



Open Foris Collect

Handbook For Charcoal Service Stakeholders

<http://www.openforis.org>

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1.0 INTRODUCTION

Open Foris Collect is the main entry point for data collected in field-based inventories. It provides a fast, easy, flexible way to set up a survey with a user-friendly interface. Collect handles multiple data types and complex validation rules, all in a multi-language environment.

Open Foris Collect provides a flexible solution for field data management, allowing full customization of inventory structure, variables, and data checks. Collect promotes data quality through an integrated data entry and data cleansing workflow. Collect introduces the concept of the Inventory Data Metamodel (IDML), a formal description (i.e., metadata) of the types of variables, classifications, and coding schemes used by the inventory. All inventories documented in this way may be entered and retrieved through a user-friendly interface, without additional programming. Collect is available in standalone (offline) or web-based (online) versions.

2.0 KEY FEATURES

The software's key features are as follows:

- **User Friendliness:** Nice web interface; Designed based on real users' needs, No need for technical skills to use it.
- **Rapid Data Entry:** Limited use of mouse needed; Data entry using only keyboard; Auto-complete; Species list search; Immediate feedback on errors/warnings.
- **Highly Configurable:** Design the survey from scratch or starting from a template; Data entry user interface is automatically generated and metadata-driven; Validation rules (distance, comparison, pattern...); Multiple layouts (form, table, multiple columns form).
- **Multiple data types:** Basic Types – Text, Number, Boolean, Date, Time. Complex types – Range, Coordinate, File, Taxon. Plus, support for calculated values.
- **Multi-user or standalone:** It can be used in a standalone environment with no need for internet connection; Data can be exported from single/standalone installations and imported into a centralized installation to create a complete data set; In multiuser environment, users can work only on owned records.
- **Controlled QA workflow:** Record goes through different steps: Data entry, Data cleansing, Data analysis. Minimized "data cooking".
- **Rich metadata:** XML format, Complex nested structure of the survey, Validation rules, Multiple Spatial Reference Systems.
- **Multilingual:** Define the survey in multiple languages - Tab labels, Input field labels, Validation messages, Code item labels, Element info tooltips. The user will see the survey in the language of his/her web browser or in the survey default language.

- **Multiple data export/import formats:** XML, CSV, Relational database.

3.0 INSTALLATION

3.1 PREREQUISITES

- Web browser: Google Chrome is recommended.

3.2 STANDALONE INSTALLATION (SINGLE USER ENVIRONMENT)

- If running Collect offline in a single-user environment, follow these instructions.

3.3 DOWNLOAD AND RUN THE INSTALLER

- Download the installer from <http://www.openforis.org/tools/collect.html> (select the proper installer for your operating system)

3.3.1 WINDOWS SYSTEMS

- Run the .exe file and follow the instructions on screen.
- Collect will be installed by default into *C:\OpenForis\Collect*.
- The user data will always be stored into your user folder (E.g.

C:\Users\YOUR_USERNAME\OpenForis\Collect

- If the installation completes successfully, you will have a group of shortcuts in the start menu, Open Foris Collect, with 2 items: Open Foris Collect and Update Open Foris Collect
- If a message from Windows Firewall appears saying that Java is trying to access the network, allow it (if you have administrative rights, otherwise close the message popup). This operation needs to be done only once.

3.3.2 LINUX SYSTEMS

- Make the downloaded .run file executable.
- Run the .run file and follow the instructions on screen.
- Collect will be installed by default into *~/OpenForis/Collect*
- If the installation completes successfully, you will have 2 icons in the Desktop, *Launch Open Foris Collect* and *Update Open Foris Collect*

3.3.3 MAC OSX SYSTEMS

- Open the .dmg file and follow the instructions on the screen.

- Collect will be installed by default into `~/OpenForis/Collect`
- If the installation completes successfully, you will have 2 shortcuts in the Desktop, *Launch Open Foris Collect* and *Update Open Foris Collect*.

4.0 START-UP COLLECT

4.1 WINDOWS SYSTEMS

- In the start menu, select "All programs", then go into Open Foris folder and select *Launch Open Foris Collect*
- The *Collect Control Panel* will appear. See [Using Collect Control Panel](#)

4.2 LINUX SYSTEMS

- Double click on the *Launch Open Foris Collect* icon in the desktop
- The *Collect Control Panel* will appear. See [Using Collect Control Panel](#)

4.3 MAC OSX SYSTEMS

- Double click on the *Launch Open Foris Collect* icon in the desktop
- The *Collect Control Panel* will appear. See [Using Collect Control Panel](#)

5.0 USING COLLECT CONTROL PANEL

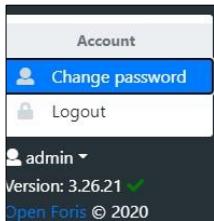
- After clicking on *Launch Open Foris Collect* icon, the control panel will appear:



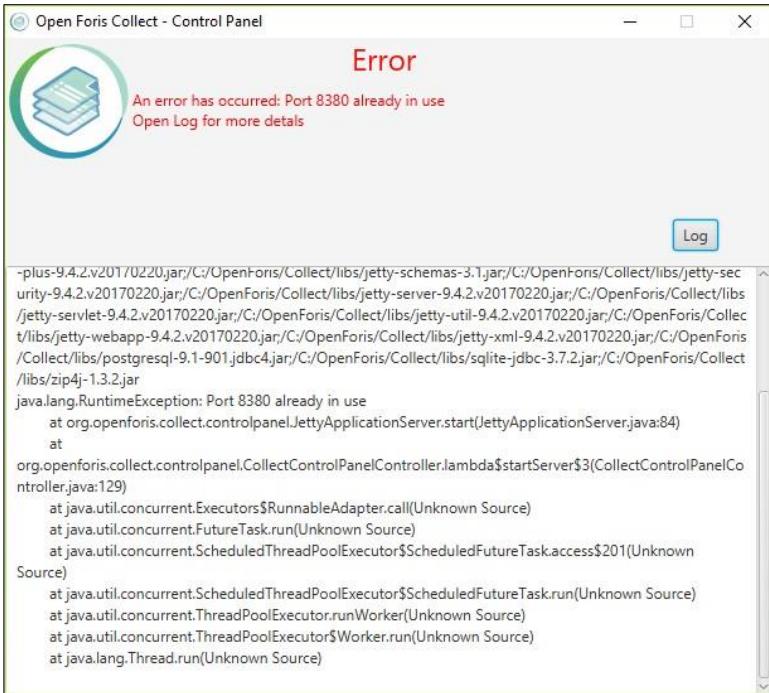
Please wait until the “Starting up...” message disappears and the “Running!” message appears:



- Collect will open automatically a new window in the default web browser, linking the address: <http://localhost:8380/collect>. This address can be different in your system: the port 8380 can be already in use in your computer, so another free port will be chosen by the installer.
- If the Control Panel says that Collect is running but the window is not automatically opened, please open the web browser and access that address manually.
- Collect home page should appear on the web browser. [If nothing happens, open a new browser window and access this url: <http://localhost:8380/collect>]
- By default, Collect runs with the user “admin” with administrative rights and you don’t see the login screen. If you add more users or you change the password for the “admin” user, next time you run Collect you will see a login page. The default password for the “admin” user is “Collect123”. You can change it by clicking on the dropdown menu button in the bottom left corner and selecting “Change password”:



- Collect login page should appear on the web browser; enter the system the first time using "admin" as username and "admin" as password. You can change the password later from the user interface
- If an error occurs, please click on the Log button; the log details box will be opened and it will be possible to have more information about the error, or at least copy and paste the content of this text area and send it to the Open Foris Team to have support.



Log info is divided into 3 sections:

- Server: errors related to the application server (Jetty) that runs Collect. Usually, here you can find error information when Collect does not start up.
- Collect: here you can find detailed information about errors related to the application (Collect) itself, for example when you have an error during the normal execution of the application and a popup shows up.
- Saiku: errors related to Saiku (the reporting system embedded into Collect and accessible from the Home Page).

6.0 SHUTDOWN COLLECT

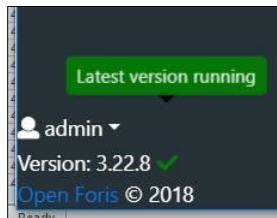
- Close all the opened browser windows that are using Collect
- Close the Open Foris Collect Control Panel by clicking on the Shutdown button or just close it by using the close icon button in the top right corner.



7.0 UPDATING COLLECT

Open Foris Collect developers are constantly working on improving the system also taking into consideration, and trying to address, the feedback from the users in the countries.

When you work with Collect in the web browser, in the bottom left corner, there is a small icon next to the application version: this can be used to check whether the latest version is in use.



Following are the steps for updating Collect to the newest released version.

7.1 UPDATE USING AUTO UPDATER

Starting from version 3.2.2, Collect has an Auto Updater that you can run from the start menu

1. close every browser window that is using Collect
2. shutdown Collect
3. click on *Update Open Foris Collect* startup menu item and follow the instructions on screen
4. start Collect

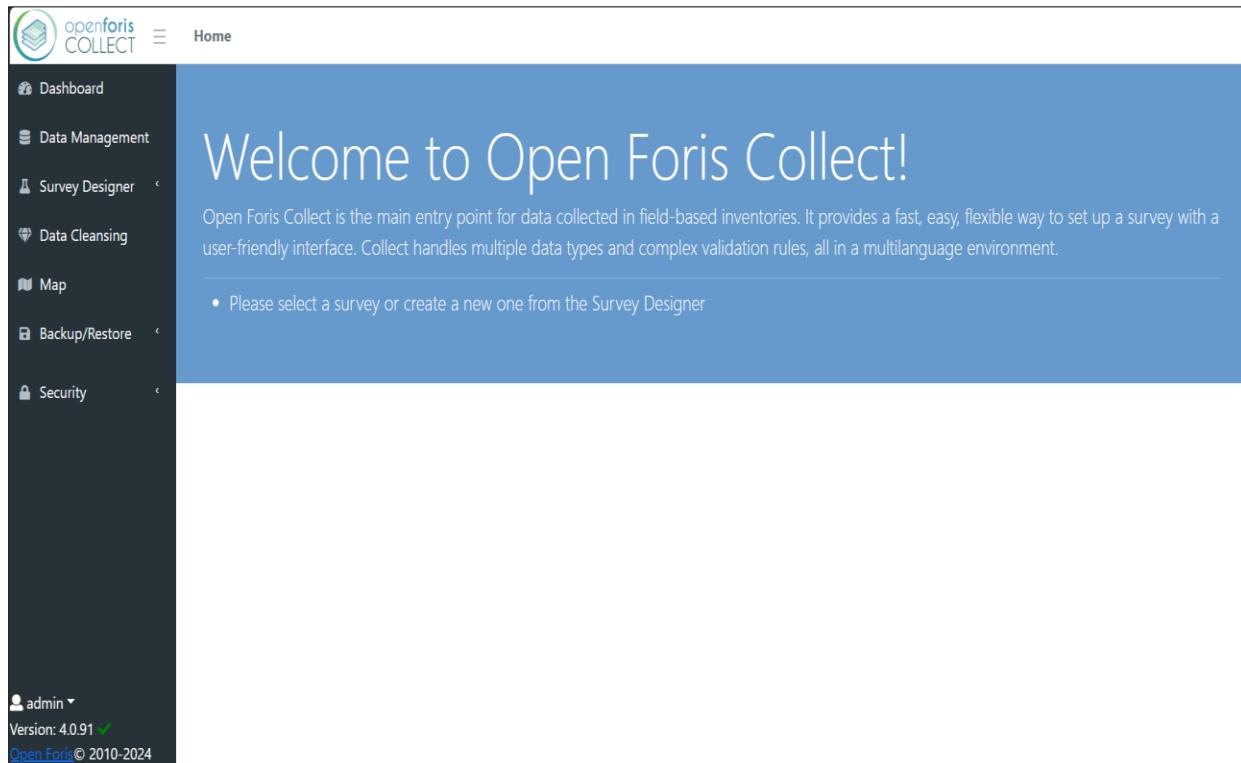
7.2 UPDATE FROM VERSION OF COLLECT OLDER THAN 3.2.2

If you want to upgrade Collect from an older version than 3.2.2 to the new one, follow these steps:

1. close every browser window that is using Collect
2. shutdown Collect
3. make a copy of the folder *data* (path: c:\opt\openforis\collect\tomcat\data) and store it outside of c:\opt\openforis, e.g. in your "user" folder, under a path like OpenForisCollectBackup
4. uninstall Collect
5. install Collect using the new installer
6. copy the folder *data* previously backed up into the folder c:\Users\USERNAME\OpenForis\Collect\
7. start Collect and verify that all old data are present

8.0 COLLECT HOME

Collect welcome page offers the following options: Dashboard, Data management, Survey designer, Data cleansing, Map, Saiku, Backup/Restore, and Security.



The screenshot shows the 'Home' page of the Open Foris Collect application. On the left is a dark sidebar menu with the following items:

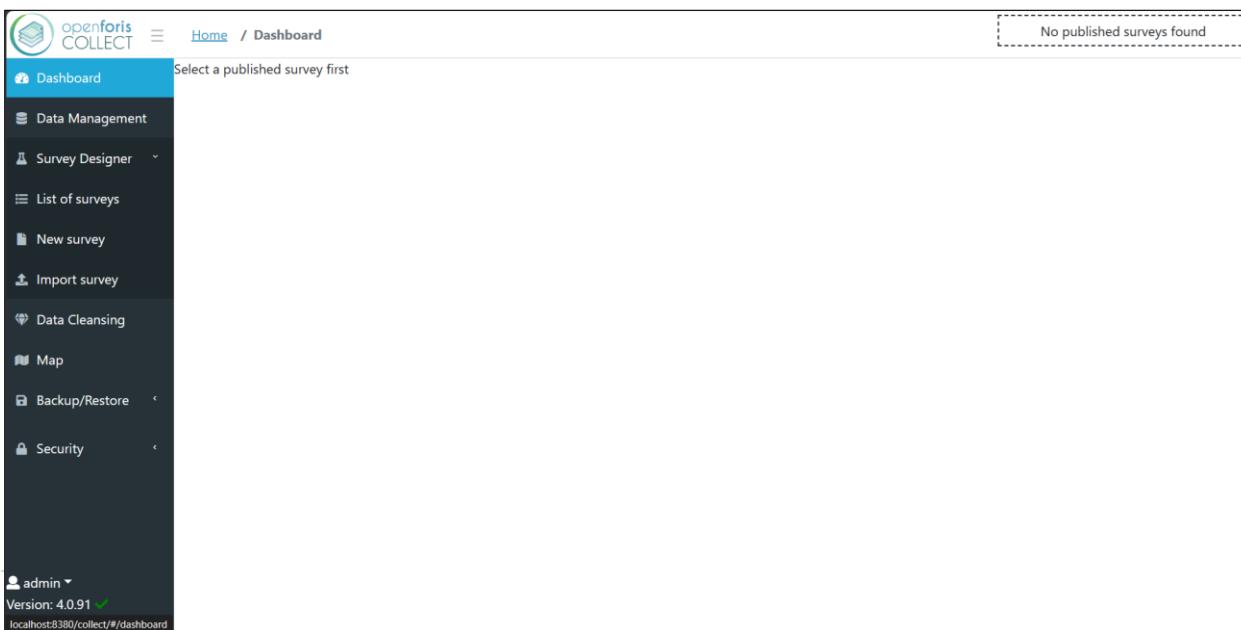
- Dashboard
- Data Management
- Survey Designer
- Data Cleansing
- Map
- Backup/Restore
- Security

Below the menu, there is a user profile section showing 'admin' and 'Version: 4.0.91'. At the bottom of the sidebar, it says 'Open Foris © 2010-2024'.

The main content area has a blue header bar with the text 'Welcome to Open Foris Collect!'. Below the header, a message states: 'Open Foris Collect is the main entry point for data collected in field-based inventories. It provides a fast, easy, flexible way to set up a survey with a user-friendly interface. Collect handles multiple data types and complex validation rules, all in a multilanguage environment.' A bullet point below the message says: 'Please select a survey or create a new one from the Survey Designer'.

9.0 DASHBOARD

It displays a list of all published surveys created in Open Foris collect. Once a survey is selected, you will see simple statistics on the data collection process related to that survey (data created, modified, entered, and cleansed –if any), sorted by day, month, and year.



The screenshot shows the 'Dashboard' page of the Open Foris Collect application. The sidebar menu is identical to the home page. The main content area has a header bar with 'Home / Dashboard' and a message 'Select a published survey first'. In the top right corner, there is a dashed box containing the text 'No published surveys found'. The bottom of the sidebar shows the same user profile and footer information as the home page.

10.0 DATA MANAGEMENT

Data management is used to enter data and manage data workflow. Stored surveys can be accessed and records can be managed and edited. When records are entered into Collect, this section presents a log of errors and warnings encountered during data entry and information on when records were created or modified and their status in the data cleansing process.

It is also possible to visualize which user entered a specific record. Clicking on Data Management opens the list of records presents.

Columns can also sort records only the data collected by a specific user

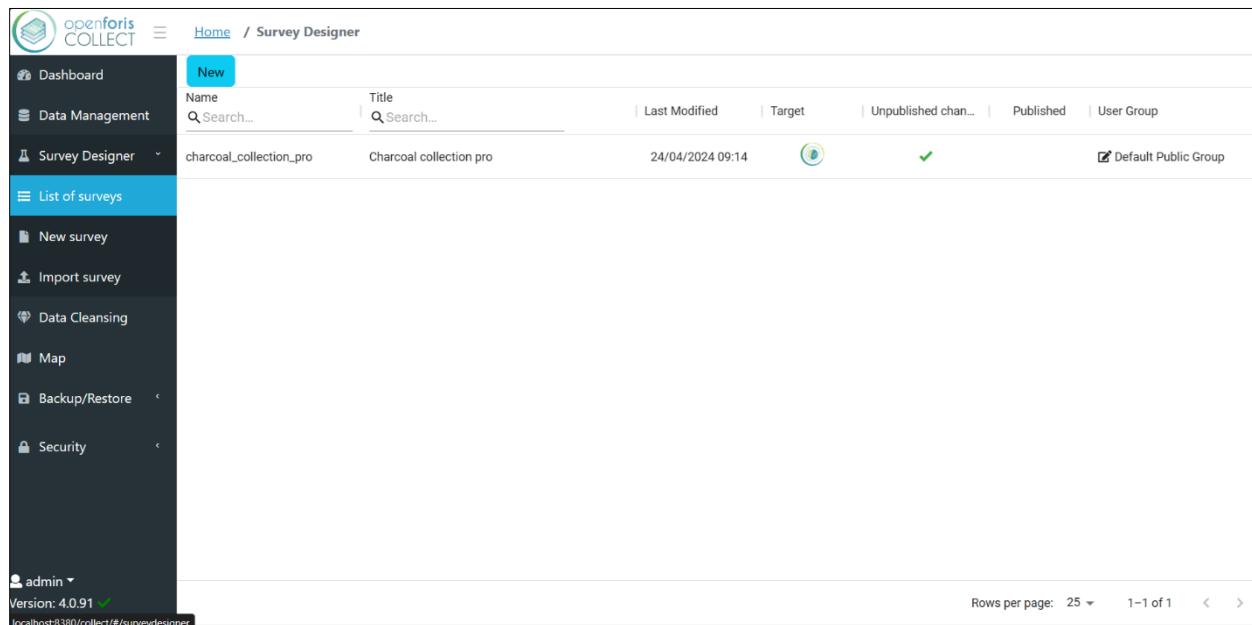
The screenshot shows the openforis COLLECT web application interface. The left sidebar has a dark theme with white text. The 'Data Management' option is highlighted with a blue background. The main content area is currently empty, displaying the message 'Select a published survey first'. In the top right corner, there is a dashed box containing the text 'No published surveys found'. At the bottom left of the main area, it shows the user 'admin' and the version 'Version: 4.0.91'. The URL 'localhost:8380/collect/#/datamanagement' is visible at the very bottom of the page.

11.0 SURVEY DESIGNER

The survey designer gives users access to the three main tools that allow for creating, importing already created open foris collect surveys, and a database to review/preview completed and uncompleted surveys.

I. LIST OF SURVEYS

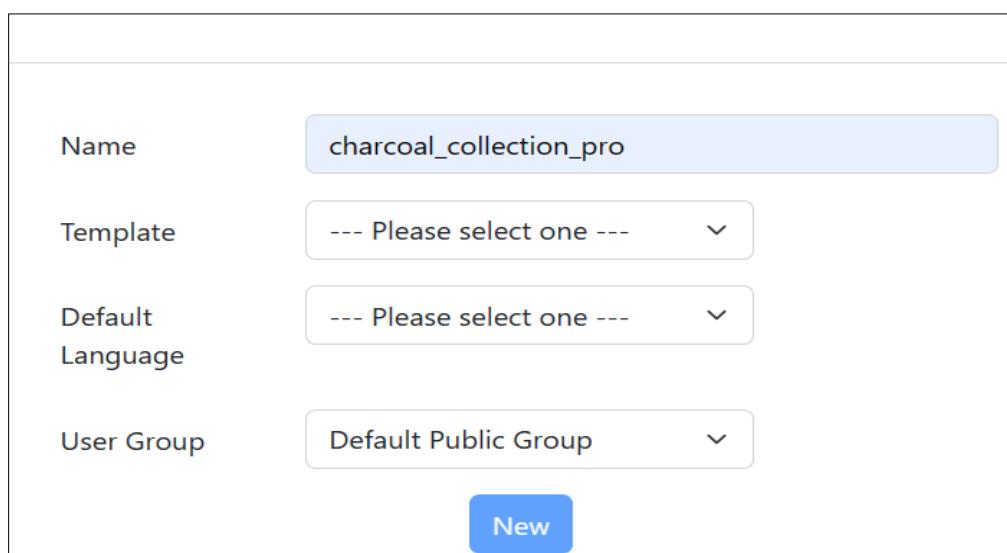
A database for reviewing/previewing finished and uncompleted surveys.



The screenshot shows the 'Survey Designer' section of the openforis COLLECT web application. On the left is a sidebar with various options: Dashboard, Data Management, Survey Designer (which is selected and highlighted in blue), List of surveys (selected), New survey, Import survey, Data Cleansing, Map, Backup/Restore, and Security. At the bottom of the sidebar, it shows 'admin' is logged in, the version is 4.0.91, and the URL is localhost:8380/collect/#/surveydesigner. The main area has a header 'New' and a search bar. Below that is a table with columns: Name, Title, Last Modified, Target, Unpublished chan..., Published, and User Group. A single row is visible: charcoal_collection_pro, Charcoal collection pro, 24/04/2024 09:14, a globe icon, a green checkmark, and a checked checkbox for 'Default Public Group'. At the bottom right of the main area, there are buttons for 'Rows per page: 25', '1-1 of 1', and navigation arrows.

II. NEW SURVEY

Used to create an open foris collect survey.



The form for creating a new survey has the following fields:

- Name: charcoal_collection_pro
- Template: --- Please select one ---
- Default Language: --- Please select one ---
- User Group: Default Public Group

At the bottom right of the form is a blue 'New' button.

III. IMPORT SURVEY

Used to import already created open foris collect surveys. Allowed files are Collect Survey (.collect), Collect Backup (.collect-backup), Collect Earth (.cep), or Collect Survey XML (.xml)

The screenshot shows the 'Survey Designer' section of the openforis COLLECT interface. On the left, a dark sidebar menu includes 'Dashboard', 'Data Management', 'Survey Designer' (with 'List of surveys'), 'New survey', 'Import survey' (which is highlighted in blue), 'Data Cleansing', 'Map', 'Backup/Restore', and 'Security'. Below the sidebar, the user is identified as 'admin' with version '4.0.91'. The main content area has a large text input field with the placeholder 'Click to select a file or drop it here.' and a note below it stating 'Allowed files: Collect Survey (.collect) Collect Backup (.collect-backup), Collect Earth (.cep) or Collect Survey XML (.xml)'. At the bottom of the page, the URL 'localhost:8380/collect/#/surveydesigner/surveymimport' is visible.

12.0 DATA CLEANSING

Collect Data Cleansing Toolkit can help you to find errors in the data and to fix them.

The screenshot shows the 'Data Cleansing' section of the openforis COLLECT interface. The sidebar menu is identical to the previous screenshot. The main content area features a heading 'Welcome to the Collect Data Cleansing Toolkit!' followed by a brief description: 'This tool helps you to find errors in the data and to fix them.' Below this, a list of steps is provided: 'These are the steps you need to follow:' with a bulleted list of instructions. The URL 'localhost:8380/collect/#/datacleaning' is visible at the bottom.

13.0 MAP

Collect Earth facilitates the interpretation of high and medium spatial resolution imagery in Google Earth, Bing Maps, and Google Earth Engine. Google Earth's virtual globe is largely comprised of 15-meter resolution Landsat imagery, 2.5m SPOT imagery, and high-resolution imagery from several other providers (CNES, Digital Global, EarthSat, First Base Solutions, GeoEye-1, GlobeXplorer, IKONOS, Pictometry International, Spot Image, Aerometrex, and Sinclair Knight Merz). Microsoft's Bing Maps presents imagery provided by Digital Globe ranging from 3m to 30cm resolution. Google Earth Engine's web-based platform facilitates access to United States Geological Survey 30m resolution Landsat imagery. Collect Earth synchronizes the view of each sampling point across all three platforms. It shows the data collected on a map, by using GPS coordinates.



14.0 SAIKU

It is a web-based open-source software that facilitates data visualization and data querying

15.0. BACKUP/RESTORE

Used for data backup and restore.

- **BACKUP**

The screenshot shows the 'Backup' page of the openforis COLLECT software. The left sidebar has a dark theme with white icons and text. The 'Backup/Restore' section is expanded, and 'Backup' is selected, highlighted with a blue background. Other options in this section include 'Restore' and 'Security'. The main content area has a light gray background. At the top, it says 'Home / Backup'. Below that, a message box says 'Select a published survey first' and 'No published surveys found'. There is also a small footer message at the bottom of the sidebar: 'admin Version: 4.0.91' and the URL 'localhost:8380/collect/#/backup'.

- **RESTORE**

The screenshot shows the 'Restore' page of the openforis COLLECT software. The left sidebar is identical to the 'Backup' page, with 'Restore' selected in the 'Backup/Restore' section. The main content area has a light gray background. At the top, it says 'Home / Restore'. Below that, there is a large input field with the placeholder 'Click to select a file or drop it here.' and a note 'Allowed files: Collect Backup (.collect-backup)'. Further down, there is a 'Restore into' section with two radio buttons: 'New survey' (selected) and 'Selected survey (Select a published survey first)'. Below that is a 'Additional Options' section with a dropdown menu. At the bottom right is a large 'RESTORE' button.

16.0 SECURITY

It allows creating personal user profiles (password protected) by specifying the role in the workflow: View, Entry limited, Entry, Cleansing, Analysis, Administrator. It also allows the creation of user groups, who will work each on different surveys or different parts of the same survey.

- **USERS**

The screenshot shows the 'Users' section of the openforis COLLECT interface. On the left is a dark sidebar with various menu items. The 'Users' item is highlighted with a blue background. The main area has a green header bar with 'New' and a delete icon. Below this is a table with columns 'Username', 'Enabled', and 'Role'. One row is selected, showing 'admin' in the 'Username' column, 'true' in 'Enabled', and 'ADMIN' in 'Role'. To the right of the table is an 'Edit user' modal window. It contains fields for 'Username' (admin), 'Enabled' (checkbox checked), 'Role' (ADMIN dropdown), 'Password' (empty input), and 'Retype-password' (empty input). A 'Save' button is at the bottom right of the modal.

