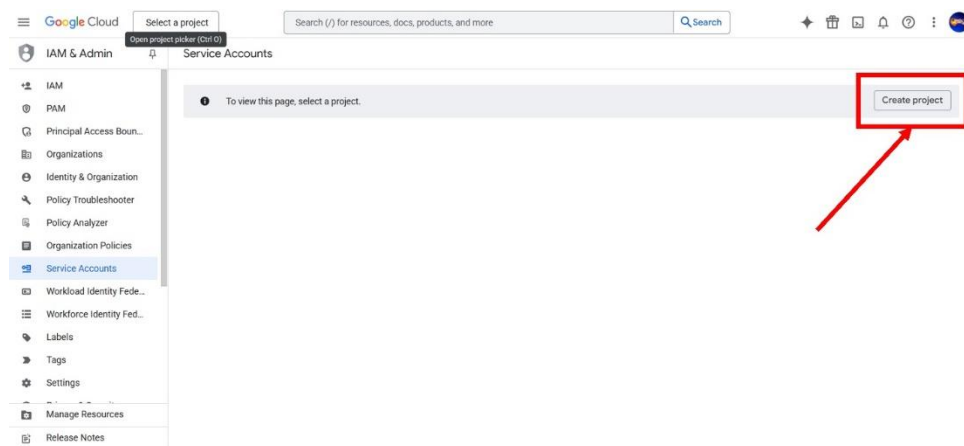


## Google Earth Engine (GEE) User credential preparation

### WQEye: A Python-based Software Aided by Google Earth Engine for Machine Learning-based Retrieval of Water Quality Parameters from Sentinel-2 and Landsat-8/9 Remote Sensing Data

Since WQEye uses GEE in the RS sampling module, users must provide their own credentials to access GEE. To do this, the user must place two files in the main directory of the software (where `app.py` is located). These two files are: *service\_account.txt* and *WQEye.json* (please use exactly these names). These files contain user-specific credentials, so they are not included in the GitHub repository. Please ensure you have these files in place before running the software.

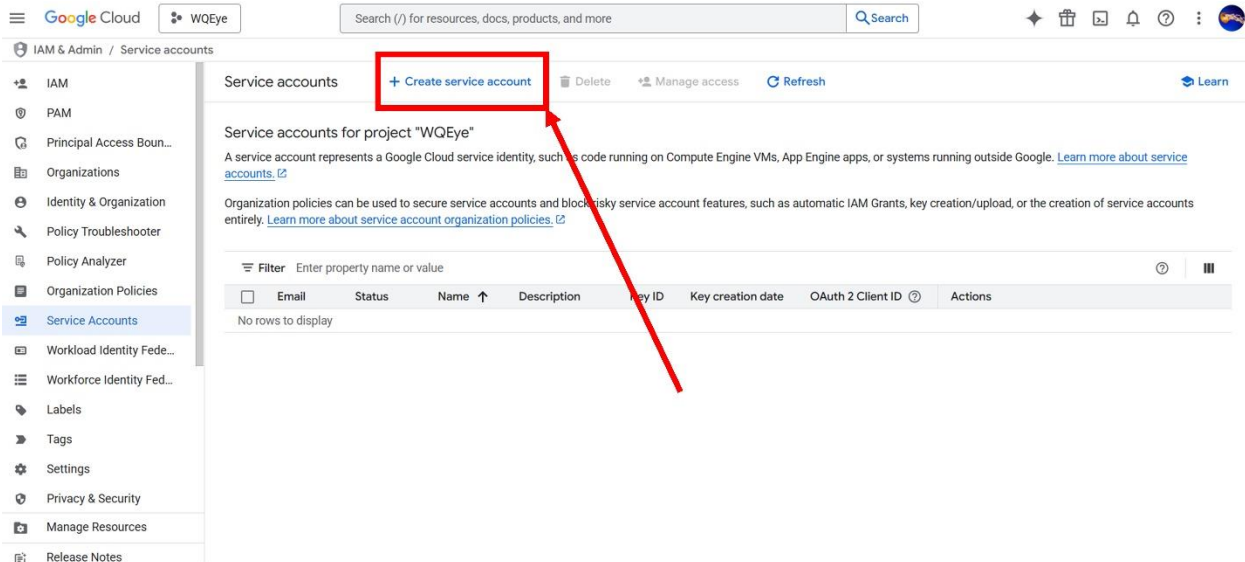
To create the two required files mentioned above, you first need to create a Google Cloud project. This is necessary because GEE relies on Google Cloud services. To do this, make sure you are logged into your Google account in your web browser (preferably Google Chrome). Then, visit Google Cloud Console ([here](#)) and click the Create Project button located in the top right corner of the page.



