

What is Collect Earth Online?

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Introduction → CEO → what CEO does → what they will use CEO for
Hello everyone ,

My name is Micky Maganini, and I work for SERVIR, a U.S. Government organization and partner of ITC. Today I am going to introduce you to a web-based tool called Collect Earth Online that was developed by SERVIR. Collect Earth Online is a satellite image viewing and interpretation platform that is free of charge. You will be using Collect Earth Online in this class to conduct an environmental analysis in your region of interest.

What is SERVIR?



Context

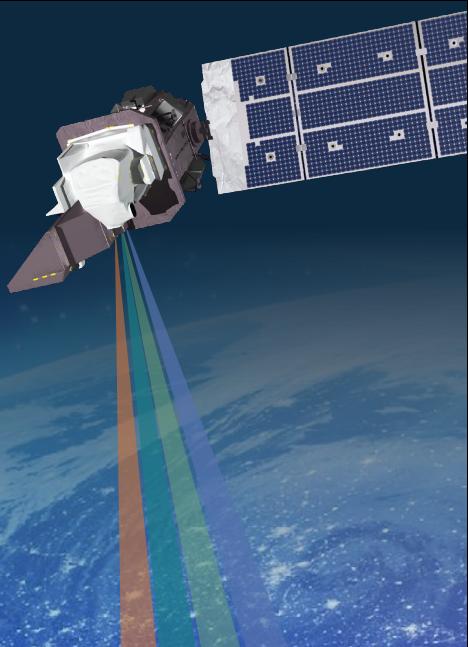
Before we learn more about Collect Earth Online, I want to provide some context about What SERVIR is.

CONNECTING SPACE TO VILLAGE



SERVIR is a joint initiative of NASA, USAID, and leading geospatial organizations in Asia, Africa, and Latin America that partners with countries and organizations to address challenges in climate change, food security, water and related disasters, land use, and air quality.

Using satellite data and geospatial technology, SERVIR co-develops innovative solutions through a network of regional hubs to improve resilience and sustainable resource management at local, national and regional scales.



joint program → hubs

SERVIR is a joint program between NASA and the US Agency for International Development. We develop solutions to address environmental challenges using earth observation data. We work with organizations around the world in five regional hubs to create these solutions.

Who Is SERVIR?



- Poverty reduction & resilience
- Data-dependent issues in data-scarce places
- International field presence
- 30+ Earth observing satellite missions, free & open data
- Major research portfolio
- Societal benefit from space



Regional Hub Host Institutions:



Hub Consortium Members:



Private sector collaborators:



USG collaborators:



Intergovernmental, NGO collaborators:



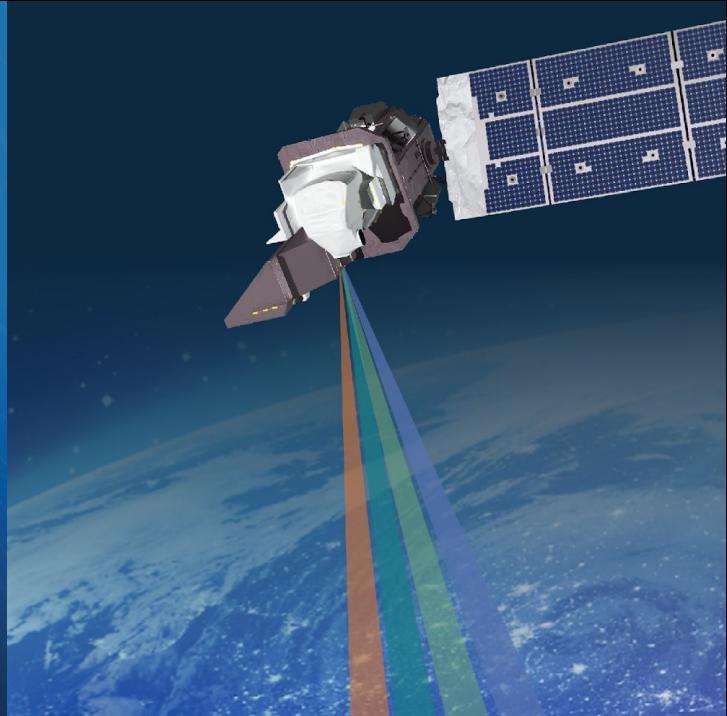
Research collaborators: 20+ US universities & research centers through the SERVIR Applied Sciences Team; ITC, in-region university networks



