RAMI Module 1

Getting Started with The Radar Mining Monitoring Tool (RAMI)

SERVIR Science Coordination Office
Curriculum Development Team
Micky Maganini
Contact: mrm0065@uah.edu

Prepared for “Forest Monitoring and Carbon Stock Estimation with Multi-source Remote Sensing in the Context of Climate Change” at ITC
Quartile 4 2022-2023

Learning Objectives

By the end of this module you will

- Have a Google Earth Engine Account
- Know how RAMI works
- Know how RAMI is used by SERVIR end users

Requirements

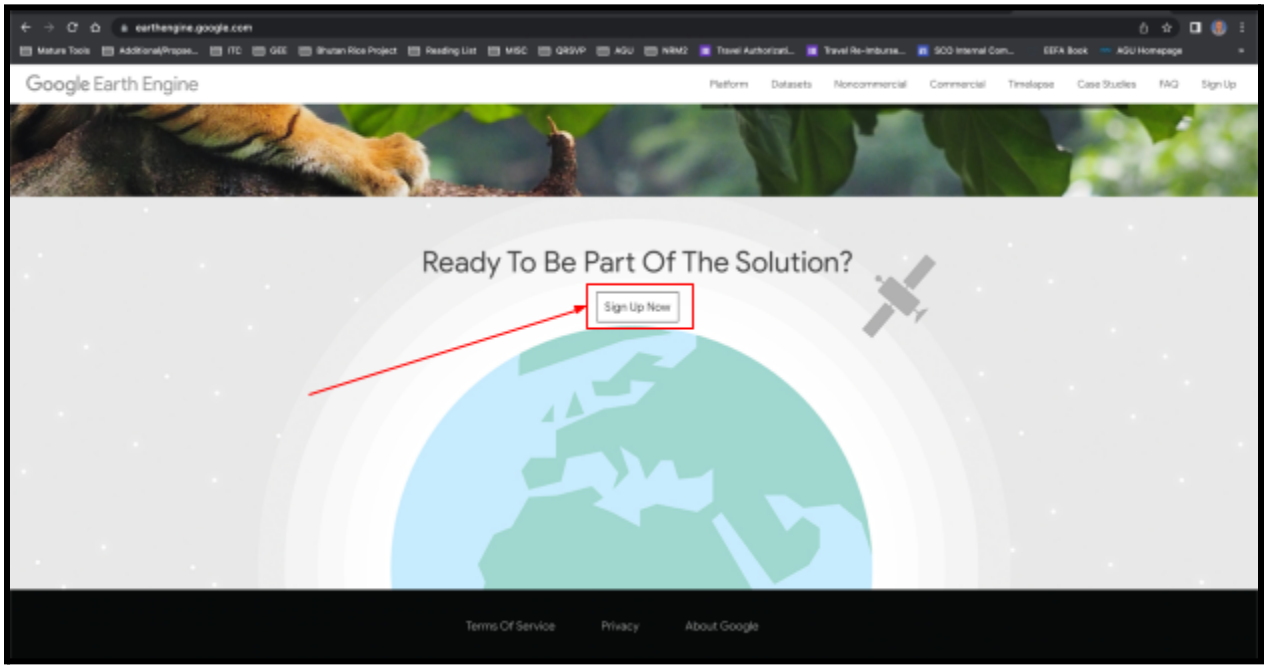
To take this module you will need...

- A computer
- Access to the internet

Creating a Google Earth Engine Account

Google Earth Engine is a geospatial platform that hosts many remote sensing datasets and allows for their computation using coding. RAMI uses Google Earth Engine and Google Cloud Platform to leverage cloud computing for geospatial data. Thus, you will need to create a Google Earth Engine account in order to use RAMI. You will need a Google account in order to register an account in Google Earth Engine

To register for a Google Earth Engine account, open your browser and navigate to earthengine.google.com. Scroll down to the bottom of the page, and click the **"Sign up now"** button, as shown by the red arrow in the image below.



Follow the instructions provided after clicking this button to create a Google Earth Engine account. Please note that it may take several days until your account is approved and registered. Once your account is approved, you will get an email saying that your account has been created.

