



[Home](#) / [Events](#) / Fundamentals To Use Hyperspectral and Thermal NASA Earth Observations



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



- users/servir_wa/buildathon_demo
- users/servir_wa/lcc_LandTrendr
- users/servir_wa/planet_nicfi
- users/servir_wa/private
- users/servir_wa/public
- users/servir_wa/services
 - WENDOU
- users/servir_wa/tmp
- users/servir_wa/wa_ferlo_data_eval
- users/servir_wa/WAforDD
 - V2_0_discontinued
 - V2_1
 - V2_2
- Writer (1)
- Reader (9)
- Archive (1)
- Examples

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.

Start by visiting:
<https://code.earthengine.google.com>



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.](#)



<https://code.earthengine.google.com>

The screenshot shows the Google Earth Engine web interface. On the left, there's a sidebar with 'Scripts', 'Docs', and 'Assets' tabs. The 'Assets' tab is active, showing a list of folders and files under the 'Owner (9)' section. The main area displays a 'Welcome to Google Earth Engine' modal. The modal has a gear icon and the title 'Welcome to Google Earth Engine'. Below the title, it says '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.' There's a section 'Let's get started:' with a blue button labeled 'I WANT TO REGISTER A NEW PROJECT' which is highlighted with a red rectangle. Below this button is a link 'I'M AUTHORIZED FOR AN EXISTING CLOUD PROJECT'. At the bottom of the modal, it says 'You are currently signed in as servir.west.africa@gmail.com. Switch account.' On the right side of the interface, there's a 'Console' tab with a message: '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.'

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.

New Project



You have 10 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)

[Manage Quotas](#)

Project name *
nasa-training-2025-07 ⓘ

Project ID: nasa-training-2025-07. It cannot be changed later. [Edit](#)

Location *
No organization [Browse](#)

Parent organization or folder

[Create](#) [Cancel](#)

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.

This project is not registered. Please register your project to use Earth Engine.

[Register](#)

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

Configuration

Access Earth Engine by registering your Cloud project as [commercial](#) or [noncommercial](#).

Earth Engine is a powerful tool for geospatial analysis used for climate, sustainability, and environmental work. Unpaid access is offered to eligible noncommercial organizations, while businesses and governments engaging in operational activities access Earth Engine via paid commercial use.

Register for commercial use



View [pricing plans](#).

Continue

See if you are eligible for noncommercial use



View [use case examples](#). Noncommercial users may need to re-verify their noncommercial eligibility on a periodic basis.

Get started

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.

1 Select your organization type

Which of the following best describes you or your organization? *

☐ Company or business (including B Corps)

☐ Public or private academic institution (including faculty, staff, students)

☐ Nonprofit

☐ Government

☐ News media or journalist

☒ Earth Engine trainer or trainee

☐ Other

5 Review summary

Register

Cancel

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

1 Select your organization type

Which of the following best describes you or your organization? *

Earth Engine trainer or trainee

Next

2 Check noncommercial eligibility

3 Choose your plan

4 Describe your work

5 Review summary

Register

Cancel

With that selected, click “Next” to continue.

← Register

✓ Select your organization type

2 Check noncommercial eligibility

What is your role in the Earth Engine training? *

☐ Trainer☒ Participant

Provide the training start date *

7/21/25



Provide the training end date *

7/22/25



Note: Noncommercial use of Earth Engine is limited to work done as part of a training course. Once your course ends, you will need to register a new project to continue using Earth Engine.

[Check eligibility](#)

3 Choose your plan

4 Describe your work

5 Review summary

[Register](#)[Cancel](#)

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.

← Register

✓ Select your organization type

2 Check noncommercial eligibility

What is your role in the Earth Engine training? *

☐ Trainer☒ Participant

Provide the training start date *

7/21/25



Provide the training end date *

7/22/25



Note: Noncommercial use of Earth Engine is limited to work done as part of a training course. Once your course ends, you will need to register a new project to continue using Earth Engine.

Based on your answers, you are eligible for noncommercial Earth Engine use.

Next

3 Choose your plan

4 Describe your work

5 Review summary

Register

Cancel

With that selected, click “Next” to continue.

✓ Select your organization type

✓ Check noncommercial eligibility

3 Choose your plan

i A pricing plan is not required for noncommercial registration.

Next

4 Describe your work

5 Review summary

Register

Cancel

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

← Register

✓ Select your organization type

✓ Check noncommercial eligibility

✓ Choose your plan

4 Describe your work

Does your work with Earth Engine fall into any of these categories?

☐

Mitigation

e.g., reduction or avoidance of greenhouse gas emissions / CO2 equivalent

☐

Adaptation

e.g., helping people and communities adapt to the impacts of climate change

☐

Protection & conservation

e.g., land and ocean-based interventions to conserve biodiversity and ecosystems

Will you use Earth Engine for any of the following? *

Next

5 Review summary

Register

Cancel

You will need to select a basic description.

