FAO – SEPAL

System for Earth Observation Data Access, Processing and Analysis for Land Monitoring

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ESA Phiweek, Frascati (IT)
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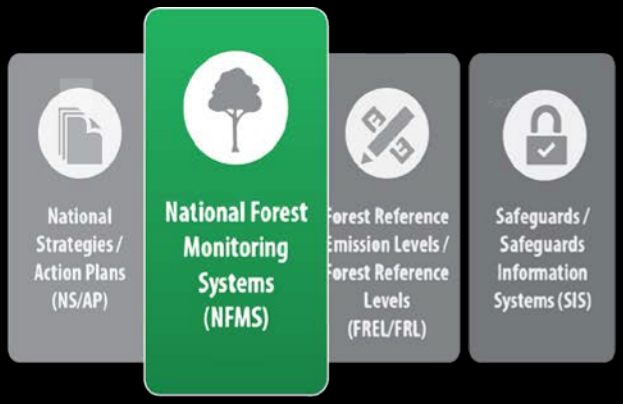
FAO country support for forest monitoring

support

- **Demand Driven**
- **Capacity Building**
- **Participatory process**
- **Address National and International Reporting Requirements** (harmonization to national and global standards)
- **Knowledge Sharing** (e.g. south-south collaboration)
- **Institutionalized & Sustain**



Technical support to ***REDD+*** *countries on* ***NFMS, FREL*** *and beyond*

Context: FAO geospatial tools

Collect | Collect Mobile | Collect Earth | Calc | Geospatial Toolkit

http://www.openforis.org

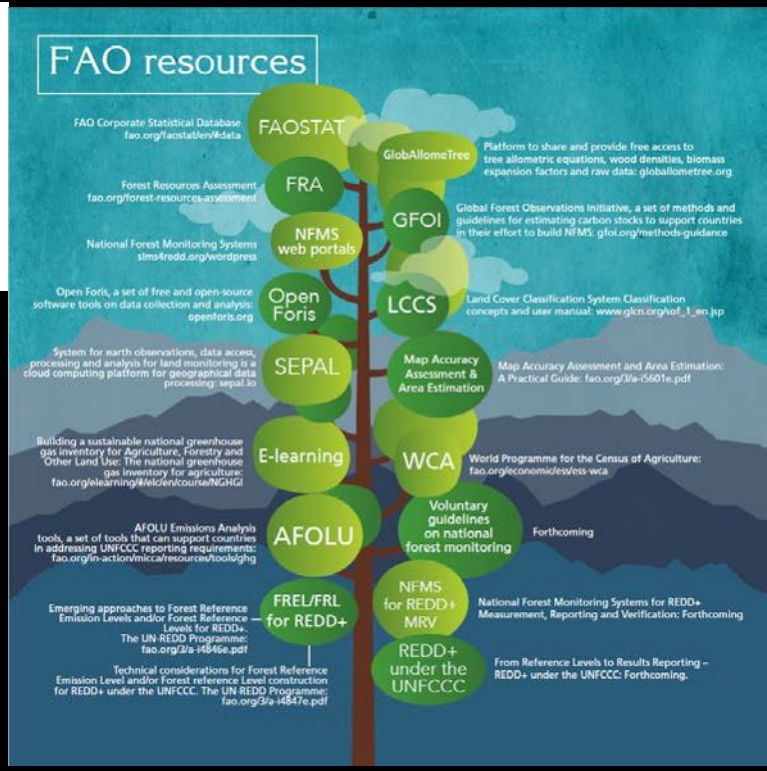
Cloud-based Processing

Food and Agriculture Organization of the United Nations

SEPAL

SYSTEM FOR EARTH OBSERVATION DATA ACCESS, PROCESSING & ANALYSIS FOR LAND MONITORING

https://sepal.io/



OpenFORIS: suite of geospatial modules

- Collect(mobile), Collect Earth, Collect Earth online

- OpenSAR toolKit

Command line tools for quasi-fully automatic preprocessing of nationwide SAR mosaics

Up to date: ALOS Palsar FBD data, 30m output resolution

Output Stack: Backscatter values, Ratio, Texture measures, DEM + aspect + slope

Nice example of integration with SEPAL

SEPAL Objectives

Improve data access, processing, and delivery of satellite data and information products to enable autonomous land monitoring capacity.

What is it?

SEPAL is a cloud-based catalyst for autonomous land monitoring

Open source

Easy query, access and processing of earth observation data

What is it?

Reduce time from innovation to adoption

Remove fear of making mistakes; fail fast

Enable collaboration - Run BEEODA, PyCCD, Datacube in a common platform, branded, in cloud

Break barriers to: analysis ready data (ARD), Supercomputing, Maintenance and Dependencies

What is it?