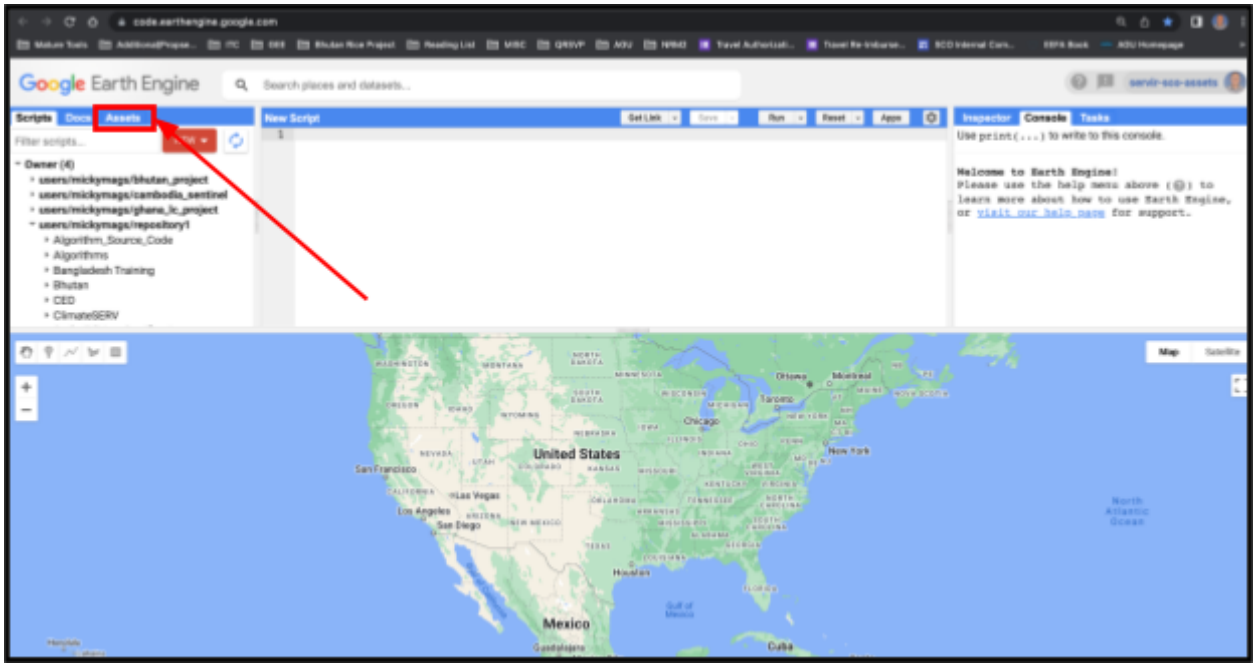
Requesting Membership to the “RAMI-for-ITC” Google Cloud Project

---

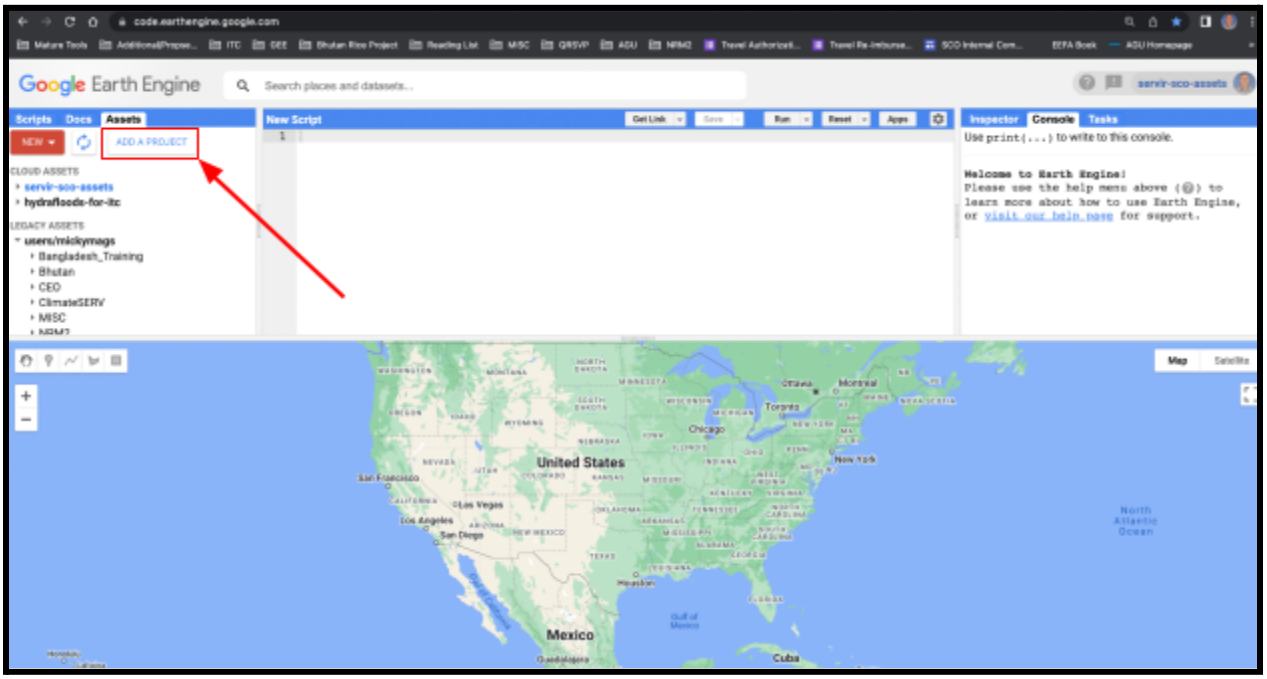
In order to work with Google Earth Engine (and thus RAMI) in a Python environment, we will need to join a Google Cloud Project that allows us to use the GEE API.

