



Collect Earth and Sepal

Multi-purpose land monitoring

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NFI Consultant - FAO

Capacity-development workshop for Central, Eastern and Southern Africa on the restoration of forests and other ecosystems to support the achievement of the Aichi Biodiversity Targets

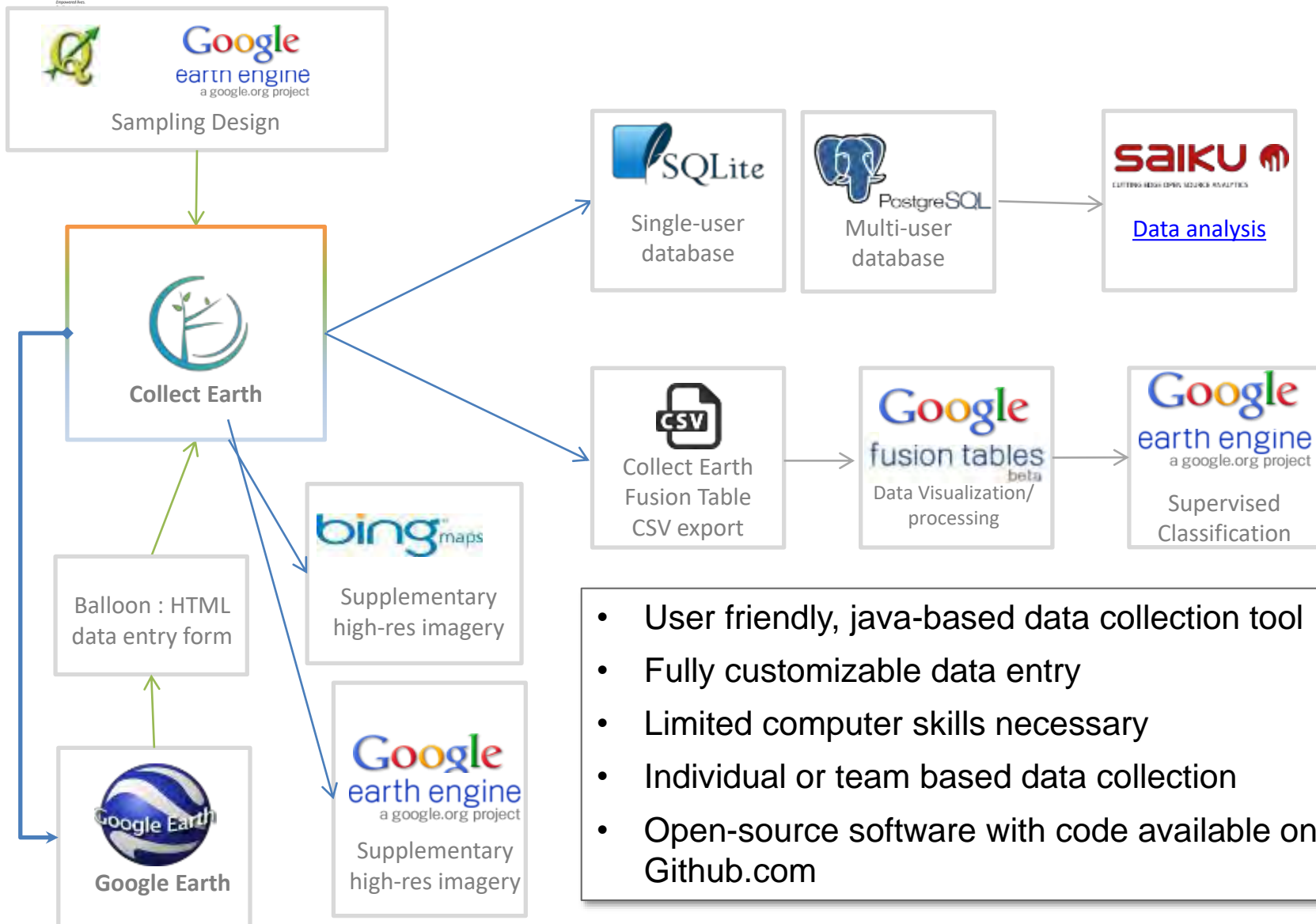
6th October 2017

Durban

South Africa

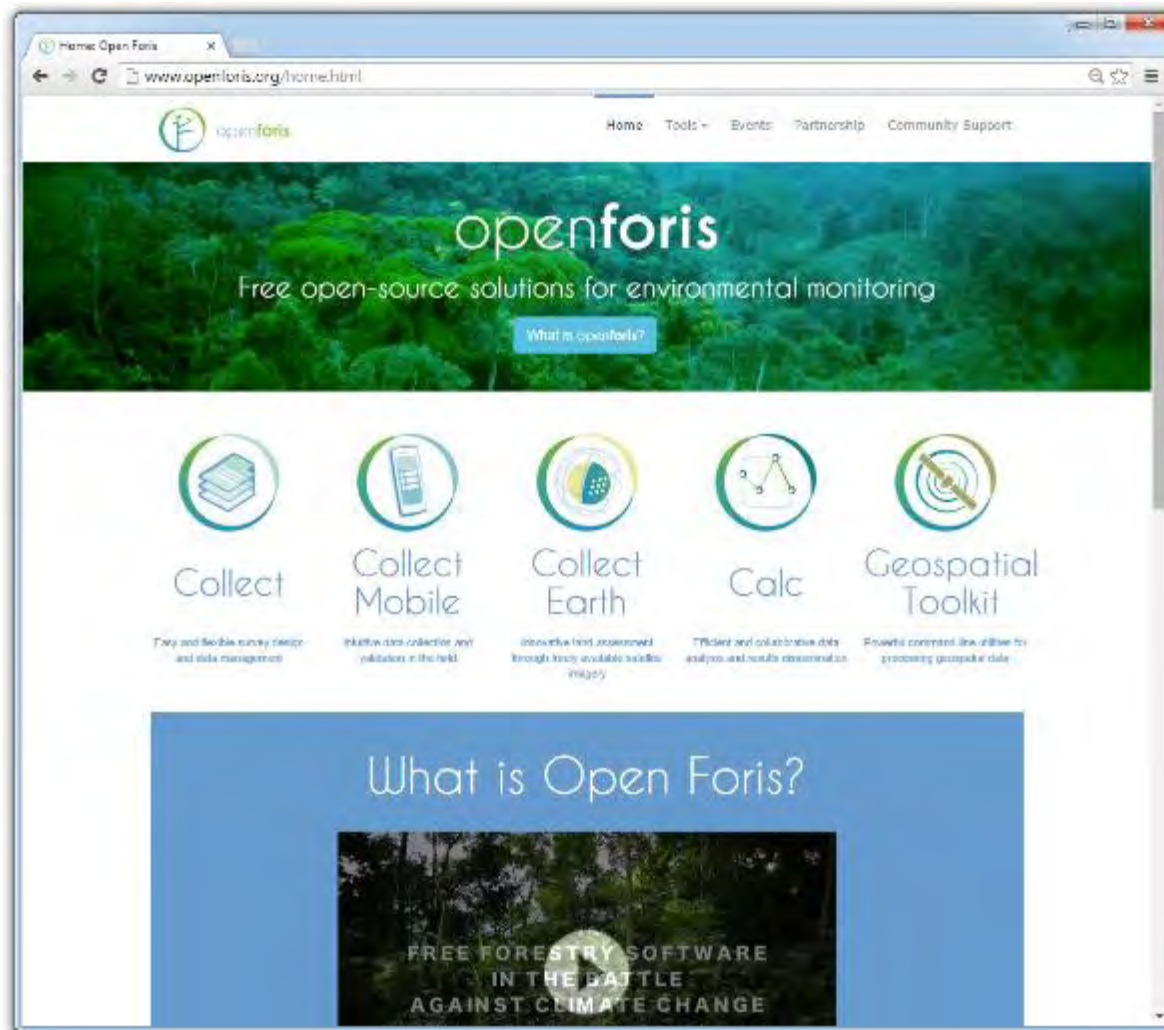
History

- Open Foris Initiative www.openforis.org
 - Collect, Collect Mobile and Collect Earth
 - Calc
 - Geospatial Toolkit
- Capacity Building for REDD+ NFMS
 - 18 Countries + more UN-REDD countries such as PNG and Mongolia
 - Supporter by BMU-International Climate Initiative