Improve training consistency

Fit into existing processing methodology

SEPAL

Bring the people to the data

(and algorithms, software and recipes)

SEPAL

Create composites / mosaics of Landsat and Sentinel

Process RADAR data

Classification and change detection

Image segmentation

SEPAL

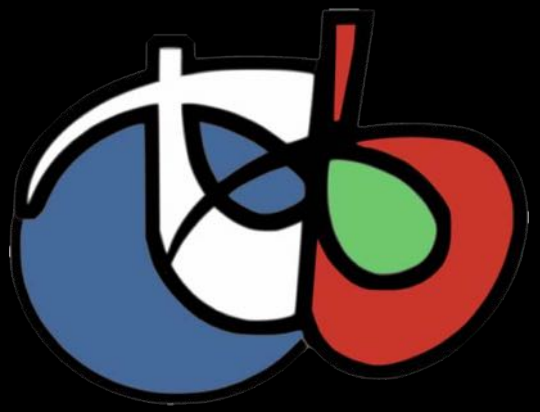
Time-series analysis

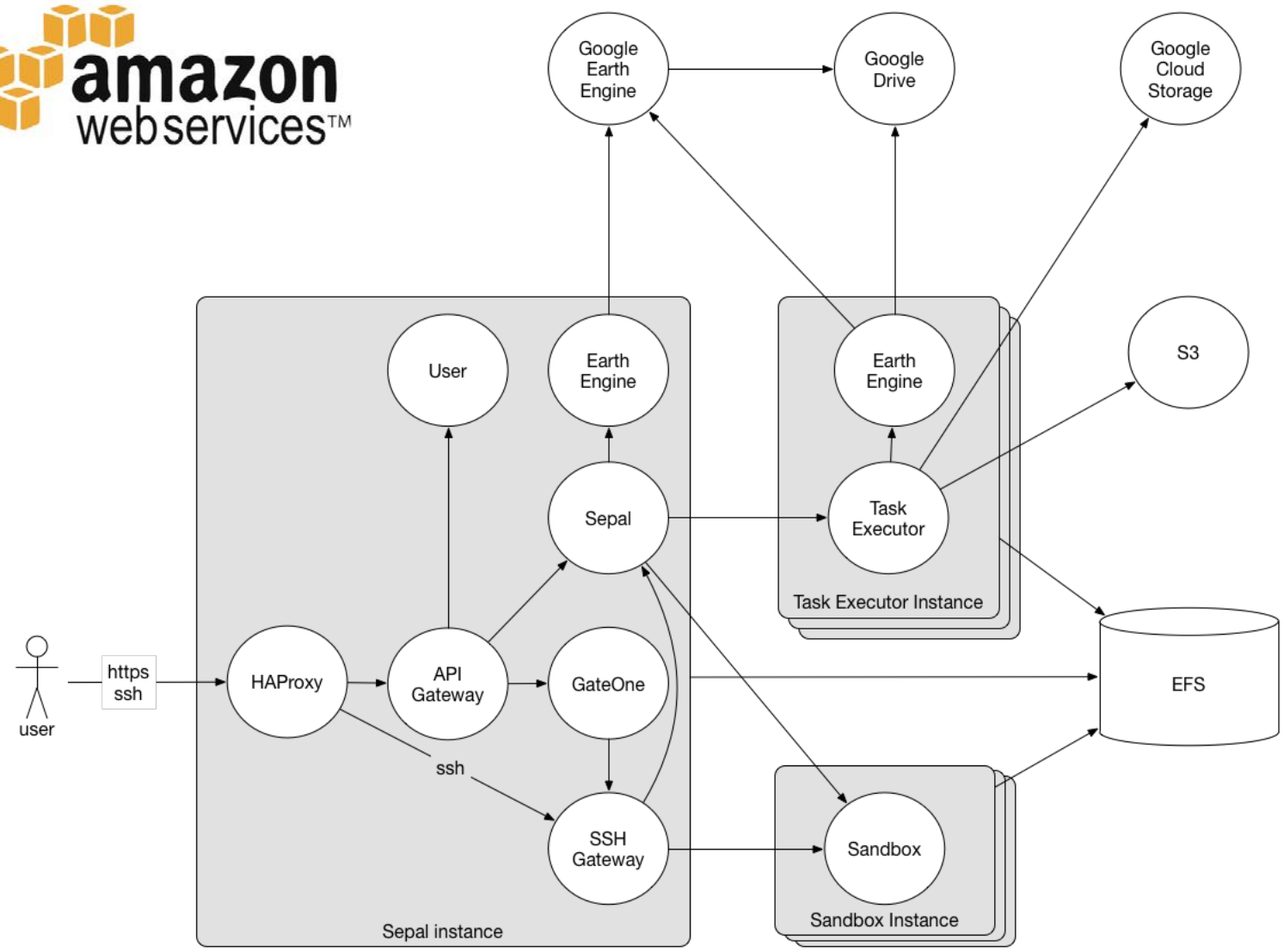
Sample-based area estimation

Integrate user-supplied imagery

Compliant with GFOI Methods and Guidance