- **GROUPS**

The screenshot shows the 'User Groups' section of the openforis COLLECT interface. The sidebar on the left has the 'Groups' item highlighted with a blue background. The main area has a green header bar with 'New'. Below this is a table with columns 'Name' and 'Label'. There are no rows listed under 'No rows'. To the right of the table is a 'New' modal window. It contains fields for 'Name' (empty input) and 'Label' (empty input). A 'Save' button is at the bottom right of the modal.

17.0 CREATING A SURVEY

17.1 STEP 1: CLICK NEW SURVEY TO GIVE YOUR PROJECT AN IDENTITY

- i. In the first row, name your project.

The screenshot shows a form for creating a new survey. The fields are as follows:

- Name: charcoal_collection_pro
- Template: --- Please select one --- (dropdown menu)
- Default Language: --- Please select one --- (dropdown menu)
- User Group: Default Public Group (dropdown menu)

A blue "New" button is located at the bottom right of the form.

- ii. In the second row, select the template that suits your project. Choose Collect Earth options.

The screenshot shows the same form as above, but the "Template" dropdown menu is open, revealing four options:

- Blank (start from scratch)
- Biophysical
- Collect Earth (this option is highlighted with a dark grey background)
- Collect Earth + IPCC

The other fields remain the same as in the previous screenshot.

- iii. In the third row, select your preferred language when designing your project. All languages in the world are available.

The screenshot shows a user interface for selecting a default language. At the top, there is a text input field containing "charcoal_collection_pro". Below it is a dropdown menu labeled "Template" with "Collect Earth" selected. A tooltip provides information about the template. The "Default Language" dropdown is open, showing a list of languages with "English (en)" highlighted. Other options include Arabic (ar), Chinese (zh), French (fr), Portuguese (pt), Russian (ru), and Spanish; Castilian (es).

Name	charcoal_collection_pro
Template	Collect Earth
<p>(i) Basic Collect Earth survey containing all necessary attributes without extras. Collect Earth needs some standard attributes in a survey and this template provides them; you then need to add your own questions.</p>	
Default Language	--- Please select one --- Arabic (ar) Chinese (zh) English (en) French (fr) Portuguese (pt) Russian (ru) Spanish; Castilian (es)
User Group	

- iv. In the fourth row, select the user restriction grade of the project, whether default public group or private group. Then click “New” to start the survey engine.

The screenshot shows a user interface for selecting a user group. The "Name" field contains "charcoal_collection_pro". The "Template" dropdown is set to "--- Please select one ---". The "Default Language" dropdown is set to "English (en)". The "User Group" dropdown is open, showing "Default Public Group" highlighted. Other options include "Default Public Group" and "Private group of admin".

Name	charcoal_collection_pro
Template	--- Please select one ---
Default Language	English (en)
User Group	Default Public Group Default Public Group Private group of admin

17.2 STEP 2: INVOLVES THE 3 MAIN STEP TO BUILD A SURVEY, NAMELY INFO, CODE LISTS AND SCHEMA RESPECTIVELY.

17.2.1 INFO: It allows the user to give his/her project a detailed description, define the plot layout (land area of sample points and spatial distribution of sample points), and select the underlying satellite imagery for earth observation.

i. Survey details

The screenshot shows the 'Info' tab selected in a software interface. The 'Survey details' section contains the following information:

Name:	charcoal_collection_pro
Project name (en):	Charcoal collection pro
Description (en):	This is a survey designed to collect charcoal production data in the Sissala West district.

ii. Collect Earth plot layout

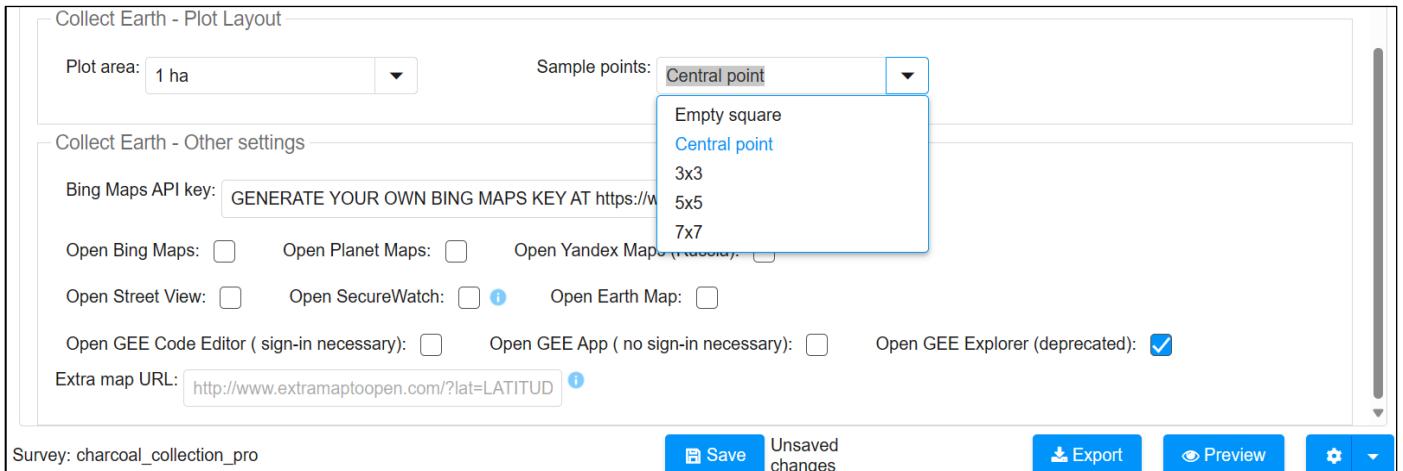
- **Plot area:** Choose 1 ha to define the plot area of the sample points

The screenshot shows the 'Collect Earth - Plot Layout' settings. The 'Plot area:' dropdown is set to '1 ha', which is highlighted with a blue selection box. Other options in the dropdown include '0.25 ha', '0.50 ha', '5 ha', and '10 ha'. The 'Sample points:' dropdown is set to 'Central point'. Below these, there are several checkboxes and links:

- 'Open Bing Maps':
- 'Open Yandex Maps (Russia)':
- 'Open Street View':
- 'Open SecureWatch':
- 'Open Earth Map':
- 'Open GEE Code Editor (sign-in necessary)':
- 'Open GEE App (no sign-in necessary)':
- 'Open GEE Explorer (deprecated)':

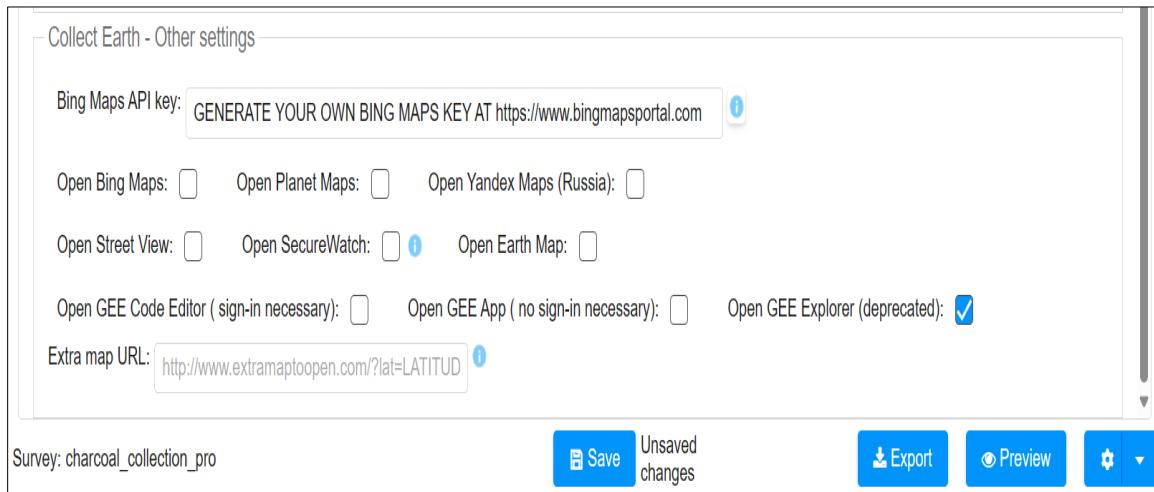
A link to 'BING MAPS KEY AT https://www.bingmapsportal.com' is also present. At the bottom, it shows 'Survey: charcoal_collection_pro' and buttons for 'Save' (with 'Unsaved changes' indicator), 'Export', 'Preview', and settings.

- **Sample points:** choose the distribution style of the sample points. choose **central point** for now



iii. Collect Earth's Other settings

- Allows the user to select one or more underlying satellite imagery to be used for earth observation. choose **Open GEE Explorer (deprecated)** for now.

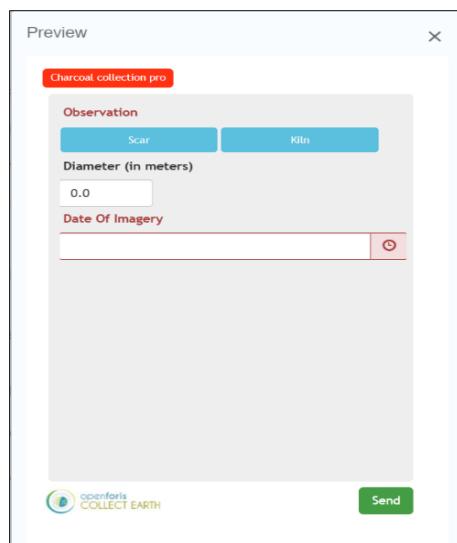


iv. Save, Export, Preview, and options

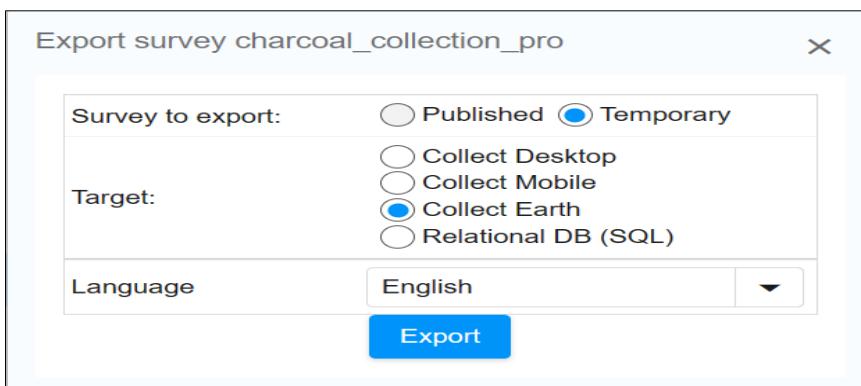
- **Save:** allows the user to save on the go and it is available in the interface of the info, code lists and schema.



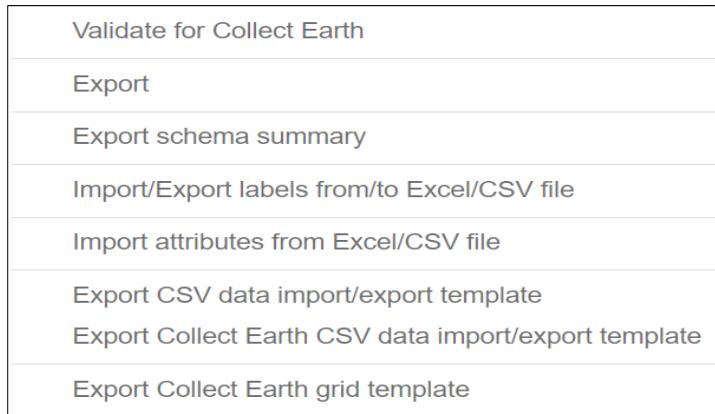
- **Preview:** allows the user to preview the survey or test it.



- **Export:** allows the user to download a completely designed survey and tailor it to the collect earth format fit for the project.



- **Options:** allows the user to export designed surveys, import pre-built surveys in Excel/CSV format, etc.



17.2.2 CODE LISTS: It allows the user to define the survey data which is the basis for data collection. E.g., Scar, Kiln. This can be designed in flat (single input e.g., scar) or hierarchical (subdivided eg., scar—big/small).

- i. Click on the (+) Add list sign to add list.

The screenshot shows the 'Code lists' tab in a survey configuration interface. The interface includes tabs for 'Info', 'Code lists' (which is selected), and 'Schema'. The 'Survey language' is set to English. On the left, there is a list of 'Defined Code Lists' containing 'demo_codelist', 'elevation_ranges', 'orientation', and 'slope_classes'. Below this list is a button labeled '+ Add list'. The main area has a placeholder text: 'Select an item from the list on the left or click on the Add button to create a new one.' At the bottom, there are buttons for 'Save', 'Export', 'Preview', and settings. The survey name 'charcoal_collection_pro' is displayed at the bottom left.

- ii. Type the **name** of the code list (**observation**) in lowercase since it is case sensitive, in the **label (en)** box—type Observation to differ from the one in the name box. In the **description** box --give a description of the query, and at the **list type** -- select either **flat** or **hierarchical** for the code/answer style. The name is what is called into the schema, because embedded in the name are the code list items.

The screenshot shows the 'Code lists' tab of the Survey123 interface. On the left, a sidebar lists 'Defined Code Lists': 'demo_codelist', 'elevation_ranges', 'observation' (which is selected and highlighted in blue), 'orientation', and 'slope_classes'. The main panel shows the details for the selected 'observation' list:

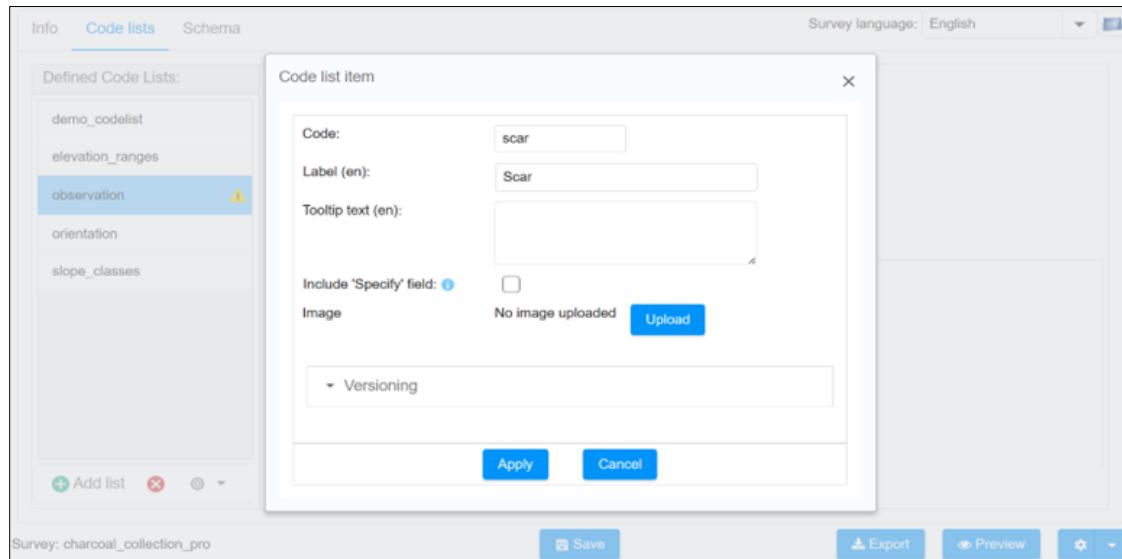
- Name:** observation
- Label (en):** Observation
- Description (en):** Whether a scar or kiln is on the ground.
- List type:** Flat (radio button selected)

Below these fields is a large empty box labeled '+ Add code' with a green plus icon. At the bottom of the panel are 'Import' and 'Export' buttons. The footer of the interface includes 'Survey: charcoal_collection_pro', 'Save' (with 'Unsaved changes' indicator), 'Export', 'Preview', and settings icons.

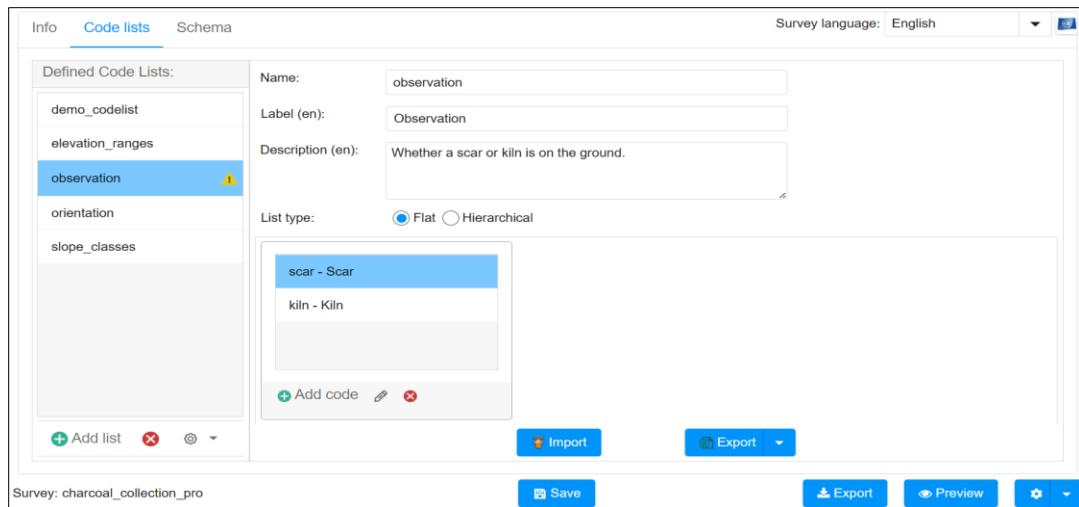
- iii. Click on (+) **Add code** to input the code list items.
E.g., scar/kiln, one at a time

This screenshot shows the 'observation' code list items entry screen. It features a large empty box labeled '+ Add code' with a green plus icon. Below this box are 'Import' and 'Export' buttons. At the bottom of the screen are 'Save' (with 'Unsaved changes' indicator), 'Export', 'Preview', and settings icons.

- iv. Input the code list item to be selected. As done for scar, do same for the kiln. The user can also upload an image concerning the query.



- v. A code list called “Observation” has been created for the survey.



NB: Take note of the code list name “demo_codelist”. It is a collect earth tutorial that should be deleted so it does not interfere with our survey but for this training purpose, we keep it temporarily.

Defined Code Lists:

- demo_codelist**
- elevation_ranges
- orientation
- slope_classes

Name: demo_codelist

Label (en): Dummy code options

Description (en): This is a list of options used for demoing purposes.

List type: Flat Hierarchical

A - First Option A
B - Second Option B

+ Add code

Add list Import Export Save Export Preview

Survey: charcoal_collection_pro

NB: Also, note that because we have not called our code list “observation” in the schema it did not appear in the dummy survey. Focus on only code list items (first option A and Second Option B) for now. Its title “Demo Code attribute - Multiple options (Required)” is assigned in the schema.

Preview

First tab with questions CHANGE! Second tab (CHANGE!)

Demo text question (not required | > 5 characters) ⓘ

Demo Code attribute - Multiple options (Required) ⓘ

First Option A Second Option B

Demo Yes/No question (shows comments if YES) ⓘ

Yes No

Demo - integer number (required | >5 and <20) ⓘ

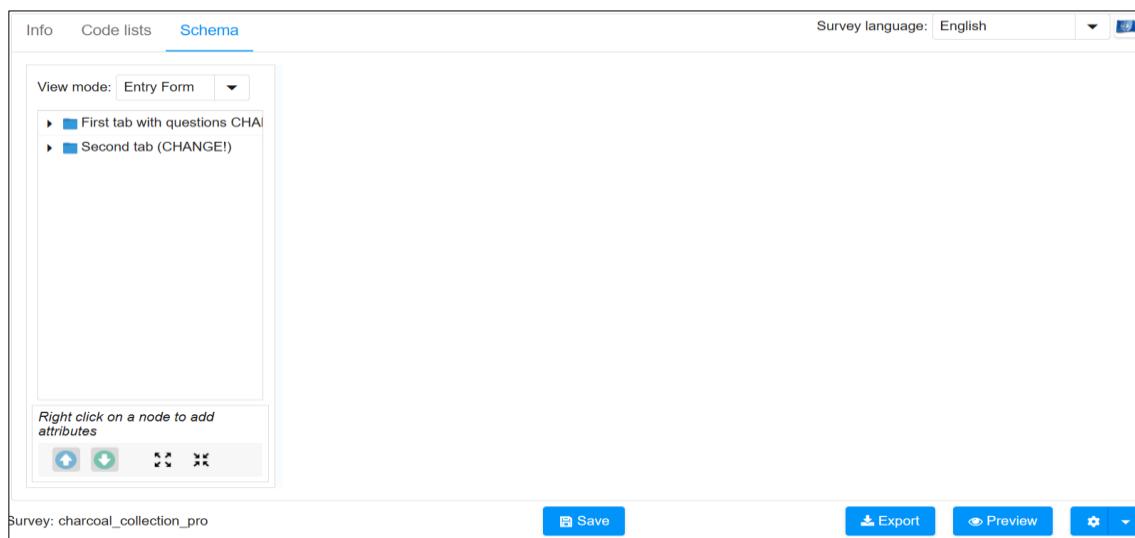
0

openforis COLLECT EARTH

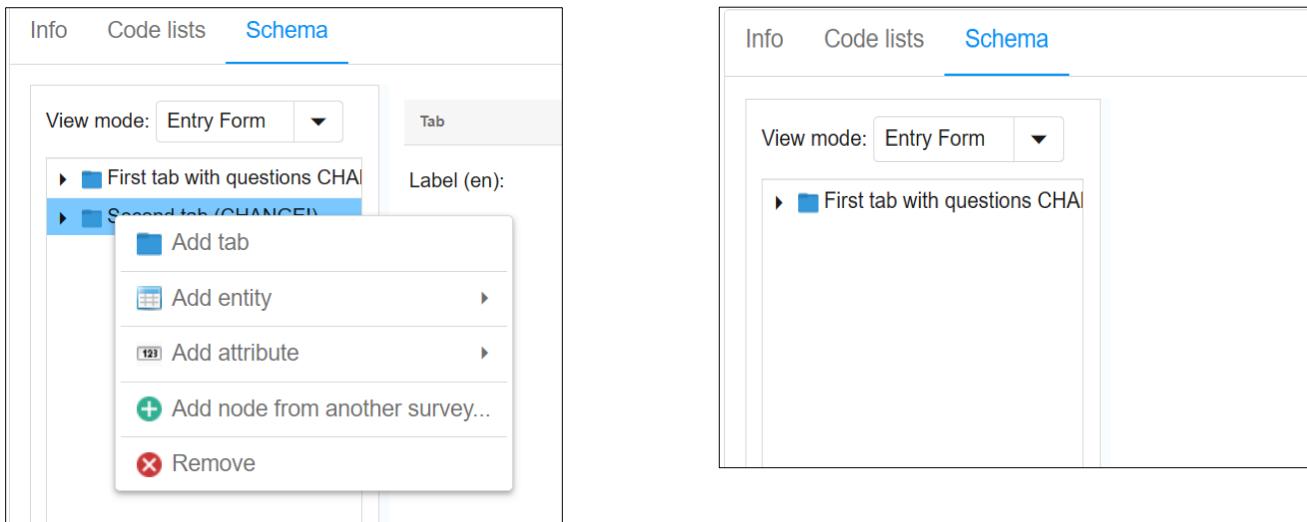
Next

17.2.3 SCHEMA: It allows the user to define the survey structure by giving titles and calling the names of data in the code lists to assign conditions to them e.g., by calling a given code list name and choosing “**always relevant**” would make inputting/selecting an answer a must before the next query. Furthermore, the label assigned in the schema becomes the title of a given query the user would see in the survey. The user can create additional queries like the dimension of the scar/kiln, date of observation, etc using the **add attribute** option. Conditions can be assigned to them also. The schema is also used to create new pages in the survey by adding **new tab**.

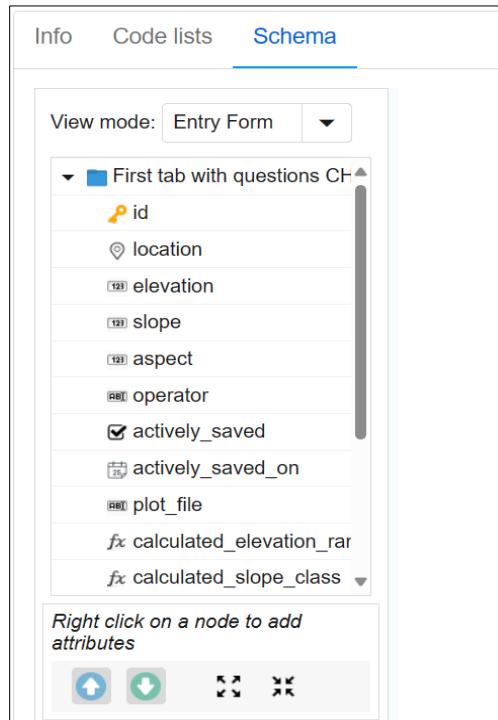
NB: The two tabs represent two pages in a survey, they are a tutorial schema related to the “demo_codelist” in the Code list section. Right-click and remove to delete the second tab, as we only need one page. In the first tab, change its name to our project name “Charcoal Collection



Pro”.



- Expand the “First tab with questions CHANGE” and scroll down to the bottom of the drop-down.



- ii. Delete the last 5 attributes (from “`short_text_demo`” to “`integer_demo`”). They are part of the Collect Earth tutorial survey but the remaining files above must not be touched. Also, quickly go to code lists and delete “`demo_codelist`”.

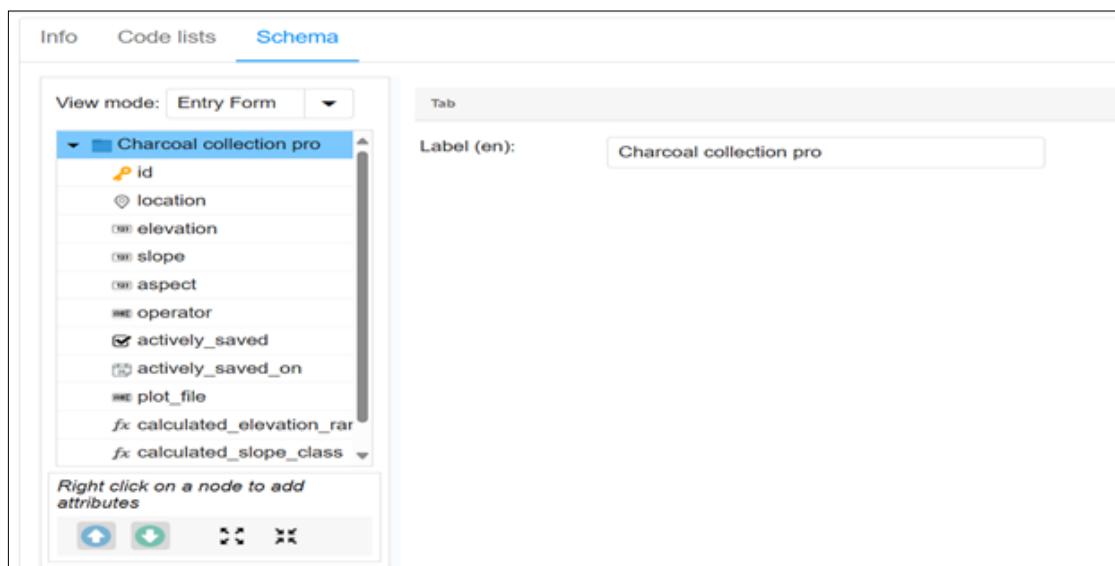
The first screenshot shows the 'Schema' tab of the Survey123 schema editor. A list of attributes is displayed, including 'operator', 'actively_saved', 'plot_file', 'calculated_elevation_rar', 'calculated_slope_class', 'calculated_aspect_class', 'short_text_demo', 'code_demo', 'yes_no_demo', 'memo_text_demo', and 'integer_demo'. The 'code_demo' attribute is selected and highlighted with a red box. The second screenshot shows a confirmation dialog box titled 'Confirm' with the message 'Remove this item?' and two buttons: 'Delete' and 'Cancel'. The third screenshot shows the 'Defined Code Lists' table with the 'demo_codelist' row removed, leaving 'elevation_ranges', 'observation', 'orientation', and 'slope_classes'.