To be added to the “RAMI-for-ITC” Google Cloud Project, email Micky Maganini (mrm0065@uah.edu) with the same email address associated with your Google Earth Engine account (also add Dr. Margarita Huesca Martinez (m.huescamartinez@utwente.nl) in CC please). Micky will add you to the Google Cloud Project, then reply to your email when you have been successfully added.

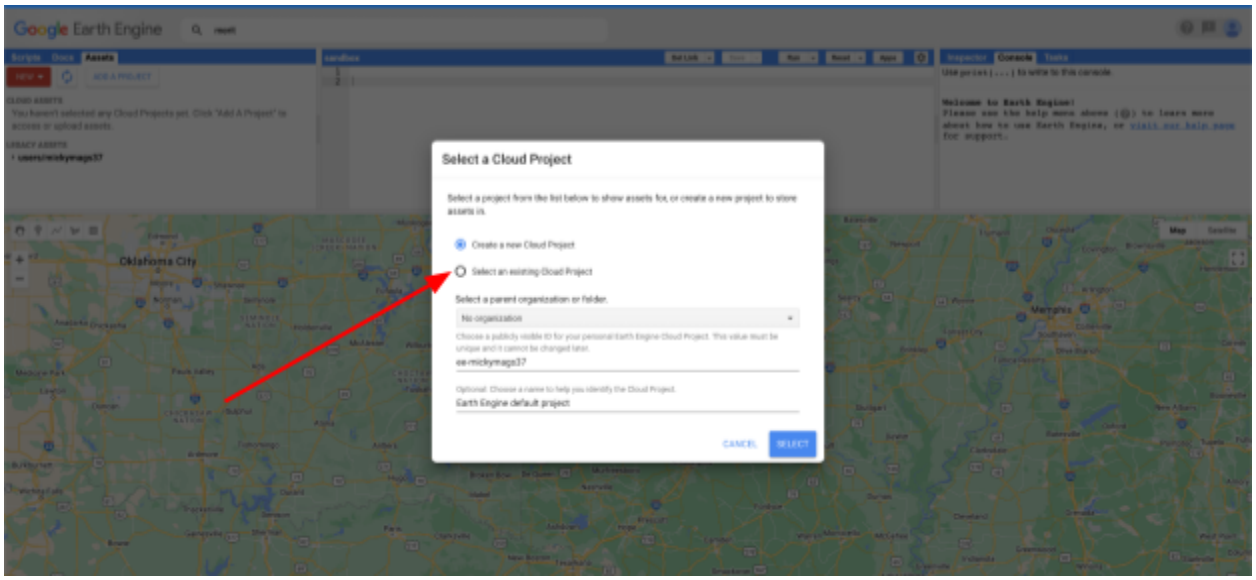
Once you get a reply email from Micky stating that you have been added to the Google Cloud Project, navigate to the Google Earth Engine Code Editor (by going to code.earthengine.google.com). Click the “**Assets”** button towards the top left corner,as shown by the red arrow in the image below.