OPENFORIS




amazon
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Drive
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Cloud
Storage
S3
User
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Engine
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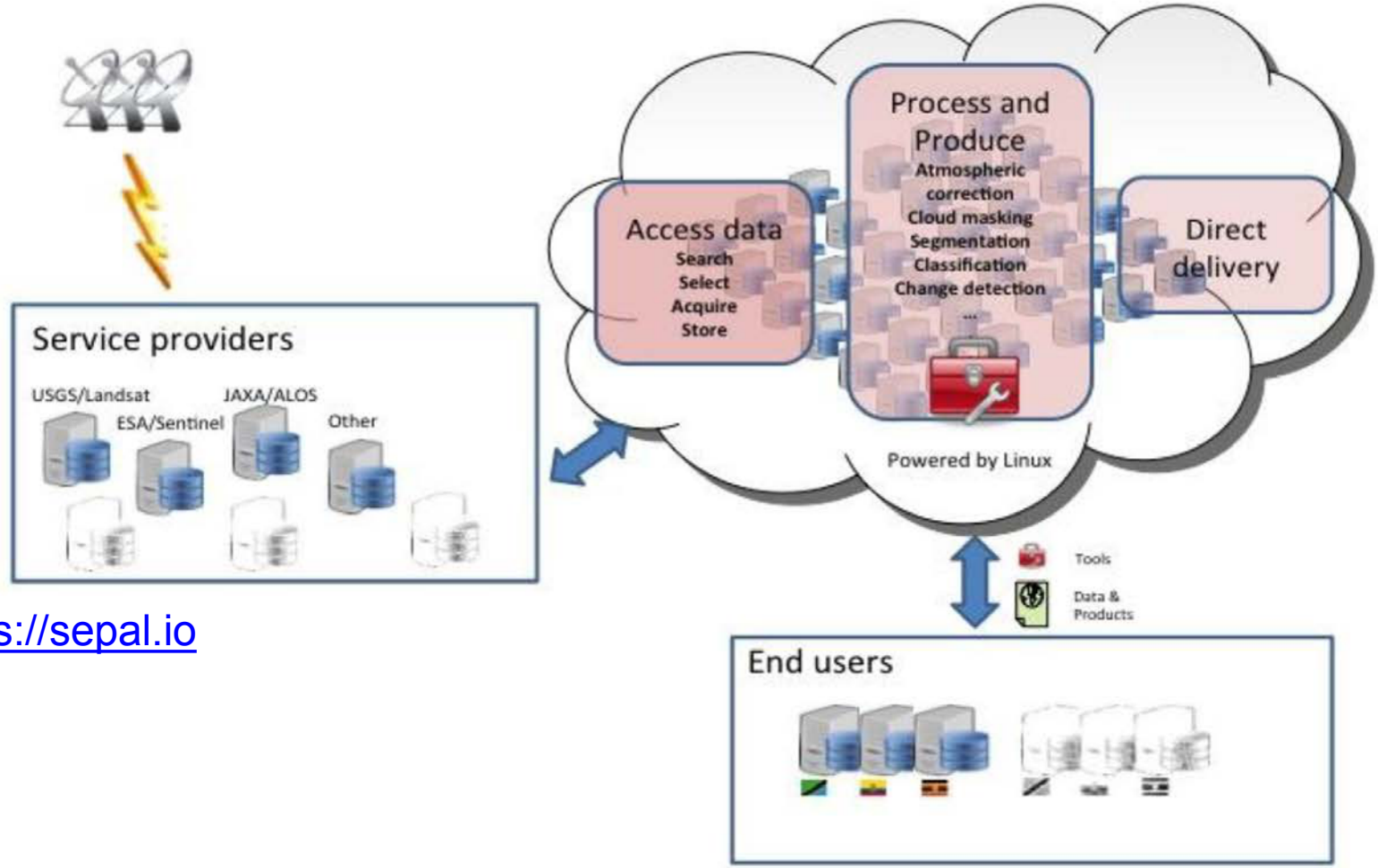
Engine
Sepal
Task
Executor
Task Executor Instance
user
https
ssh
HAProxy
API
Gateway
GateOne
EFS
ssh
SSH
Gateway
Sandbox
Sandbox Instance
Sepal instance

