Food and Agriculture Organization
of the United Nations
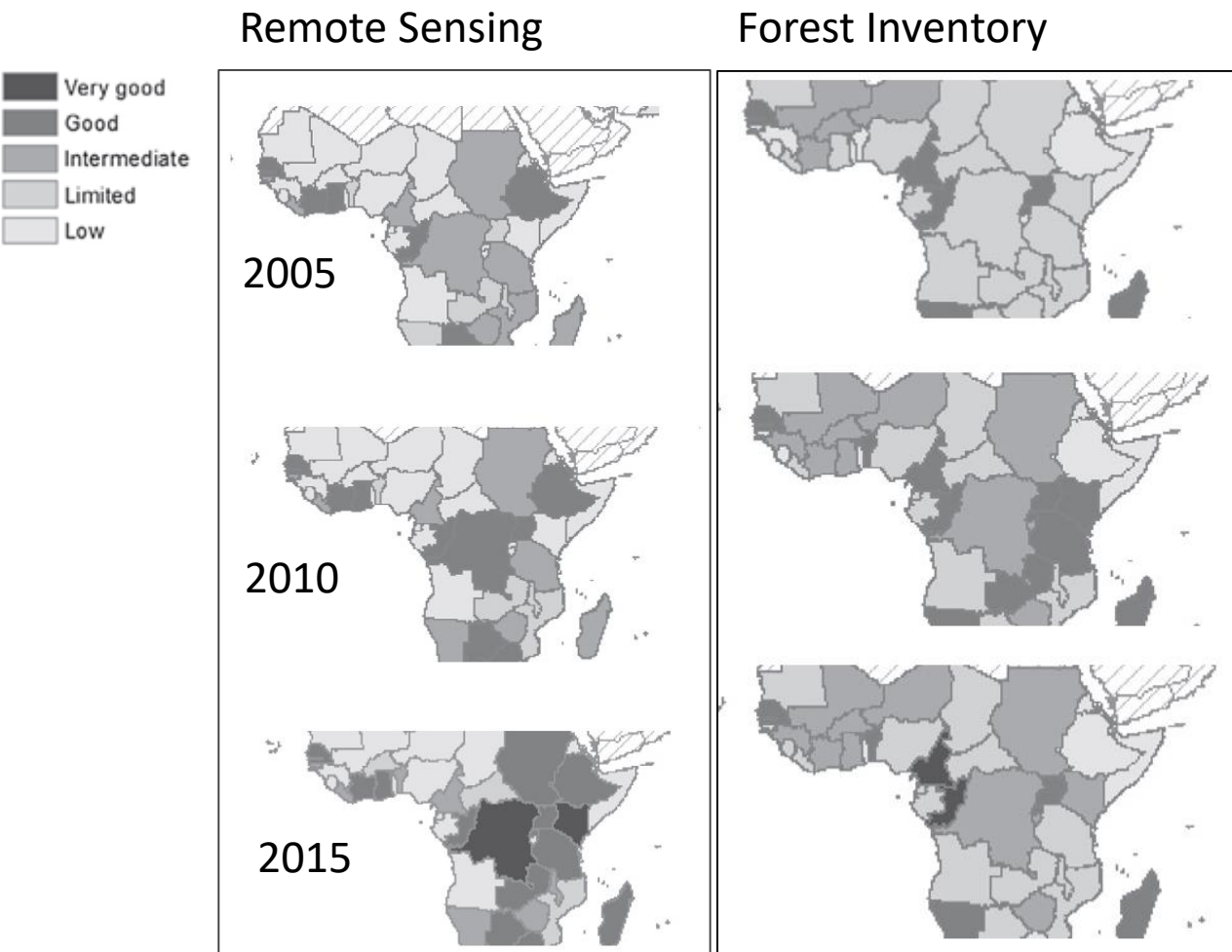
Earth observation data and products in forest monitoring