☒ Select your organization type☒ Check noncommercial eligibility☒ Choose your plan☒ 4 Describe your work

Does your work with Earth Engine fall into any of these categories?

☐ Mitigation

e.g., reduction or avoidance of greenhouse gas emissions / CO2 equivalent

☐ Adaptation

e.g., helping people and communities adapt to the impacts of climate change

☒ Protection & conservation

e.g., land and ocean-based interventions to conserve biodiversity and ecosystems

Will you use Earth Engine for any of the following? *

☐ Carbon Removals, Monitoring, Reporting and Verification)☐ Navigation & Mobility☒ Oceans Ecosystems & Conservation☐ Public Health☐ Real estate development☐ Real estate services☐ Retail & Wholesale☐ Routing

Cancel OK

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.

✓ Select your organization type

✓ Check noncommercial eligibility

✓ Choose your plan

4 Describe your work

Does your work with Earth Engine fall into any of these categories?

☐ Mitigation

e.g., reduction or avoidance of greenhouse gas emissions / CO2 equivalent

☐ Adaptation

e.g., helping people and communities adapt to the impacts of climate change

☒ Protection & conservation

e.g., land and ocean-based interventions to conserve biodiversity and ecosystems

Will you use Earth Engine for any of the following? *

Oceans Ecosystems & Conservation

Next

5 Review summary

Register

Cancel

With that selected, click “Next” to continue.

Google Cloud

HighReSenegal

Search (/) for resources, docs, products, and more

Search

✦ 📺 📄 🔔 ? ☰

Earth Engine / Configuration / Register

Overview

Tasks

Configuration

← Register

✓ Describe your work

5 Review summary

Organization type

Which of the following best describes you or your organization?

Earth Engine trainer or trainee

Noncommercial eligibility

What is your role in the Earth Engine training?

Participant

Provide the training start date

2025-07-21

Provide the training end date

2025-07-22

Your work

Does your work with Earth Engine fall into any of these categories?

Protection & conservation

Will you use Earth Engine for any of the following?

Oceans Ecosystems & Conservation

❗

To make changes, click the relevant step title and edit your answers.

❗

This information is collected to verify noncommercial eligibility, inform product improvements, and assess the sustainability impact of Earth Engine usage, subject to the [Google Cloud Privacy Notice](#).

Release Notes

Register Cancel

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

Google Cloud HighReSenegal

Search (/) for resources, docs, products, and more

Earth Engine / Configuration / Register

Overview
Tasks
Configuration

Register

- ✓ Select your organization type
- ✓ Check noncommercial eligibility
- ✓ Choose your plan
- ✓ Describe your work
- ✓ Review summary

Processing... Cancel

Enable required APIs

To complete registration please enable the Earth Engine API.

[Google Earth Engine API](#) Not enabled

Send feedback Cancel **Enable**

Release Notes

<

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.

Configuration

You are now registered for noncommercial use



Check out the Overview page to access the Earth Engine API, explore datasets, and start analyzing.

Continue

Your Cloud project is registered for noncommercial use



Change your registration details, or update to commercial use if your project no longer meets noncommercial [eligibility requirements](#).

Manage registration

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.

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.

Choose a Cloud Project for your workspace

Select a Cloud Project to associate with your Earth Engine workspace. Cloud Projects allow you to add collaborators and manage permissions on assets. [Learn more.](#)