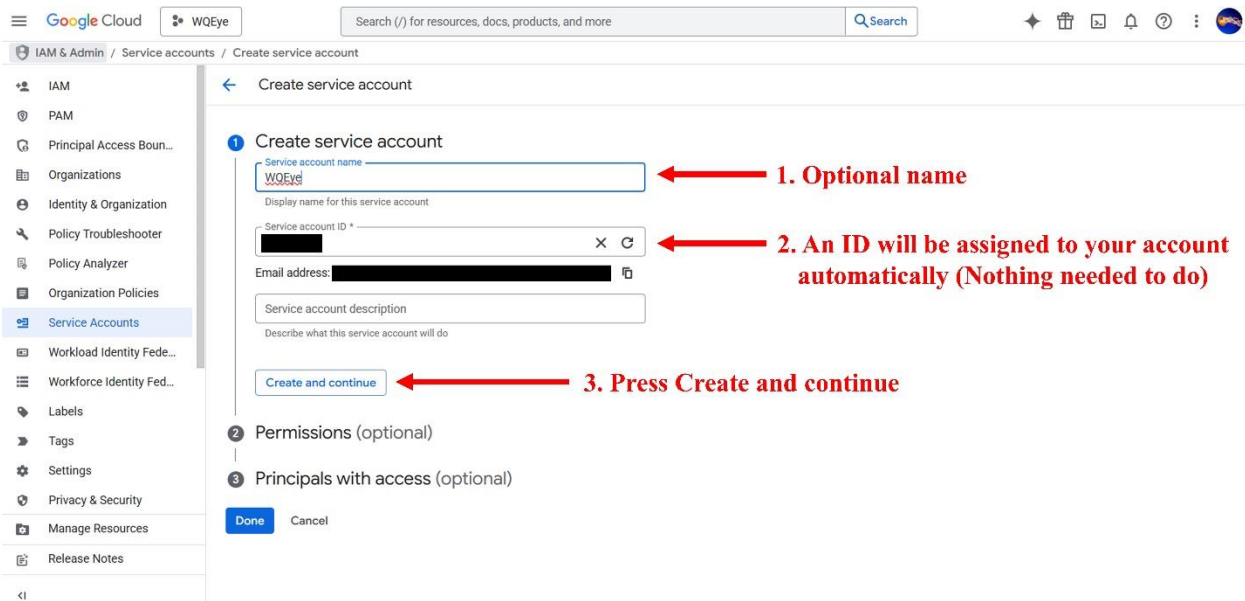
Next, enter a project name (this is optional; in our example, we assume the name is WQEye) and click Create.