SERVIR network → ITC & SERVIR

Beyond our regional hub institutions, we partner with organizations in the private sector, intergovernmental organizations, NGOs, and research institutions like ITC. ITC and SERVIR have partnered with each other since 2018 as both institutions apply earth observations to sustainable development on a global scale.

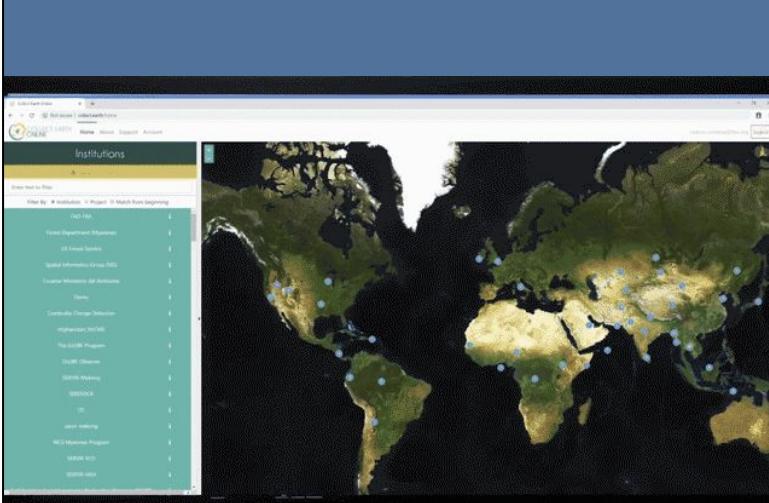
Collect Earth Online



Transition to CEO

Now that you have some context on who we are at SERVIR and why we are partnered with ITC, let's take some time to learn about Collect Earth Online.

Collect Earth Online (CEO)



Now with high resolution Planet base maps made possible through Norway's International Climate and Forest Initiative!

Collect Earth Online simplifies sample collection and incorporates crowdsourcing techniques for monitoring land cover and classifying forests.

CEO definition → why it was created → REDD+ → historically → CEO

Collect Earth Online is a free and open source satellite image viewing and interpretation system. Collect Earth Online was created because of a need for countries with limited financial resources to be able to maintain their commitments to global climate agreements. For example, the REDD+ framework, created by the United Nations Framework Convention on Climate Change, requires countries to update their carbon stocks annually. To do this, each member country needs an accurate land cover map of their country. But historically, the cost of obtaining high resolution satellite imagery to create these products was exorbitant. Collect Earth Online has changed that, allowing not only government practitioners, but students, researchers, and civilian scientists access to high

resolution imagery and software to collect land cover reference data.

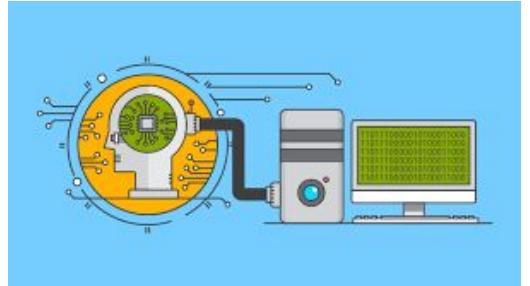
What is an Image Interpretation Project?