- User friendly, java-based data collection tool
- Fully customizable data entry
- Limited computer skills necessary
- Individual or team based data collection
- Open-source software with code available on Github.com

Learn more
about the rest
of the software
suite online



Collect Earth on OpenForis.org



- Download the latest version of Collect Earth
- View Collect Earth tutorials
- Participate in the technical support forum



Where.....countries



ICI BMU funded: Algeria, Argentina, Bhutan, Brazil (implementing partner), Chile, Colombia, Ghana, Kyrgyzstan, Lao People's Democratic Republic, Morocco, Mozambique, Peru, Philippines, South Africa, Tajikistan, Thailand, Tunisia, Uruguay, Zambia
Norway funded: Mongolia, Papua New Guinea

Collect Earth user cases

Collect Earth facilitates the analysis of high and very high resolution satellite imagery for a wide variety of purposes, including :

- Support **multi-phase National Forest Inventories**
- **Land Use, Land Use Change and Forestry (LULUCF) assessments** (18 partnering countries)
- **Monitoring agricultural land** and urban areas
- Accuracy assessment of existing maps (DRC, Zambia)
- Collection of spatially explicit socio-economic data (Vietnam)
- Quantifying deforestation, reforestation and desertification

Collect Earth

Information of plot ID : \$[id]

Land use category

Forest Grassland Cropland

Wetland Settlement Other

Accuracy YES NO

Land use sub-category

F>F C>F G>F Accuracy YES NO

W>F S>F O>F Year N/A

Land use sub-division

Main Type Natural forest

Sub-division Northern Afrotropical Forest Gr

Sub-Type Mankala-Afromontane Forests

Accuracy YES NO

Collect Earth

Land Use/Cover - ID-TRACT: \$[id]

Land Use/Cover Classes (indicate the number of points falling in each LUCC 1-25)

Nat Forest cc=0%	Nat Forest cc>50%
Nat Forest cc>50%	Planted Forest
Other land cc=0%	Other land cc>50%
Other land cc>50%	
Other wooden land	Inland Water
Outside Country/Ocean	Unknown

No points allocated

Interpretation Uncertainty

Low Medium High

Presence of Wetlands

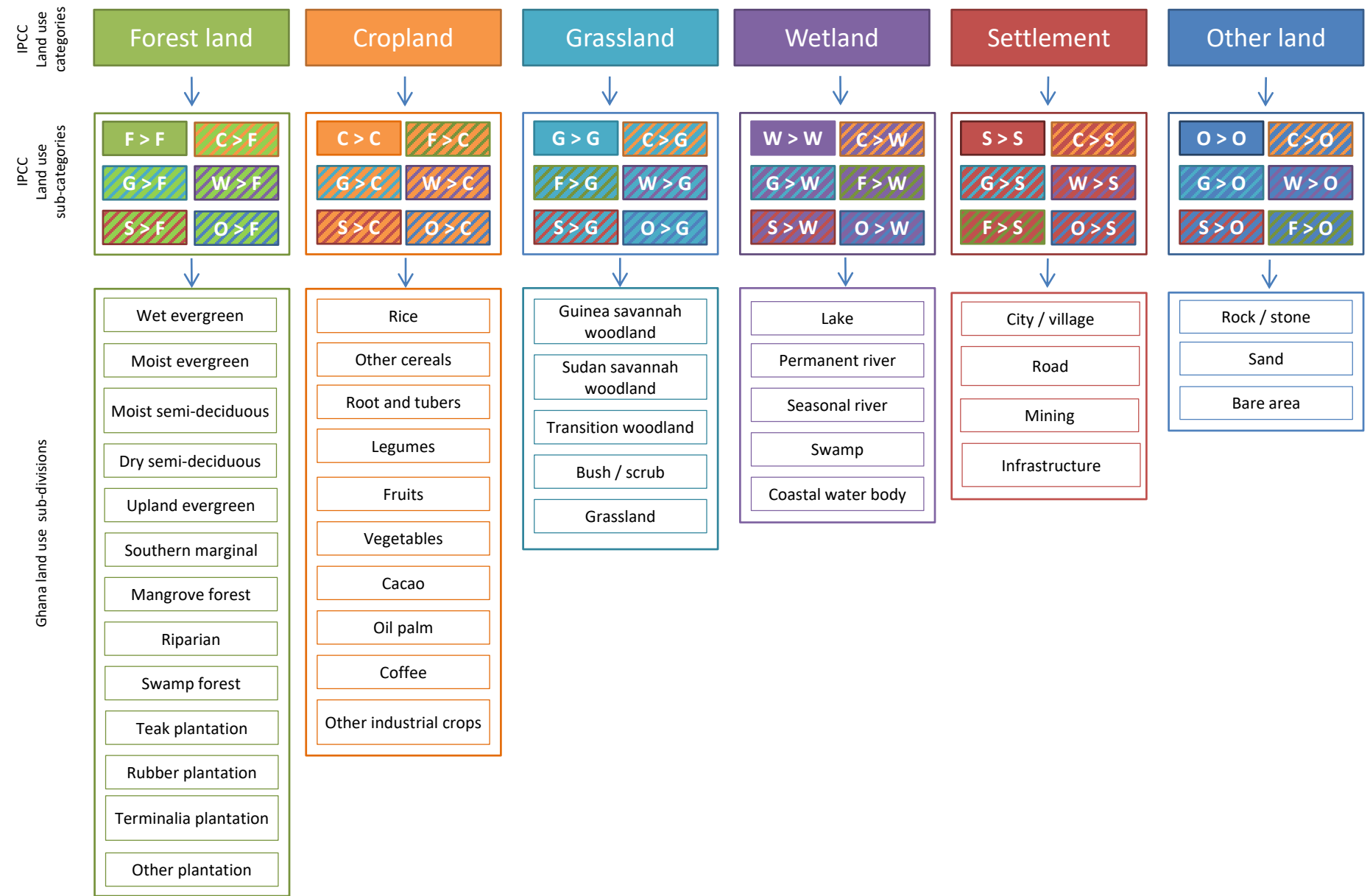
YES NO

Presence of Planted Forest

YES NO

Restoration?