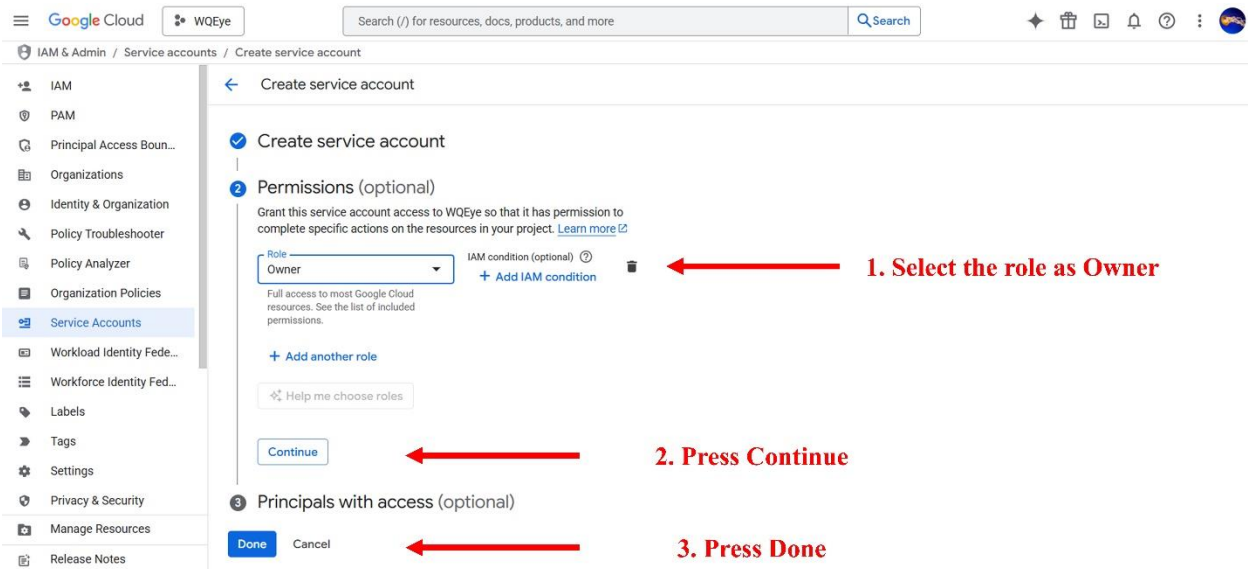
Once the project is created, you will be directed to a new page. On this page, click + Create Service Account.



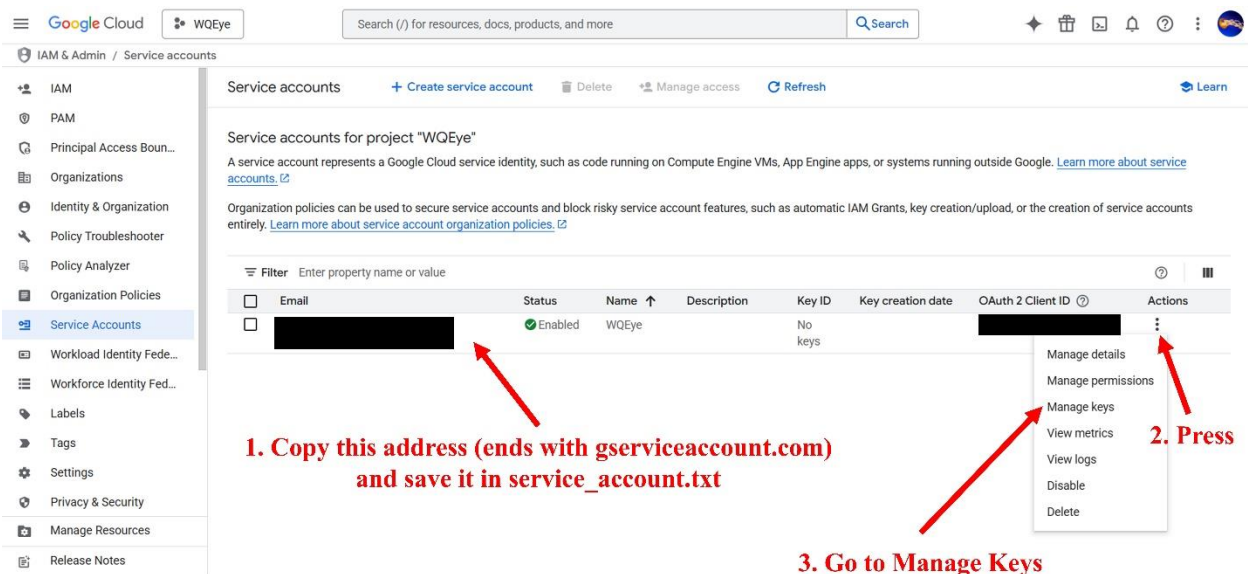
Choose a service account name (this is optional; in our example, we use WQEye). Once you enter the service account name, a service account ID will be automatically generated. Then, click Create and Continue.