NB: When deleting “`code_demo`” from the schema tab, you can see on the right that “`demo_codelist`” (predesigned in the code list) was called so that the code list item

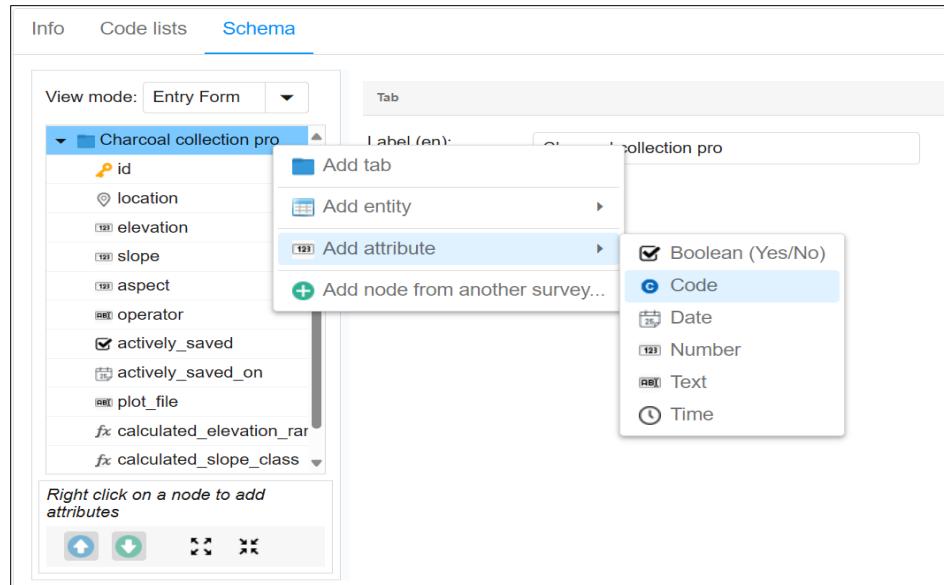
The screenshot shows the 'Schema' tab of the Survey123 schema editor. On the left, a list of attributes includes 'elevation', 'slope', 'aspect', 'operator', 'actively_saved', 'plot_file', 'calculated_elevation_rar', 'calculated_slope_class', 'calculated_aspect_class', 'short_text_demo', and 'code_demo'. The 'code_demo' attribute is selected and highlighted. On the right, the 'Code attribute' panel displays the following configuration for 'code_demo': Name: 'code_demo', Label (en): 'Demo Code attribute - Multiple options (Required)', Tooltip text (en): 'Gives the user a set of options that can be chosen from. Modify the codelist "demo_codelist" to add, remove options.', Is key?: unchecked, Code list: 'demo_codelist' (with an 'Edit Code list' button), Visible in UI: 'Always visible' (selected), Calculated: unchecked, Multiple: unchecked, Required: 'Always required' (selected). The 'Survey language' dropdown is set to 'English' and the 'Path' is '/plot/code_demo'.

embedded in that code would be summoned into the survey.

- iii. Change the name of the tab to your preferred project name by right-clicking on the First tab with questions CHANGE. Fill in the empty box by the “Label (en)”.
For this project, we will give it the name, **“Charcoal collection pro”**



- iv. To add the Code list, right-click the “Charcoal collection pro” tab, go to “Add attribute” then click on Code.

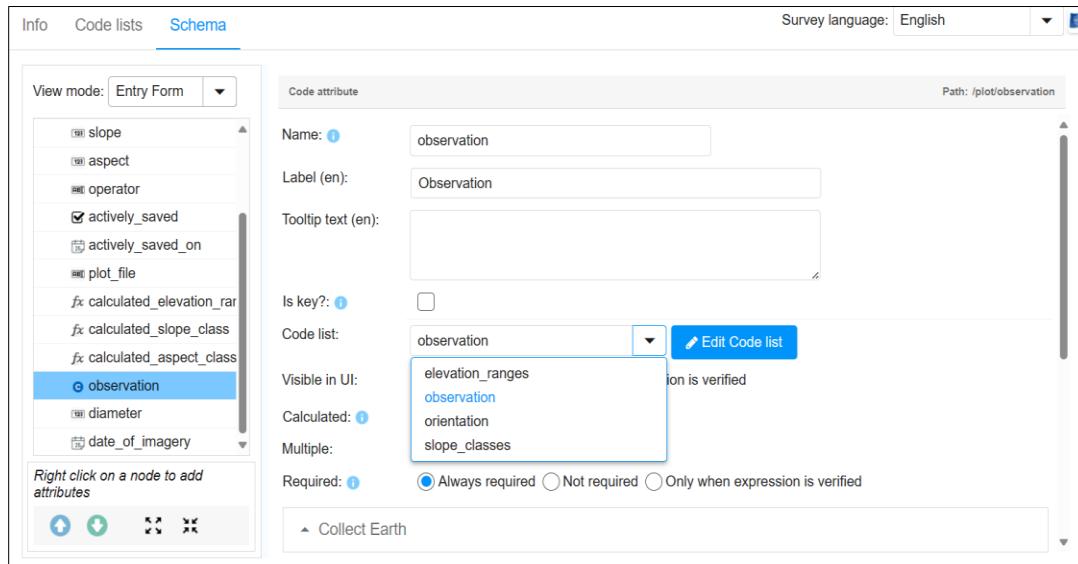


- v. Type “observation” in the name and label box provided. Note that when you type in the name box, it automatically appears in the label.

The screenshot shows the Survey123 Schema editor with the 'observation' node selected in the tree view. The right panel displays the 'Code attribute' configuration for 'observation'. The 'Name' field contains 'observation' and the 'Label (en)' field also contains 'Observation'. Under 'Visible in UI:', the 'Always visible' radio button is selected. Under 'Required:', the 'Always required' radio button is selected. The 'Survey language' dropdown is set to English.

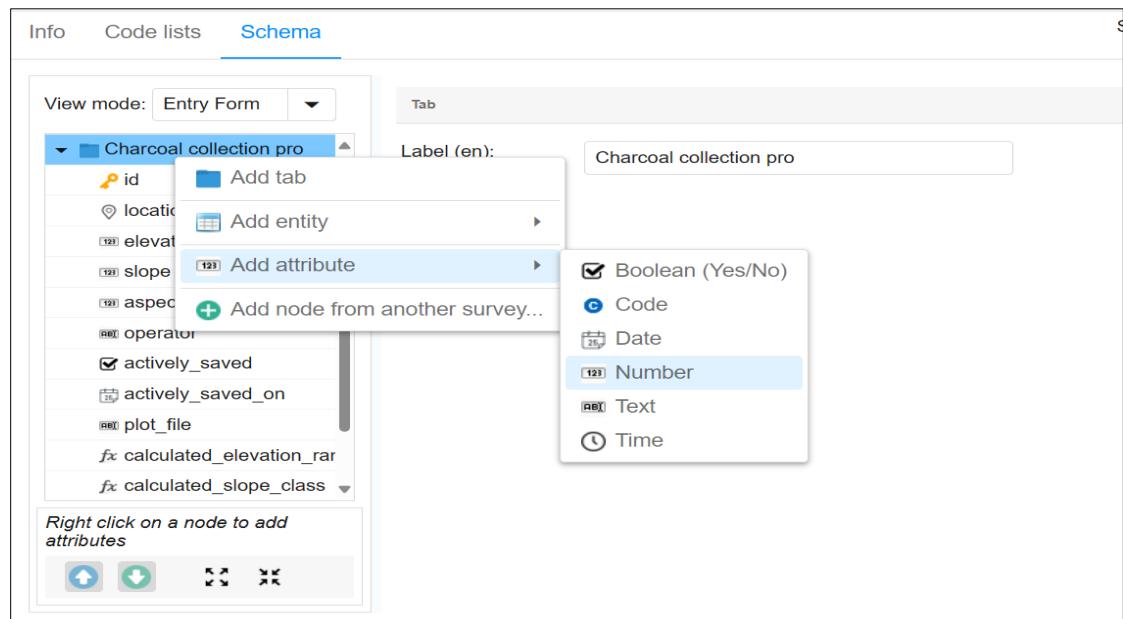
Setting	Value
Name:	observation
Label (en):	Observation
Visible in UI:	Always visible
Required:	Always required

- vi. Select your created code list “observation” under the Code list section

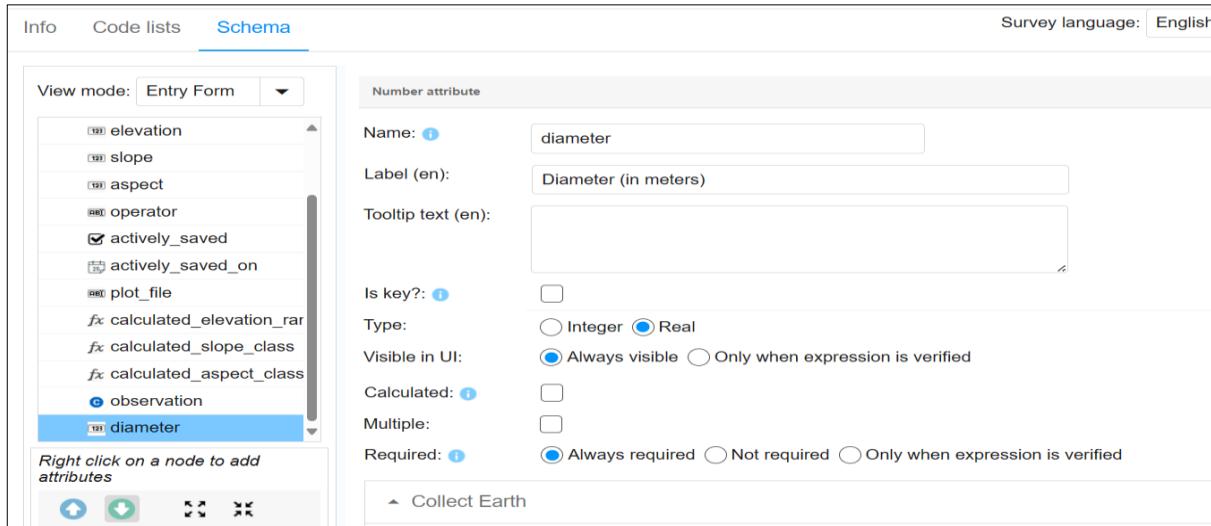


- vii. Right-click the “Charcoal collection pro” tab, click “Add attribute” then click number. This is created to answer queries that would require number input. E.g., measurement in distance, measurement in weight, number of people etc.

For our work, it'll be used to record the diameter of the charcoal scars/ kilns.

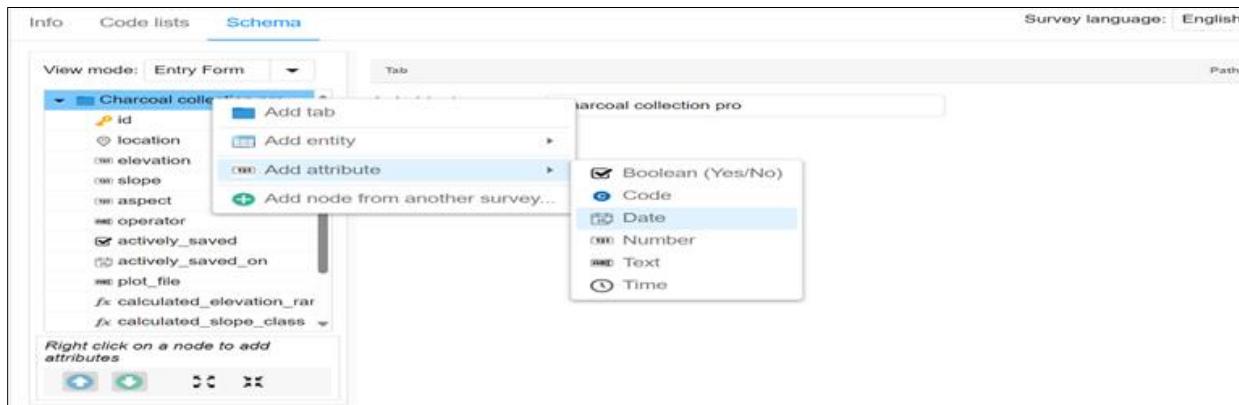


viii. Type “diameter” in the name box, and type “Diameter (in meters)” in the label box.

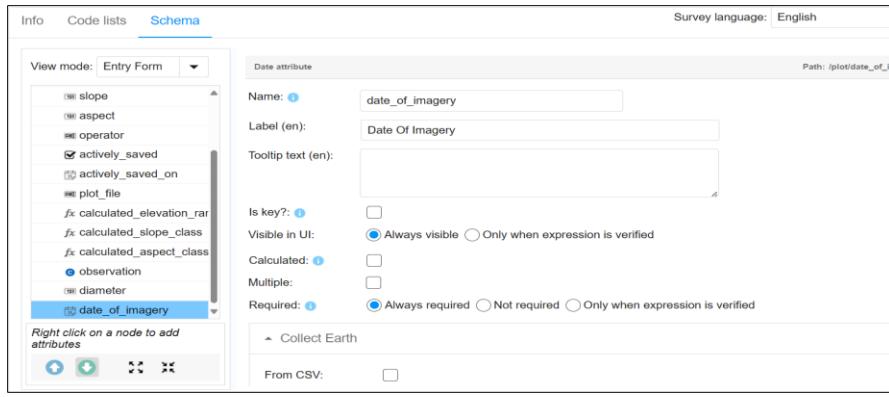


choose “Real” under the “Type”: because we want our number style in decimals.

ix. Right-click the “Charcoal collection pro” tab again, go to “Add attribute” then click “Date”



x. Type “date of imagery” in the name box, and the label box. Then click Save.



- xi. Click Preview to see the complete survey design.

Preview

Charcoal collection pro

Observation

Scar
Kiln

Diameter (in meters)

Date Of Imagery

(c)

(c)

Send

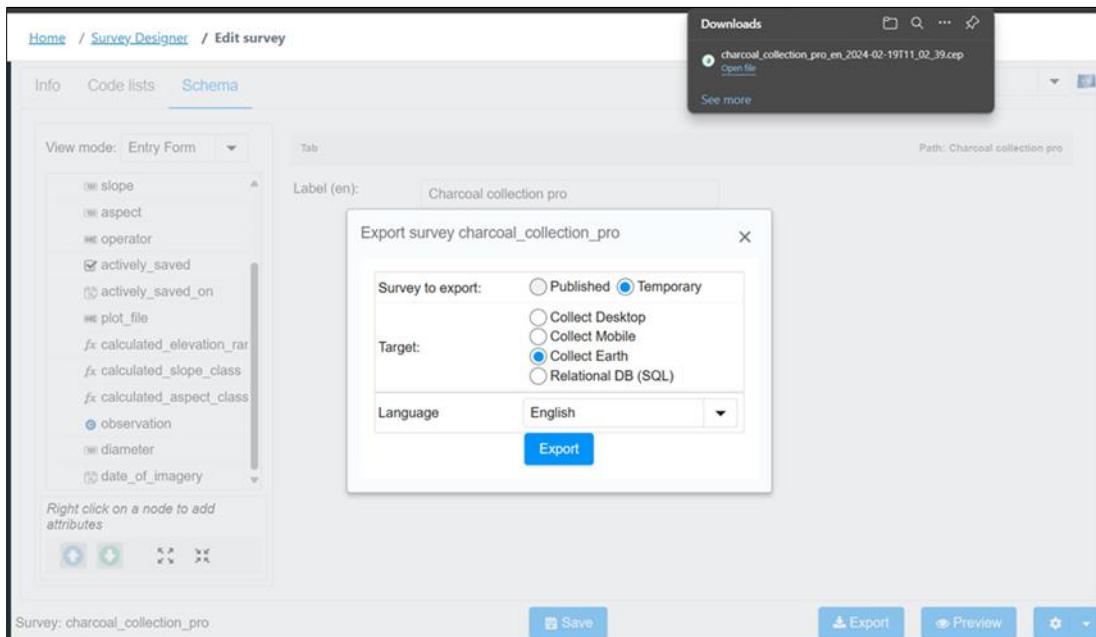
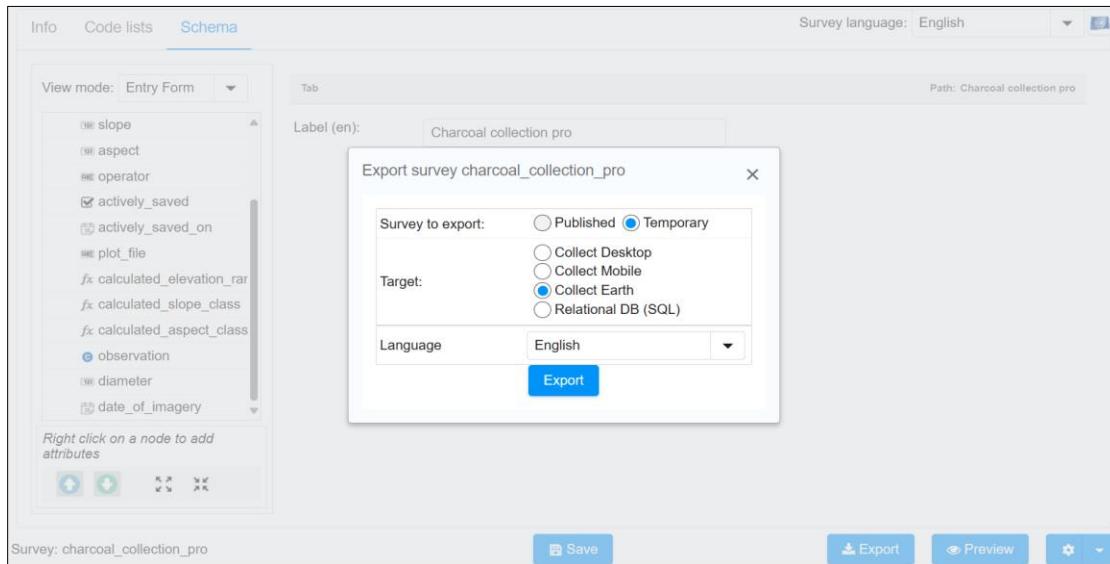
To make changes or add more information, the code list and schema can be edited.

17.3 TO EXPORT AND DOWNLOAD YOUR SURVEY IN COLLECT EARTH FORMAT

Click on the Export button, bottom right of the page. A popup box will appear asking the survey to export, whether published or temporary. Temporary is selected because the survey is not yet published.

Collect Earth is selected as the Target. Language is left on the default English.

After all these parameters are answered, click on the Export button to start download of the survey.



The survey is saved as a Collect Earth Project (CEP) file and can be used in Open Foris Collect Earth and Google Earth Pro.

QGIS

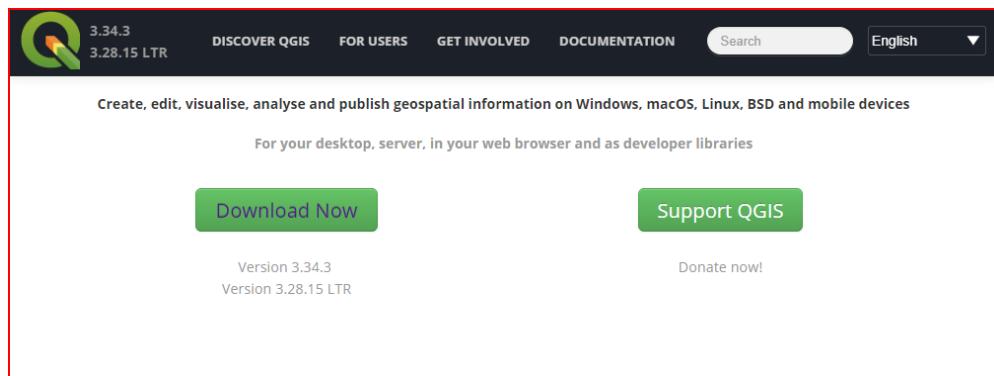
For the purpose of the Charcoal Production Site Monitoring service, charcoal production areas were identified. This identification was based on literature capturing areas with rampant charcoal production in Ghana.

To generate the 10x10km grids, QGIS software has to be installed. Follow the steps below to install QGIS.

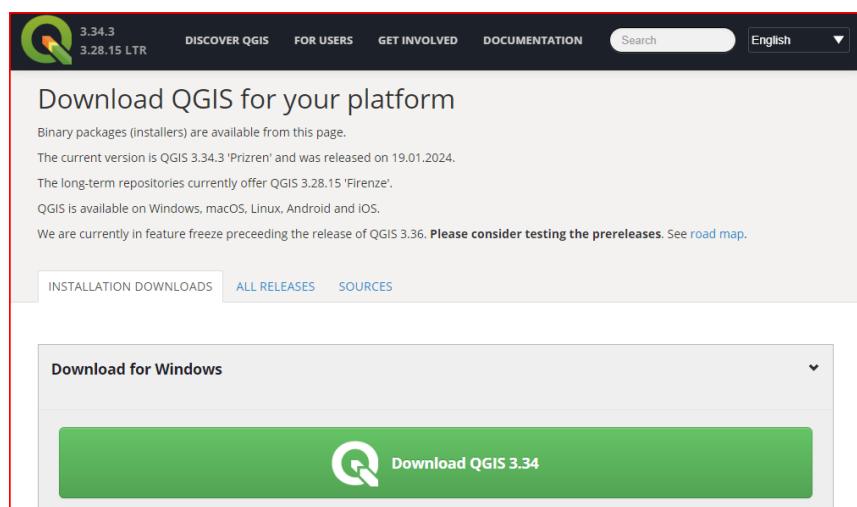
- Visit the official website using the URL <https://www.qgis.org/en/site/> in any web browser.



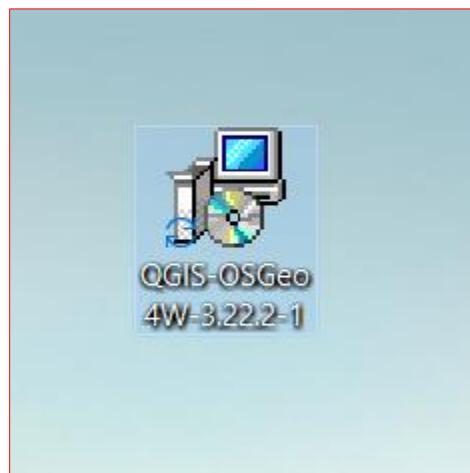
- Click on the Download Now button at the bottom of the page



- Clicking on “Download Now” opens a web screen. Click on “Download QGIS 3.34” to start downloading.



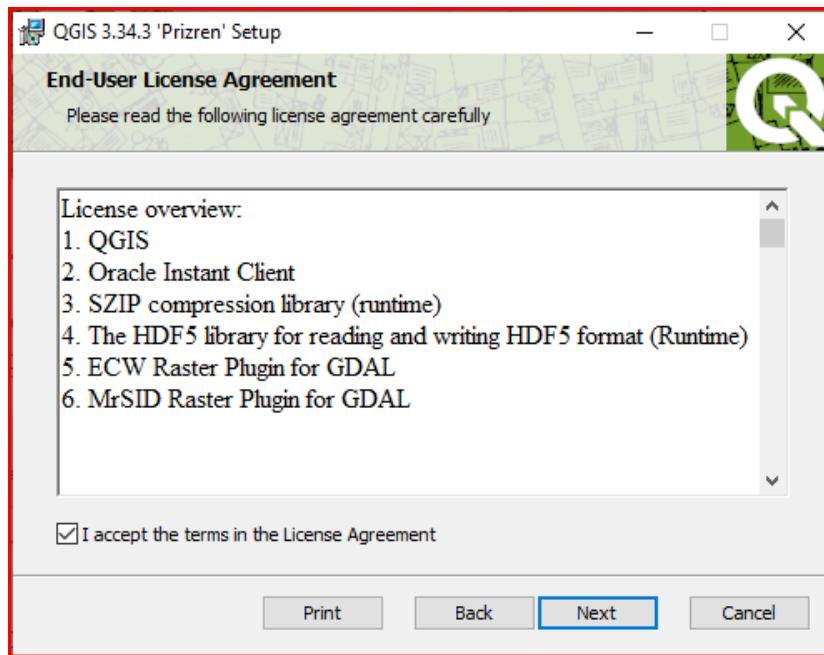
- Now check for the executable file in the downloads folder in your system and open it.



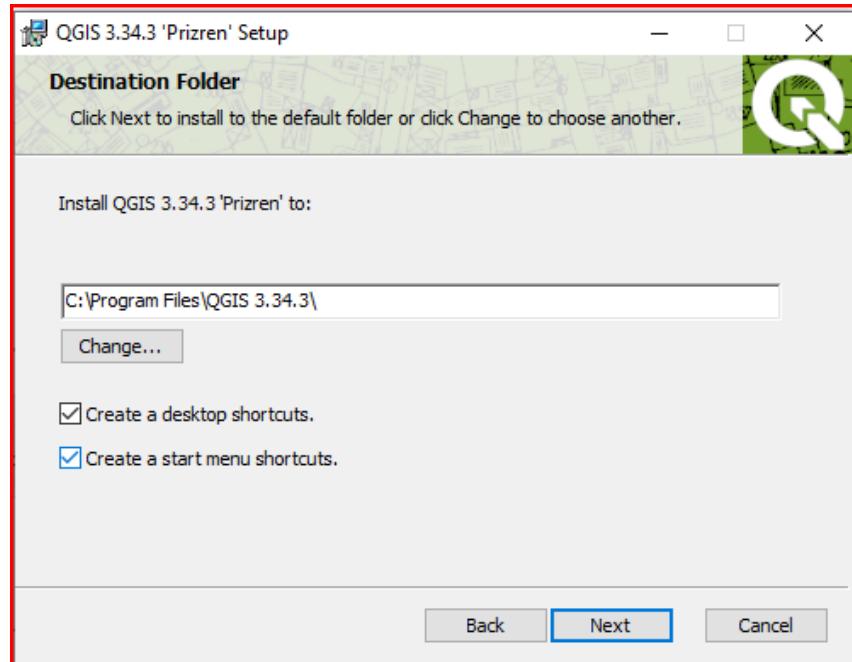
- Now the installation process is started. Click on the **Next** button.



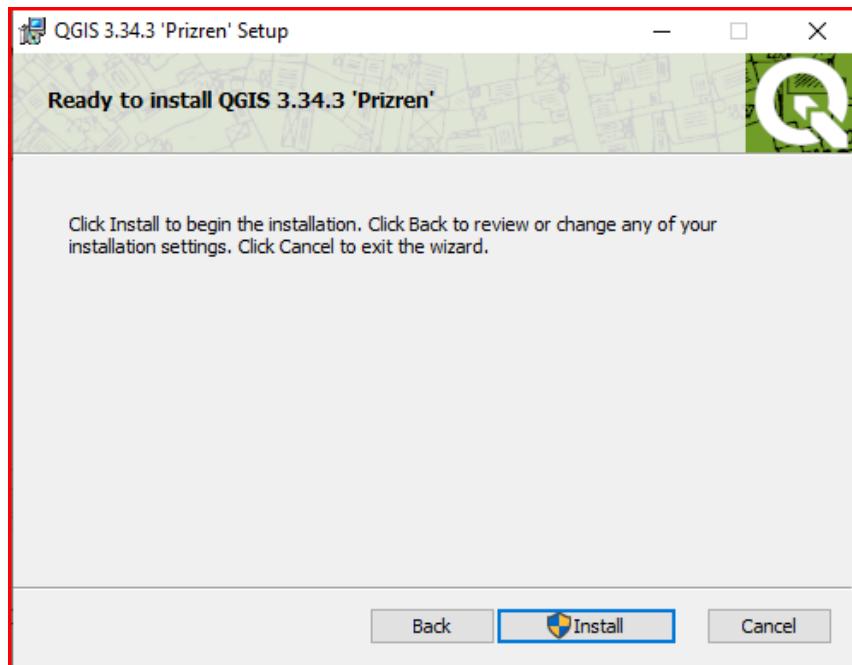
- The next screen will be of License Agreement, click on “**I accept the terms in the License Agreement**” then click on **Next** button.