Ghana land use classification scheme



Collect Earth - Ghana

Google Earth

File Edit View Tools Add Help

Search

Places

- My Places
- Temporary Places
- Collect Earth Data
 - Ghana lulucf ipcc
 - 8x8_Ashanti.ced
 - 1 - ID# : 173374
 - 2 - ID# : 177214
 - 3 - ID# : 177222
 - 4 - ID# : 177254
 - 5 - ID# : 177262
 - 6 - ID# : 177286
 - 7 - ID# : 180998
 - 8 - ID# : 181006
 - 9 - ID# : 181014
 - 10 - ID# : 181062
 - 11 - ID# : 181070
 - 12 - ID# : 181078
 - 13 - ID# : 181086
 - 14 - ID# : 181094
 - 15 - ID# : 181102
 - 16 - ID# : 181110
 - 17 - ID# : 181118
 - 18 - ID# : 181126
 - 19 - ID# : 181134
 - 20 - ID# : 184846
 - 21 - ID# : 184854
 - 22 - ID# : 184862
 - 23 - ID# : 184870
 - 24 - ID# : 184894
 - 25 - ID# : 184902
 - 26 - ID# : 184910
 - 27 - ID# : 184918
 - 28 - ID# : 184926

Sign in

openforis COLLECT EARTH

ID: 173374 - Elevation: 143m, Aspect: 288°, Slope: 0°

Land use category

Forest	Grassland	Cropland
Wetland	Settlement	Other
No Data	Accuracy	YES NO

Land use sub-category

F > F	C > F	Accuracy	YES NO
G > F	W > F	Year	N/A
S > F	O > F		

Land use sub-division

Natural Forest

Wet Evergreen	Moist Evergreen
Moist semi-deciduous	Dry semi-deciduous
Upland Evergreen	Southern Marginal