1. Sample-Based Inventory



2. Training and/or Validation for a Land Cover Map generated with Machine Learning

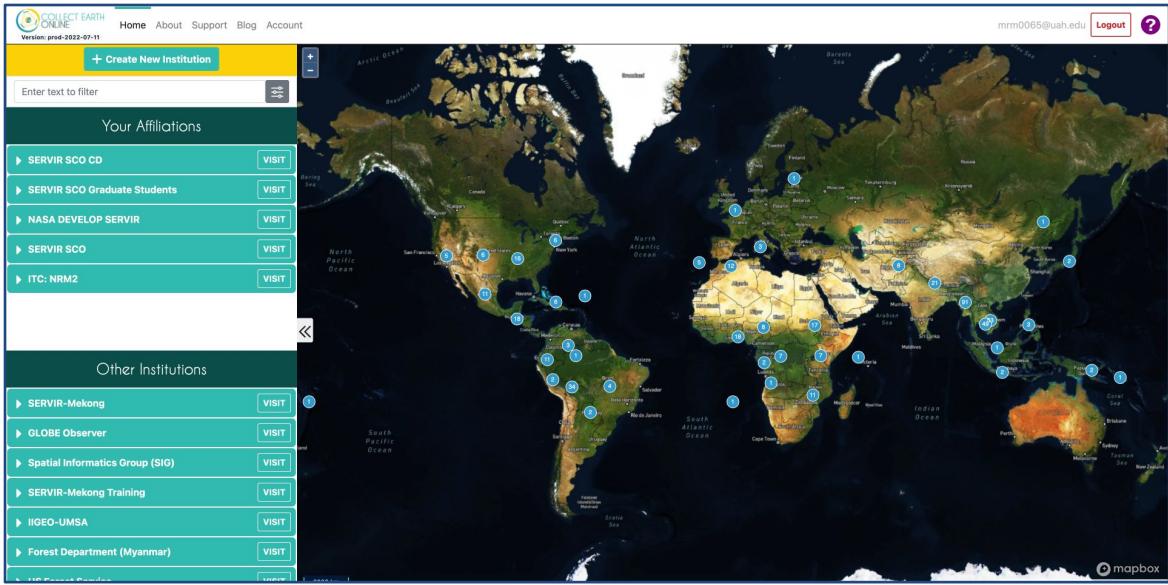


What is an IIP → two common uses → define inventory
→ define machine learning models → training vs.
validation

But what is an Image Interpretation project, you may ask? Well it usually includes a labelled set of data based on imagery. The two most common uses for image interpretation projects are sample-based land cover inventories, and collecting land cover data to train and validate machine learning models. In a sample-based inventory, we collect data about a portion of the landscape that we think statistically represents the entire landscape, then draw conclusions about the entire region. In a Machine learning model, we collect reference data on land cover, then using a computer algorithm to classify the entire region of

interest based on the trends in the reference data.

Collect Earth Online Homepage



Homepage → Module 1 → your affiliations → clicking visit

This is what the Collect Earth Online homepage looks like. By now, all of you should have followed the instructions in Module 1, so that means (1) you have an account, and (2) you are a member of the “ITC:NRM2” institution. So you will see your email in the top right corner, and on the left you will see “ITC: NRM2” under the “Your Affiliations” tab. As you can see, I have separate projects in my affiliations tab, but you will just see “ITC: NRM2”. By clicking “visit” on this tab, you will be brought to our institution’s homepage.