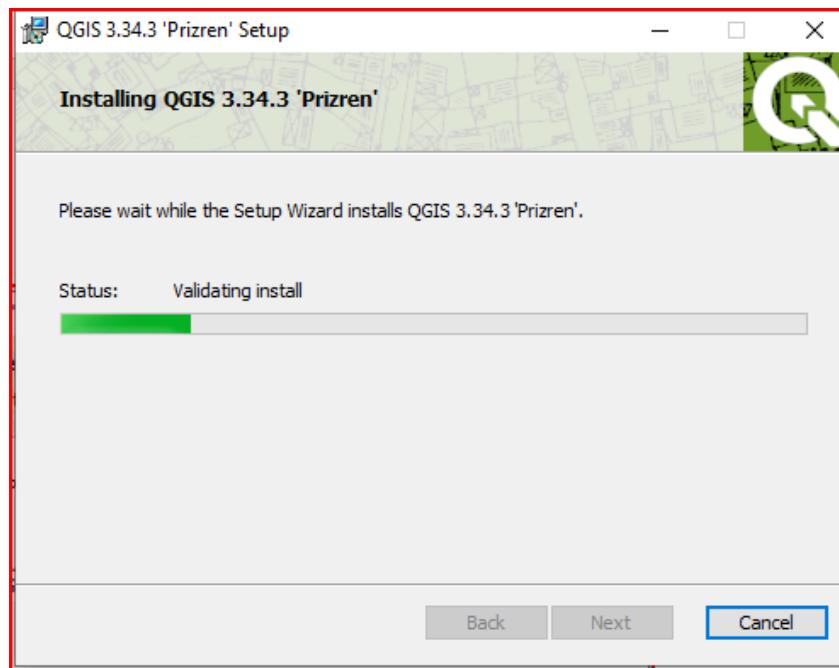
- The next window specifies the Location for the installation, choose the drive which has sufficient memory space for the installation. Then click on the **Next** button.



- Now click on the **Install** button to start the installation.



- After this, the installation process will start and it might take 8-12 minutes depending on your computer speed and specification to complete the installation.



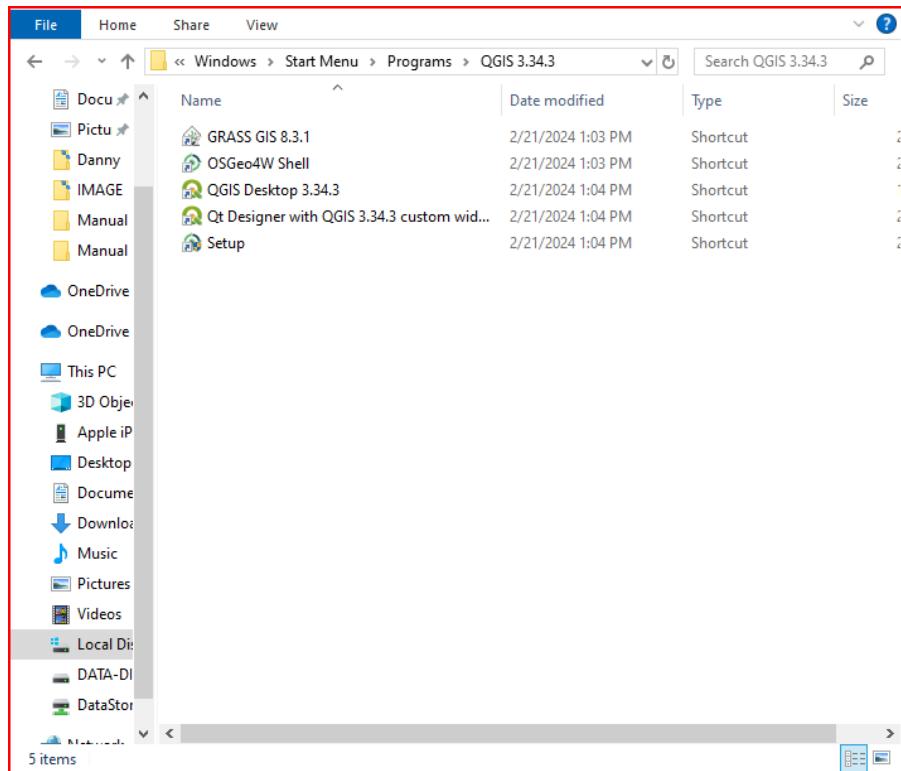
- After the installation process is complete, click on the “Finish” button.



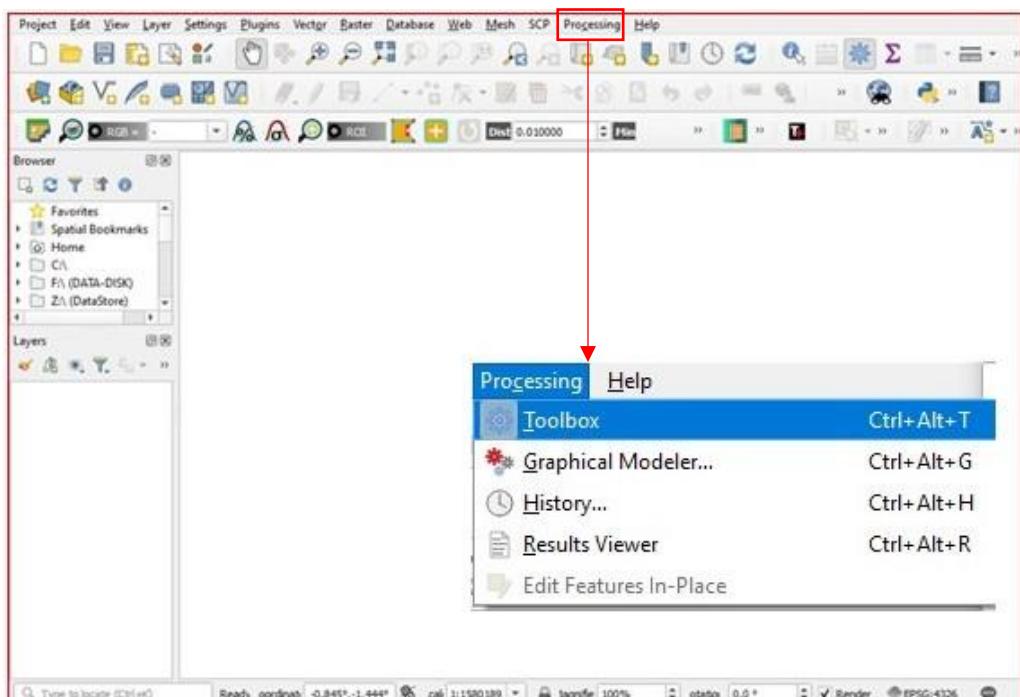
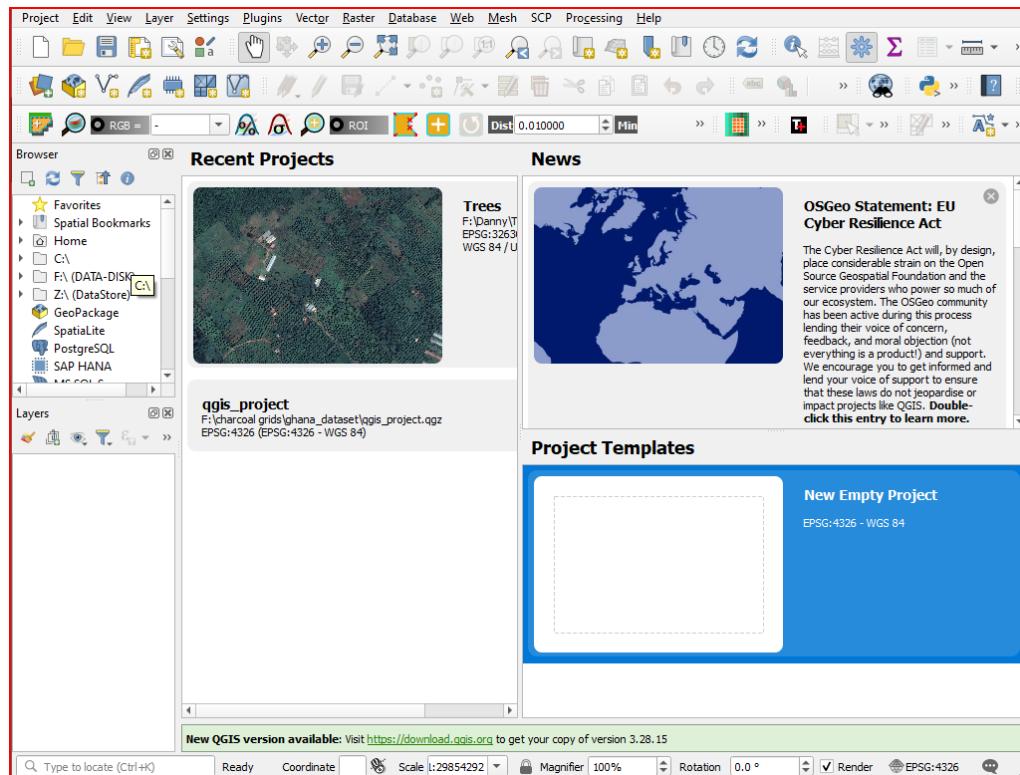
At this point, QGIS is successfully installed on the system and a shortcut folder will be created on the desktop screen.



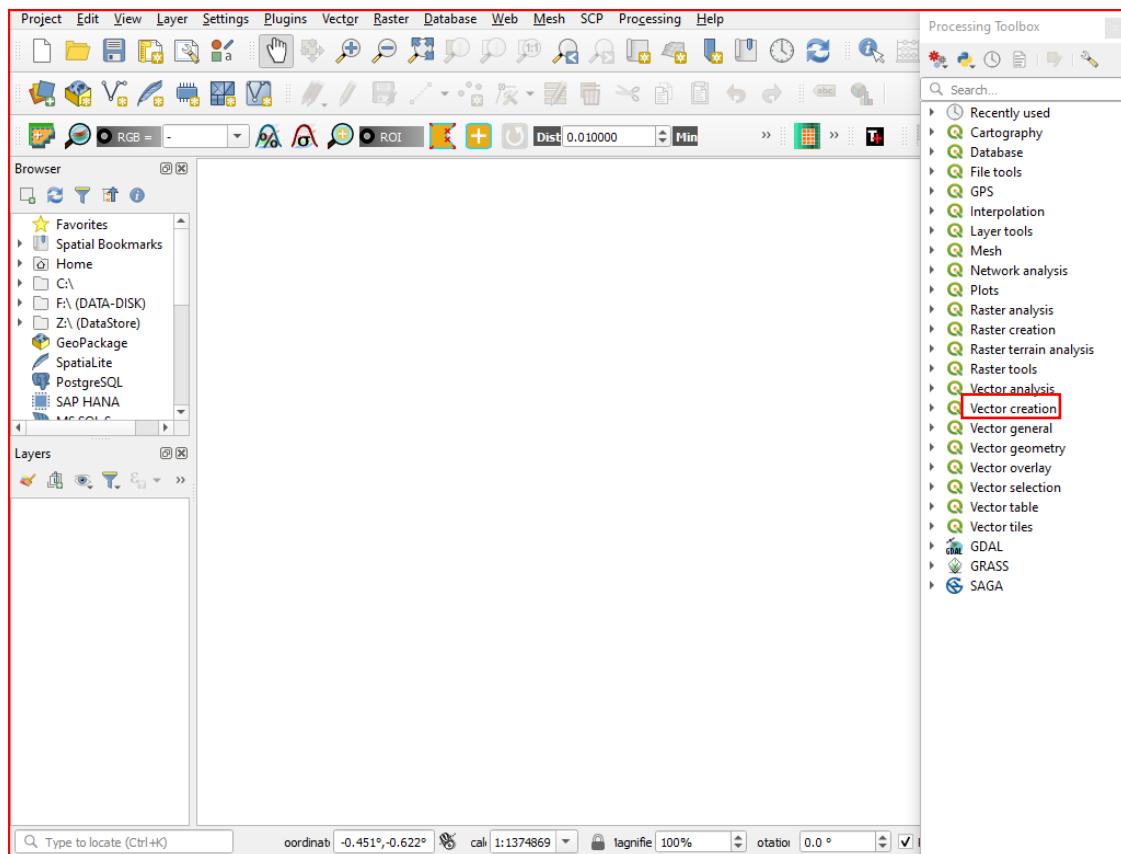
Now double click on the folder to open. A lot of files will be displayed but choose QGIS Desktop 3.34.3.



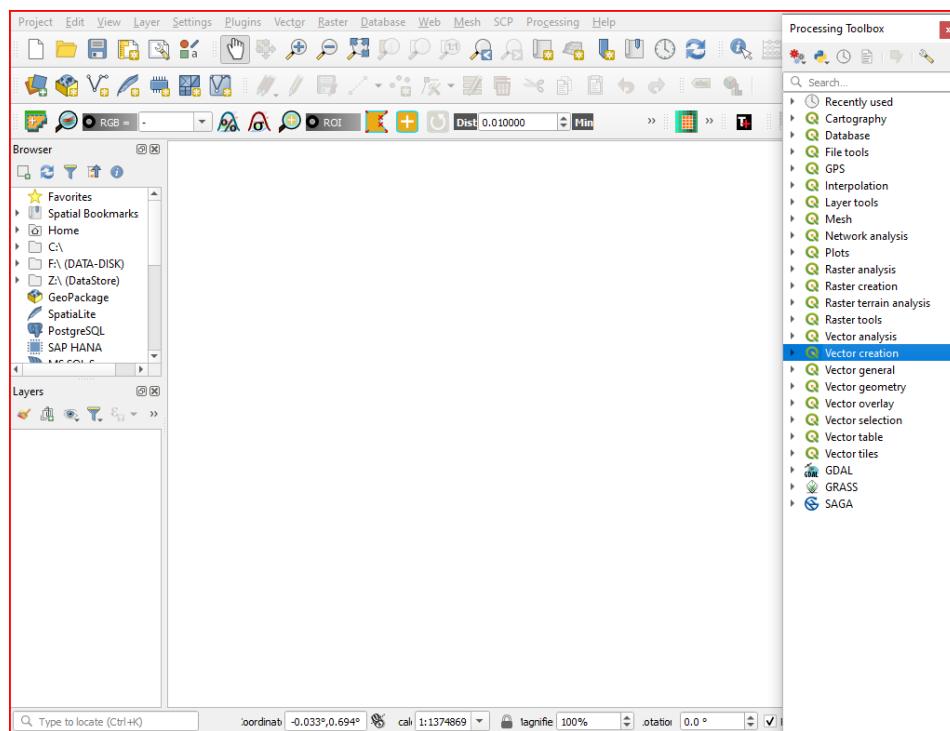
1. Generate 10x10km grids in ESRI shapefile format
 - First launch QGIS software, and wait for a few minutes for it to open.
 - Select a new project to take you to the workspace interface.



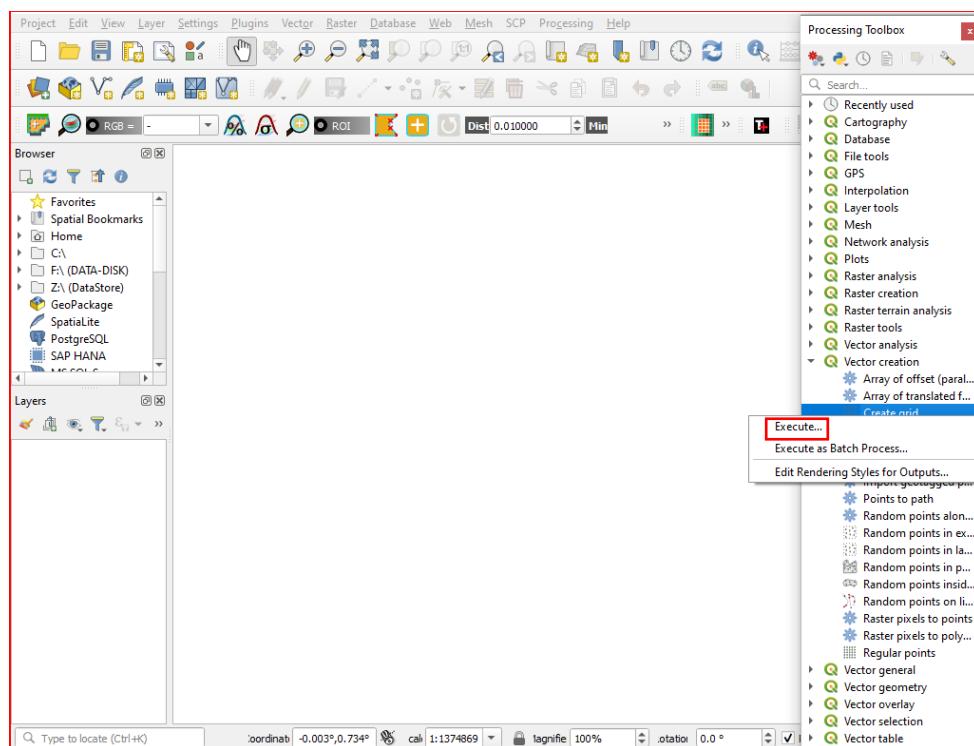
- On the top is the toolbar, click on the Processing toolbar and Select Toolbox, the toolbox is then activated at the right corner of the Map canvas.

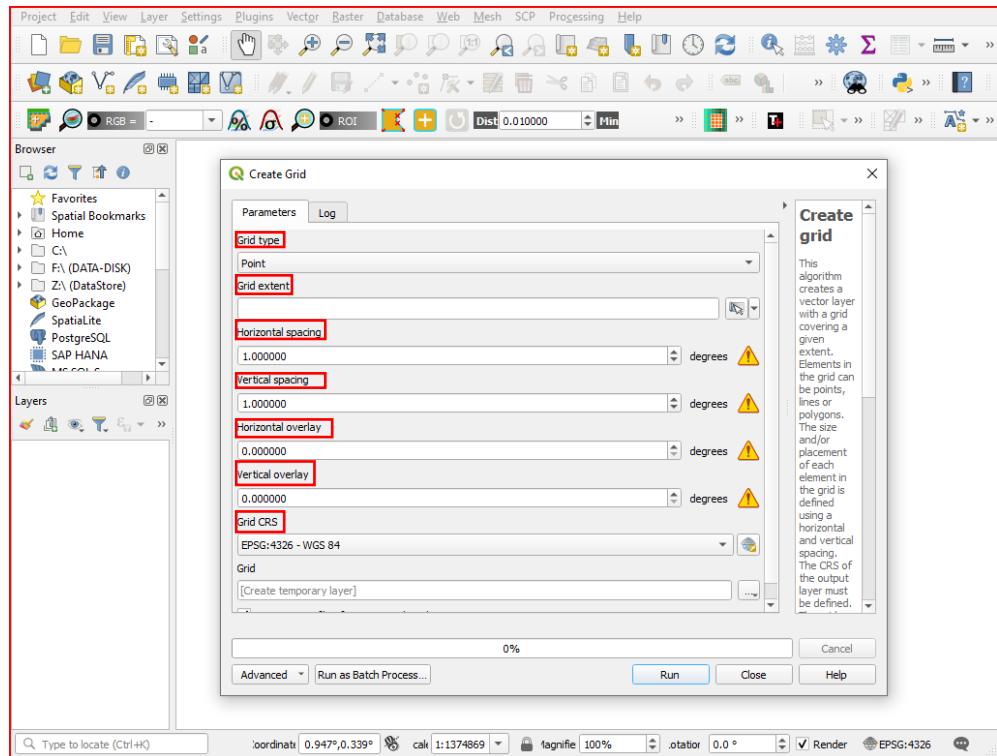


- On the Processing toolbar highlight **Vector Creation** and click on the arrow beside it to expand.



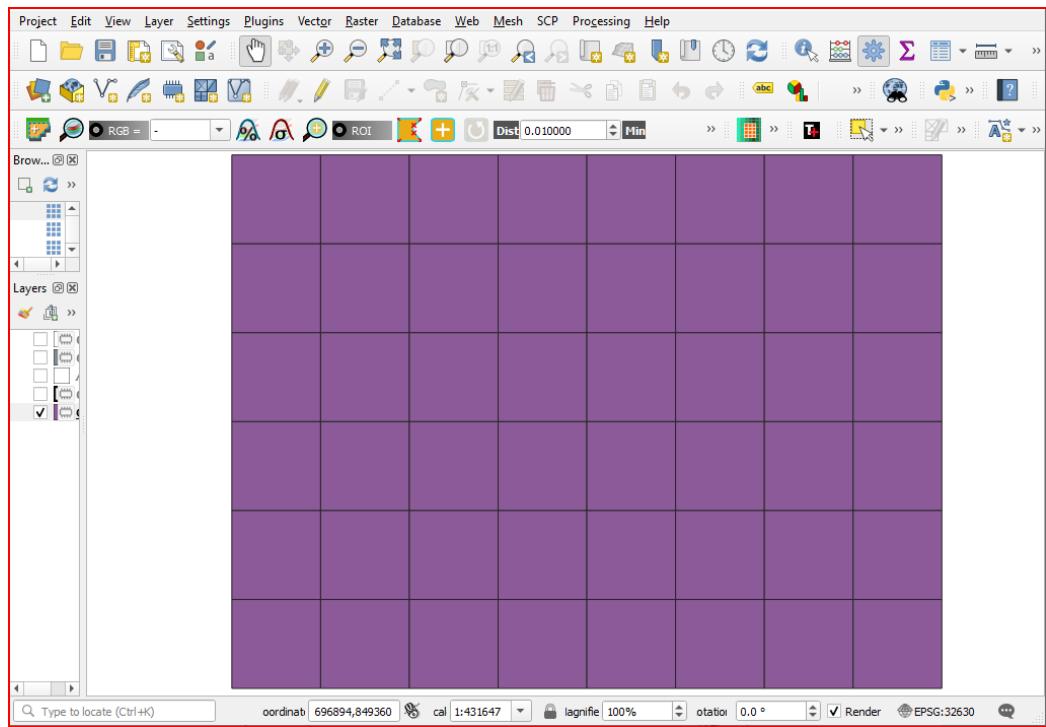
- Right Click on **Create Grid**, a pop-up window will appear. Select **Execute**, and another dialog box will show up.



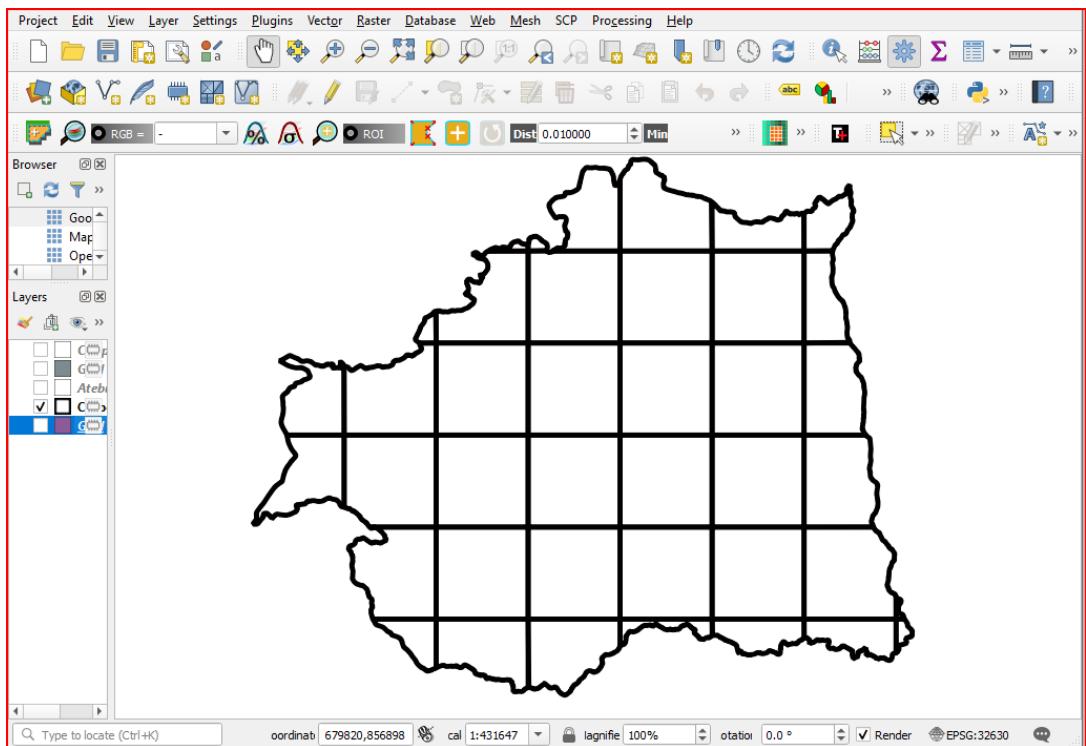


- First on the list is “**Grid type**”. The grid type gives the option to select the type of grid to generate. Since we are interested in a rectangular grid, select **Rectangle(polygon)**
- Next is “**Grid extent**”, expand and select the option, “Calculate from layer” to select the district boundary since we have the boundary of our Area of interest (AOI).
- Below is the **Horizontal and vertical spacing**, input 10 both at the horizontal and vertical spacing and change the metric units to kilometers. Leave the horizontal and vertical overlay to the default values
- Below is the **Grid CRS**, change the projection from geographic to projected which is UTM zone 30N

- Click on Run to generate the grids.

