

# Workshop Requirements:

**Python Download Link:** [Mac](#) / [Windows](#)

Linux

1. Download and extract Python:

```
cd ~  
wget https://www.python.org/ftp/python/3.9.22/Python-3.9.22.tgz  
tar -xzf Python-3.9.22.tgz  
cd Python-3.9.22
```

2. Configure and build:

```
./configure --prefix=$HOME/python392 --enable-optimizations  
make -j4  
make install
```

3. Add Python to your path:

```
echo 'export PATH="$HOME/python392/bin:$PATH"' >> ~/.bashrc  
source ~/.bashrc
```

4. Verify installation:

```
python3.9 --version
```

Google Earth Engine Account Link: [Signup](#) :

Create project

Earth Engine

Configuration

Overview

Tasks

Configuration

To view this page, select a project.

Create project

New Project

You have 12 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)

[Manage Quotas](#)

Project name \*

geelax

Project ID: geelax. It cannot be changed later.

Edit

Location \*

No organization

Browse

Parent organization or folder

Create

Cancel

Pick eligible for noncommercial use:

Earth Engine / Configuration

Overview

Tasks

Configuration

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

Pick Other

Overview

Tasks

Configuration

Register

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

2 Describe your work

3 Review summary

4 Register

5 Cancel

## Pick Individual research.

Register

1 Select your organization type

2 Check noncommercial eligibility

Which of the following best describes your use case? \*

Individual research or noncommercial use [not involved with an org.]

Please provide more info about how you will be using Earth Engine \*

Research

Check eligibility

3 Choose your plan

4 Describe your work

Review summary

Register Cancel

## Register:

Register

1 Select your organization type

2 Check noncommercial eligibility

3 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? \*

Other

If other, please provide a short description \*

Research

Next

Review summary

Register Cancel

## Enable API:

Enable required APIs

To complete registration please enable the Earth Engine API.

[Google Earth Engine API](#) ? Not enabled

Send feedback Cancel Enable

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

## Visual Studio Code Download and setup:

Download link: [Download VS code](#)

### Setup Guide:

#### Windows

- ✓ Use the official installer (admin access may be required)

1. Download from: [VS Code for Windows](#)
2. Run the installer and follow the setup instructions.
3. After installation, open **Command Prompt** or **Start Menu**, and run:

```
code
```

#### macOS

1. Download the macOS Universal installer: [VS Code for macOS](#)
2. Open the `.zip` file and drag **Visual Studio Code** to the **Applications** folder.
3. Open Terminal and run:

```
code
```

If `code` is not found, open VS Code, press `Cmd+Shift+P`, and run: `Shell Command: Install 'code' command in PATH`

#### Linux (no sudo)

- ✓ Extract and run from a `.deb` file manually

1. Download the latest `.deb` file: [VS Code .deb](#)
2. Extract contents without installing system-wide:

```
ar x code_*.deb
tar -xf data.tar.xz -C ~/code_extracted
~/code_extracted/usr/share/code/bin/code
```

3. (Optional) Add to PATH:

```
echo 'alias code="$HOME/code_extracted/usr/share/code/bin/code"' >> ~/.bashrc
source ~/.bashrc
```

4. Launch VS Code with:

```
code
```

- ✓ You now have VS Code running without needing admin rights.

Git Download and Setup Instructions: [Git Download](#)

## **Tool Index-Visualizer: Visualize and compare Spatial data**

Clone the repository:

```
git clone https://github.com/Saurav-JSU/Index-Visualizer.git  
cd Index-Visualizer
```

Create and activate a virtual environment:

```
python3 -m venv .venv  
source .venv/bin/activate
```

Upgrade pip and install requirements:

```
pip install --upgrade pip  
pip install -r requirements.txt
```

Authenticate with Google Earth Engine:

```
earthengine authenticate
```

Open the project in VS Code:

```
code .
```

Select the virtual environment and play around with notebook.

Cleanup

```
rm -rf Index-Visualizer  
deactivate
```

## **GeoClimate-Fetcher: Download Average timeseries or Grided data.**

Clone the repository:

```
git clone https://github.com/Saurav-JSU/GeoClimate-Fetcher.git  
cd GeoClimate-Fetcher
```

Create and activate a virtual environment:

```
python3 -m venv .venv  
source .venv/bin/activate
```

Upgrade pip:

```
pip install --upgrade pip
```

Install the package in development mode:

```
pip install -e .
```

Authenticate with Google Earth Engine:

```
earthengine authenticate
```

### **Running the Interactive GUI**

```
jupyter notebook geoclimate_fetcher/notebooks/interactive_gui.ipynb
```

Play around with the notebook.

Cleanup

```
rm -rf GeoClimate-Fetcher  
deactivate
```

## **Tool GroundData-validator: Download, Compare and validate modeled data against ground station readings.**

Clone the repository:

```
git clone https://github.com/Saurav-JSU/GeeData-GroundData-validator.git
cd GeeData-GroundData-validator
```

Create and activate a virtual environment:

```
python3 -m venv .venv
source .venv/bin/activate
```

Upgrade pip and install requirements:

```
pip install --upgrade pip
pip install -r requirements.txt
```

Authenticate with Google Earth Engine:

```
earthengine authenticate
```

Run the tool with python.

```
Python main.py
```

Earth Engine tab and authenticate first.

Play around with the tool.

Recommended Download Select 1-2 year period, Montana state less stations DAYMET PRISM.

Analysis Tab: Run analysis.

Visualization Tab: Timeseries, Dataset comparison. Spatial Distributions.

Cleanup

```
rm -rf GeeData-GroundData-validator
deactivate
```