Google earth

Imagery Date: 3/3/2014 lat: 7.599836° lon: -1.350181° elev: 143m eyealt: 545m

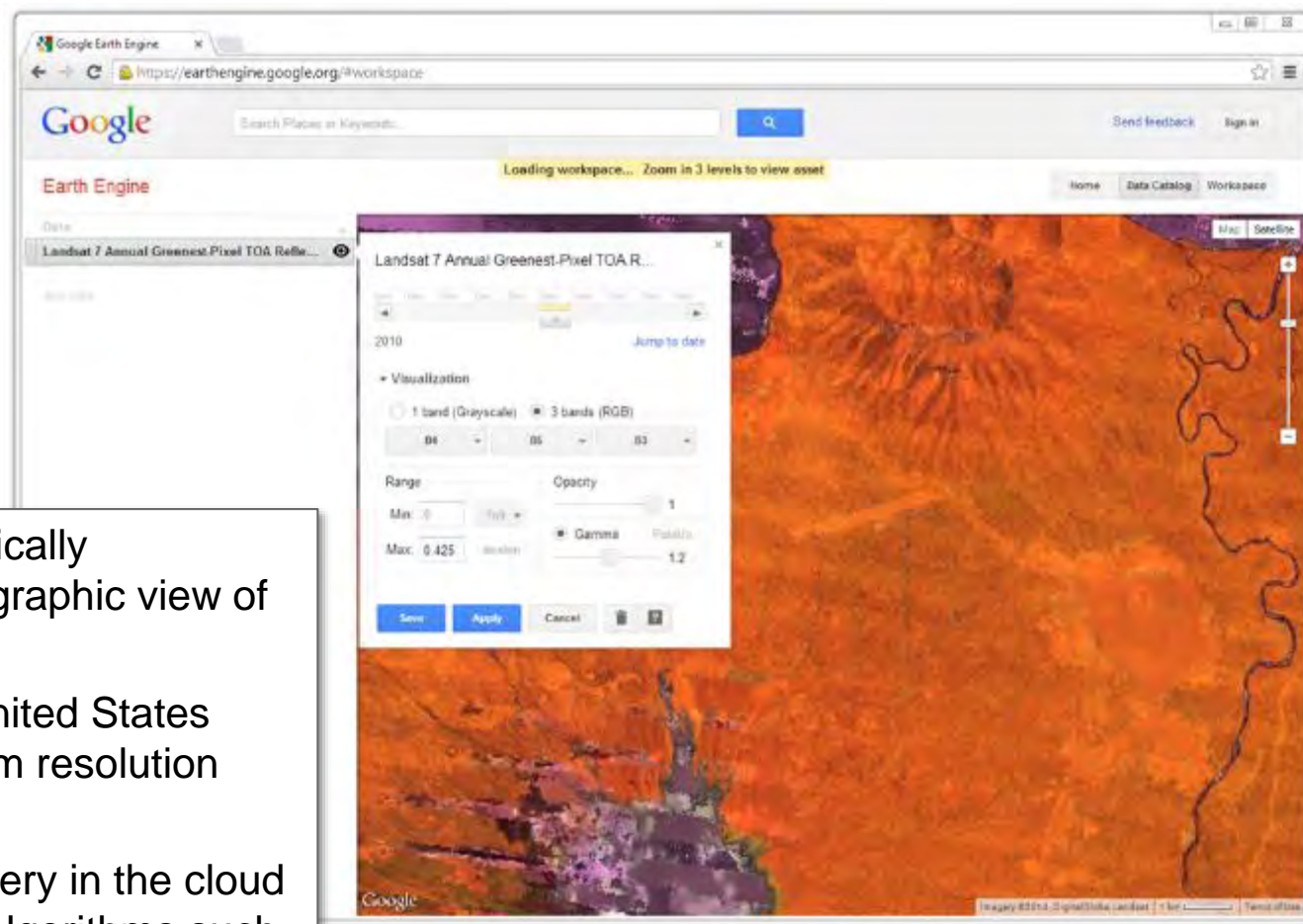
Layers **Earth Gallery >>**

Geo link Bing Maps



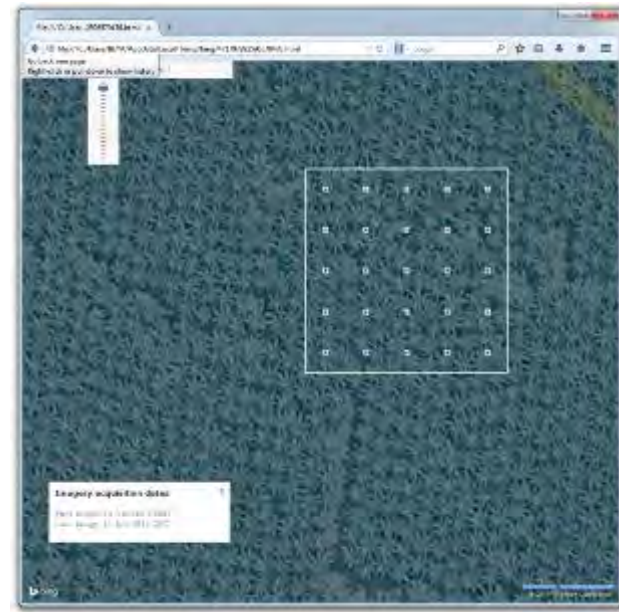
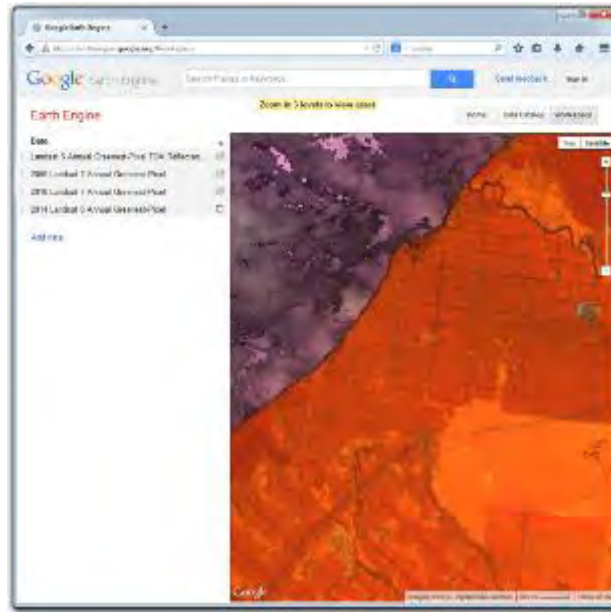
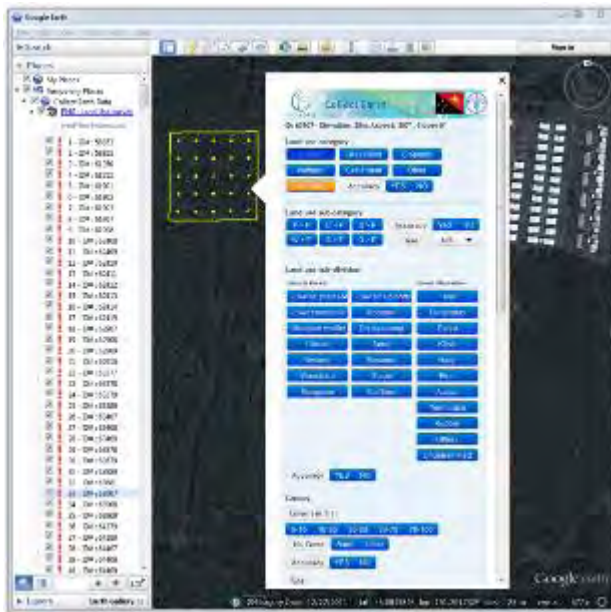
- Collect Earth automatically synchronizes the geographic view of the plot
- Digital Globe very high resolution imagery ranging from 3m to 30cm resolution
- Imagery acquisition dates available with Collect Earth customization

Google Earth Engine

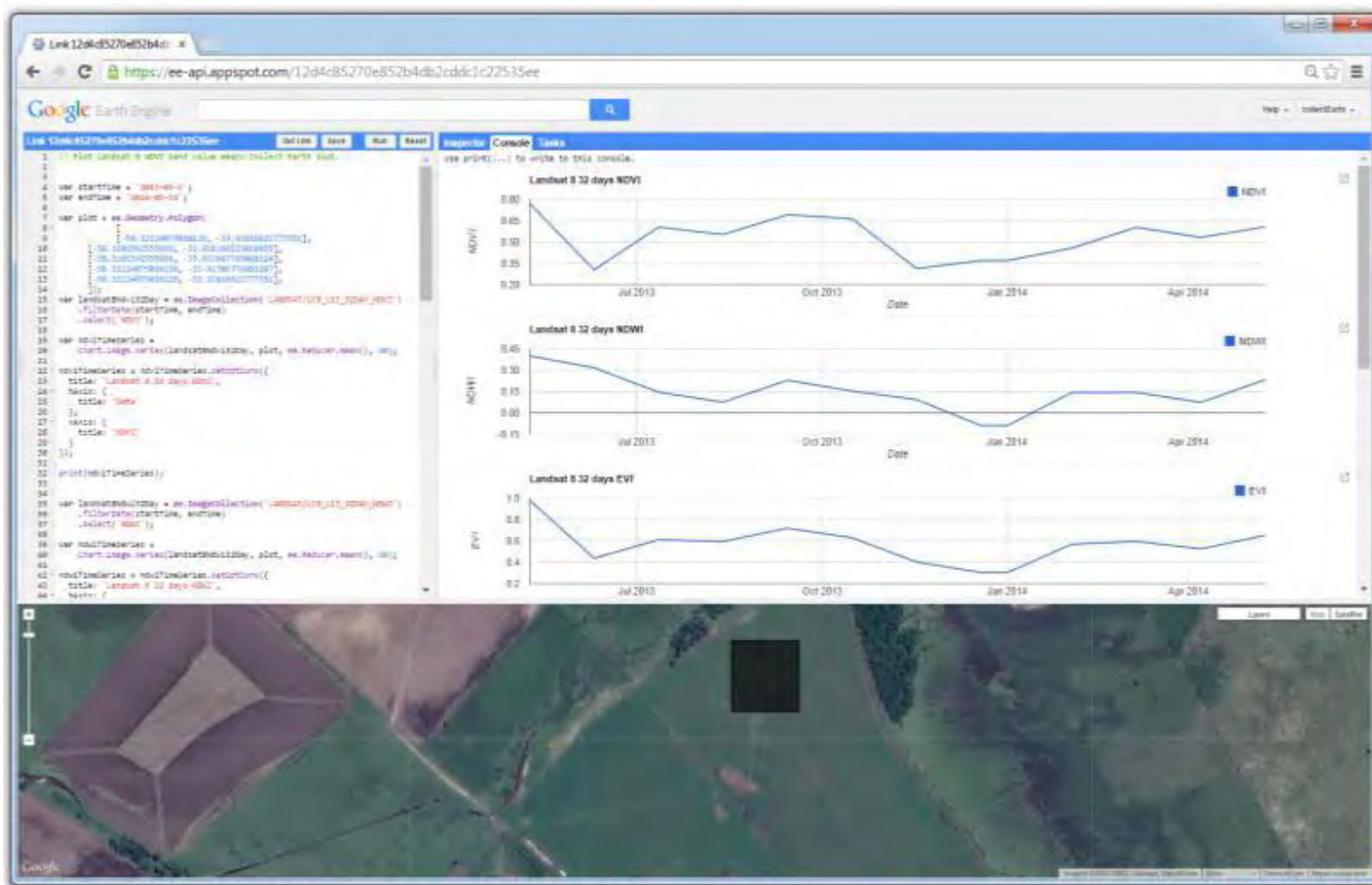


- Collect Earth automatically synchronizes the geographic view of the plot
- Access to 40 years United States Geological Survey 30m resolution Landsat imagery
- Process satellite imagery in the cloud with commonly used algorithms such as RandomForests classifier
- Import Collect Earth land use data for supervised classification and validation assessments

Geo-link between three data repositories



View inter- and intra-annual vegetation indices



Compatible with ALU GHG Inventory Software



Land use assessment with
Collect Earth

ID	Area (ha)	Code	Location
1	1.14	450	...
2	2.14	450	...
3	3.14	450	...
4	4.14	450	...
5	5.14	450	...
6	6.14	450	...
7	7.14	450	...
8	8.14	450	...
9	9.14	450	...
10	10.14	450	...
11	11.14	450	...
12	12.14	450	...
13	13.14	450	...
14	14.14	450	...
15	15.14	450	...
16	16.14	450	...
17	17.14	450	...
18	18.14	450	...
19	19.14	450	...
20	20.14	450	...
21	21.14	450	...
22	22.14	450	...
23	23.14	450	...
24	24.14	450	...
25	25.14	450	...