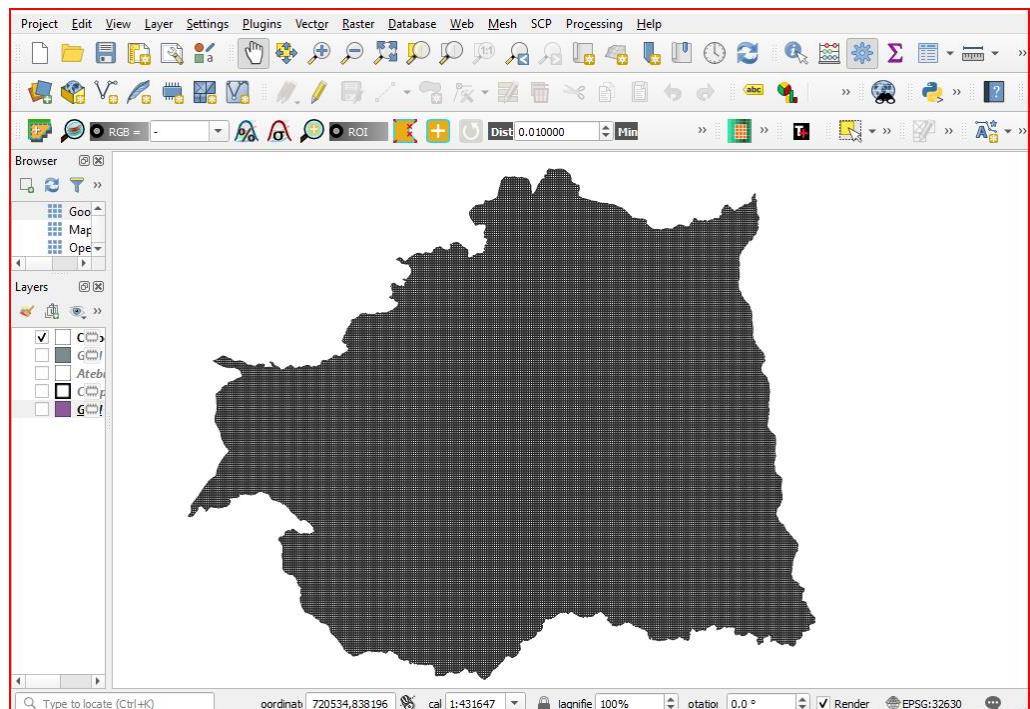


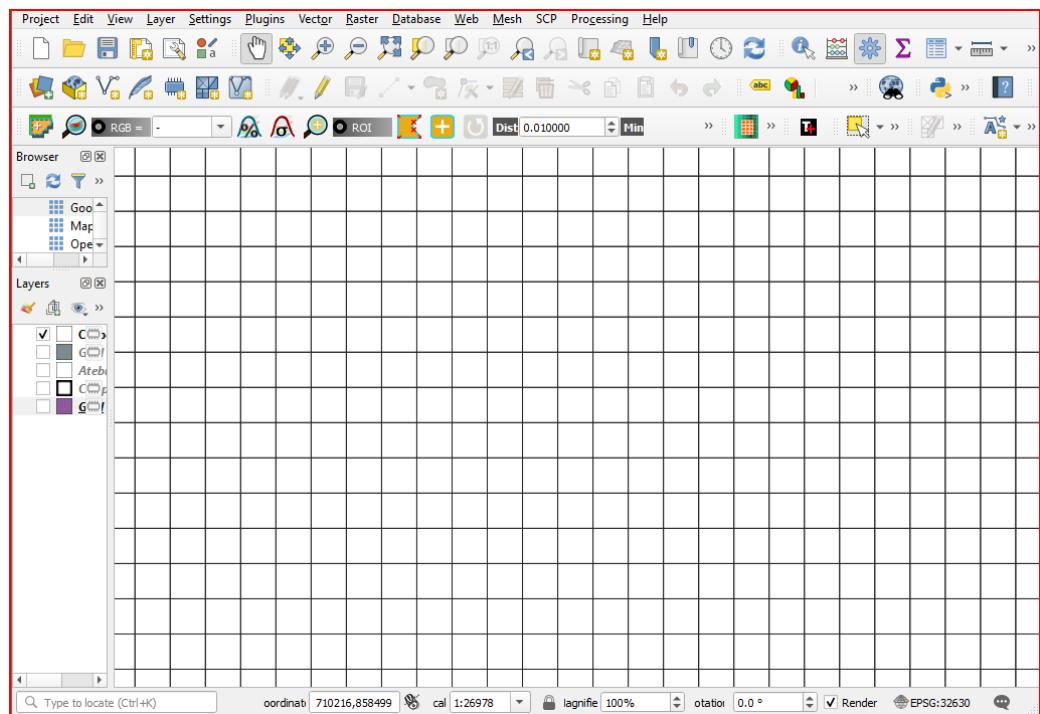
- After generating the grids clip them to the AOI.



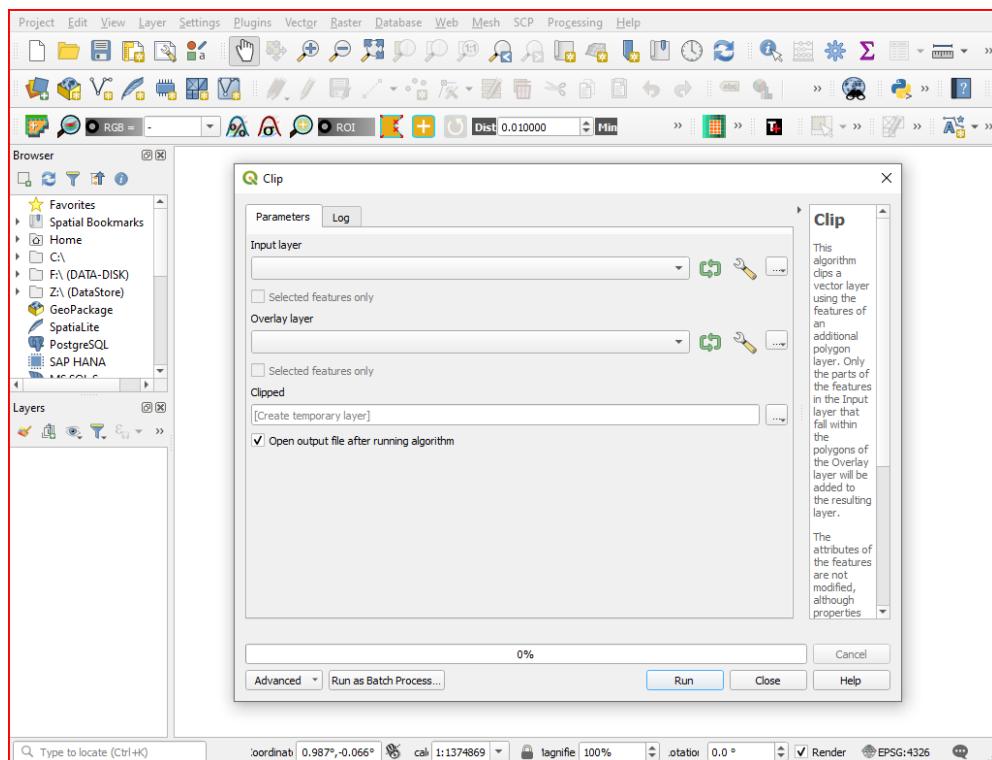
2. Generate 250x250m grids within the 10x10km shapefile.

- Go through the same process in generating the 10x10km but in this context, input 250 at the horizontal and vertical spacing and change the metric units to meters.
- Clip it to the AOI and to clip in QGIS.





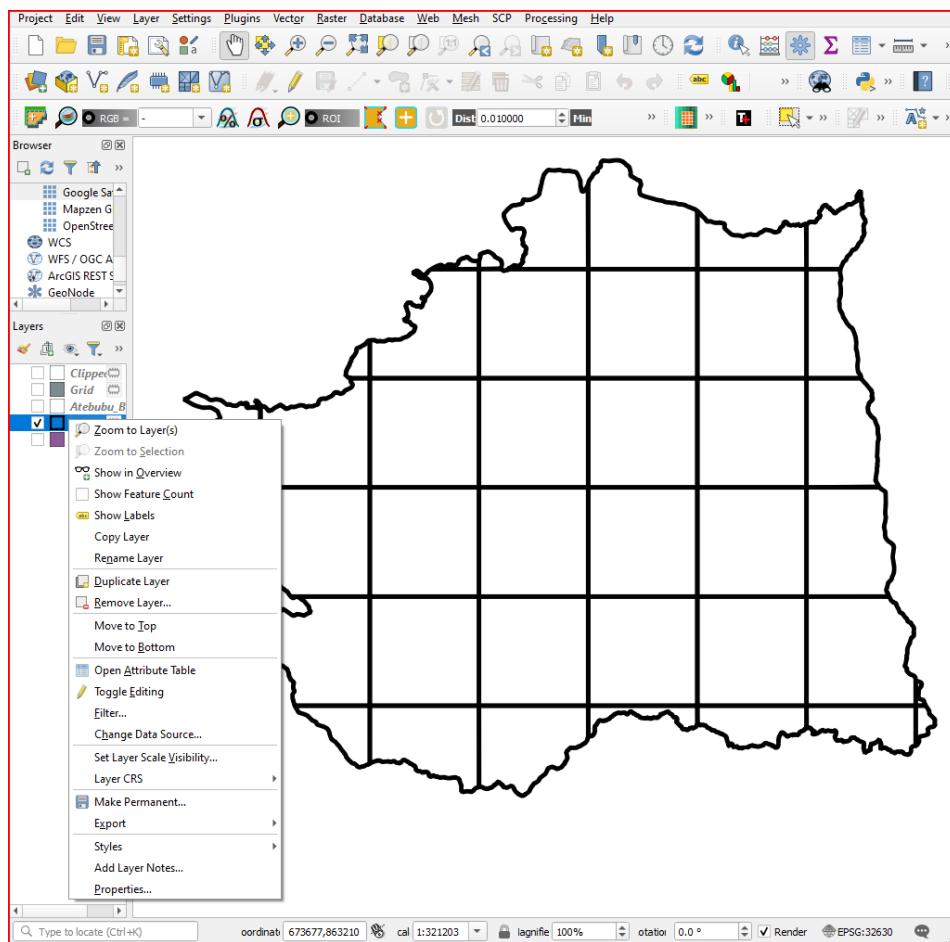
- ✓ Click on **Vector** from the toolbar, click on the **Geoprocessing tool**, and select **Clip** a pop-up will appear.



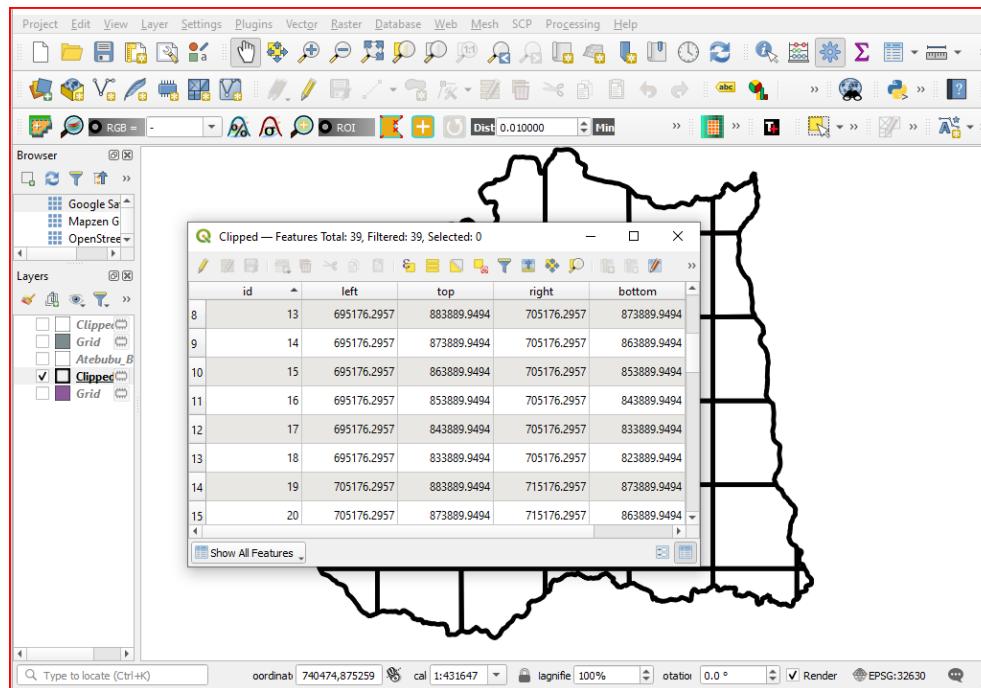
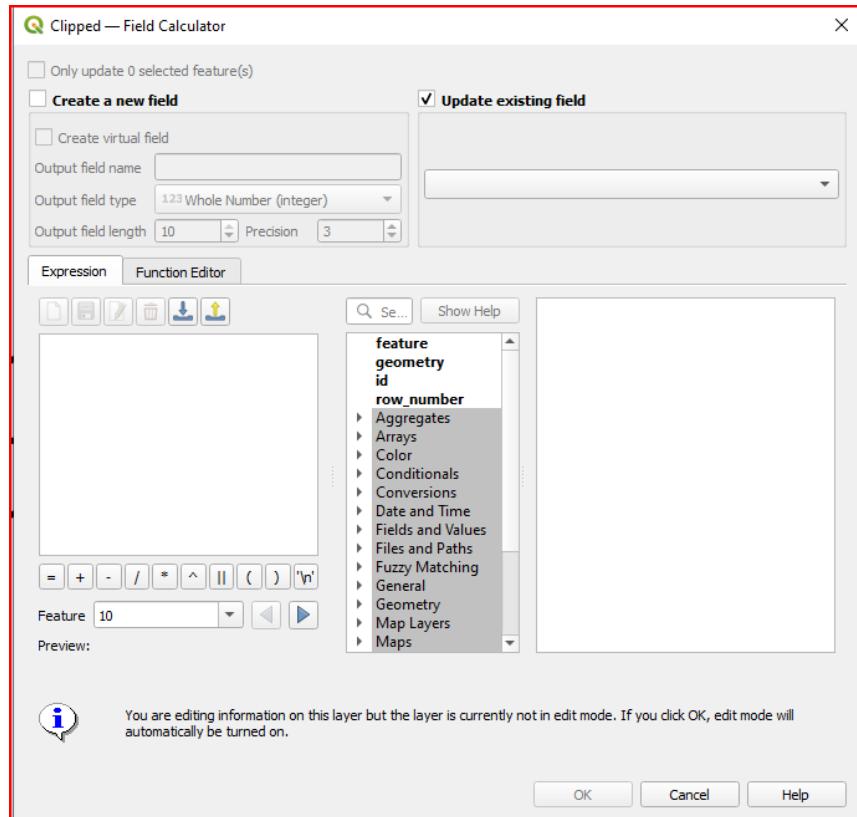
- ✓ At the **Input Layer** select the generated grid
- ✓ At the **Overlay Layer** select the AOI
- ✓ **Clipped** allows you to specify where you want to save the outputs.
- ✓ Clip **Run** to clip the grids to the boundary.

3. Assign unique codes to Grids.

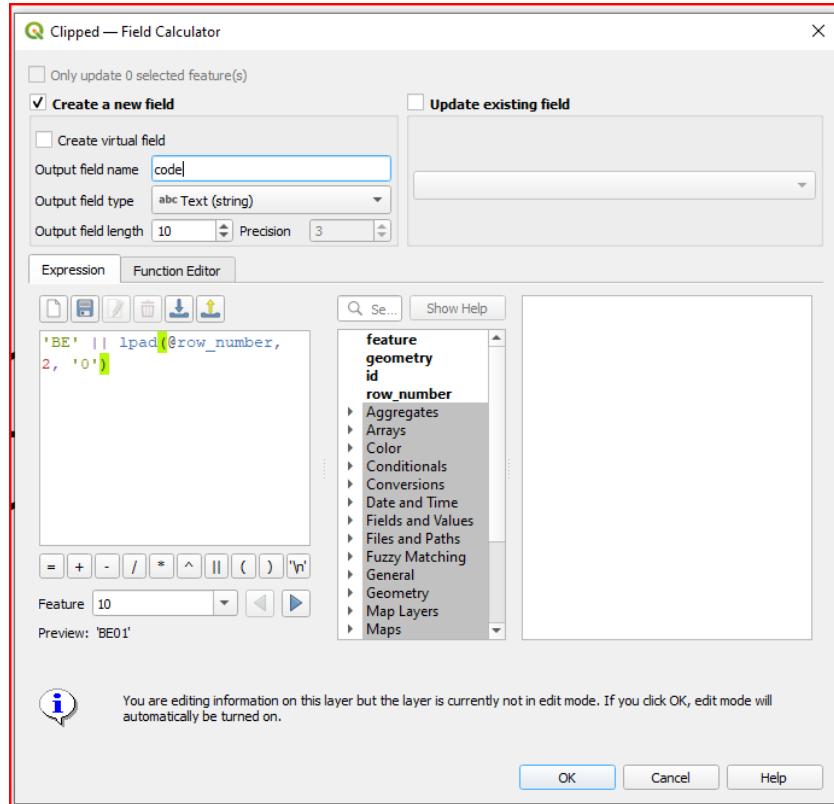
- To assign unique codes to the grids, right-click on the 10x10km grid that has been clipped to the boundary.
- Select **Attribute Table** from the drop-down and a dialog box will appear



- Select Field Calculator  from the dialog box and a pop-up will appear



- Check **Create New Field**, type the name of the field at the **Output field name**, and select text(string) at the **Output field type**. Leave the field length at its default value.



- Type this function ('BE' || lpad(@row_number, 2, '0')) at the expression field and click ok to generate the unique codes.

Clipped — Features Total: 39, Filtered: 39, Selected: 0

		id	left	top	right	bottom	code
1		3	675176.2957	863889.9494	685176.2957	853889.9494	BE01
2		4	675176.2957	853889.9494	685176.2957	843889.9494	BE02
3		8	685176.2957	873889.9494	695176.2957	863889.9494	BE03
4		9	685176.2957	863889.9494	695176.2957	853889.9494	BE04
5		10	685176.2957	853889.9494	695176.2957	843889.9494	BE05
6		11	685176.2957	843889.9494	695176.2957	833889.9494	BE06
7		12	685176.2957	833889.9494	695176.2957	823889.9494	BE07
8		13	695176.2957	883889.9494	705176.2957	873889.9494	BE08

Show All Features

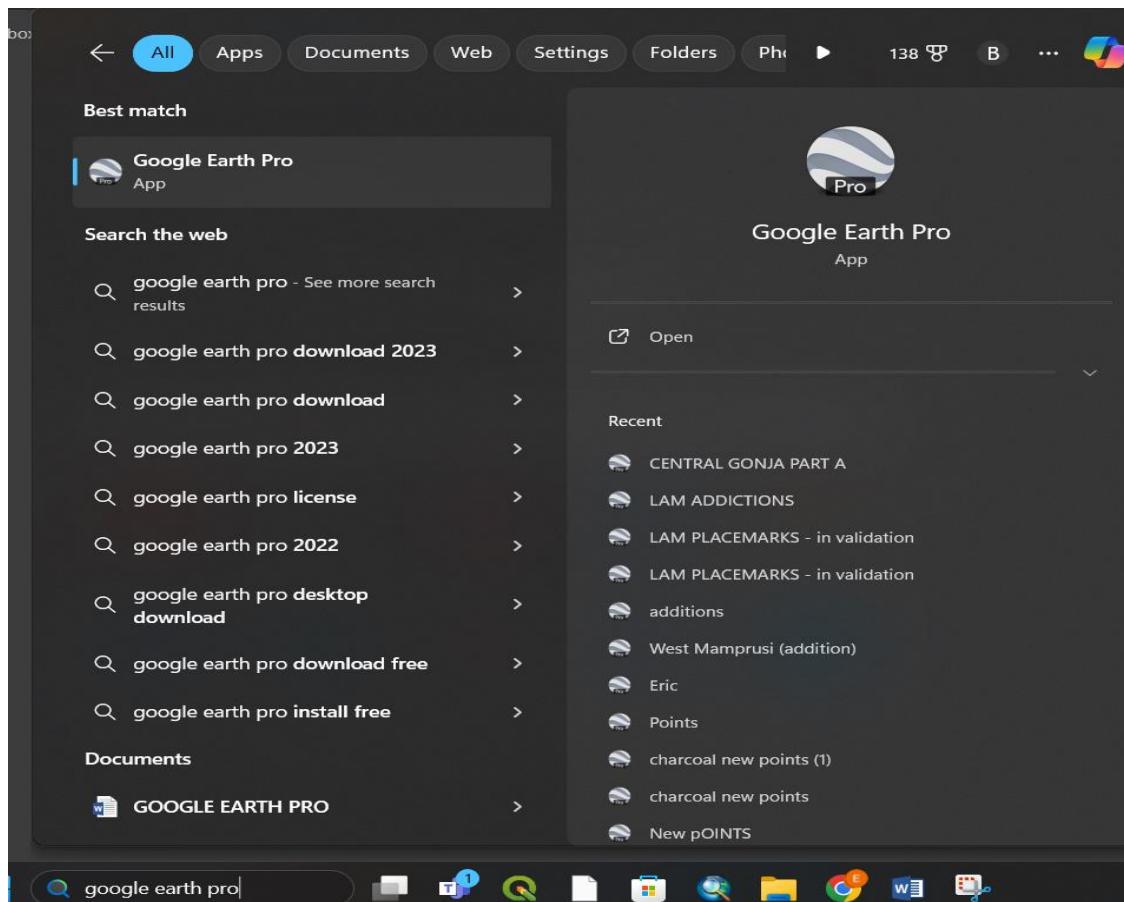
INTRODUCTION TO GOOGLE EARTH FOR PICKING SCARS/ KILN

STEP 1. INSTALLATION OF GOOGLE EARTH PRO SETUP.

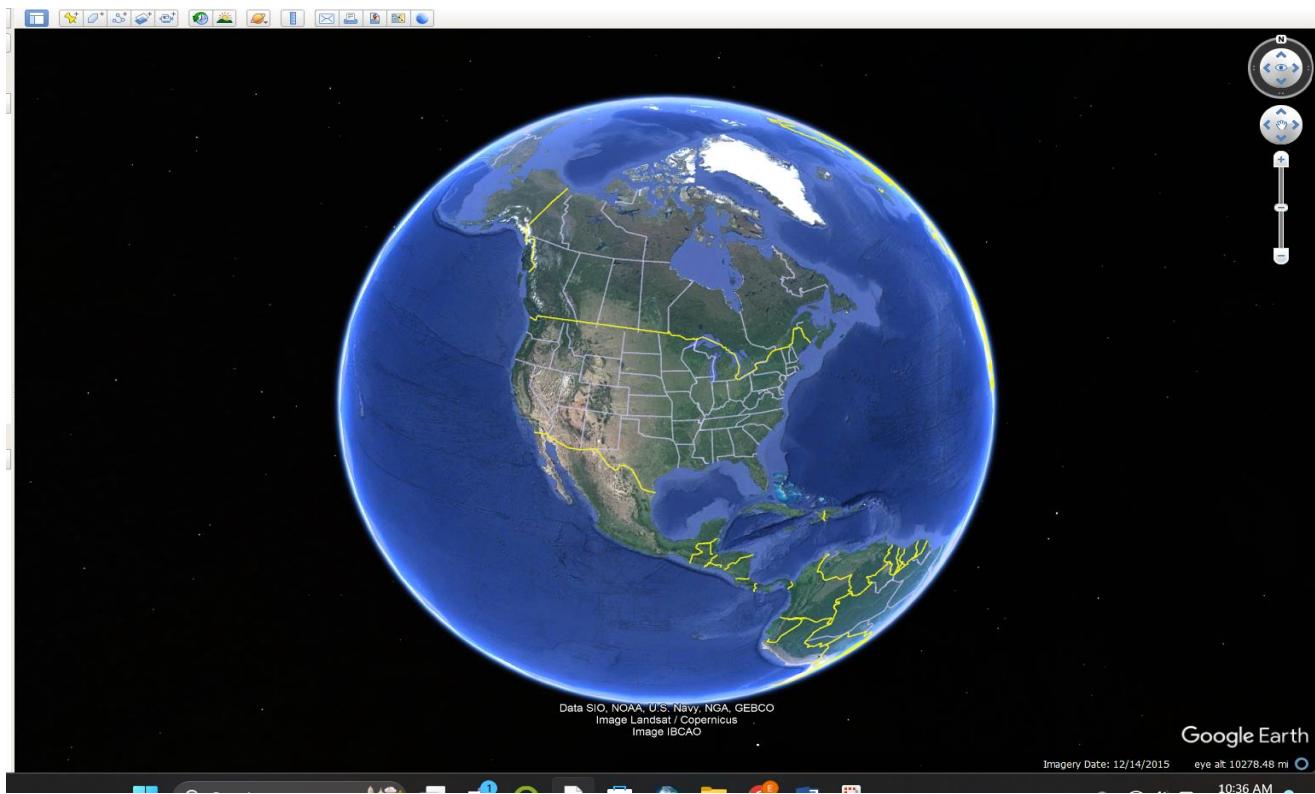
- Double Click on the setup.
- 
- GoogleEarthProSetup
.exe
- Click YES on the pop-up menu.
 - Installation is completed.

STEP 2. OPEN THE GOOGLE EARTH PRO APPLICATION.

- Type **GOOGLE EARTH PRO** on your Windows search box to locate the application after installation.



- Double-click on the application to open Google Earth Pro.



BASIC FEATURES IN GOOGLE EARTH PRO.



PLACEMARK: This is used to mark a feature on an image.



ADD POLYGON: This feature is used to create a shape in Google Earth Pro.



ADD PATH: This feature is also used to create a path in Google Earth Pro.



ADD IMAGE OVERLAY: Use for adding other images into Google Earth Pro.



RECORD A TOUR: Use for recording a tour in Google Earth Pro.



TIME SLIDER: Use to show historical imagery.



Shows sunlight across the landscape.



Use to switch between Earth, Sky and other planets.



Use for measuring objects found in google earth pro.



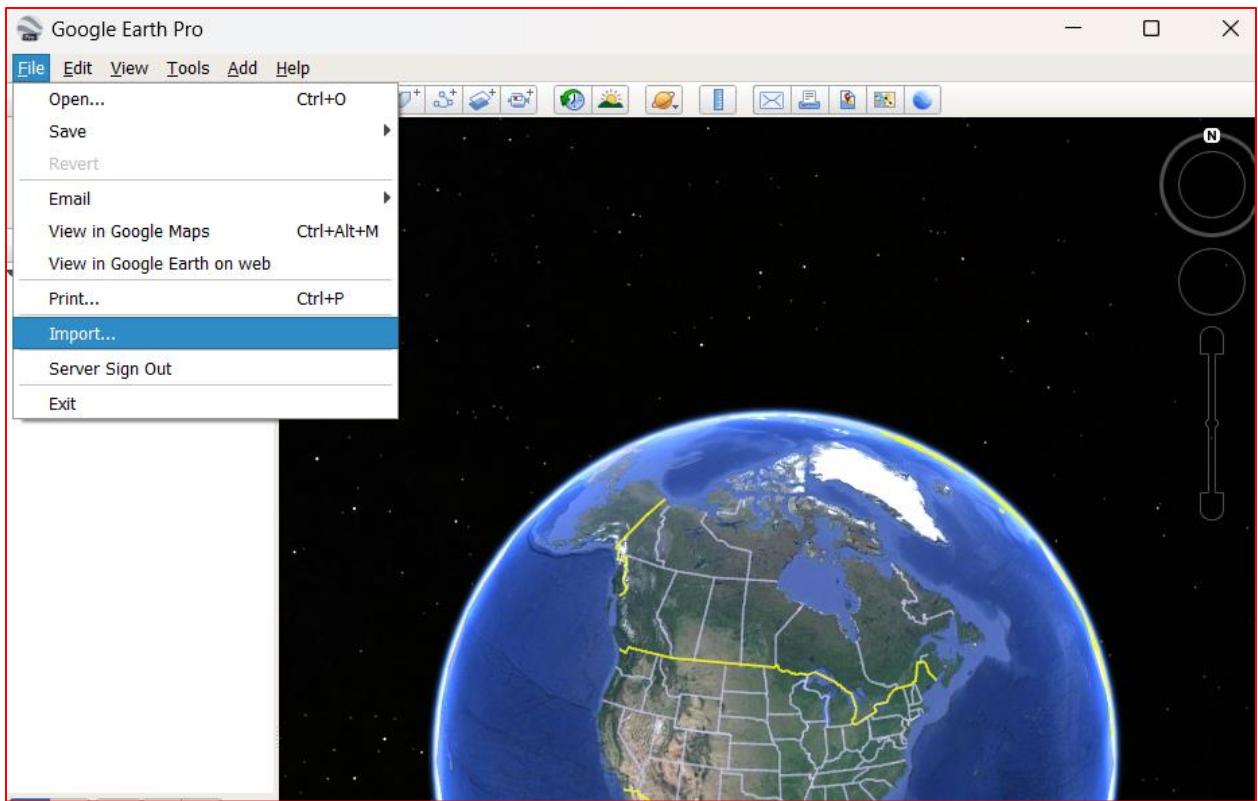
Use for printing images.