FAO, Forestry Department
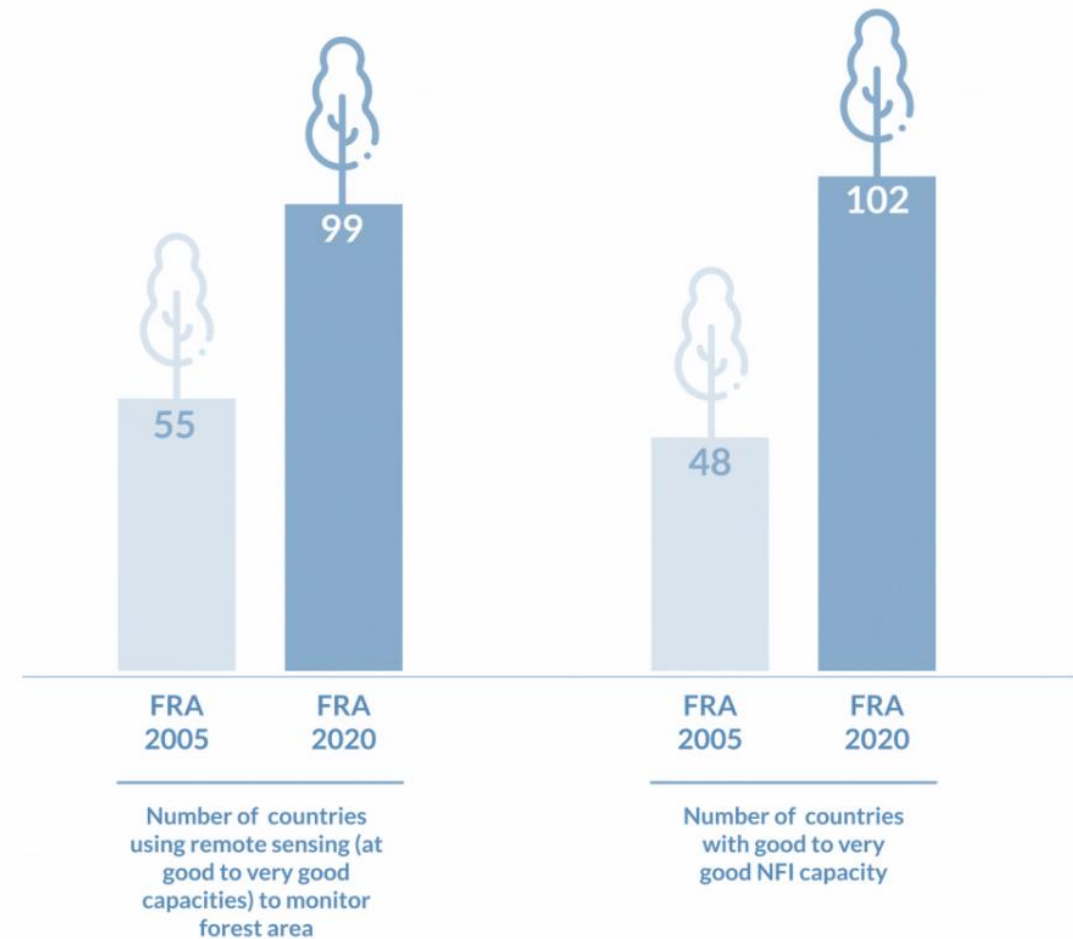
Country monitoring gap assessments

Remote Sensing   Forest Inventory

Source: Romijn et al., (2015)

Source: Nesha et al., (2021)

Free & open-source solutions for monitoring

www.openforis.org

A set of free and open-source software tools that facilitates flexible and efficient data collection, analysis and reporting

The tools

Arena
Online platform for survey design, data management, utilization and processing

Collect
Easy and flexible survey design and data management

Collect Mobile
Intuitive data collection and validation in the field

Calc
Efficient and collaborative data analysis and results dissemination

Collect Earth
Easy and flexible survey design and data management

Collect Earth Online
Online Land Monitoring tool for crowd-sourcing of augmented visually interpreted data