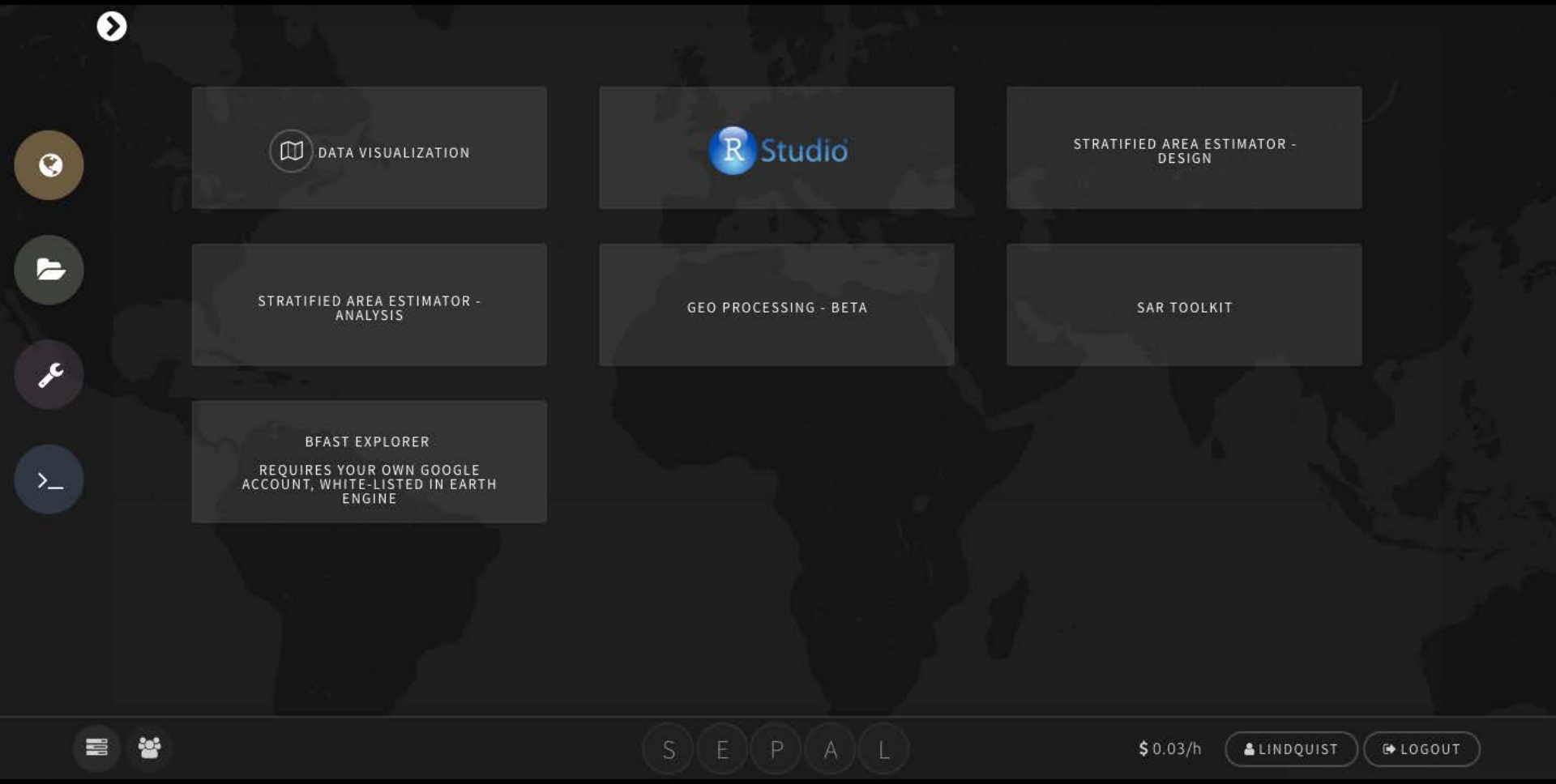
Cloud computing structure

System for Earth System and Analysis for Land Monitoring (SEPAL)