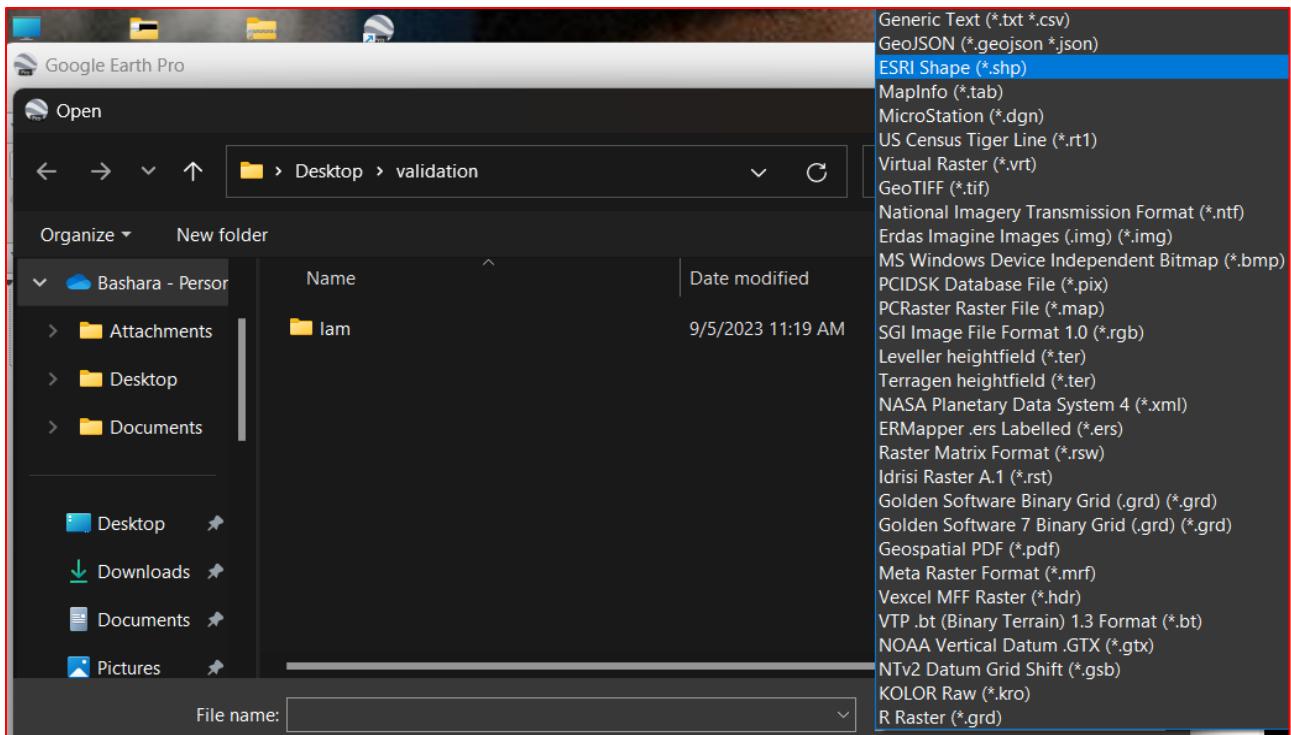


Use for saving images in Google Earth.

STEP 3: IMPORT GRIDS TO PICK CHARCOAL SCARS/KILNS.

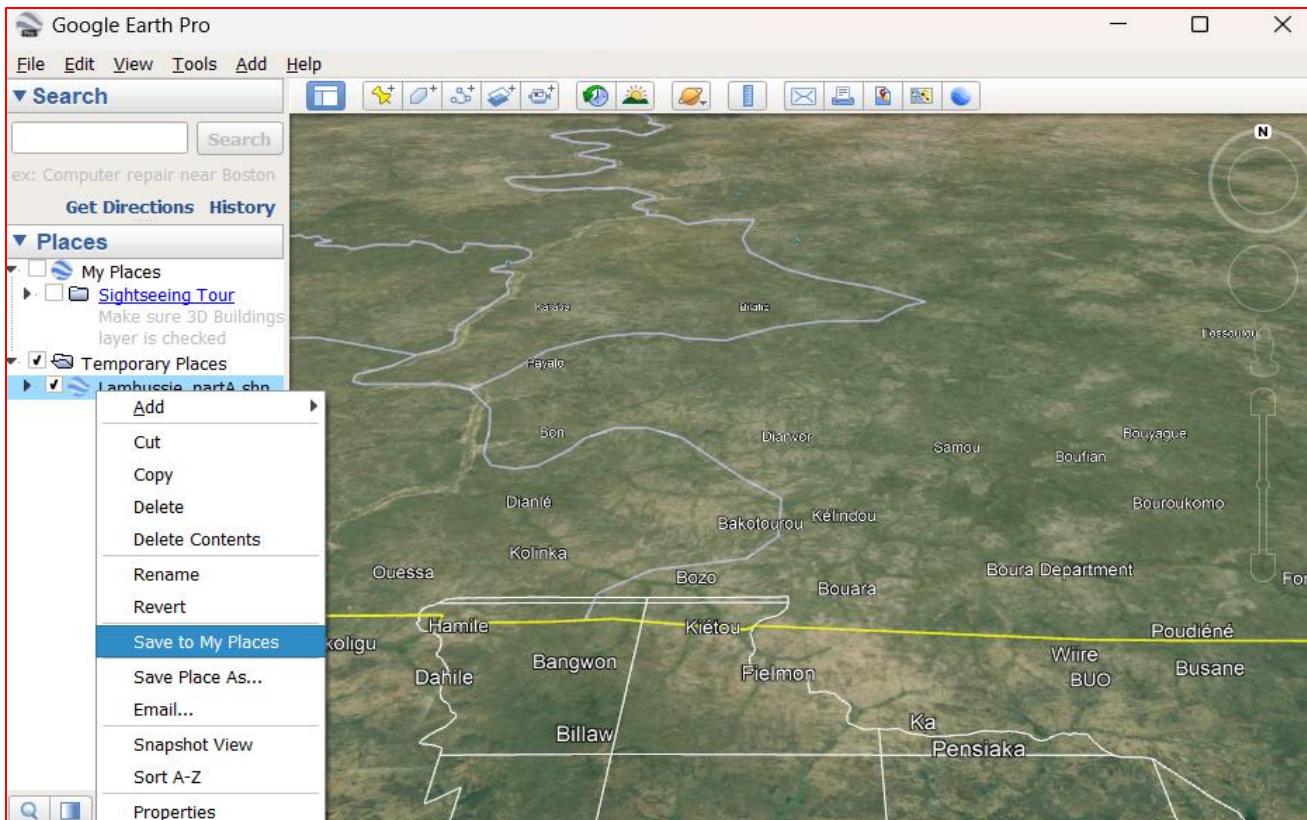
- Click on File on the left cover of the Menu bar.
- Scroll down to Import from the drop-down Menu and Right-click to open your browser
- Click on the file type in your browser and select ESRI shapefile.
- Browse to the folder where GRID has been saved.
- Double-click to open the folder to select Grid.
- Click on GRID and click on open at the bottom right of your browser menu to import the grid in Google Earth Pro.





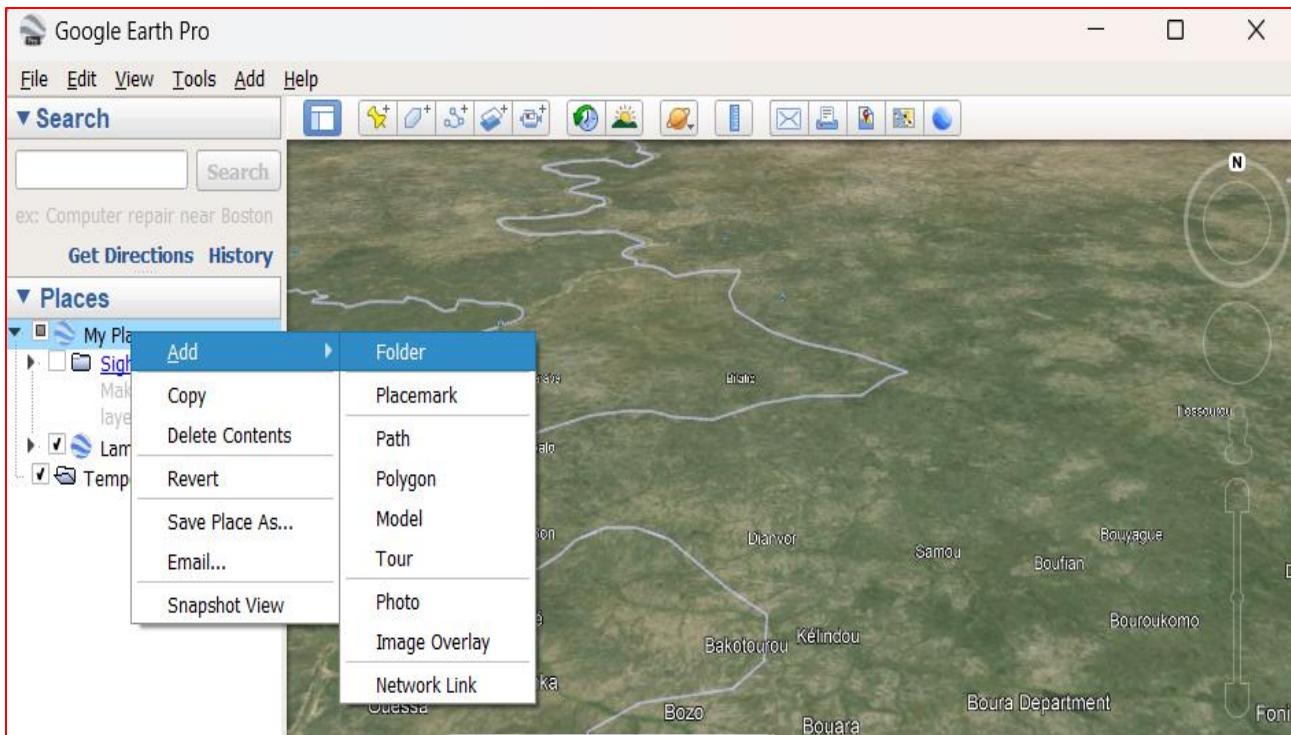
STEP 4. SAVE THE GRID IN GOOGLE EARTH PRO.

- Right-click on the imported grid.
- Scroll down to **SAVE TO MY PLACES**.
- Right-click on my **SAVE TO MY PLACES** to save.



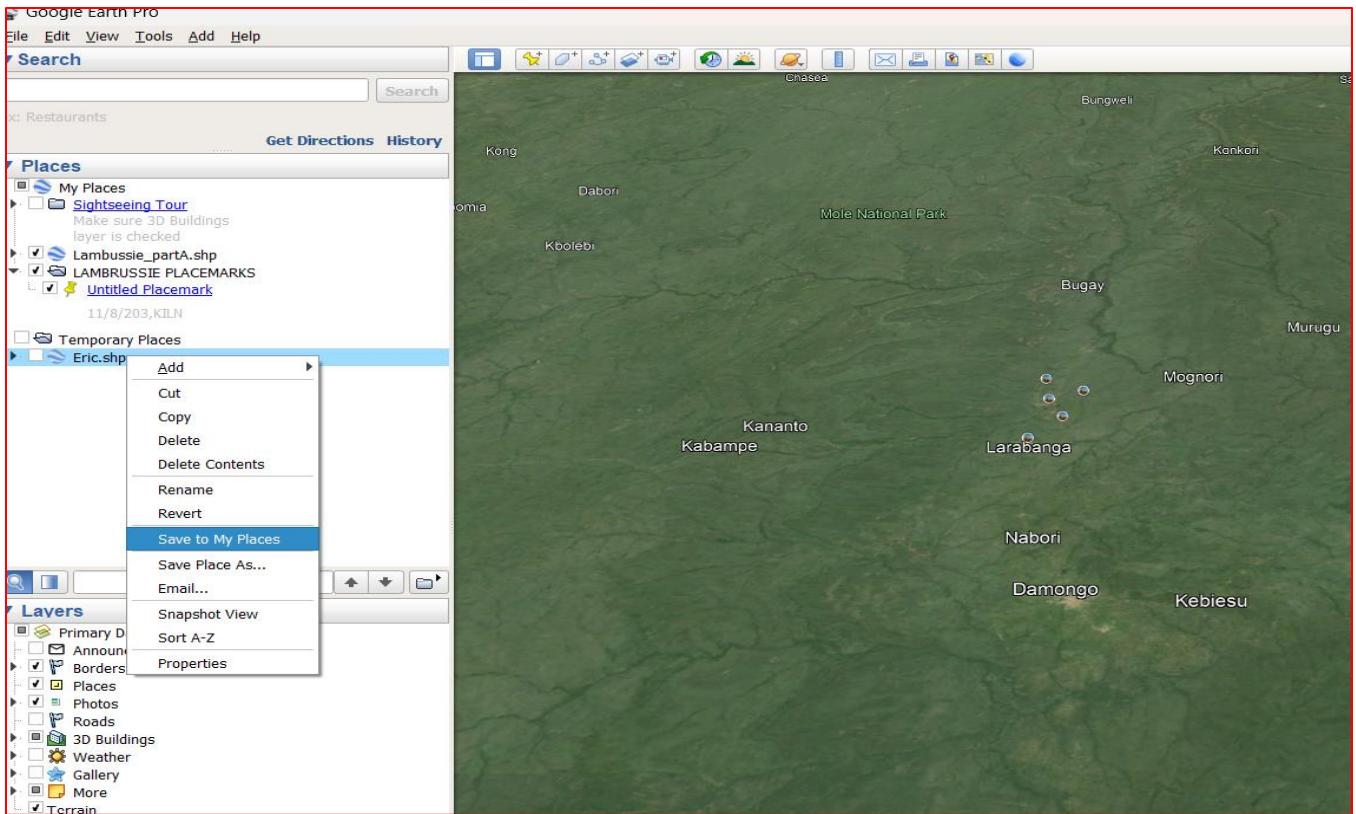
STEP 5: CREATE A FOLDER TO STORE PLACEMARKS.

- Right-click on **MY PLACES**.
- Click on **ADD** and select **Folder**.
- Folder has been created and saved at Temporary places.



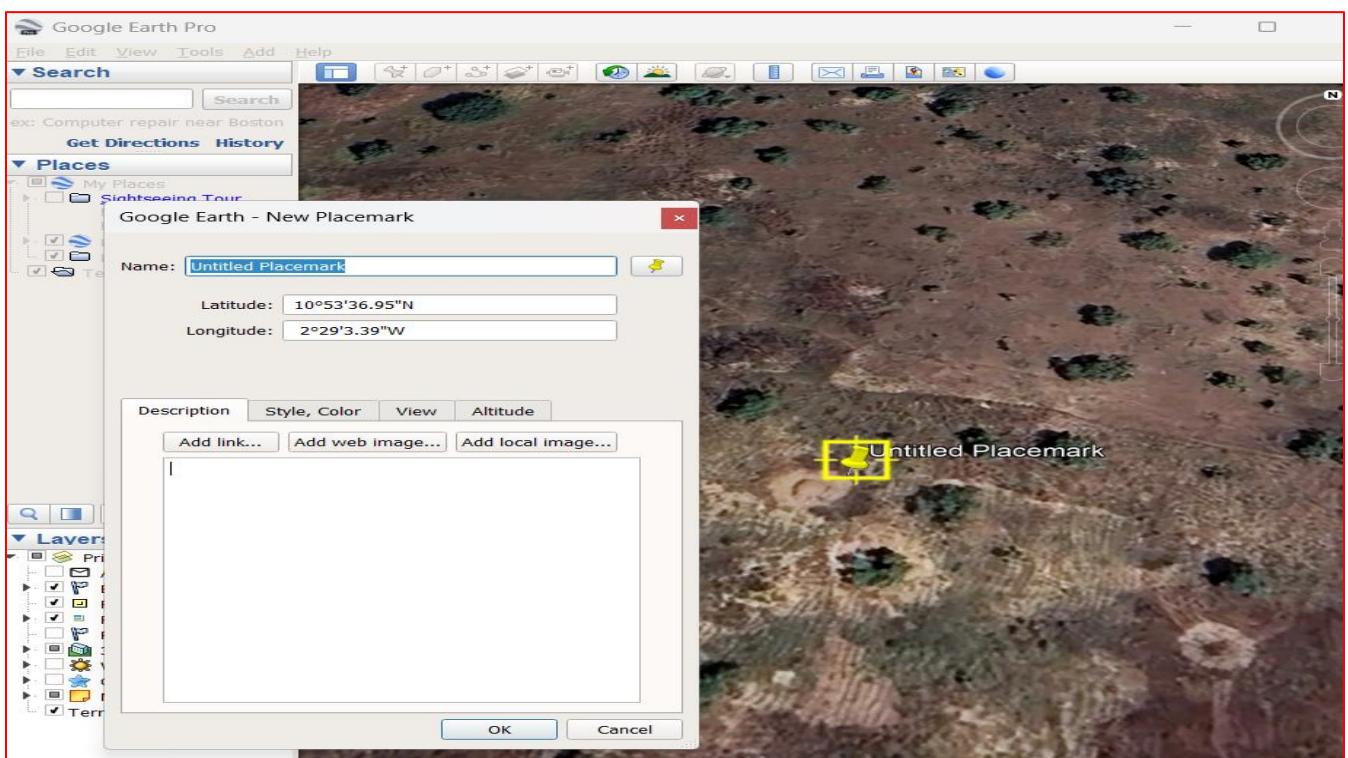
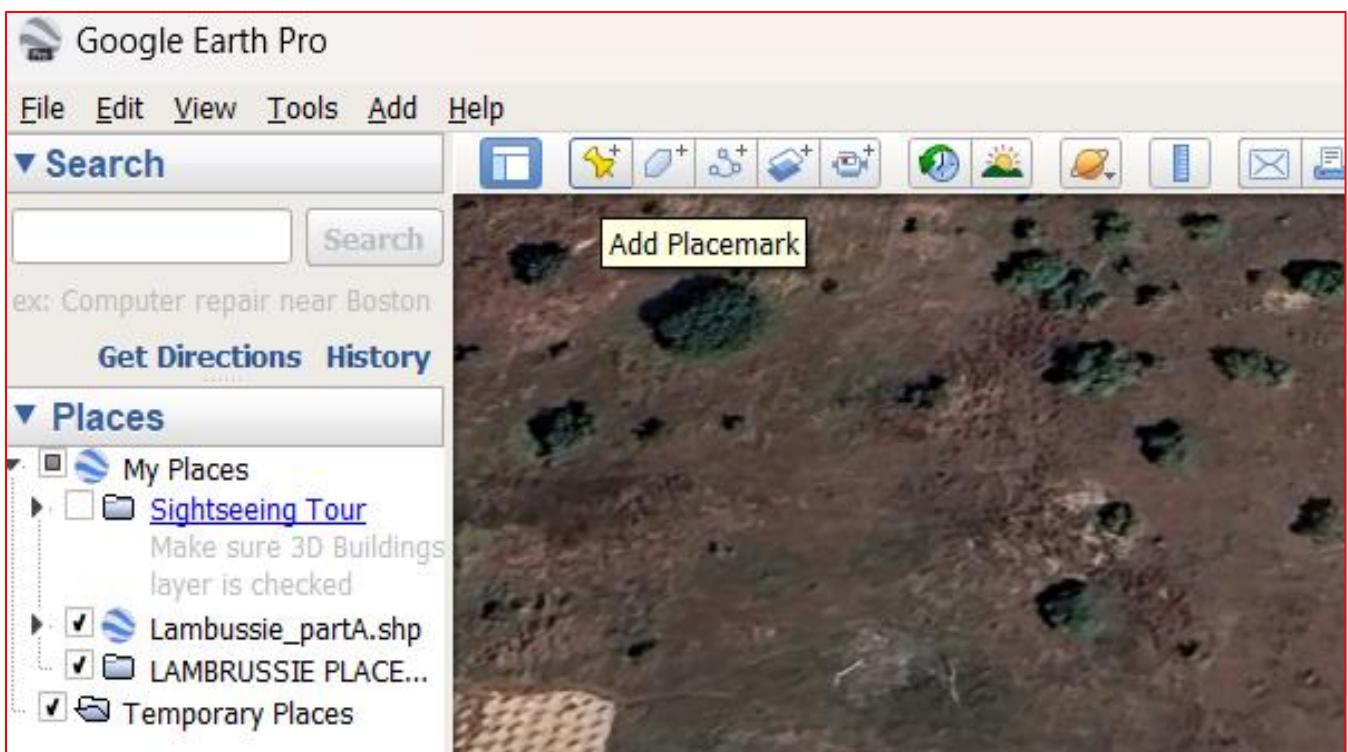
STEP 6: SAVE FOLDER PERMANENTLY TO MY PLACES.

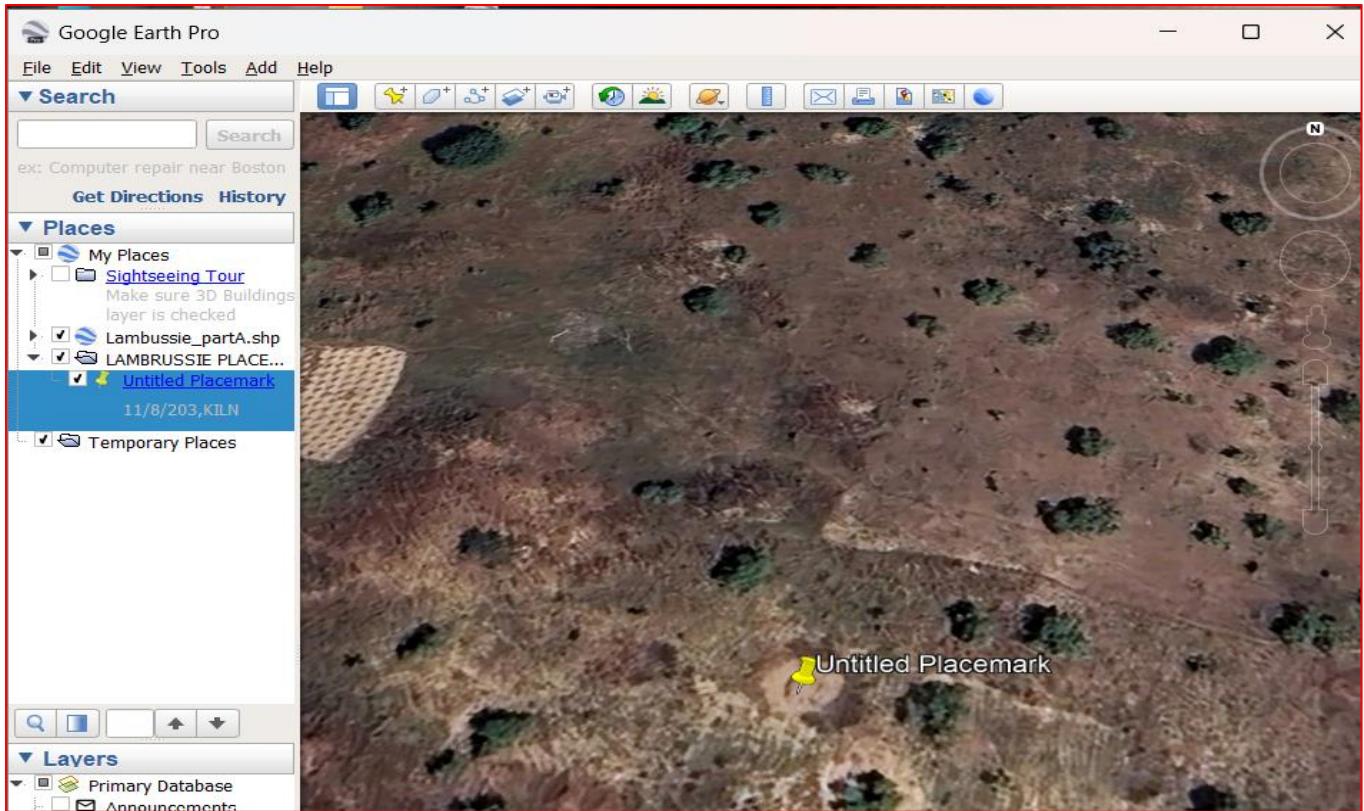
- Right-click on the **Folder** in Temporary places.
- Select **SAVE TO MY PLACES** from the drop-down menu to save.



STEP 7: PICKING CHARCOAL SCARS/ KILNS USING PLACEMARKS.

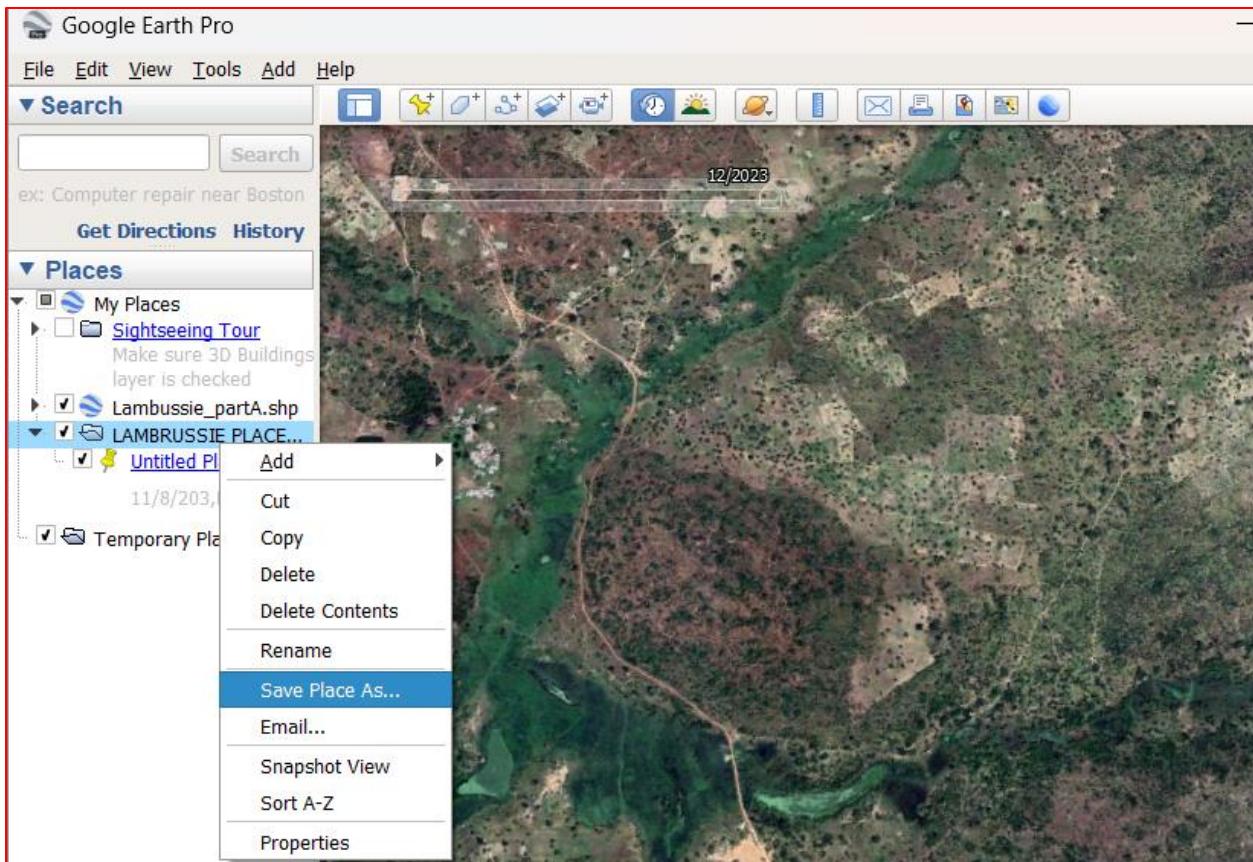
- Click on the **PLACEMARK**  feature after locating a scare or a kiln.
- A description menu pops up
- Describe the feature found on the image in the description box with a date. Eg.[11/02/2023, kiln].
- Click on **OK** to save the placemark.