Project

Type to filter

↺ Refresh

Earth Engine enabled Cloud Projects

HighReSenegal

highresenegal

All Cloud Projects

nasa-training-2025-07

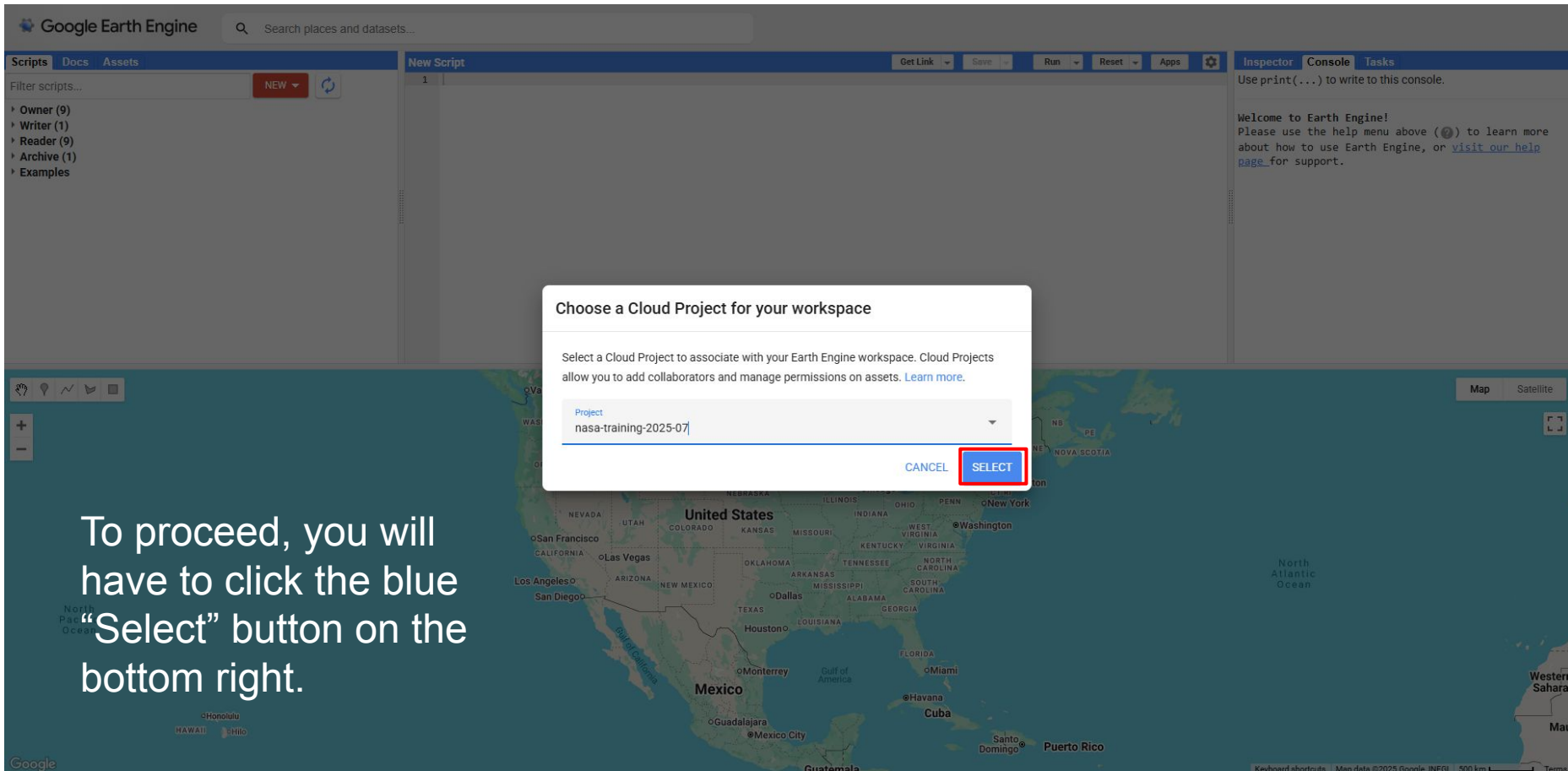
nasa-training-2025-07

mangroves

mangroves-1559830412662

[Register a new project](#)

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.

Google Earth Engine

Search places and datasets...

Scripts Docs Assets

Filter scripts...NEW

Owner (9)

Writer (1)

Reader (9)

Archive (1)

Examples

New Script

Get Link Save Run Reset 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



North Atlantic Ocean

Western Sahara

Mau

Keyboard shortcuts | Map data ©2025 Google, INEGI | 500 km

the PACE OCI Toolkit

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



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.

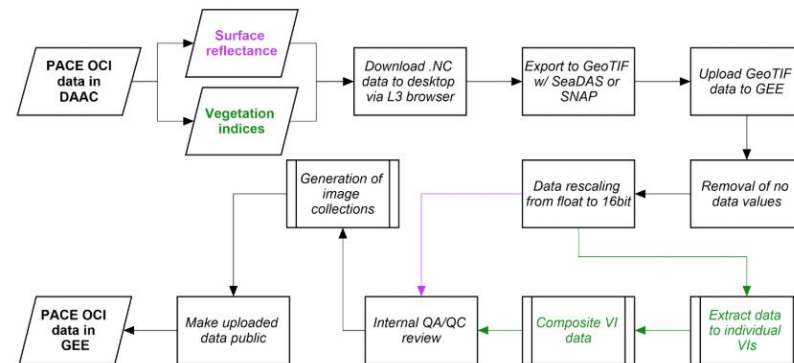
Functions

The scripts are divided into the following main functions:

- 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)
- Data visualization** (for viewing PACE OCI SR and VI data are available, as well as viewing available EO-1 Hyperion and EMIT data)
- Spectral signature visualization** (for extracting and viewing the spectral signatures of specific land cover or vegetation features)
- Data gap filling** (for filling data gaps using averages or using harmonic functions)
- Time series analysis** (for viewing the time series of SR or VI data)
- 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.



https://code.earthengine.google.com/?accept_repo=users/servirbz/pace_oci

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.