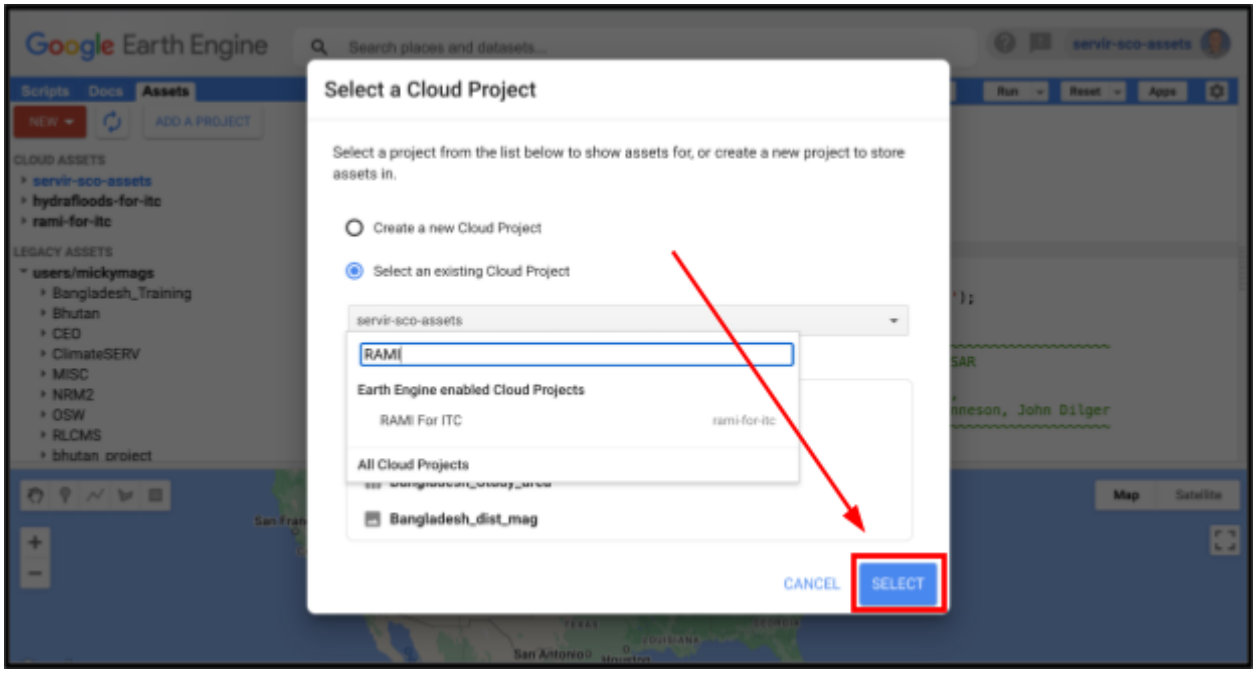
Next, click the **“Add a Project”** button towards the top left of the page, as shown by the red arrow in the image below.



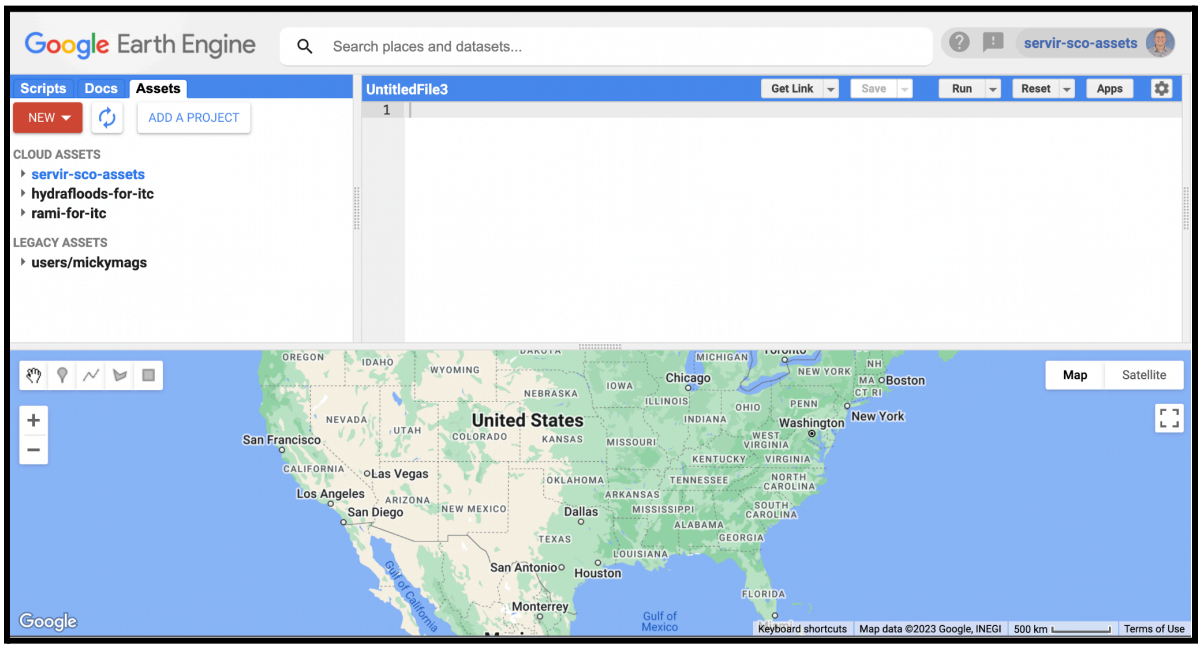
This will bring up a window like the one shown below. Click the circle next to the text that says **“Select an existing Cloud Project”**, as shown by the red arrow below.