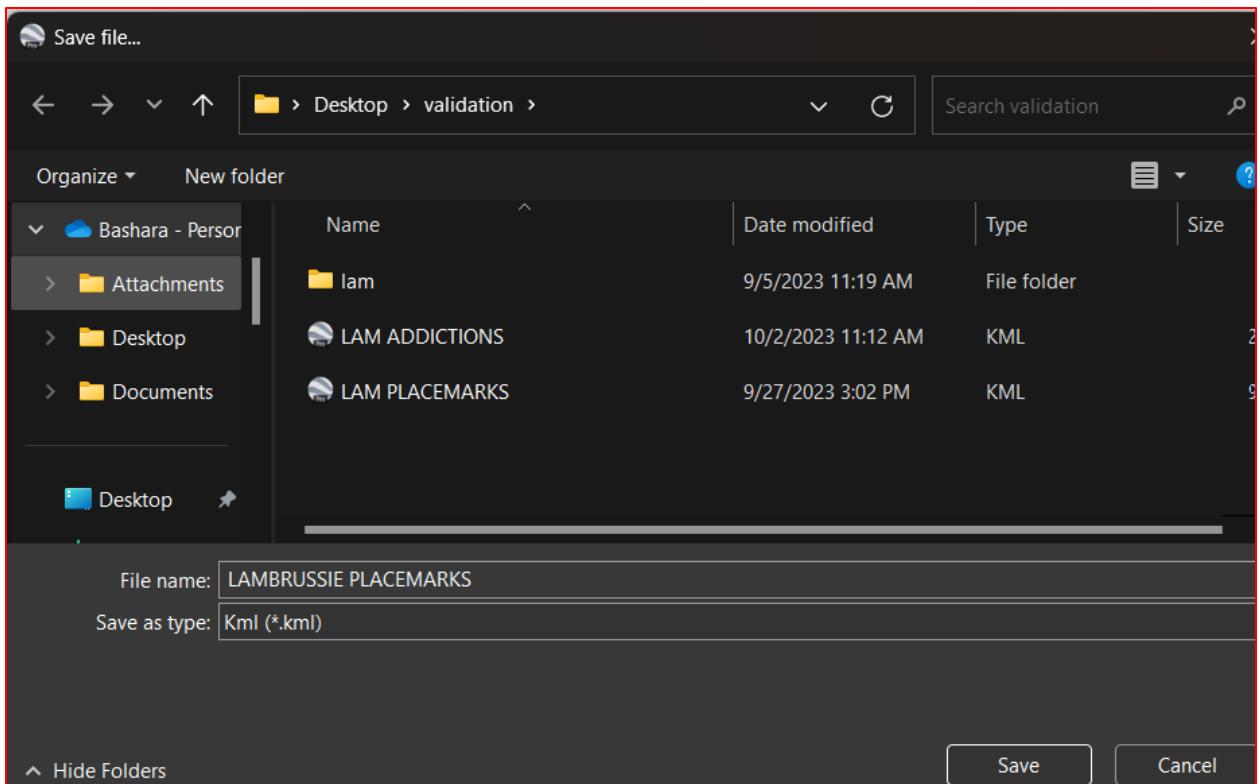




STEP 8: SAVE PLACEMARK FOLDER AS KML.

- Right-click on PLACEMARK FOLDER
- Click on **SAVE PLACES AS** from the drop-down menu.
- It opens to your browser.
- Select folder destination to save the **placemark folder**.
- Select **kml** as folder type and click **SAVE** to save.





OPEN FORIS COLLECT EARTH

Collect Earth is a tool that enables data collection through Google Earth.

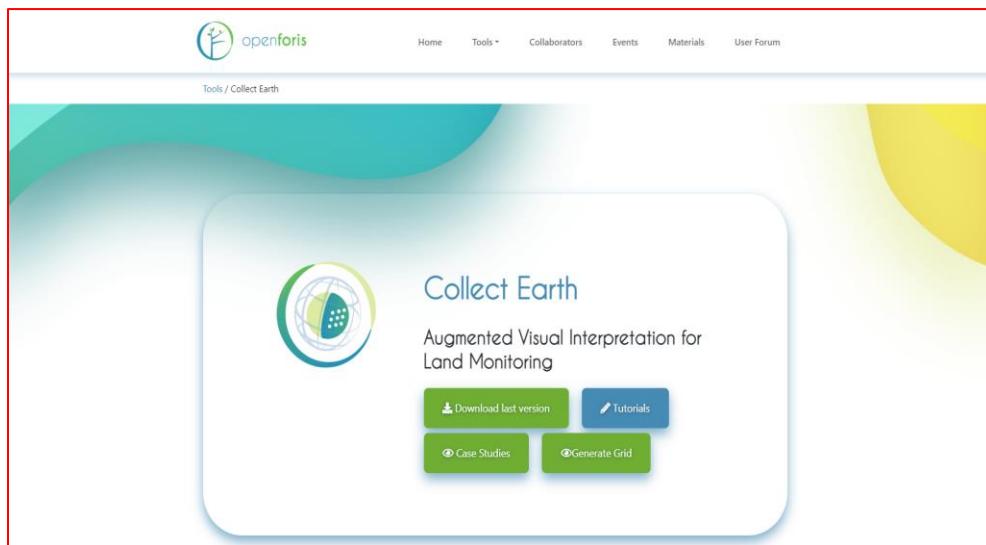
Collect Earth is user-friendly and perfect for performing fast, accurate, and cost-effective assessments. It is highly customizable for the specific data collection needs and methodologies one is interested in

The data gathered through Collect Earth can be exported to other commonly used formats.

A. Download Collect Earth

To download Collect Earth, visit their website using this link: <https://openforis.org/tools/collect-earth/>

The home page shows 4 tabs



- I. Download the latest version of Collect Earth: This downloads the Collect Earth installer software onto your device. Clicking on it leads to another tab where the download is done.

Download Collect Earth

 Windows

 Linux

 Mac

Latest version : **1.21.0** (11/9/2023)

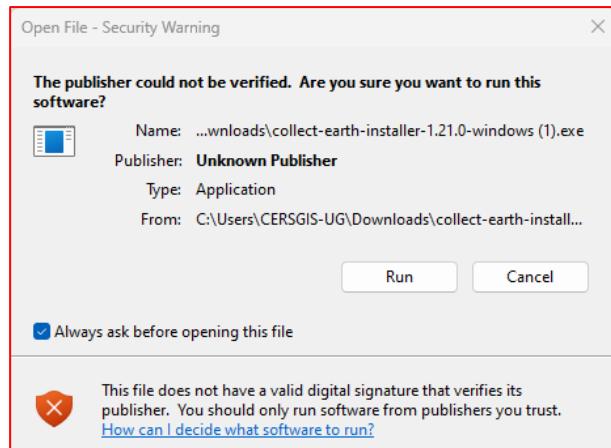
Collect Earth **requires** Google Earth Pro and Mozilla Firefox or Google Chrome.

To download, click on the file that corresponds to your Operating System (OS) to begin the installation process

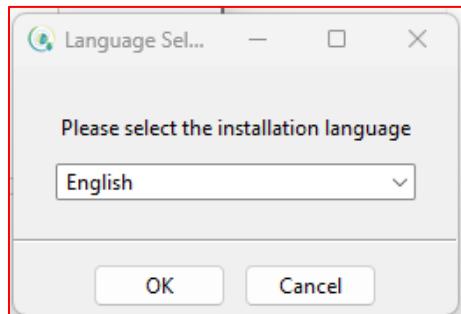
- II. Tutorials: The tutorials tab provides step-by-step assistance to various forms of activities performed in Collect Earth. Some of the activities include key features, installation, sample design, survey design etc.
- III. Case studies: Provide a list of projects executed using Collect Earth.
- IV. Generate Grid: Grids can be generated with the Google Earth Engine tool directly by using a shapefile or country /province/district boundaries.

B. Installing Collect Earth

- i. To install, click on the downloaded file to start the installation process.
- ii. A pop-up box will appear asking you to run the software on your device. Click on “Run” to start the installation.



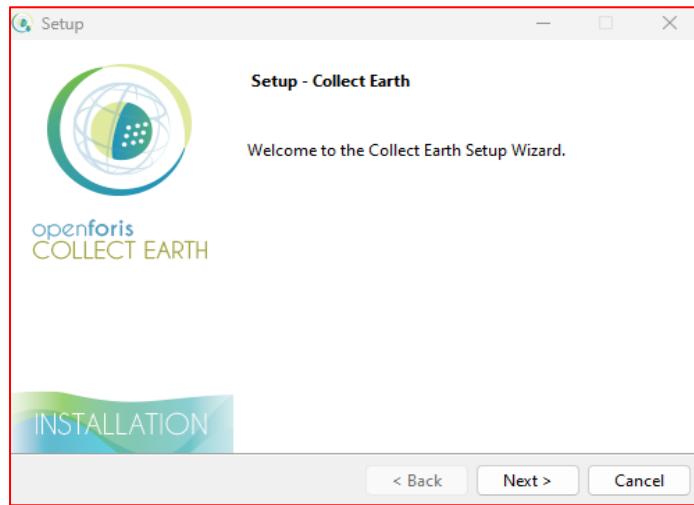
- iii. English is the default language. Collect Earth Spanish, French, and Portuguese versions are also available.



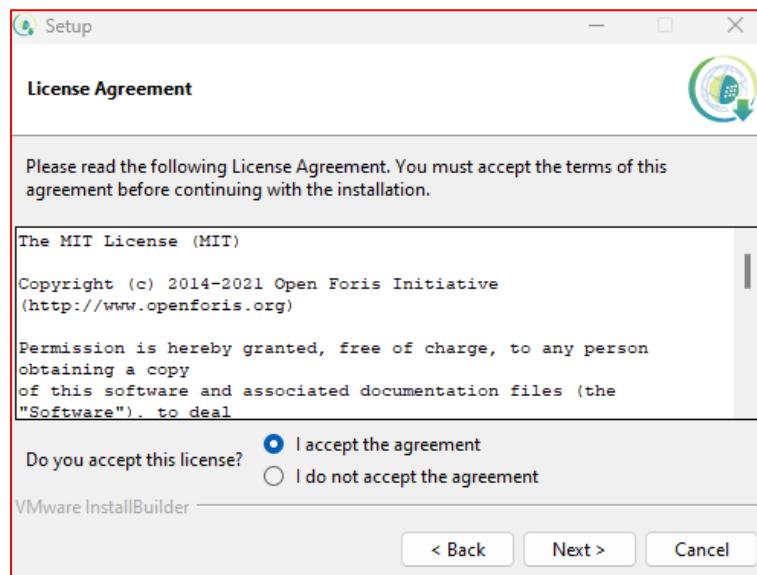
- iv. Click on “OK” after selecting a language of choice.

A Setup popup box will appear to guide in the installation.

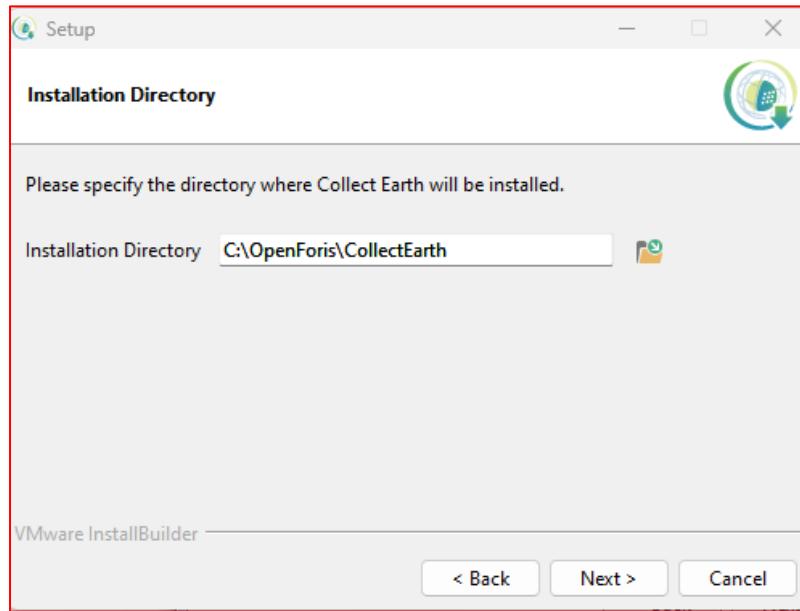
- v. Click “Next” to continue



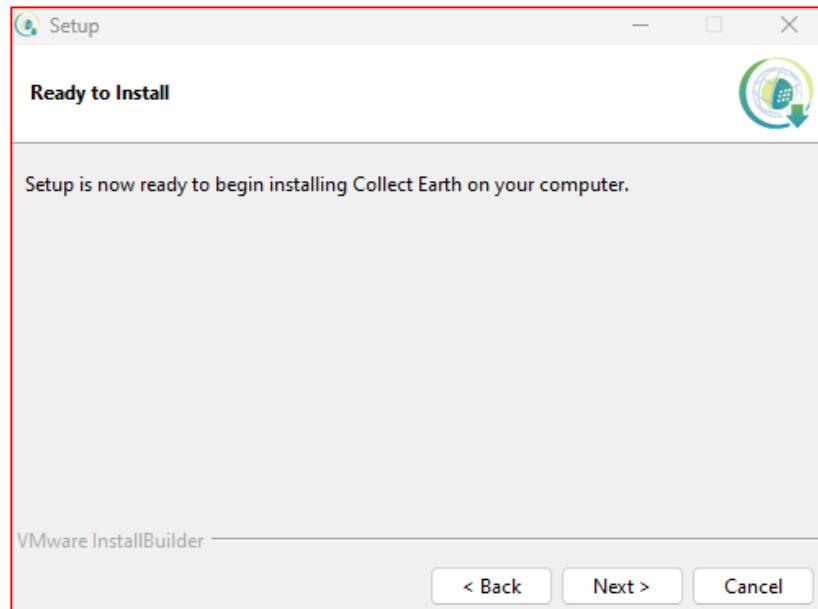
- vi. Read and accept the license agreement and click “Next”.



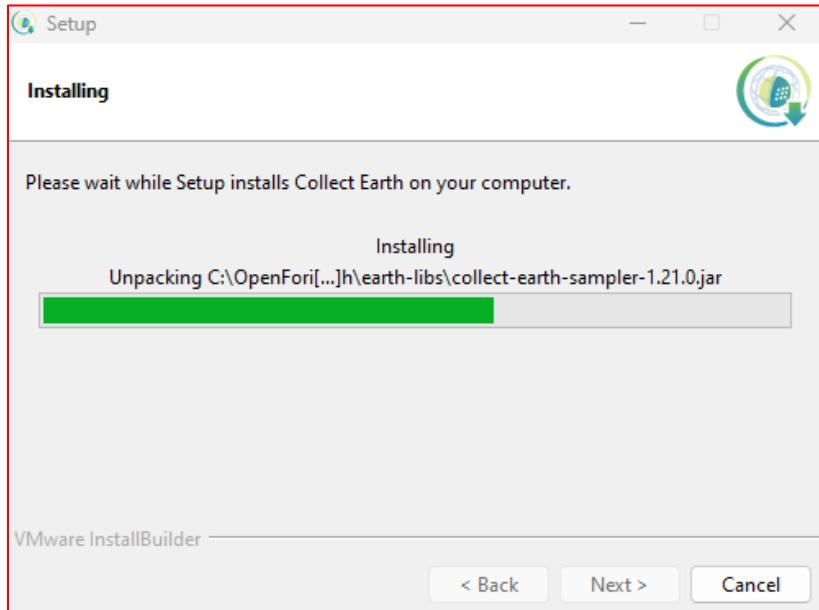
- vii. Click “Next” to install Collect Earth to the default location, C:\OpenForis\CollectEarth



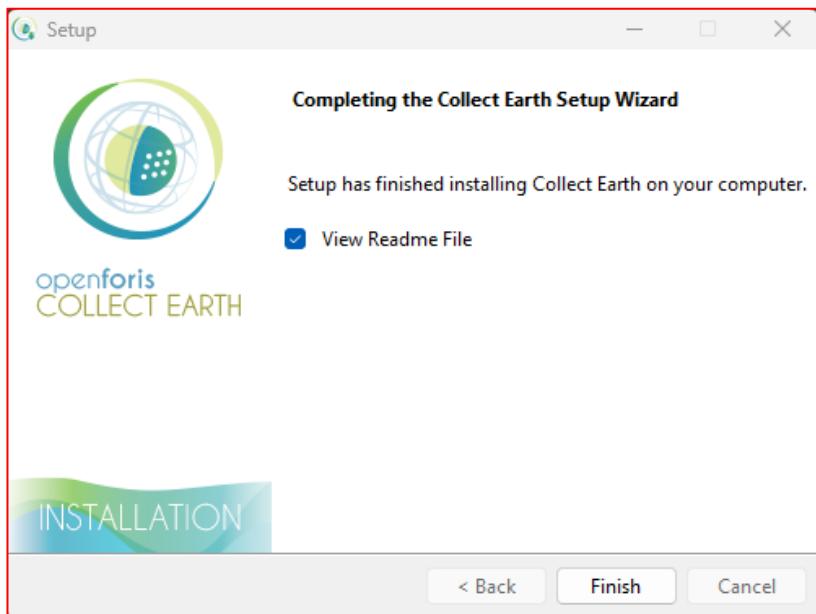
- viii. Click “Next” in this popup window and on the subsequent windows to begin the installation.



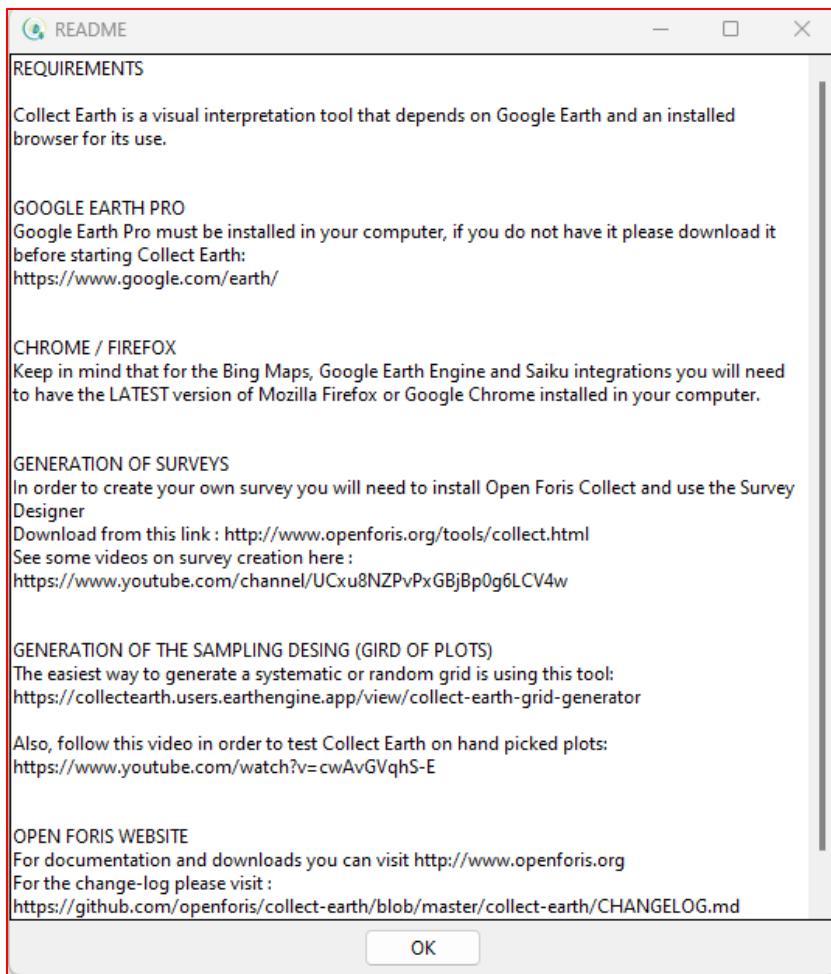
- ix. Installation begins with unpacking the necessary files



- x. When the installation is complete, this window will appear. Click "Finish".



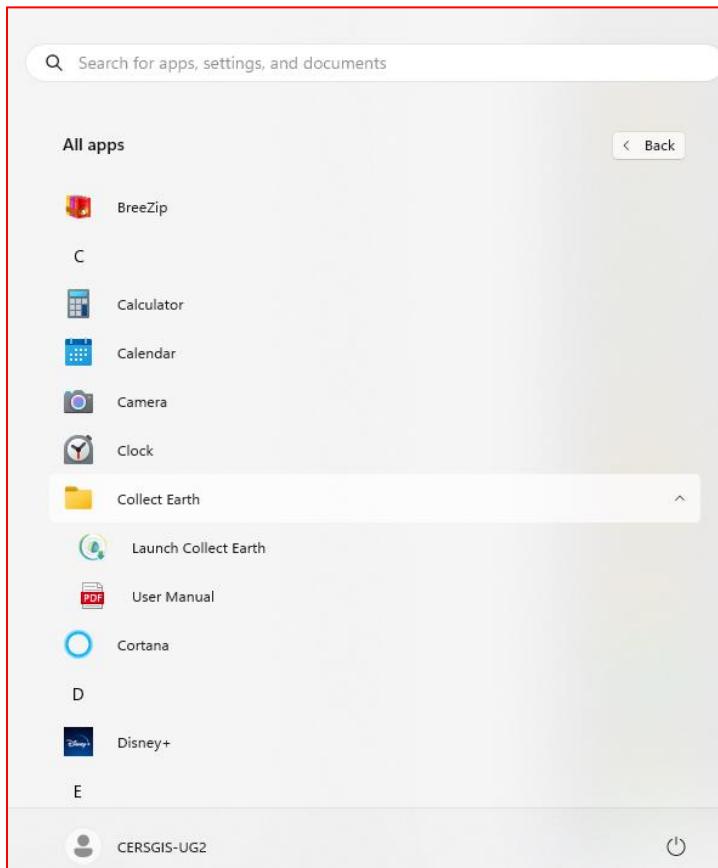
- xi. The enabled "View Readme File" will open with some requirements needed. Click "OK" to close it.



- xii. Depending on your computer’s firewall settings, a security warning may pop up. If this happens, click “Allow access”.

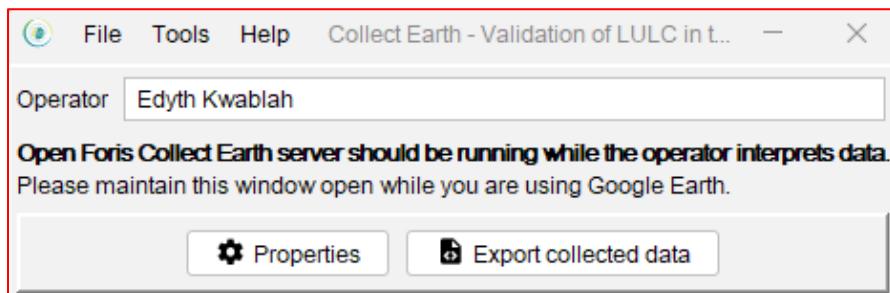
C. Setting up Collect Earth

- i. Once installed, click on the Collect Earth Launcher in the Windows Start Menu to launch the application.



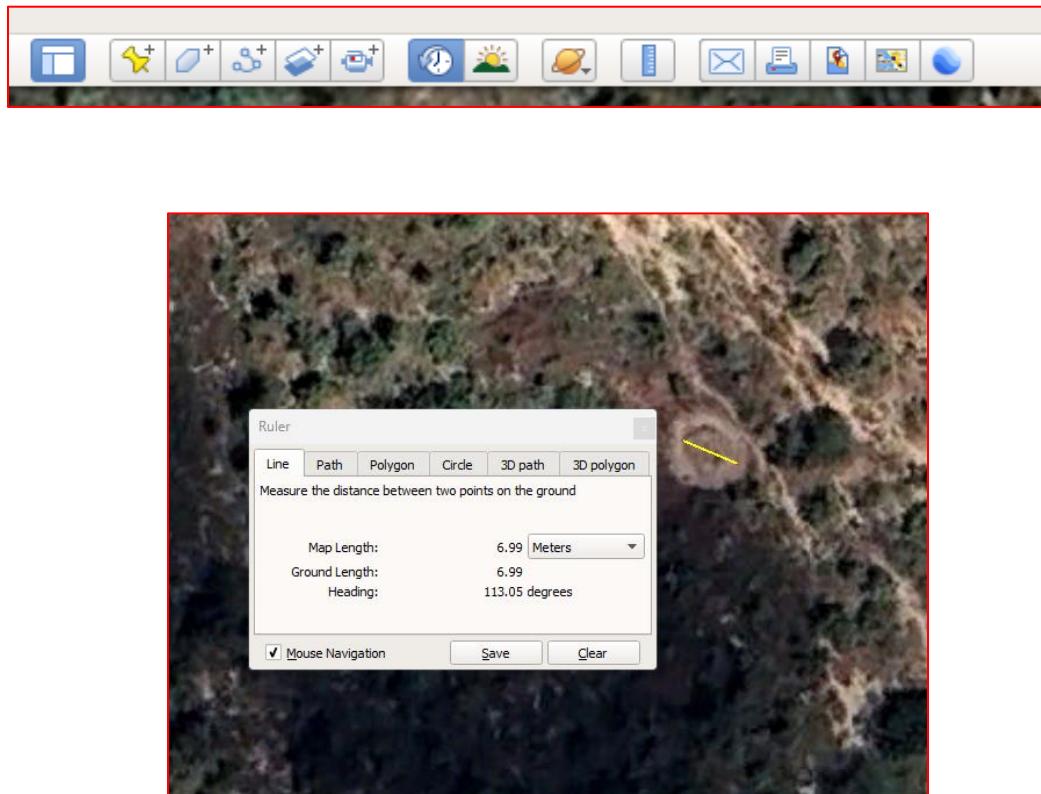
When Collect Earth is launched, it opens a control window. This control window allows for some adjustments to be done.

- ii. The 1st adjustment is the “Operator” section. An operator is a person who will enter or edit data in the Collect Earth system. This is done to get the author of an assessment or a Collect Earth project. Operator names can be between 6 and 50 characters long.