Land use data exported
from Collect Earth as CSV



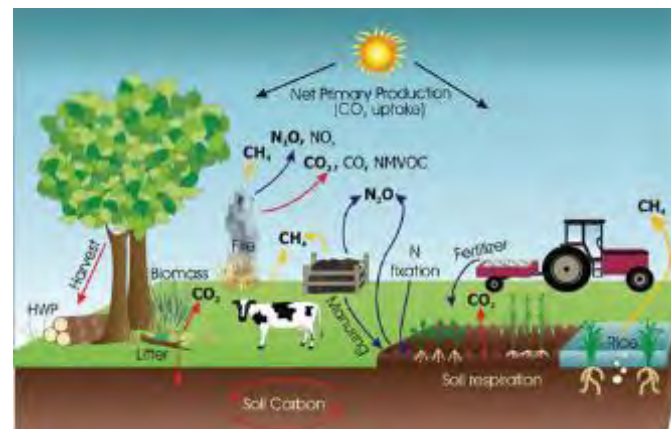
ID	Area (ha)	Code	Location
1	1.14	450	...
2	2.14	450	...
3	3.14	450	...
4	4.14	450	...
5	5.14	450	...
6	6.14	450	...
7	7.14	450	...
8	8.14	450	...
9	9.14	450	...
10	10.14	450	...
11	11.14	450	...
12	12.14	450	...
13	13.14	450	...
14	14.14	450	...
15	15.14	450	...
16	16.14	450	...
17	17.14	450	...
18	18.14	450	...
19	19.14	450	...
20	20.14	450	...
21	21.14	450	...
22	22.14	450	...
23	23.14	450	...
24	24.14	450	...
25	25.14	450	...

Land use subdivisions exported
from Collect Earth as CSV

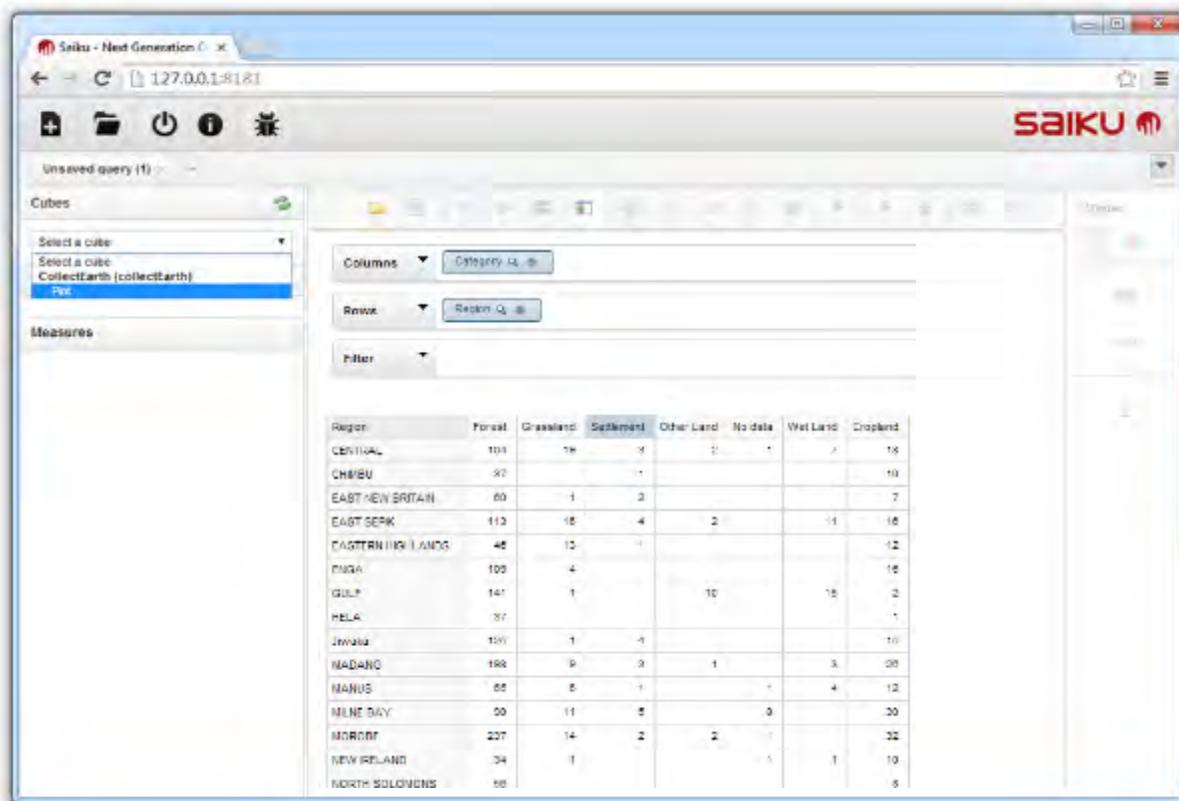
Climate	Soil	Area (ha)
Tropical Dry	Low Activity Clay Mineral	28851
Tropical Dry	Organic	22758
Tropical Dry	Sandy Mineral	1933
Tropical Dry	Volcanic Mineral	123.4
Tropical Moist, Short Dry Season	High Activity Clay Mineral	50050
Tropical Moist, Short Dry Season	Low Activity Clay Mineral	254311

Total Area (ha): 44817237

LULUCF Greenhouse Gas Inventory



LULUCF emissions fissions



■ CENTRAL ■ CHIMBU ■ EAST NEW BRITAIN ■ EAST SEPIK

Settlement



Grassland



Forest



- Fast, intuitive and flexible data analysis
- Powerful tool for data quality control
- Data export to Excel, CSV and PDF
- Produce colorful and informative charts and graphs with a few clicks
- Export graphics to JPG, PNG or other formats

SEPAL

System for earth observations, data access, processing & analysis for land monitoring

SEPAL is a cloud computing platform for geographical data processing. It enables users to quickly process large amount of data without high network bandwidth requirements or need to invest in high-performance computing infrastructure.

System for earth observations, data access, processing &
analysis for land monitoring

