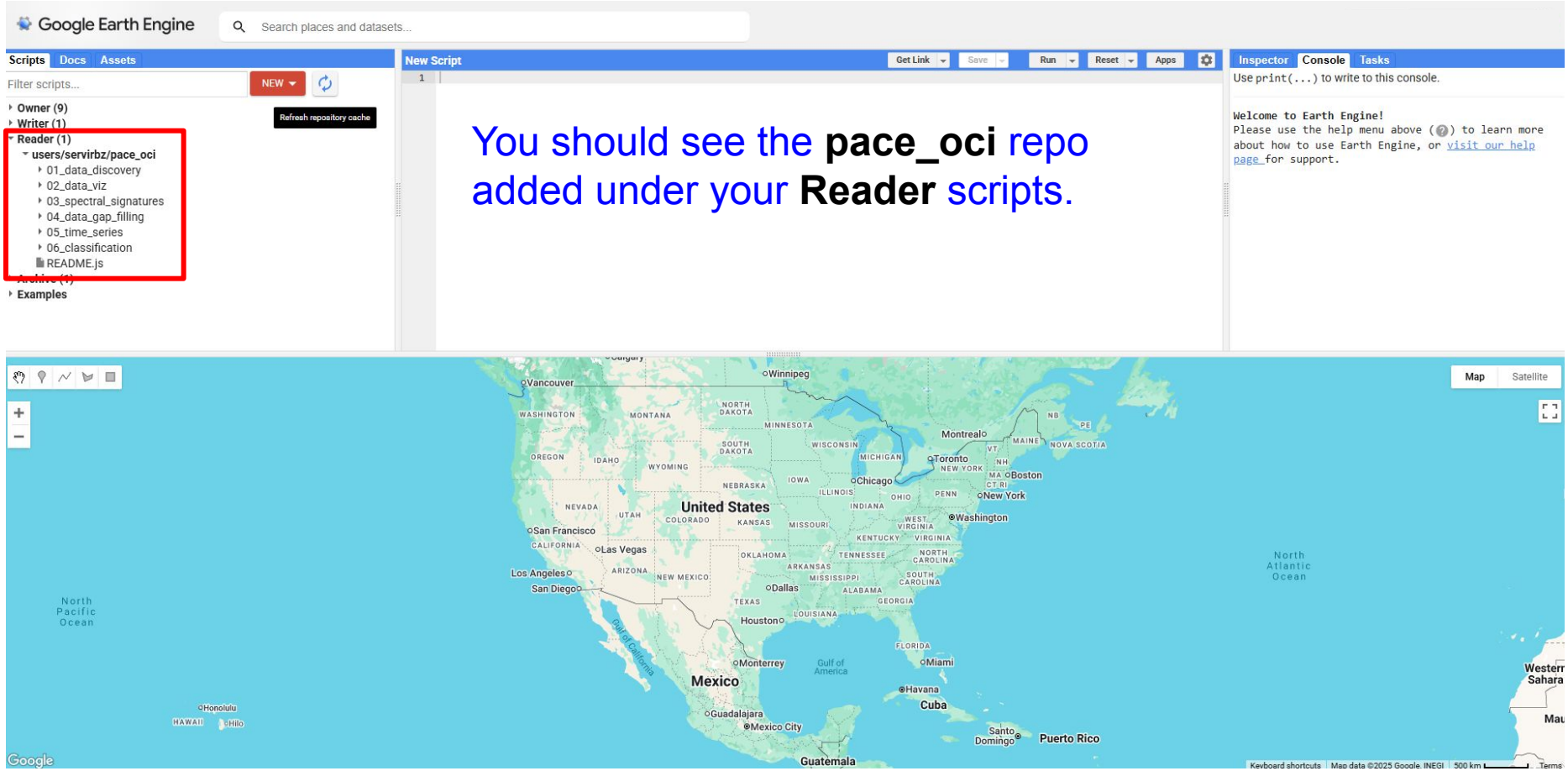
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Refresh repository cache
Owner (9)
Writer (1)
Reader (1)
users/servirbz/pace_oci
01_data_discovery
02_data_viz
03_spectral_signatures
04_data_gap_filling
05_time_series
06_classification
README.js
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You should see the pace_oci repo added under your Reader scripts.