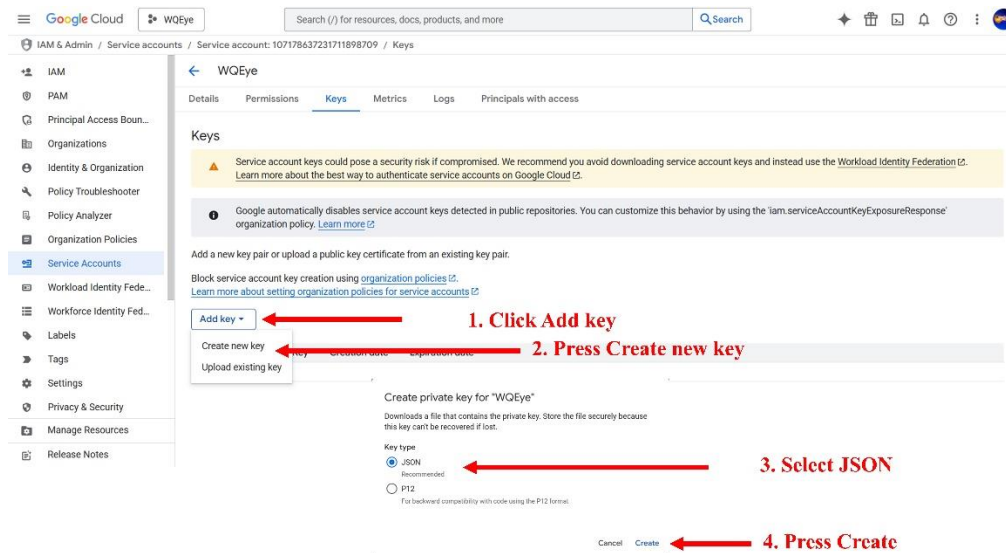
For the role, select Owner. Then, click Continue, and finally click Done.



Next, copy the service account email address (it ends with gserviceaccount.com) and save it in a file named service\_account.txt. Place this file in the same directory as app.py. Then, click the : (three-dot menu) next to your service account and select Manage Keys.



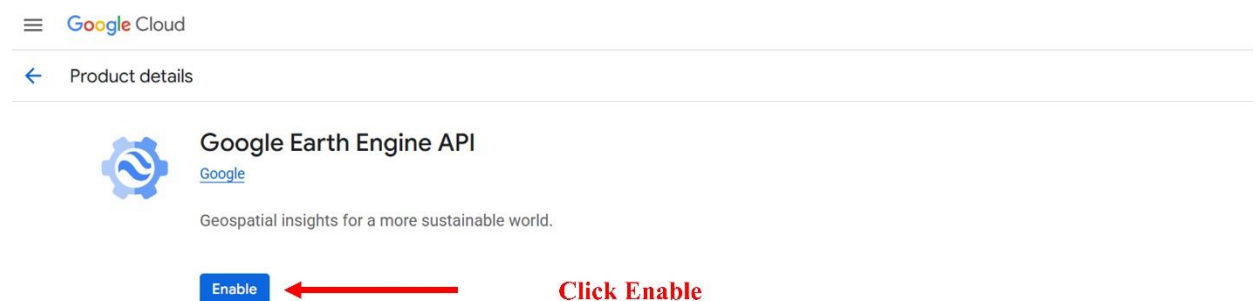
Then, click on Add Key, followed by Create New Key. Select JSON as the key type and click Create.