Next, click the text that says **“Select a Cloud Project”** and type in “RAMI”, then click “RAMI-for-ITC”. Finally, click the blue **“Select”** button as shown by the image below.



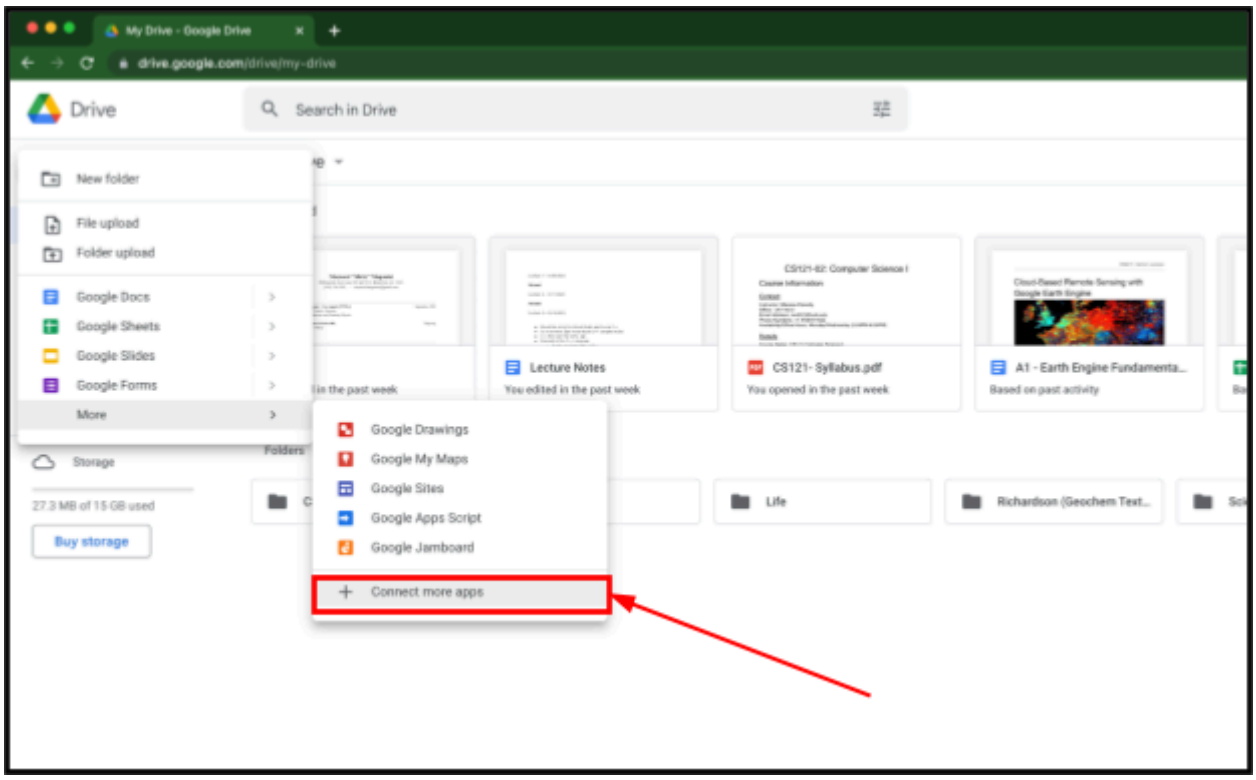
Now, navigate back to your assets page in Google Earth Engine. If you followed the previous steps correctly, you should now see text that says **“rami-for-ITC”** on the left side of your screen under the text that says **“Cloud Assets”**, as shown by the image below.