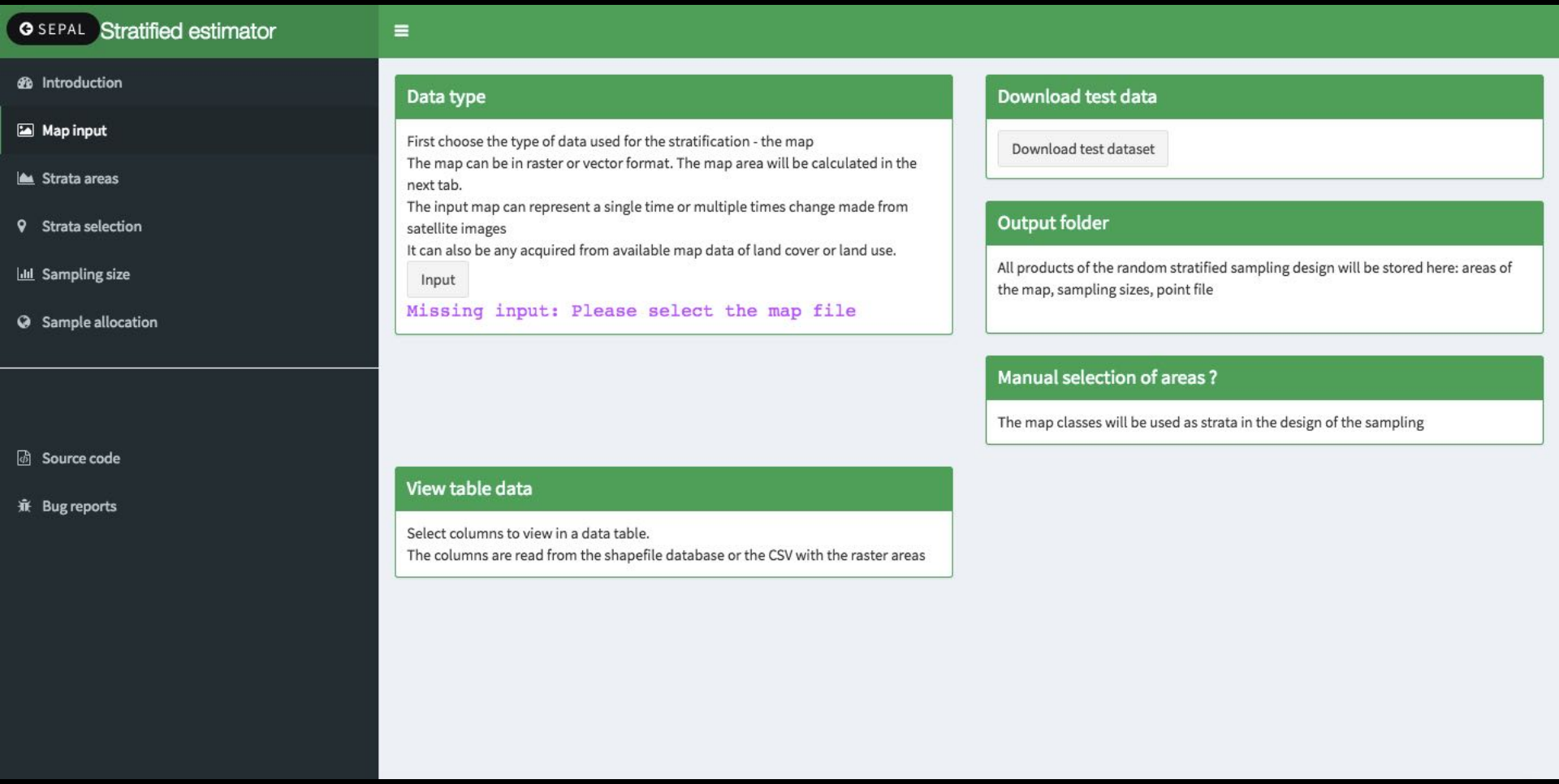
https://sepal.io

SEPAL - 2.0

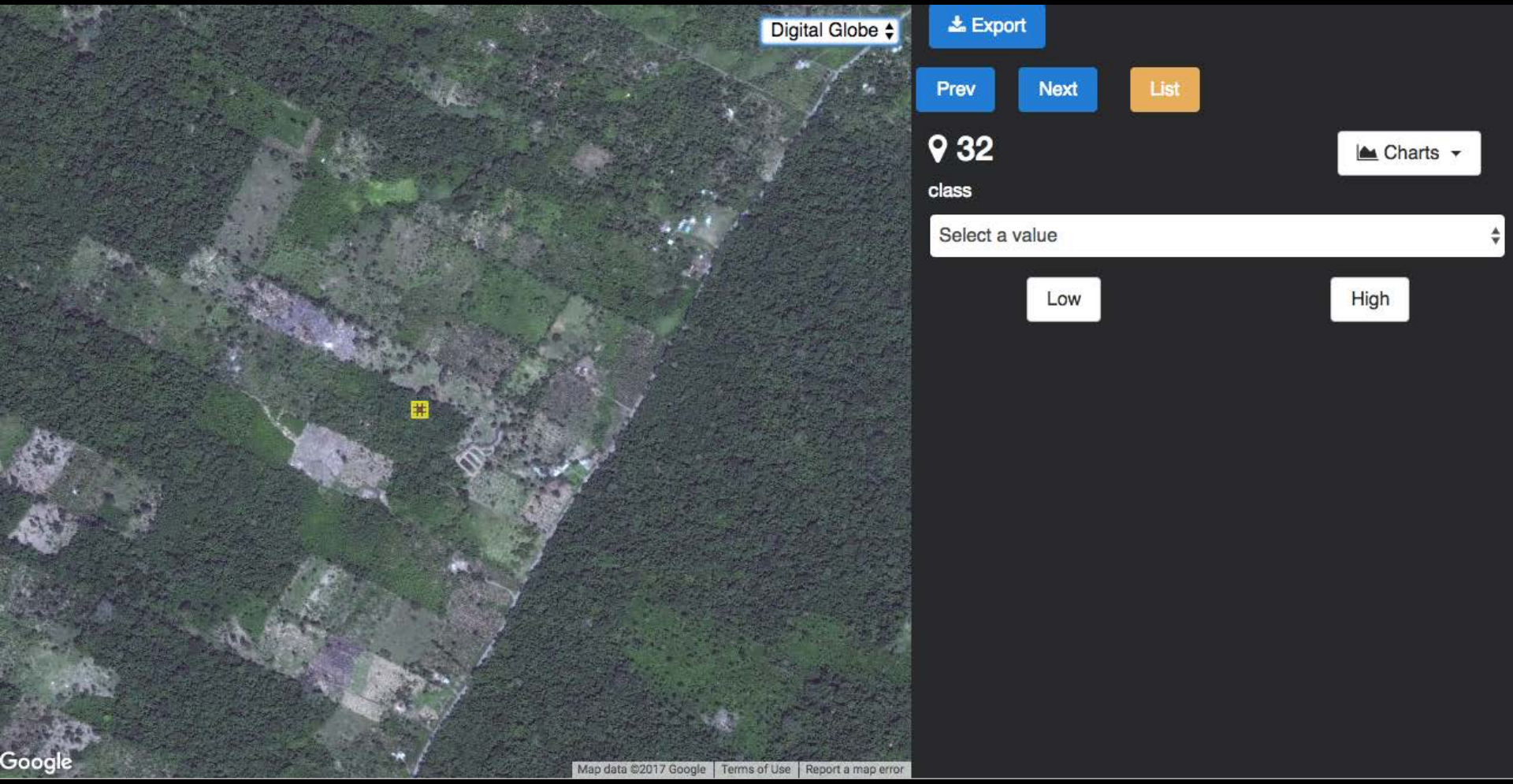