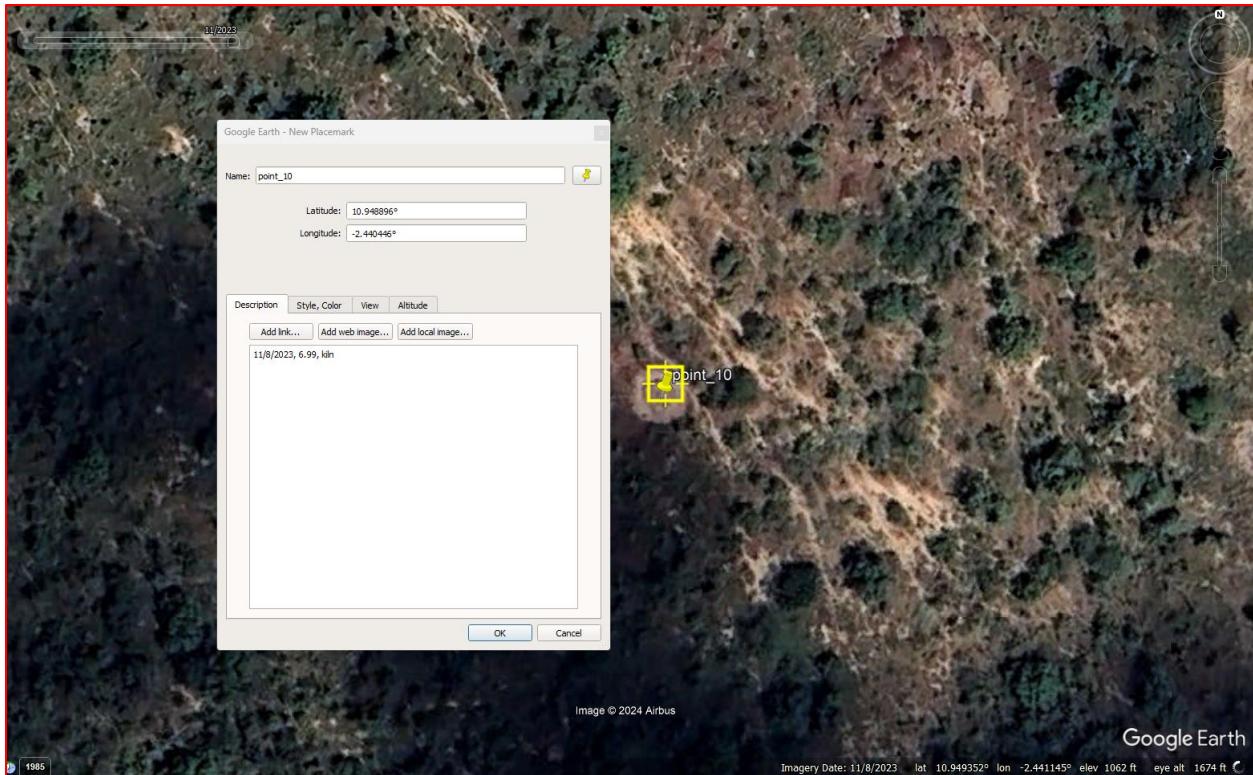


D. Collecting Points in Google Earth Pro

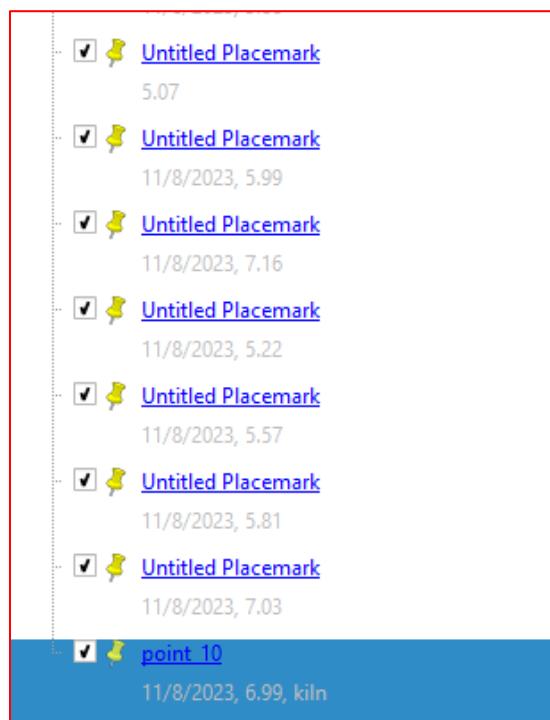
When a point is seen as a scar or kiln, the diameter is measured with the ruler in meters



The placemark is then used to save the location of the point, giving it a unique name, coordinates are automatically captured, and the description area is filled out by providing the date the scar or kiln is seen in the format MM/DD/YYYY, the diameter measured and whether the point is a scar or kiln.

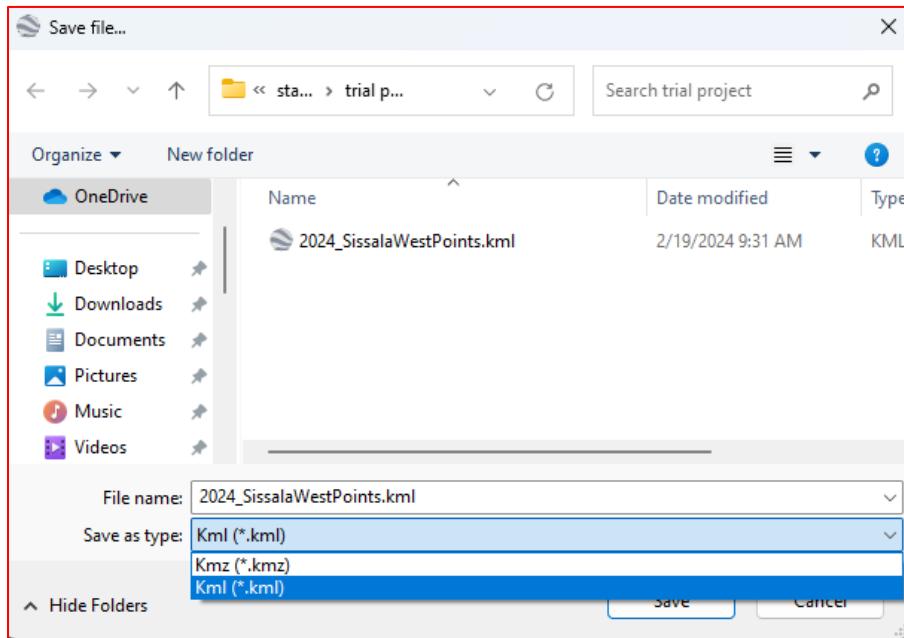


All points collected are saved in a temporary place

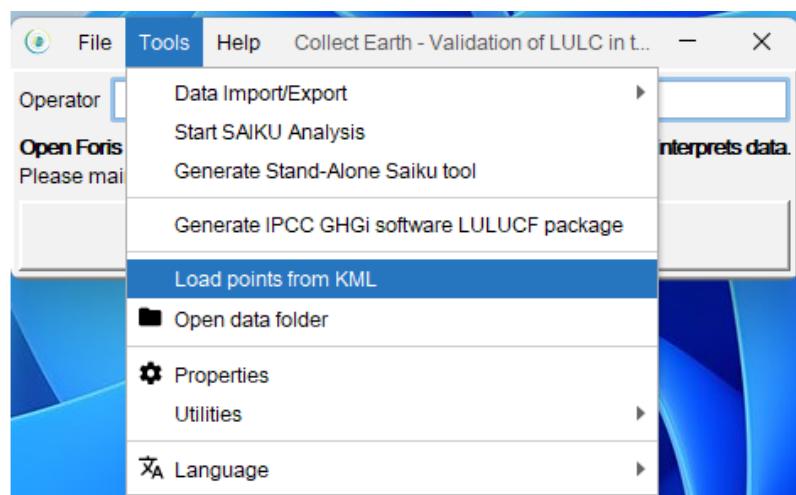


Working with Collect Earth

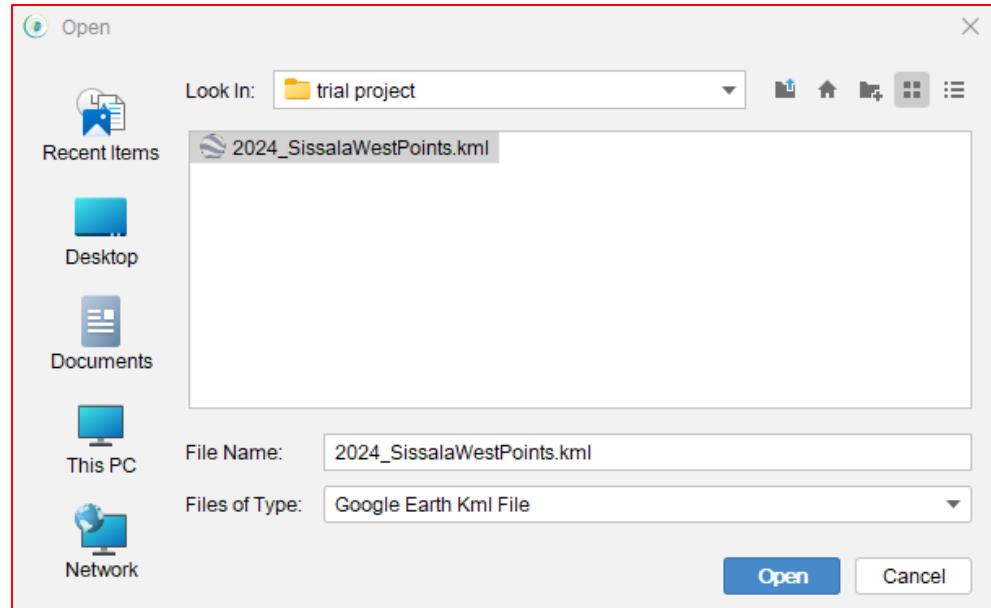
- i. Scars or kiln collected with Google Earth Pro are saved in KML format.



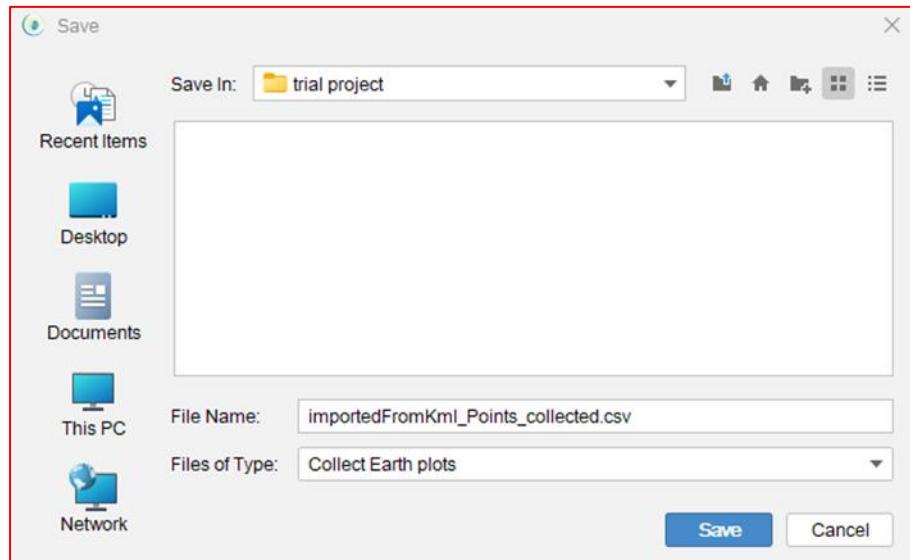
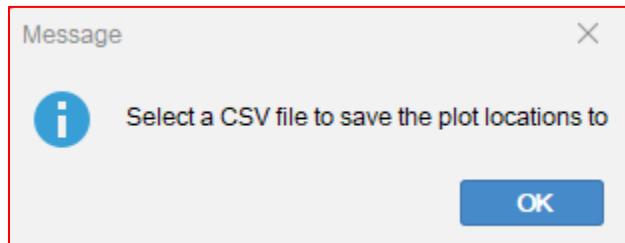
- ii. To load the saved KML points in Collect Earth, click on Tools tab to open a popup box. Select “Load points from KML”.



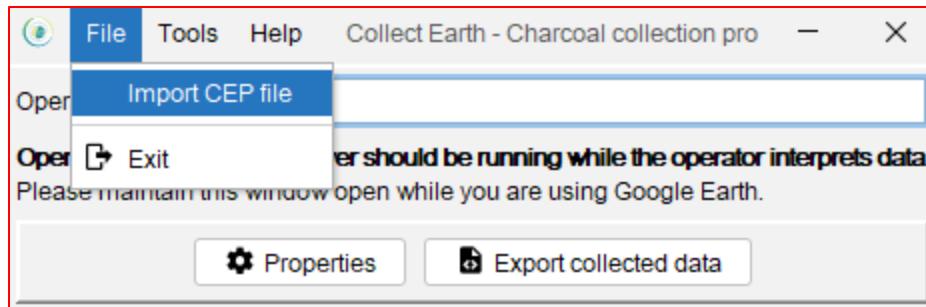
- iii. Navigate to the directory where the points are saved, select the saved points and click “Open”.



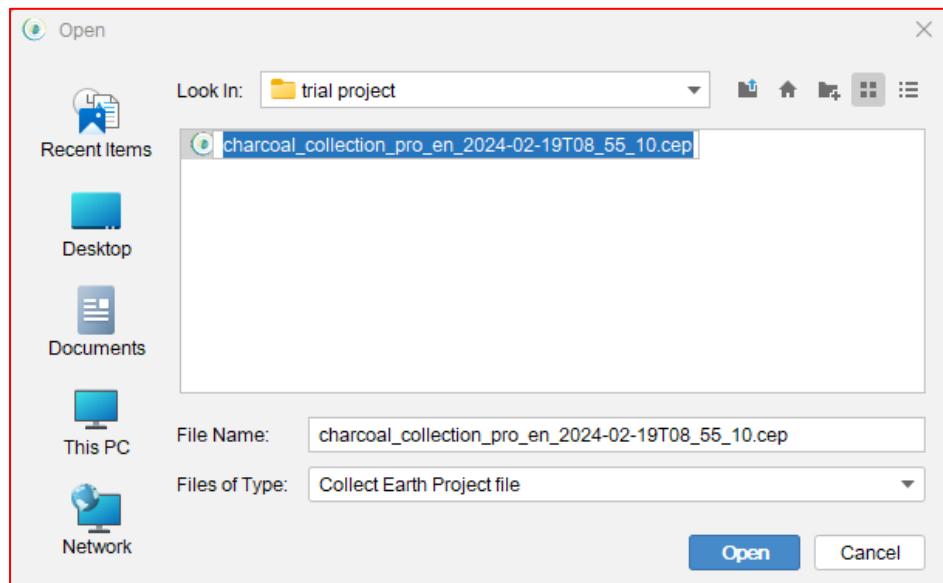
- iv. Collect Earth will ask to save a “.csv” file where coordinates and other needed information are saved. Click “OK” and save the file to your working directory.



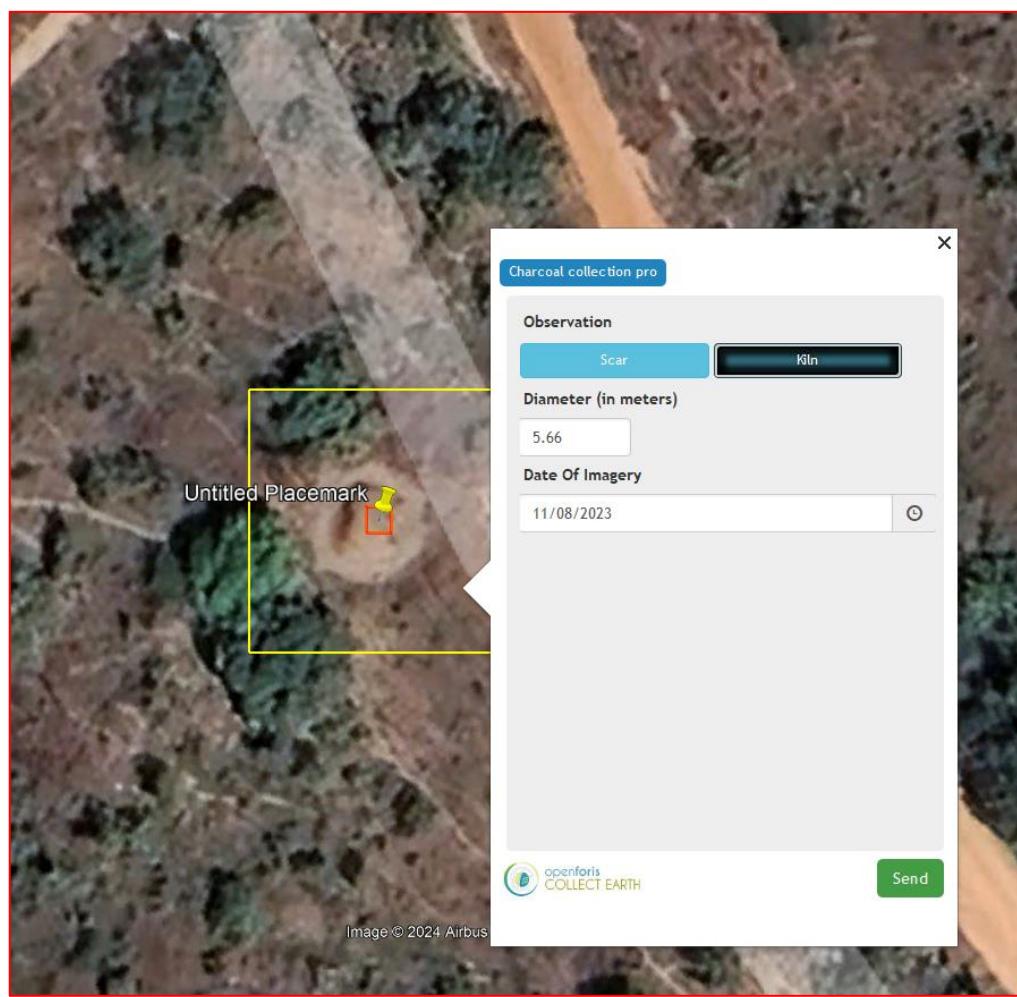
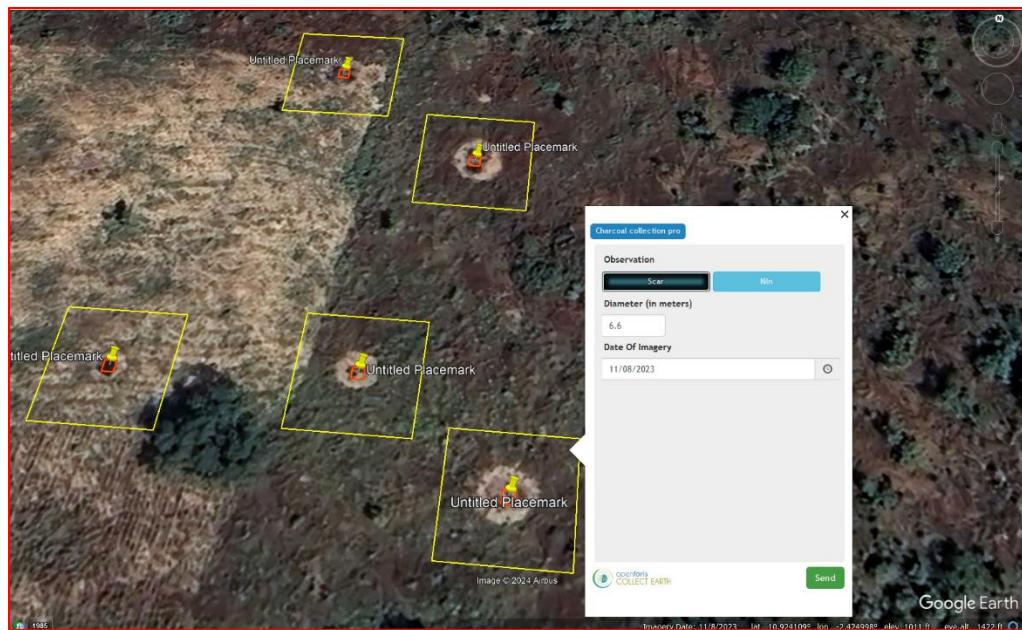
- v. To import the created survey as a CEP file, click on the “File” tab in the Collect Earth interface to open a popup box. Click on “Import CEP file” which is the survey file created with Open Foris Collect.



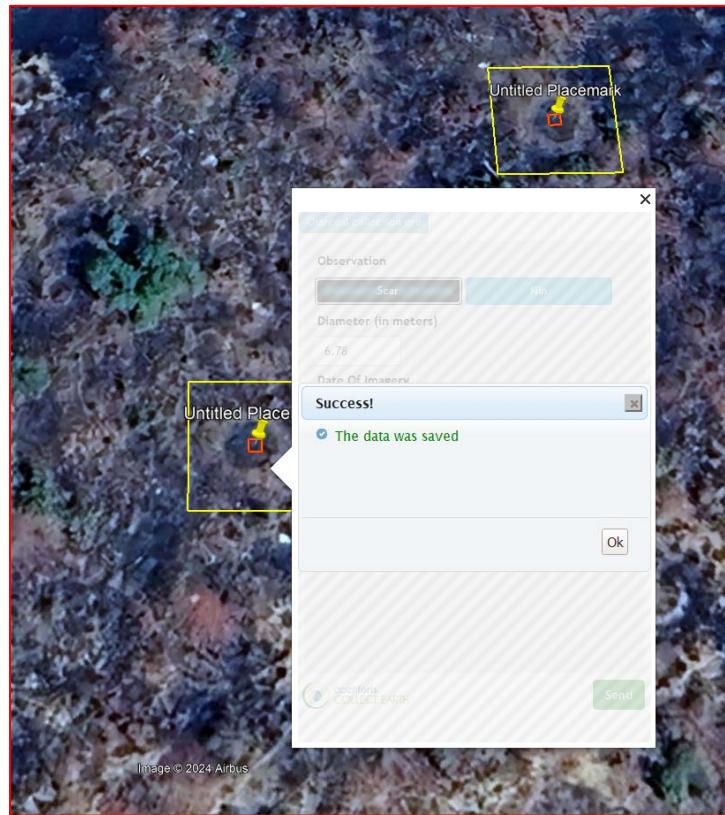
- vi. Navigate to the folder where the CEP (survey) was saved and click “Open”.



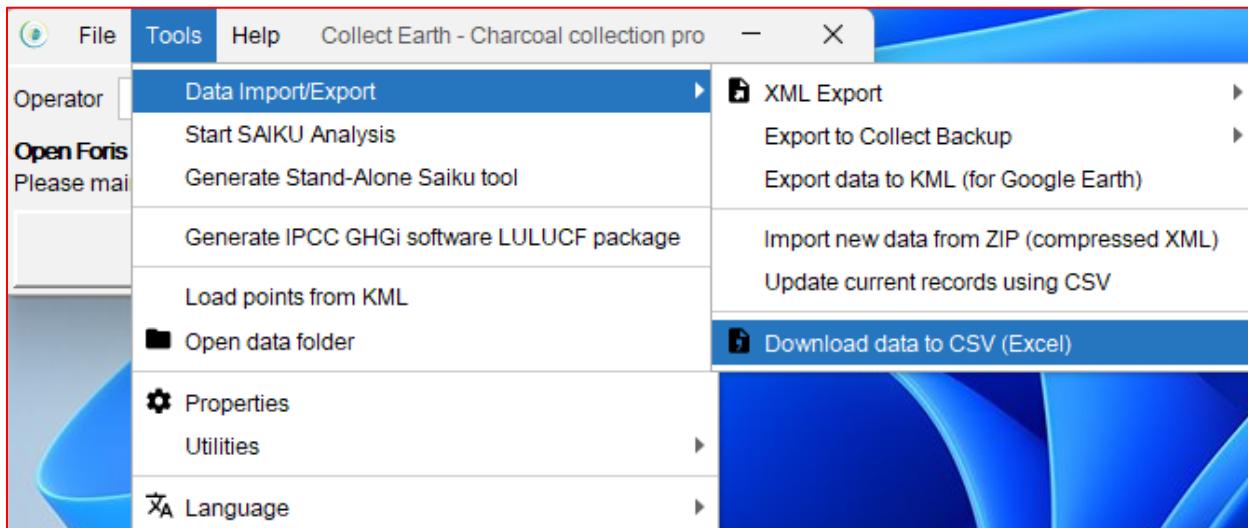
- vii. This will automatically launch Google Earth Pro showing the points and the plot (in yellow) around it. Clicking inside the plot will open the survey for the necessary information to be filled.



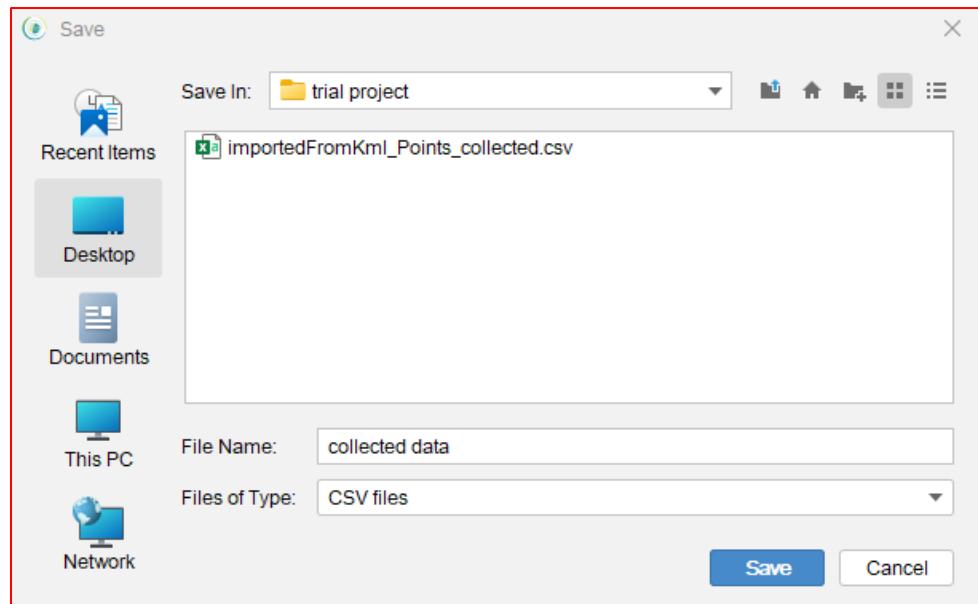
- viii. Click on “Send” to save the information to the plot and automatically moves to the next plot for data to be picked. A popup notification will show stating the data has been saved.



- ix. After answering all the survey questions, click on “Tools”, and click on “Data Import/Export”. This will open another popup box, click on “Download data to CSV (Excel)” to download the csv file which contains all data picked.



x. Save the csv file to your working directory.



xi. Opening it should contain data collected.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
id	location_x	location_y	location_z	elevation	slope	aspect	operator	actively_s	actively_s	actively_s	actively_s	plot_file	calculated	calculated	calculated	calculated	calculated	calculated	observati	observati	diameter	date_of_i	date_of_i	date_of_imagery	day
id_95	EPSG:4326	-2.4537	10.84796	0	0	0	Edyth Kwe	FALSE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A							
id_257	EPSG:4326	-2.4442	10.95059	0	0	0	Edyth Kwe	FALSE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A	scar	Scar	7.77	2023	11	8	
id_1	EPSG:4326	-2.37522	10.81358	0	0	0	Edyth Kwe	TRUE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A	scar	Scar	6.78	2023	12	30	
id_220	EPSG:4326	-2.4012	10.92957	0	0	0	Edyth Kwe	FALSE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A							
id_288	EPSG:4326	-2.42522	10.92401	0	0	0	Edyth Kwe	FALSE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A							
id_287	EPSG:4326	-2.42499	10.92385	0	0	0	Edyth Kwe	FALSE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A	scar	Scar	6.6	2023	11	8	
id_2	EPSG:4326	-2.37476	10.81408	0	0	0	Edyth Kwe	TRUE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A	scar	Scar	6.4	2023	12	30	
id_3	EPSG:4326	-2.37578	10.81383	0	0	0	Edyth Kwe	TRUE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A	scar	Scar	5.65	2023	12	30	
id_4	EPSG:4326	-2.45571	10.87055	0	0	0	Edyth Kwe	TRUE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A	kiln	Kiln	5.66	2023	11	8	
id_5	EPSG:4326	-2.45551	10.8712	0	0	0	Edyth Kwe	TRUE	2024	2	19	importedi	0	'#DIV/0!	FLAT	0-5 °	na	N/A	kiln	Kiln	4.61	2023	11	8	
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