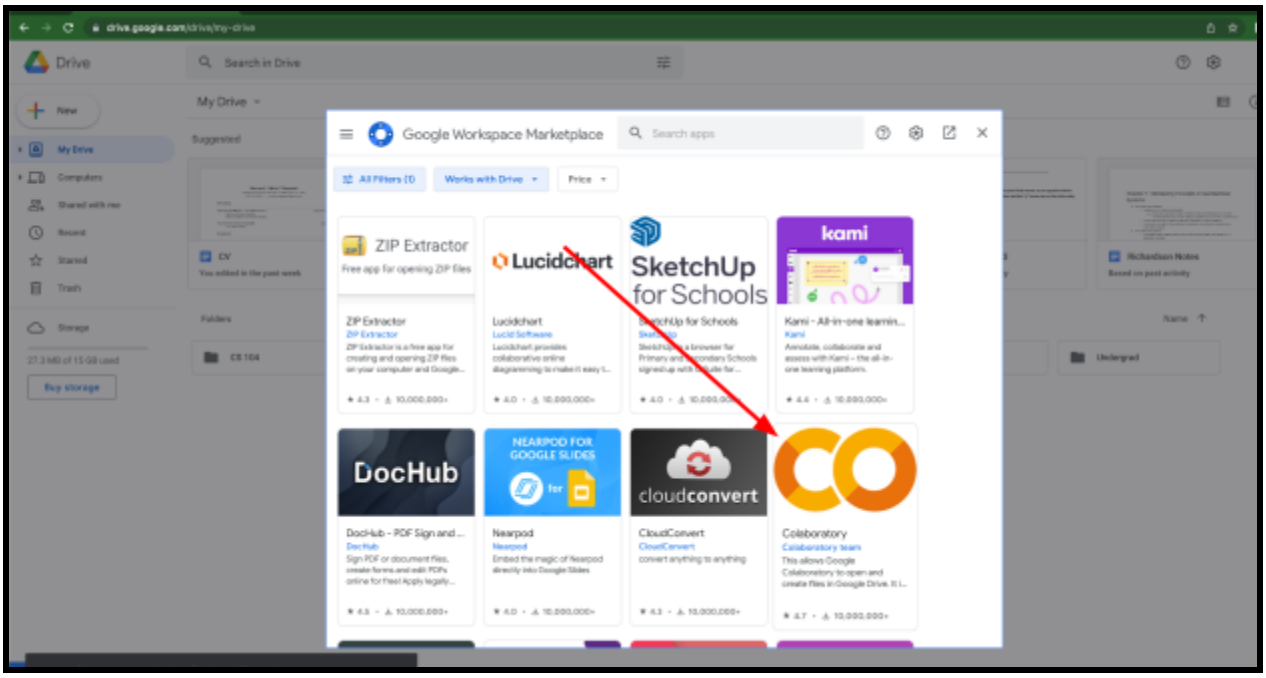
Installing Google Colaboratory

We will use Google Colaboratory notebooks to understand how RAMI works. Google Colaboratory (often called Google Colab) allows you to write and execute Python code in your browser, offering access to free GPUS and the ability to share your notebooks (documents where you can run code) with others. You can find more information about Google Colab by clicking here.