- Owner
- Writer
- Reader
- Archive
- Examples



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.

The repo might not add automatically.
You may need to click the refresh
button in the top left.





- users/servirbz/pace_oci
 - 01_data_discovery
 - 02_data_viz
 - 03_spectral_signatures
 - 04_data_gap_filling
 - 05_time_series
 - 06_classification
 - README.js

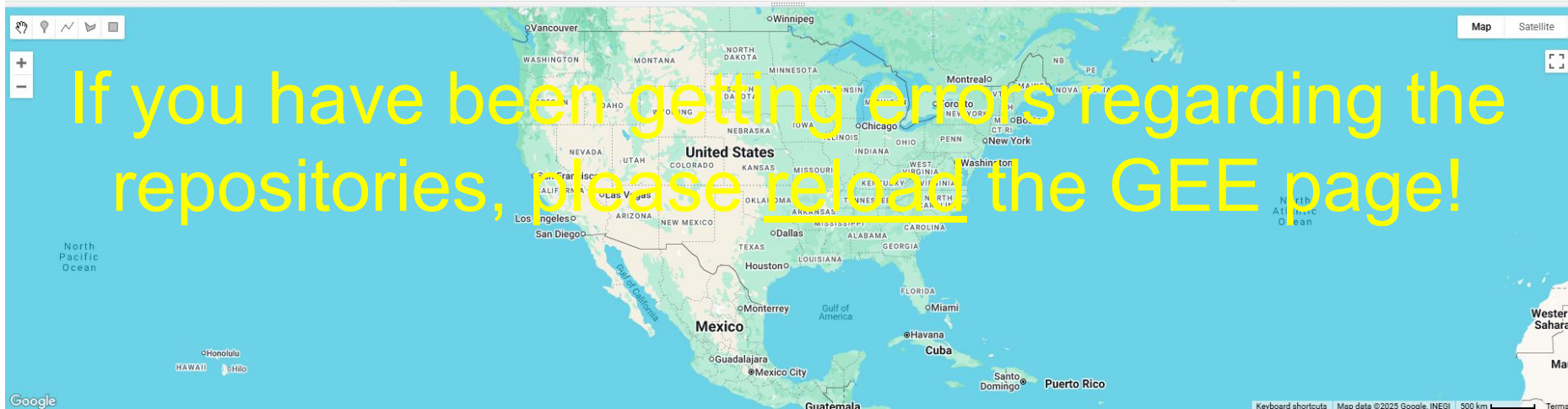
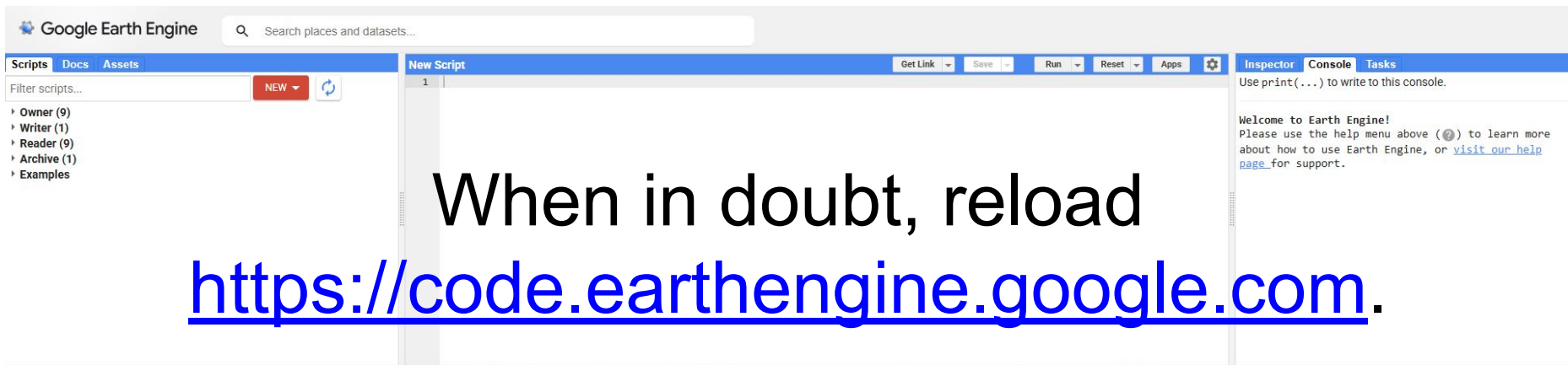
Use `print(...)` to write to this console.

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.

You should see the **pace_oci** repo added under your **Reader** scripts.





Questions?

email me: eac0021@uah.edu