Earth Map
The power of Google Earth Engine without coding. A user friendly tool for complex land monitoring
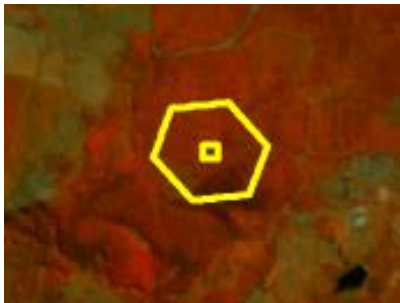
SEPAL
System for earth observation, data access, processing, analysis for land monitoring

Enhanced visual interpretation: Collect Earth Online

400.000 Samples, random stratified. Focus on land use changes 2000-2010 and 2010-2018
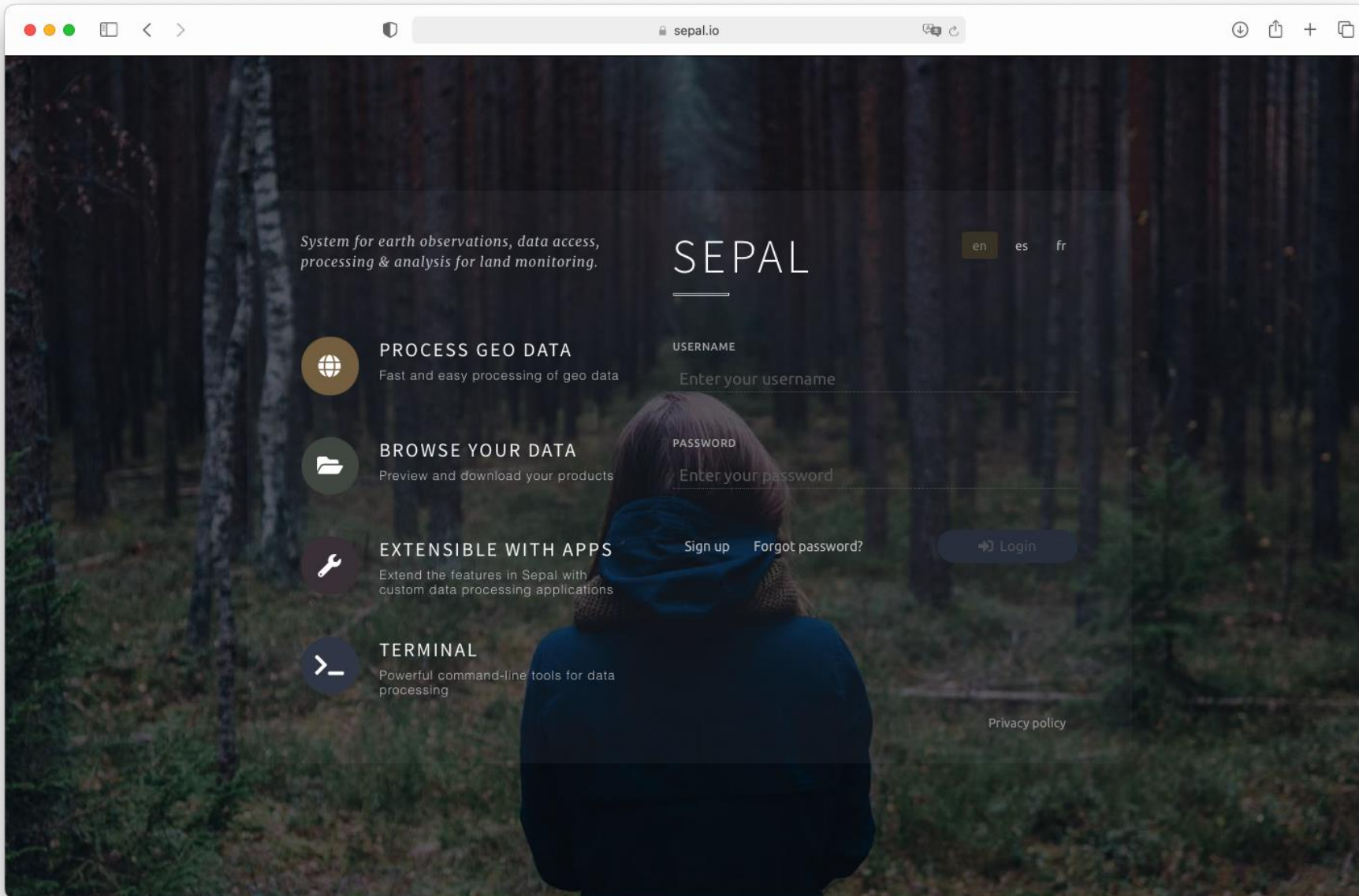
More than 800 experts of 126 countries collected the data across the world