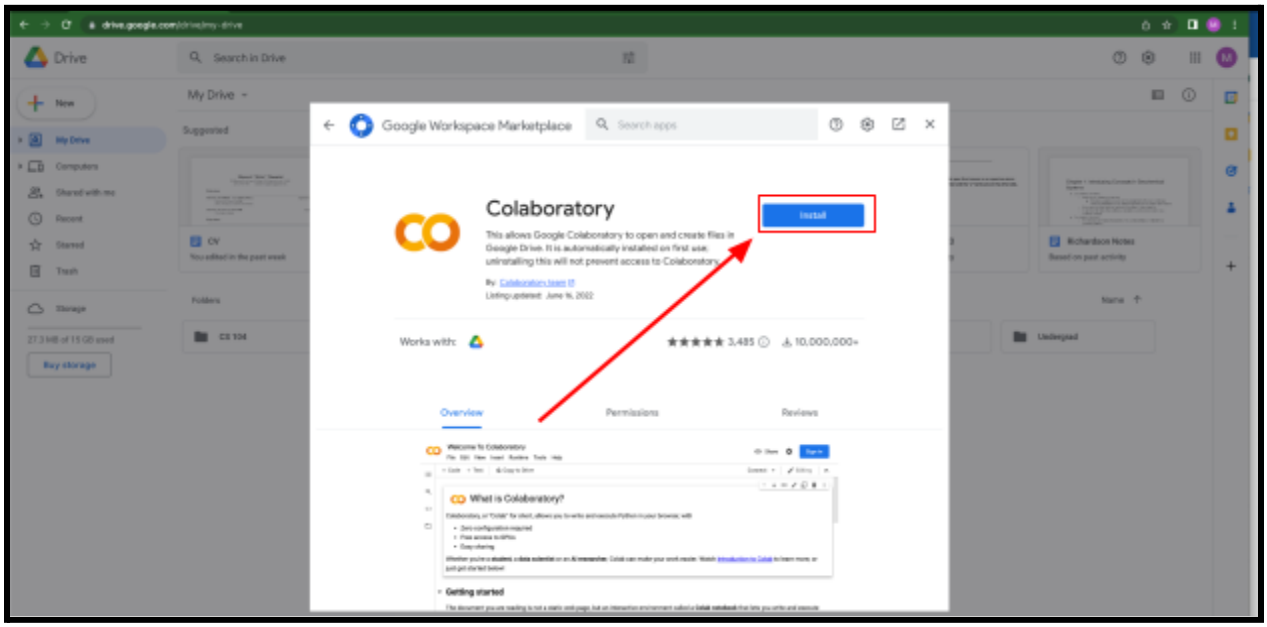
To install Google Colab, navigate to drive.google.com and log into your account. Note that this must be the same email associated with your Google Earth Engine account.



Click Google Colaboratory (should be on the bottom right), or search for it using the search bar in the upper right.



This will bring up the screen shown below. Click the blue **"Install"** button to install Google Colaboratory to your Google Drive account. Follow the prompts to complete the installation process.