SEPAL



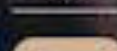
SEARCH GEO DATA

Fast and easy access to scenes and mosaics



BROWSE YOUR DATA

Preview and download your products



PROCESS YOUR DATA

Easy-to-use data processing Apps



TERMINAL

Powerful command-line tools for data processing



Forgot password

Enter your user name

Enter your password



Engaged by
Member States

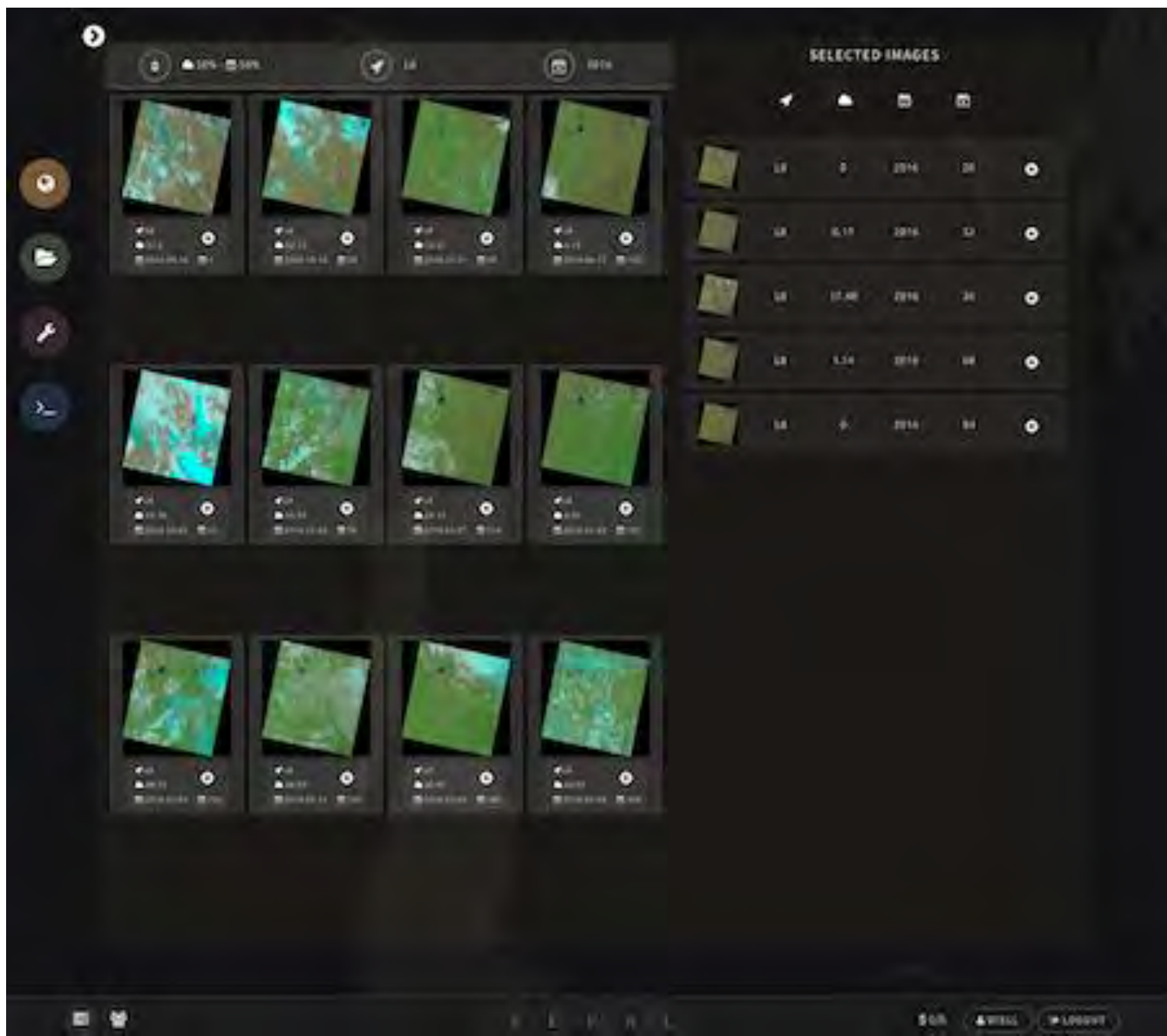


► **LOW-COST**

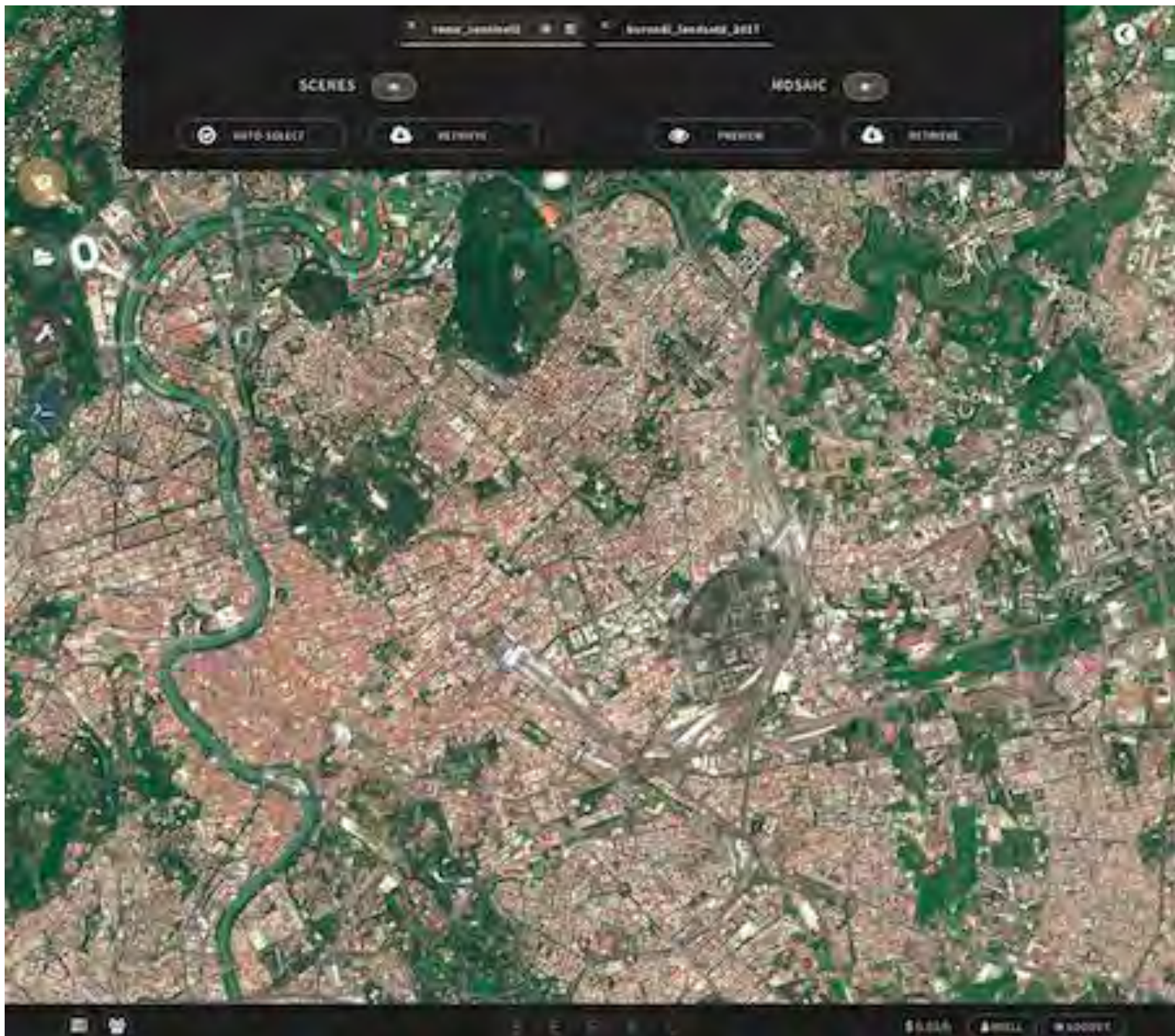
The screenshot shows the Sentinel Hub Playground interface. The search filters are set as follows:

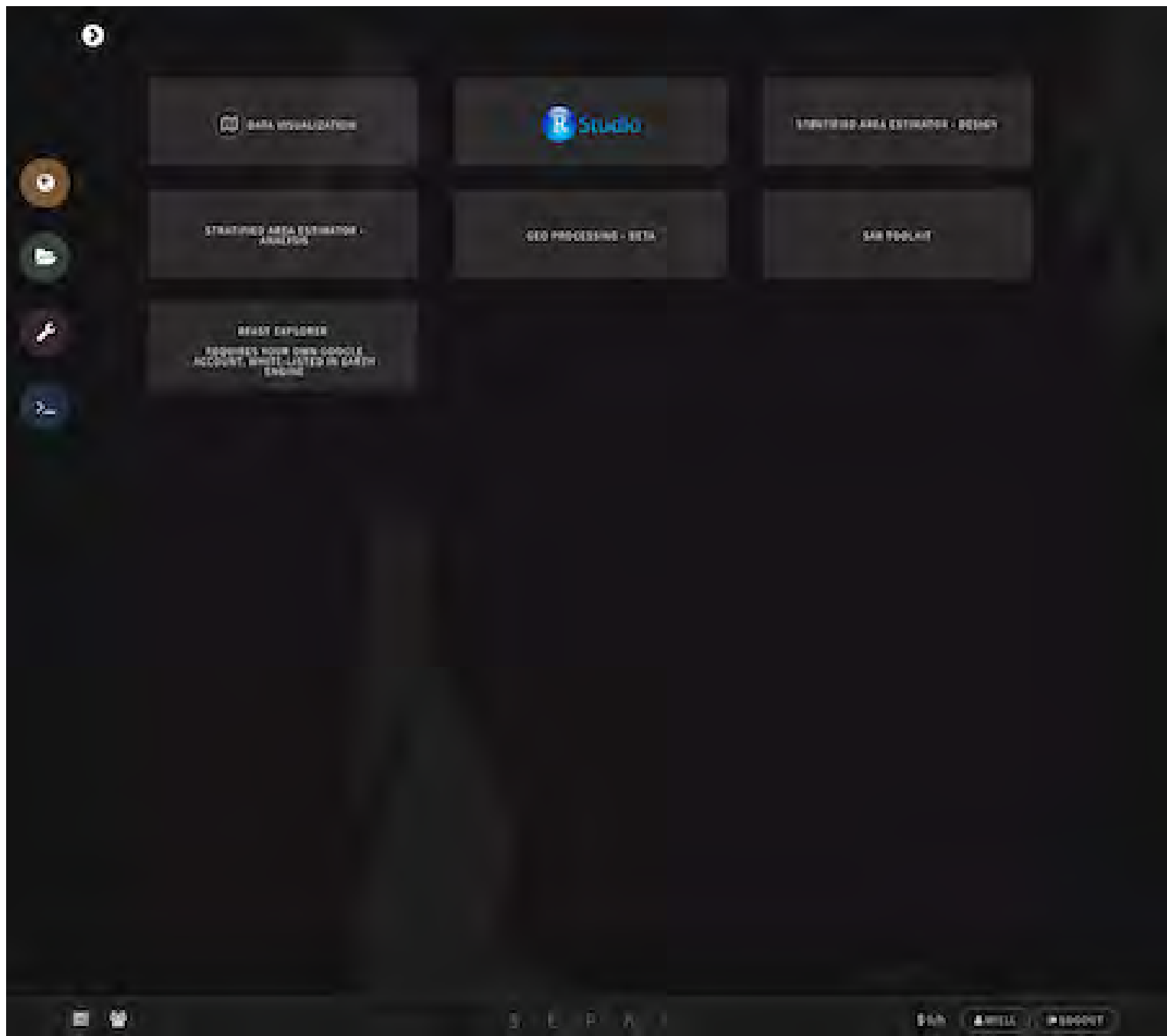
- NAME:** cambodia_2017_Sentinel2
- AREA OF INTEREST:** Cambodia
- SATellites:** LANDSAT or SENTINEL-2
- TARGET DATE:** 2017 / 02 / 28

The date selection interface is expanded, showing a calendar for February 2017. The day 28 is selected. A "SEARCH" button is visible below the date picker.



UN-REDD PROGRAMME





UN-REDD PROGRAMME



Approved by
Executive Board





[Press Shift-F1 for help]

Host/IP or ssh:// URL [localhost]: ssh://roberts@ssh-gateway?identities=id_rsa
Connecting to ssh://roberts@ssh-gateway-22

The following SSH identities are being used for this connection:
id_rsa

- Monthly budget -

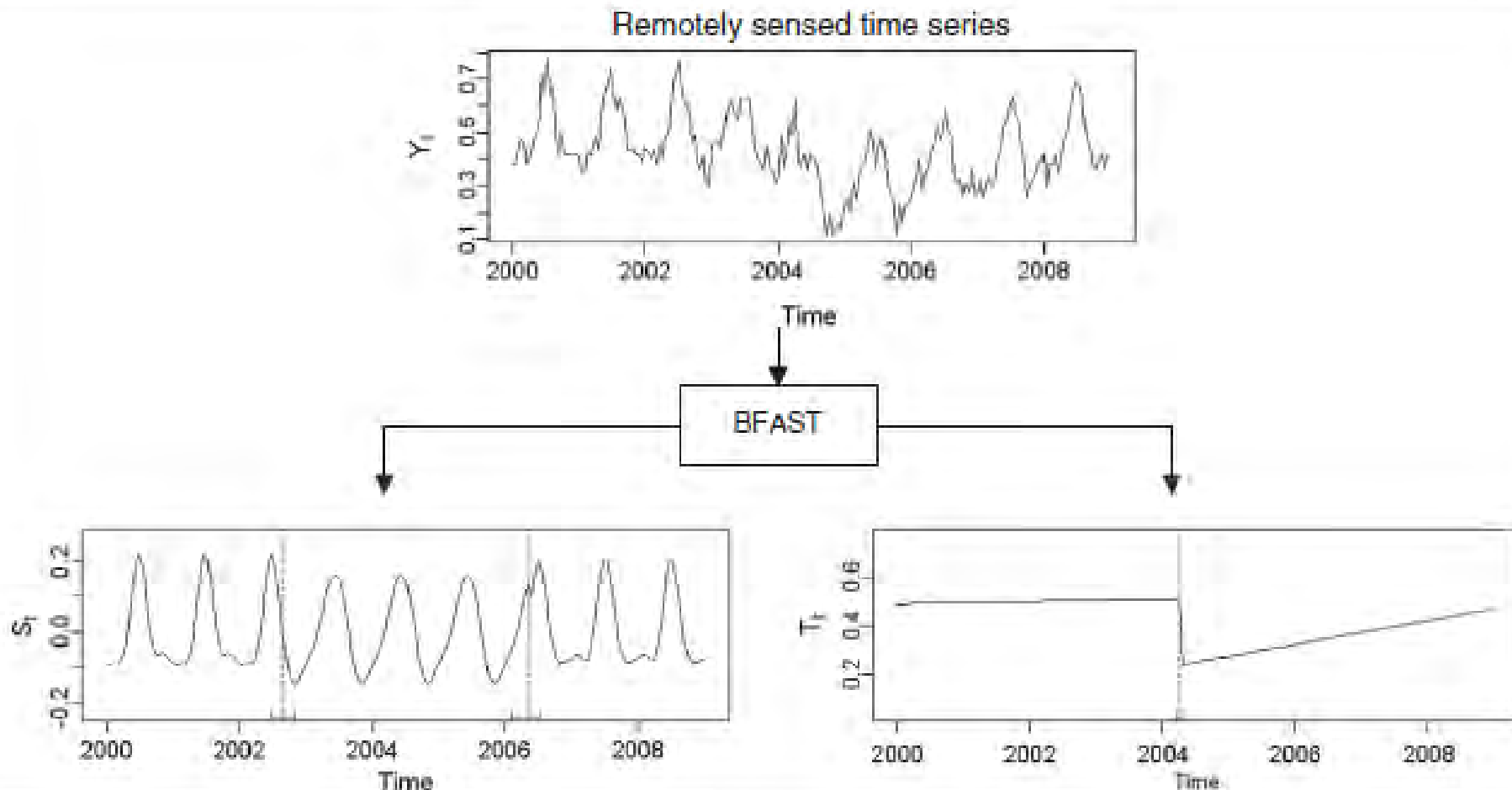
Instance spending/budget: 0.2/20 USD
Storage spending/budget: 0.7/20 USD
Storage used/quota: 19.19/20 GB