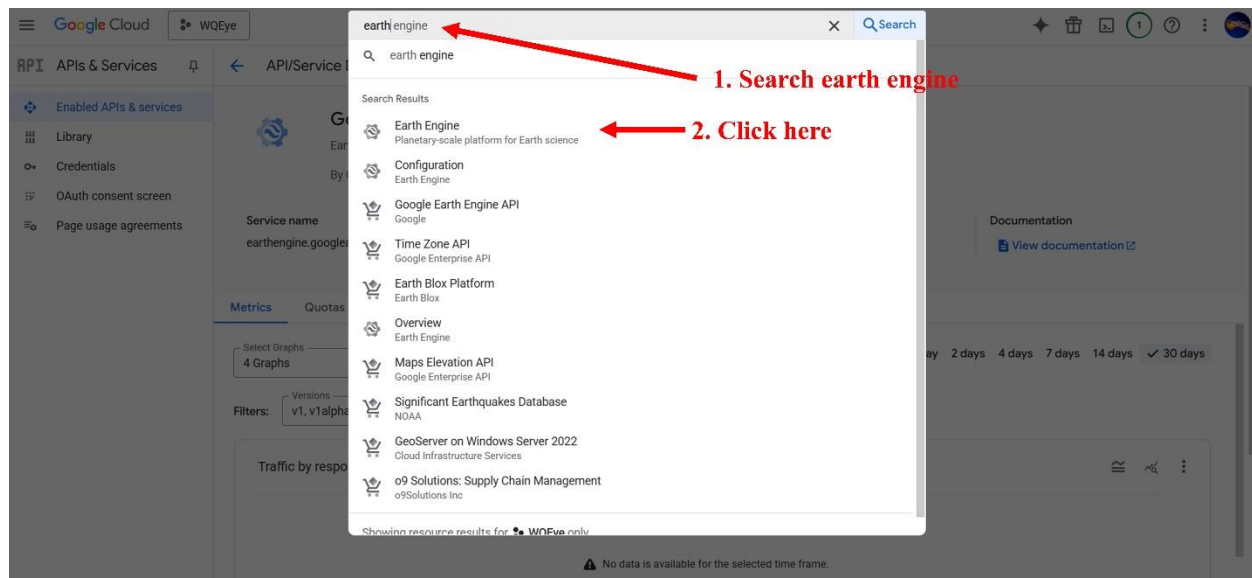
This will download a .json file to your local computer containing your service account credentials (as depicted below). Rename this file to WQEye.json and place it in the same directory as app.py.

```
{
  "type": "service_account",
  "project_id": "wqeye-123456",
  "private_key_id": "1234567890",
  "private_key": "-----BEGIN PRIVATE KEY-----\nMIIEvQIBADANBgkqhkiG9w0BAQEFAASCBKcwggSjAgEAAoGBA\n-----END PRIVATE KEY-----",
  "client_email": "wqeye-123456@wqeye-123456.iam.gserviceaccount.com",
  "client_id": "1234567890",
  "auth_uri": "https://accounts.google.com/o/oauth2/auth",
  "token_uri": "https://oauth2.googleapis.com/token",
  "auth_provider_x509_cert_url": "https://www.googleapis.com/oauth2/v1/certs",
  "client_x509_cert_url": "https://www.googleapis.com/robot/v1/metadata/x509/wqeye-123456%40wqeye-123456.iam.gserviceaccount.com",
  "universe_domain": "googleapis.com"
}
```

Now, you need to enable GEE for your Google Cloud project. To do this, go to the API & Services Library in the Google Cloud Console ([here](#)). In the search bar, type Google Earth Engine API, select it from the results, and click Enable.



After that, In the search bar at the top of the Google Cloud Console main page, type Earth Engine and select Earth Engine from the search results.



Then, go to the Configuration section and apply for Non-commercial Use. Fill out the required form and click Register. Once approved, you're all set — you can now use WQEye.