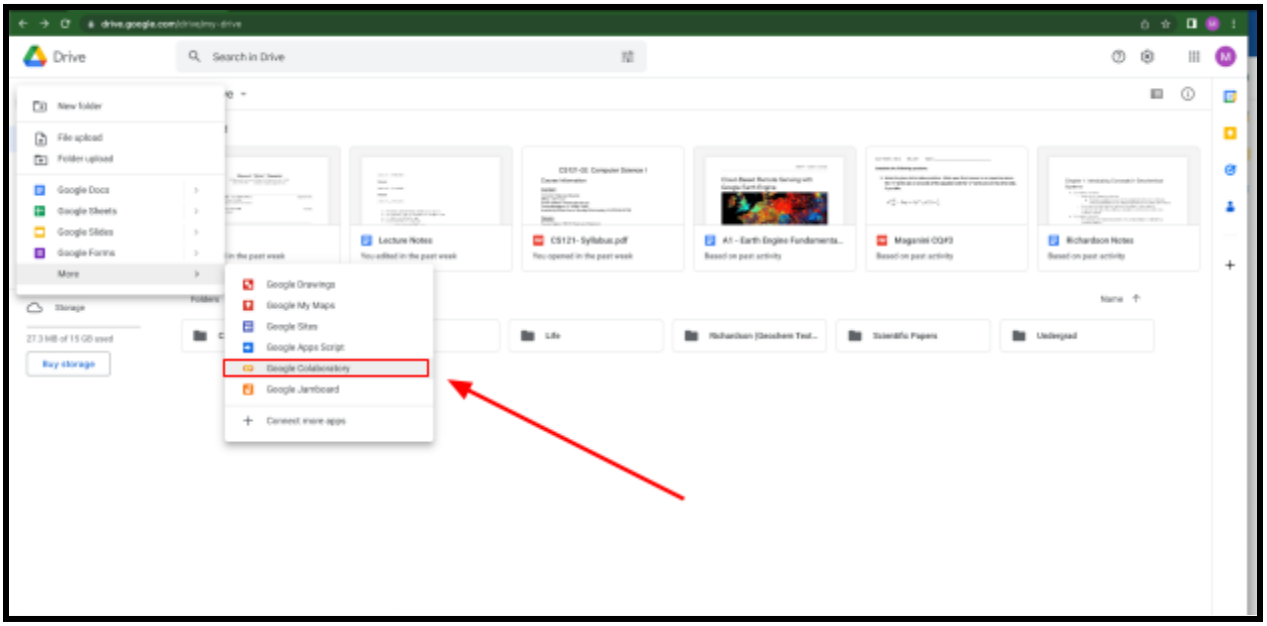


Introduction to Google Colab

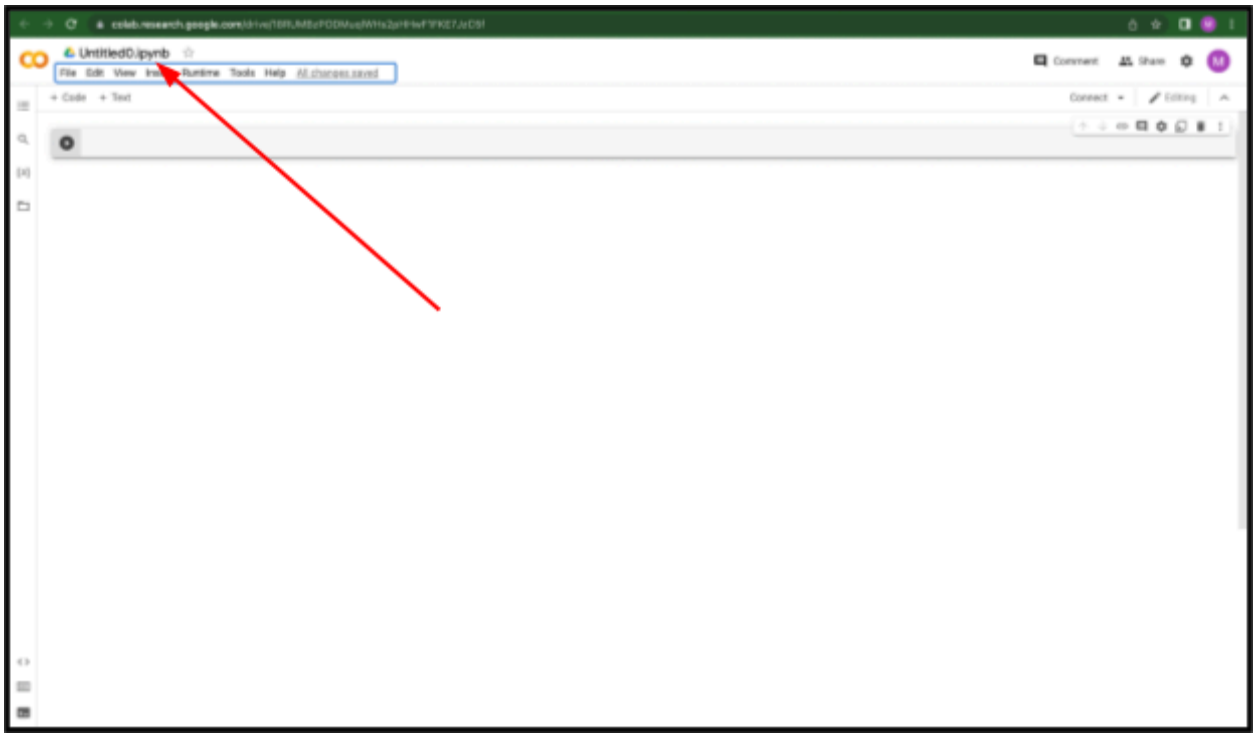
Let's get familiar with how Colab works.

Opening a Google Colaboratory File

To open a Google Colaboratory file, click the **"New"** button in the upper left, then click **"More"** from the dropdown menu. This will bring up a separate dropdown menu. Click **"Google Colaboratory",** as shown by the red arrow below. This will open a Google Colaboratory File.



Give your Colab file a title by clicking in the top left corner, and typing in a new name, as shown by the image below.



There are two types of cells in Google Colab, code cells and text cells. Code cells are cells where we can type and run Python code, where text cells are where we can type descriptive information about our code.