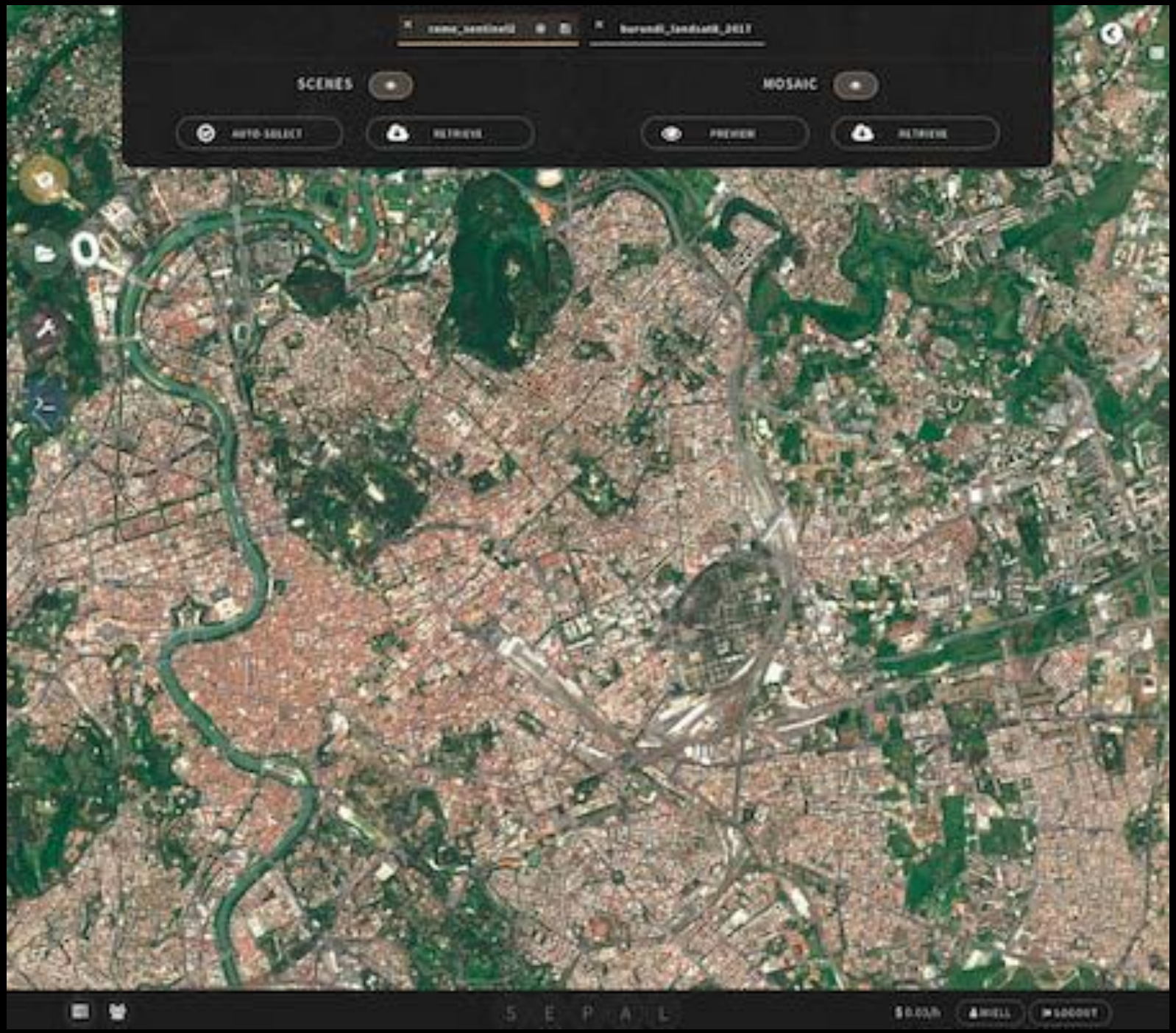
SEPAL Modules for Extended Capacity and