Deforestation (2000 to 2018) was mainly due to **Cropland expansion (77%)** and **Livestock grazing (17%)**

Other wooded lands represent 13.7 % of total Africa land.

Cloud-computing at finger tips: sepal.io

Forest Inventory and Agricultural Census in Tunisia: land cover classification using Sentinel 1 time scans

Drivers of deforestation and degradation (CAFI): https://sites.google.com/view/cafifaoddd/

Framework for Ecosystem Restoration Monitoring

Based on FAO's Hand-In-Hand Geospatial architecture

➢ *Explore* geospatial information related to soil, water, vegetation, and socio-economics for your ecosystem of interest

➢ *Access* tools and guidance for restoration planning and monitoring

➢ *Upload* and integrate geospatial data locally, nationally, regionally, and globally in private work-space

➢ *Create* compelling restoration impact stories, based on user specific geospatial data for a defined area of interest

➢ *Apply* advanced functionality with integration of FAO's cloud computing platform SEPAL – *mobile compatible*

https://data.apps.fao.org/ferm

FERM User Guide : http://www.fao.org/3/cb5046en/cb5046en.pdf
FERM demo video: https://youtu.be/qsKtf-Q_SGg

Monitoring Great Green Wall field activities

Delfino plough

Micro-basins by the plough

After rainy season

Sanpelga, Burkina Faso
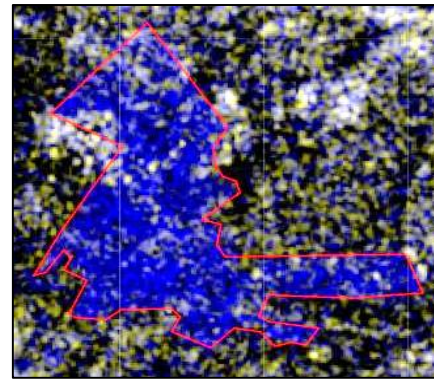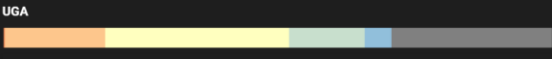

Sentinel-1 radar data
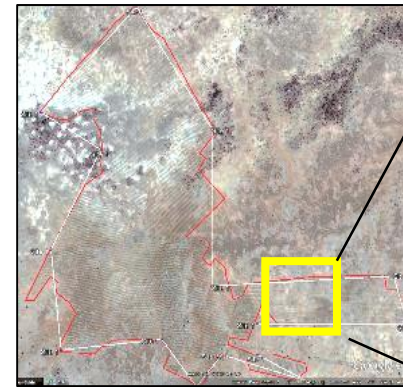
Monitor land preparation, report exact date and revise boundaries to improve measurements of areas prepared for planting
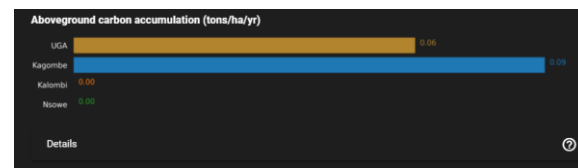
se.plan - SEPAL forest restoration planning tool

- Decision support tool for restoration practitioners.