- Create new session -

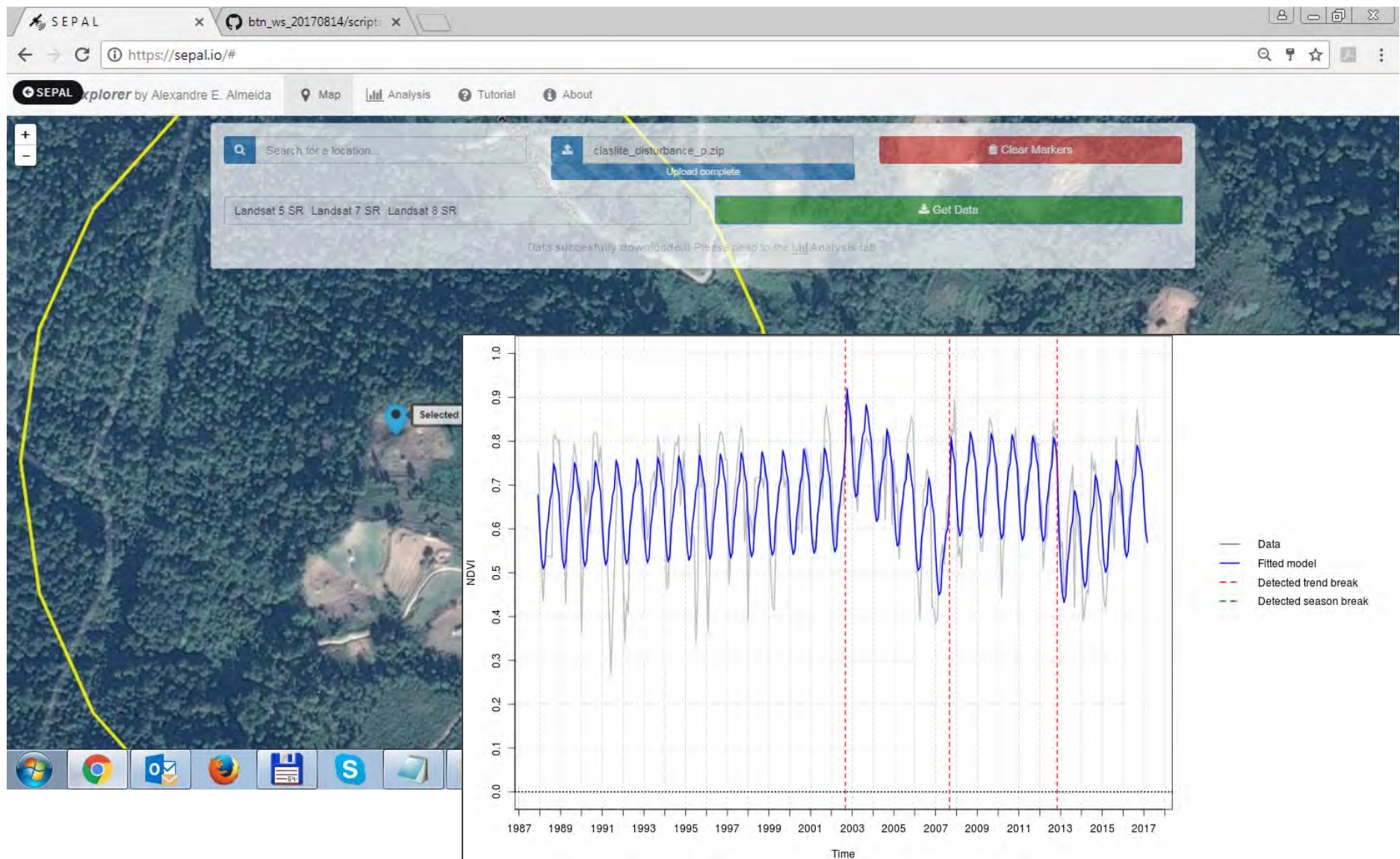
1	t2.small, 1 CPU / 2.0 GiB, 0.025 USD/h
2	m3.medium, 1 CPU / 3.75 GiB, 0.073 USD/h
3	m4.large, 2 CPU / 8.0 GiB, 0.119 USD/h
4	m4.xlarge, 4 CPU / 16.0 GiB, 0.238 USD/h
5	m4.2xlarge, 8 CPU / 32.0 GiB, 0.475 USD/h
6	m4.4xlarge, 16 CPU / 64.0 GiB, 0.95 USD/h
7	m4.10xlarge, 40 CPU / 160.0 GiB, 2.377 USD/h
8	m4.16xlarge, 64 CPU / 256.0 GiB, 3.803 USD/h
9	c4.large, 2 CPU / 3.75 GiB, 0.113 USD/h
10	c4.xlarge, 4 CPU / 7.5 GiB, 0.226 USD/h
11	c4.2xlarge, 8 CPU / 15.0 GiB, 0.453 USD/h
12	c4.4xlarge, 16 CPU / 30.0 GiB, 0.905 USD/h
13	c4.8xlarge, 36 CPU / 60.0 GiB, 1.811 USD/h
14	r4.large, 2 CPU / 15.25 GiB, 0.148 USD/h
15	r4.xlarge, 4 CPU / 30.5 GiB, 0.296 USD/h
16	r4.2xlarge, 8 CPU / 61.0 GiB, 0.593 USD/h
17	r4.4xlarge, 16 CPU / 122.0 GiB, 1.186 USD/h
18	r4.8xlarge, 32 CPU / 244.0 GiB, 2.371 USD/h
19	r4.16xlarge, 64 CPU / 488.0 GiB, 4.742 USD/h
20	x1.16xlarge, 64 CPU / 976.0 GiB, 8.003 USD/h
21	x1.32xlarge, 128 CPU / 1920.0 GiB, 16.006 USD/h

Select (1):

BFAST: extraction of significant trend breaks within dense time series



BFAST in SEPAL: point based through GUI + bfastSpatial for mapping



Additional information and examples

Accuracy assessment / stratified area estimator tools

<http://www.gofcgold.wur.nl/redd/training-materials/webinar-series/episode/6>

Intro and overview to SEPAL

<http://www.gofcgold.wur.nl/redd/training-materials/webinar-series/episode/7>