Map
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Toronto
Boston
New York
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Gulf of California
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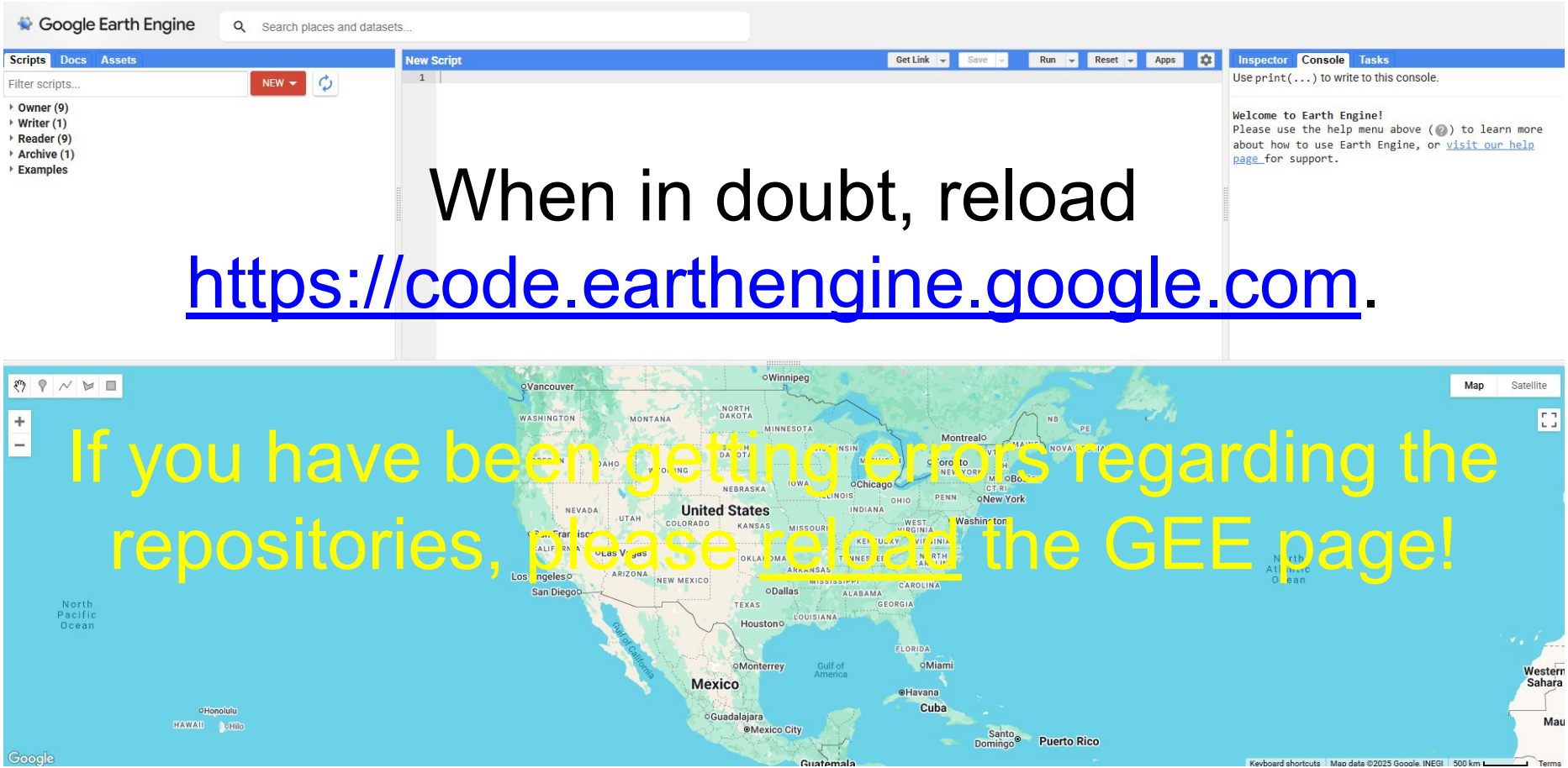
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Questions?

email me: eac0021@uah.edu