Collect Earth Online Institution Page

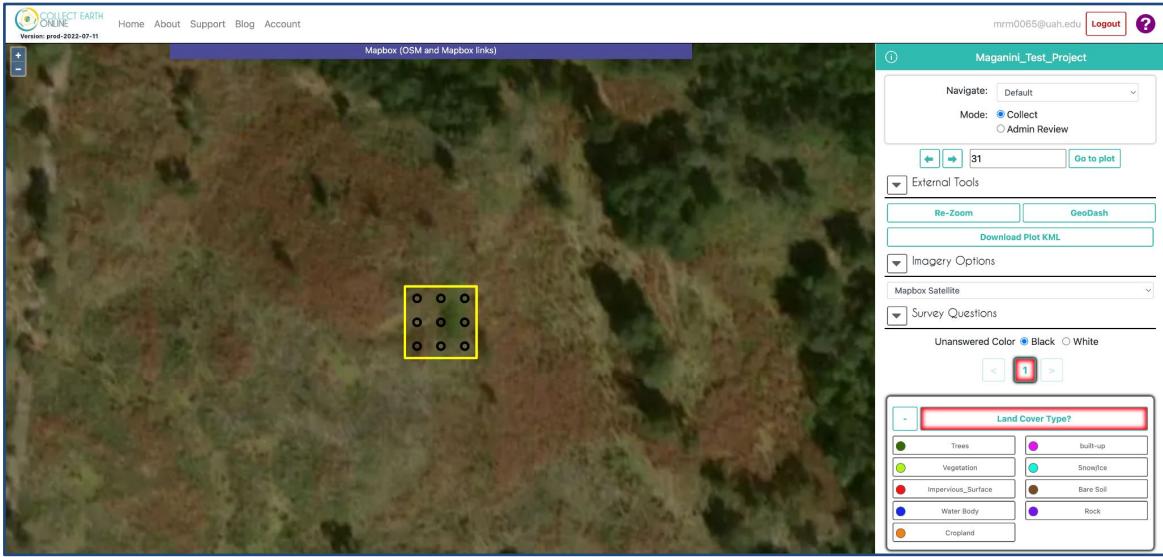


A screenshot of the Collect Earth Online Institution Page. At the top, there's a navigation bar with links for Home, About, Support, Blog, and Account. On the right, it shows the user's email (mrm0065@uah.edu), a Logout button, and a help icon. The main header says "ITC: NRM2". Below that, a sub-header reads "The homepage for NRM2 students to create photo interpretation projects". There are three buttons: "Edit Institution" (with a pencil icon), "Go to Dashboard" (with a house icon), and "Logout" (with a question mark icon). A teal bar contains three buttons: "Projects 1" (with a dropdown arrow), "Imagery 18" (with a camera icon), and "Users 14" (with a person icon). A note below explains the color coding for project status: red for no plots collected, yellow for some plots collected, and green for all plots selected. A large teal button at the bottom left says "+ Create New Project". Below it, a row of buttons includes "Public" (green), "Maganini_Test_Project" (yellow, currently selected), and icons for edit (pencil), delete (trash), and two letters (P and S).

Institution Page → users → project

This is what our institution page looks like. Here you can see the users that are members of the institution, the projects that are currently living here, and the imagery that is available for this institution. You can also create a new project from this page.

Data Collection



Collecting data → map window → assessment unit → sampling locations → RHS

We'll get into the details of creating a project later, but first let's take a look at how Collect Earth Online will appear when you're actually interpreting imagery and collecting data. Due to Collect Earth Online's customizable nature, any two projects may look very unlike. For a standard land cover survey, your project may look something like this. On the left side of the screen, we have the map window, which shows the imagery, the assessment unit, and the sampling locations. The assessment unit refers to the yellow square. This is the unit of land we are attempting to classify. Within the assessment unit are nine evenly spaced sampling locations, shown by black circles. It is

our goal to classify each of these sampling locations as a land cover class. On the right hand side, we can see the imagery source that is being displayed, as well as our survey questions and answers towards the bottom right.