- Focus on both **socio-economic** and **biophysical** factors

- Restoration suitability is based on a cost-benefit ratio and excludes areas where restoration cannot take place.

- An easy-to-use interface that allows for the use of global or **custom** datasets.

- A dashboard provides a map of forest restoration suitability and summary statistics.

Forest restoration scenario in Uganda
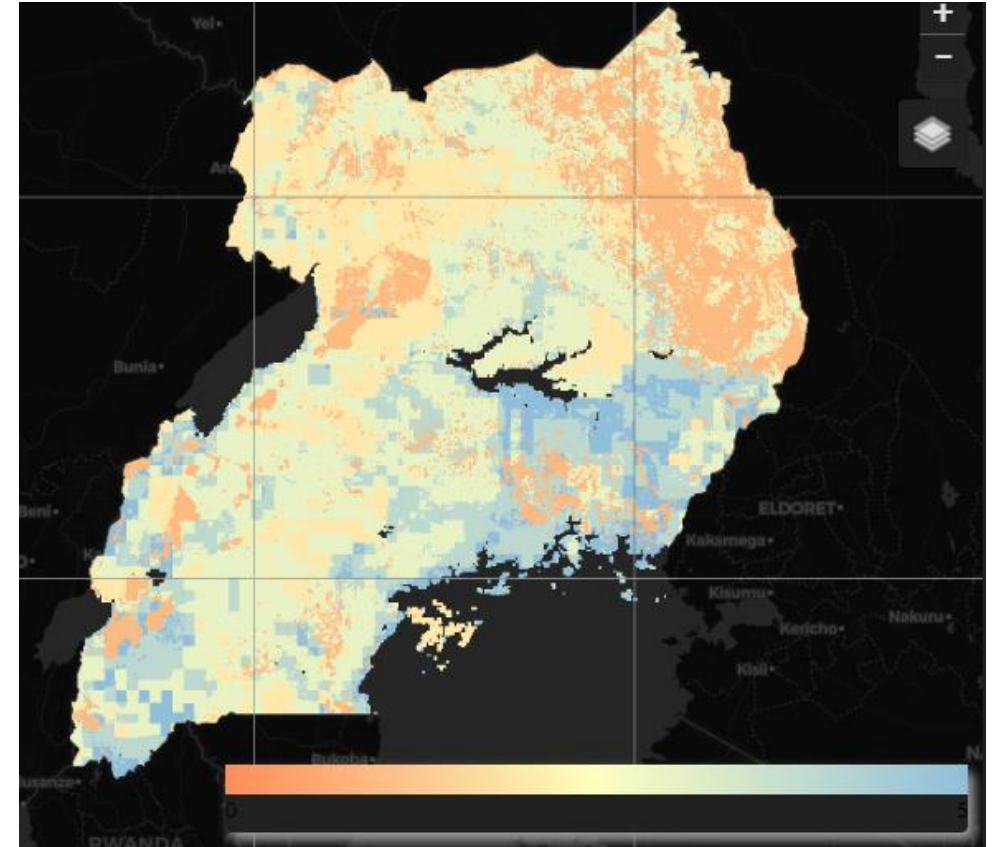
Peatland monitoring in Indonesia

In degraded peatlands the creation of canals to establish crop plantations leads to water drainage and the consequent soil degradation and soil organic carbon loss. Peatland restoration consists of **blocking these canals using dams to rewet the area**.

Canal dam for peatland restoration.
Source: Marcel Silvius, Wetlands International

Indonesian government peatland monitoring situation room

Ground sensors are used to collect data on **soil moisture and ground water levels** using SEPAL the data is transformed into maps that show trends in moisture and water levels in the peatlands.

Data: Sentinel-1, GDLAS and ground water level measurements

SEPAL
System for earth observation data access, processing & analysis for land monitoring

More information

www.fao.org/forest-resources-assessment

www.fao.org/national-forest-monitoring