Collaboration

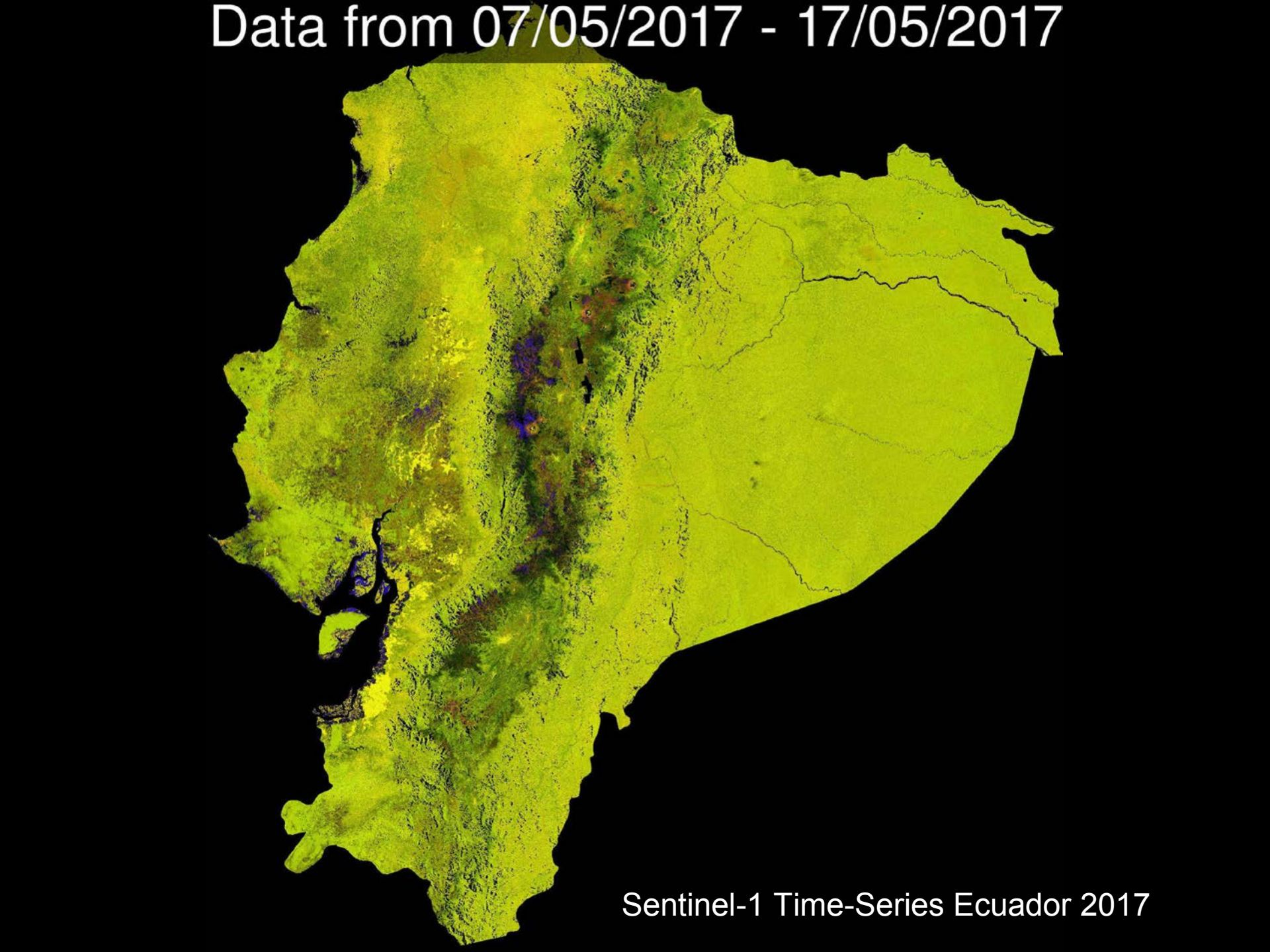
Stratified Area Estimation, Step-by-Step