Collect Earth Online Materials



Collect Earth Online Module 1

Getting Started with Collect Earth Online
SERVIR Science Coordination Office
Curriculum Development Team
Molly Maguire
Contact: mrm000@gsu.edu

Prepared for "From Data to Geo-Information for Natural Resources Management" at ITC
Quarter 2 2022-2023



Collect Earth Online Module 2

Base Imagery Sources in Collect Earth Online
SERVIR Science Coordination Office
Curriculum Development Team
Molly Maguire
Contact: mrm000@gsu.edu

Prepared for "From Data to Geo-Information for Natural Resources Management" at ITC
Quarter 2 2022-2023



Collect Earth Online Module 3

Creating Your Own Project in Collect Earth Online
SERVIR Science Coordination Office
Curriculum Development Team
Molly Maguire
Contact: mrm000@gsu.edu

Prepared for "From Data to Geo-Information for Natural Resources Management" at ITC
Quarter 2 2022-2023



Collect Earth Online Module 4

Collecting Data in a Collect Earth Online Project

SERVIR Science Coordination Office
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Molly Maguire
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Prepared for "From Data to Geo-Information for Natural Resources Management" at ITC
Quarter 2 2022-2023



materials → Canvas

To help you learn how to use Collect Earth Online we at SERVIR have created some materials to help. These are hosted on your Canvas site and will serve as guides for working with CEO.

Live Demonstration



So let's go to Collect Earth Online and see how it works in action.

Acknowledgements

Collect Earth Online has received financial support from NASA, The U.S. Agency for International Development (USAID), SERVIR, the Food and Agriculture Organization (FAO), the U.S. Forest Service, SilvaCarbon, Google, and Spatial Informatics Group. It was co-developed as an online tool housed within the OpenForis Initiative of FAO.

Collect Earth Online was initially developed by SERVIR, and is now supported by a broad base of partners. CEO was inspired by Collect Earth, a desktop software developed by FAO. The development team includes Arthur Luz, Jordan Combs, Matt Spencer, Richard Shepherd, Oliver Baldwin Edwards, Sif Biri, Roberto Fontanarosa, Francisco Delgado, Githika Tondapu, Billy Ashmall, Nishanta Khanal, John Dilger, Karen Deyson, Karis Tenneson, Kel Markert, Africa Flores, Emil Cherrington, and Eric Anderson.

The Collect Earth Online curriculum was organized by SERVIR's Science Coordination Office with individual modules created by NASA's Earth Observatory, the Spatial Informatics Group, and SERVIR SCO. Individual modules were developed by Crystal Wespestad (Spatial Informatics Group), Holli Riebeek (NASA Earth Observatory), Robert Simmon (NASA Earth Observatory), Billy Ashmall (SERVIR Science Coordination Office) Micky Maganini (SERVIR Science Coordination Office), NASA Earth Observatory, NASA, and the US Agency for International Development. Review of the material was conducted by SERVIR's Science Coordination Office, specifically Kelsey Herndon, Emil Cherrington, Billy Ashmall, Diana West, Katie Walker, Lauren Carey, Jacob Abramowitz, Jake Ramthun, Natalia Bermudez, Stefanie Mehlich, Emily Adams, Stephanie Jimenez, Vanesa Martin, Alex Goberna, Francisco Delgado, Biplov Bhandari, and Amanda Markert. Crucial insight regarding the development of the curriculum materials was provided by Claudia Paris and Andrea Puzzi Nicolau.

Review of the material was also conducted by Bart Krol and Laura Cray of ITC (The Faculty of Geo-information Science and Earth Observation at the University of Twente). The course and unit banner images were created by Gianluca Ambrosi of ITC.

Sources

- Development Team: <https://sams.servirglobal.net/detail/7>
- All other info: <https://www.collect.earth/about/>

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SERVIR For NRM2 Syllabus

Syllabus → Office Hours → Set up a time → Module 1 → Thanks

So I will now put the link to the syllabus I have created in the chat. The syllabus contains links to all of the curriculum materials I have created, as well as my contact information. I have also included a Google Meets Link for “office hours” and will be available after 3:00 p.m. Monday through Friday to meet with you. So you can text or email me to set up a time to meet on that Google Meets link and show me how you are working with ClimateSERV, or ask any questions you may have. So with the remaining time, we can start to work through Module 1 individually and put any questions you may have in the chat. And thank you everyone for allowing myself and SERVIR to be a part of your learning experience.



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