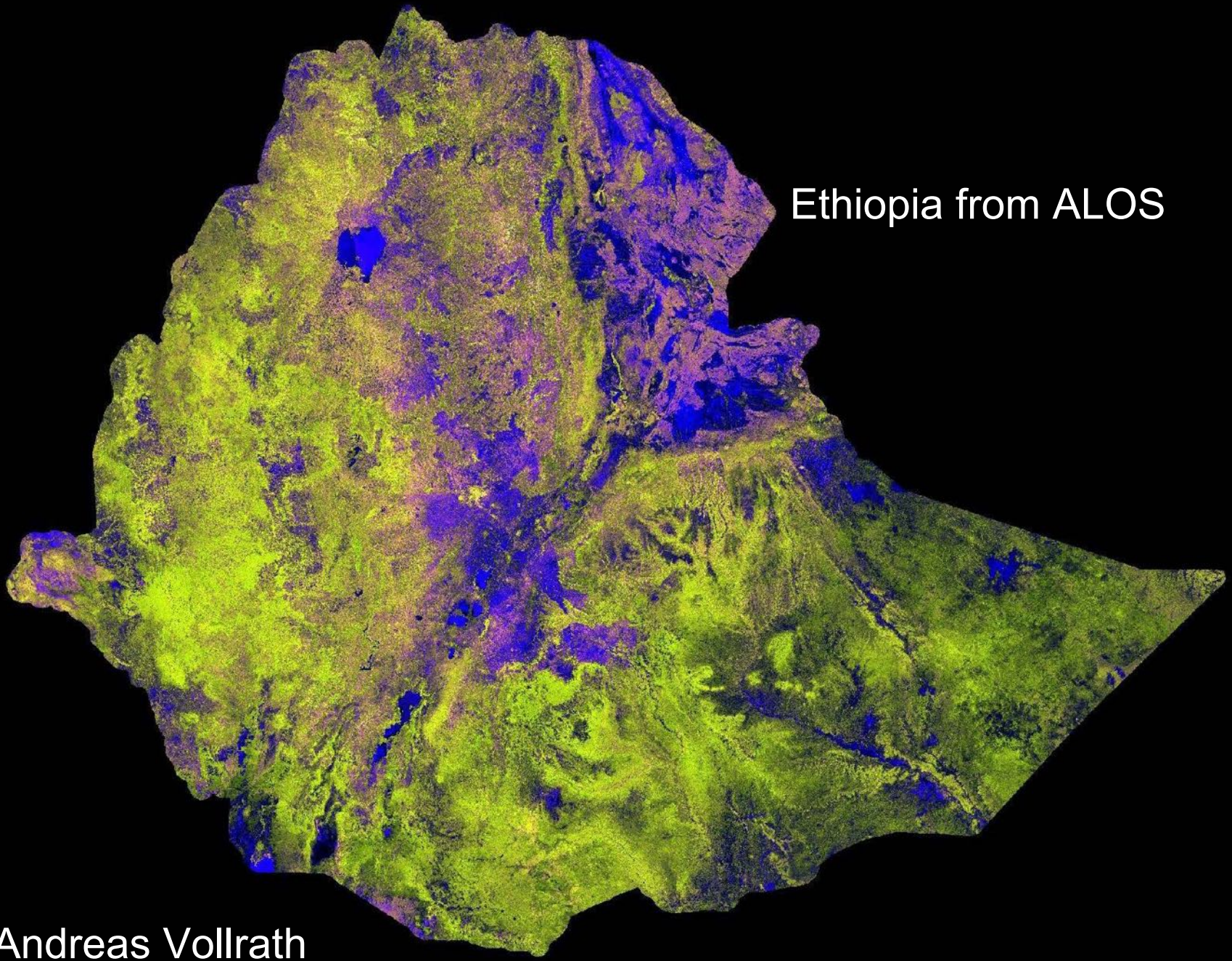


Sample-based assessments - Training and Reference Data



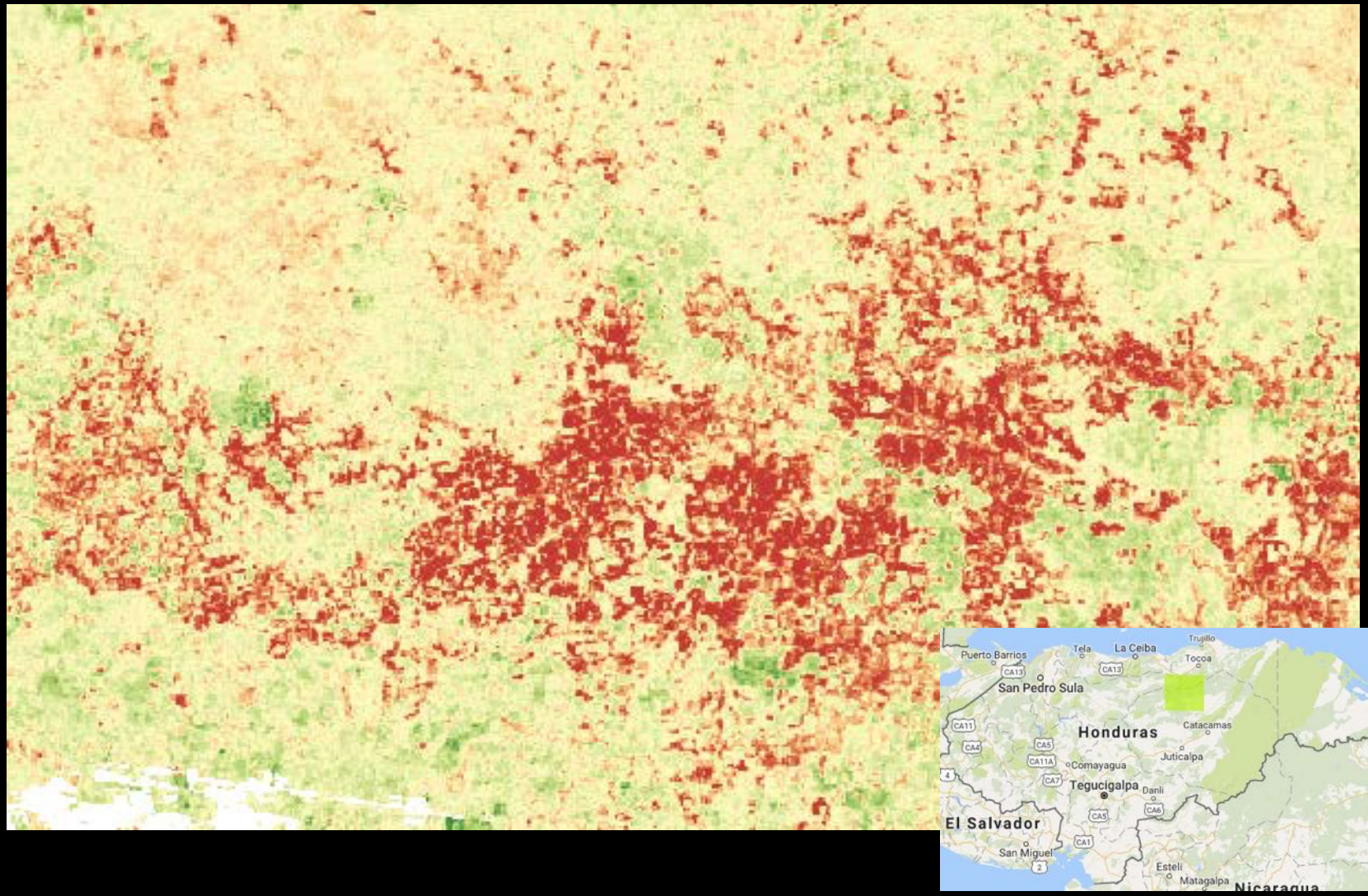

SCENES
MOSAIC
AUTO SELECT
RETRIEVE
PREVIEW
RETRIEVE
SEPAL


Data from 07/05/2017 - 17/05/2017
Sentinel-1 Time-Series Ecuador 2017


Ethiopia from ALOS
Andreas Vollrath

Sentinel 2, 2017

Landsat Time-series Analysis - Honduras Insect Damage



Every acquisition from 2010 - 2018 processed

SEPAL Conclusion

- Improve connection between data / users / information products for monitoring
- Increase production speed of products required for MRV
- Open, flexible system for rapid and standardized image processing
- Building capacity for autonomous creation of national statistics

OPENFORIS

tinyurl.com/fao-sepal

github.com/openforis/sepal

SEPAL Conclusion

First things first.

SEPAL Conclusion

github.com/openforis/sepal

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https://sepal.io

Sign up for Earth Engine access

earthengine.google.org

gmail account required too

Sign up for NASA EarthData access

https://urs.earthdata.nasa.gov/users/new

Sign up for JAXA ALOS Palsar access

http://www.eorc.jaxa.jp/ALOS/en/palsar_fnf/registration.htm

Thanks!
Governments of Norway, Germany, Finland
European Commission
USGS, NASA, ESA
Google

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Rachel Golder, Esther Phillips

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