Uptake of Deforestation Alerts with WRI tools

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GFOI Session on Tropical Forest Monitoring

ESA Living Planet Symposium 2025

How Satellite-Based Deforestation Alerts Work

Satellite captures an image

Computer processes data to identify alerts

Alerts shared with relevant audiences

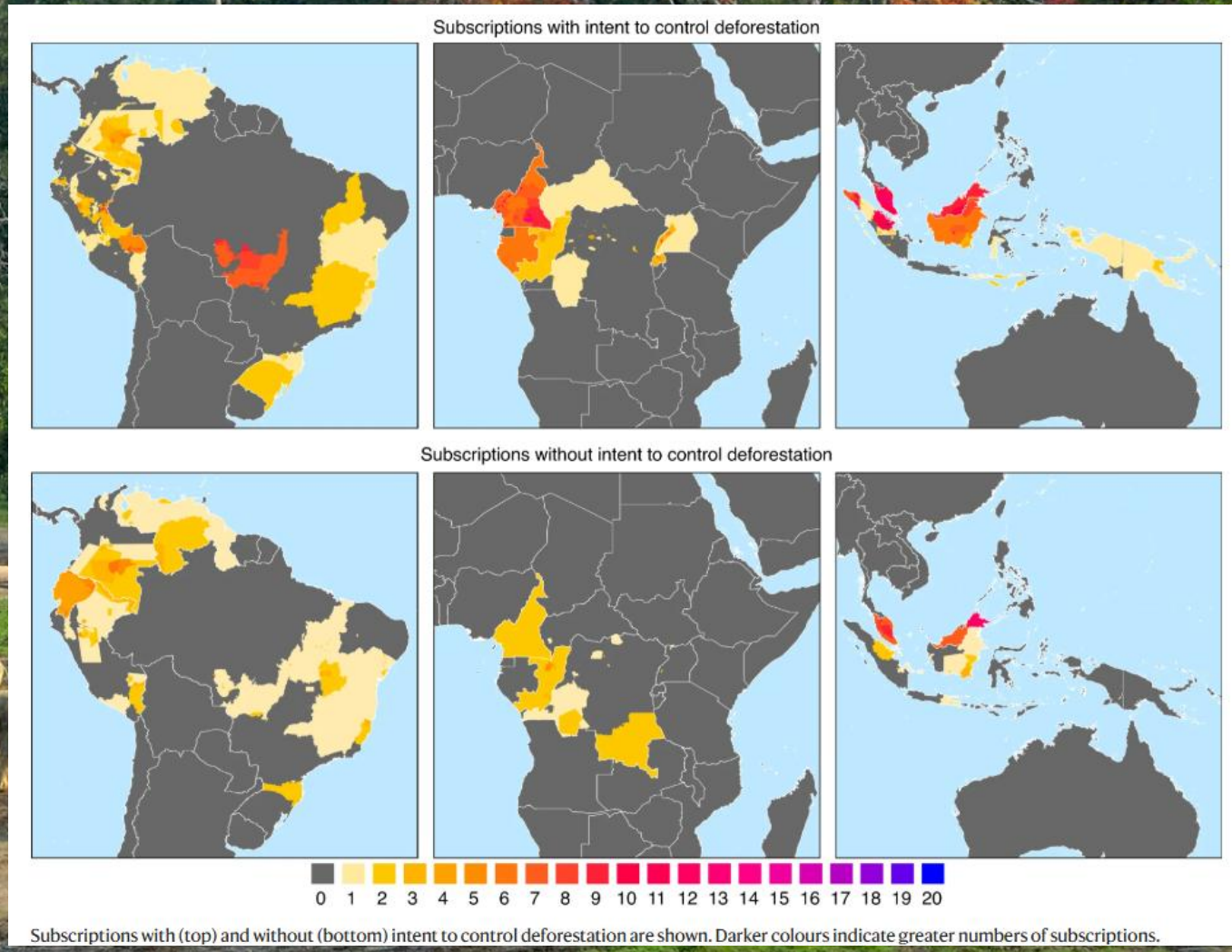
Users act on alerts

bit.ly/EWsystems

GLOBAL FOREST WATCH

WORLD RESOURCES INSTITUTE

Use of near real-time deforestation alerts led to **18% reduction in deforestation** in monitored African forests



Dzanga-Sangha National Park, Central African Republic (Photo: WCS).

Citation: The impact of near-real-time deforestation alerts across the tropics https://www.nature.com/articles/s41558-020-

Photo: Amazon Conservation Association

Making alerts actionable

- Open and free data
- Easy access – alert integration
- Tools for application – Forest Watcher, GFW, MapBuilder
- Thematic detail – confidence information, contextual data, drivers information
- Scaling success – funding and support e.g. Small Grants Fund
- Guidance, documentation and South-South exchange

DigitalGlobe (WV2), 01 Abril 2016

GLOBAL FOREST WATCH

GLOBAL FOREST WATCH

- GFW offers a suite of forest monitoring tools designed to:
  - Increase **knowledge** and **transparency** about forest landscapes
  - **Advance private sector action** to stop commodity-driven deforestation and manage forests sustainably
  - Harness information to **mobilize local action** by governments and civil society

Global Reach, Real Impact: Who Uses GFW

NGOs
Rainforest Foundation

Companies
Cargill

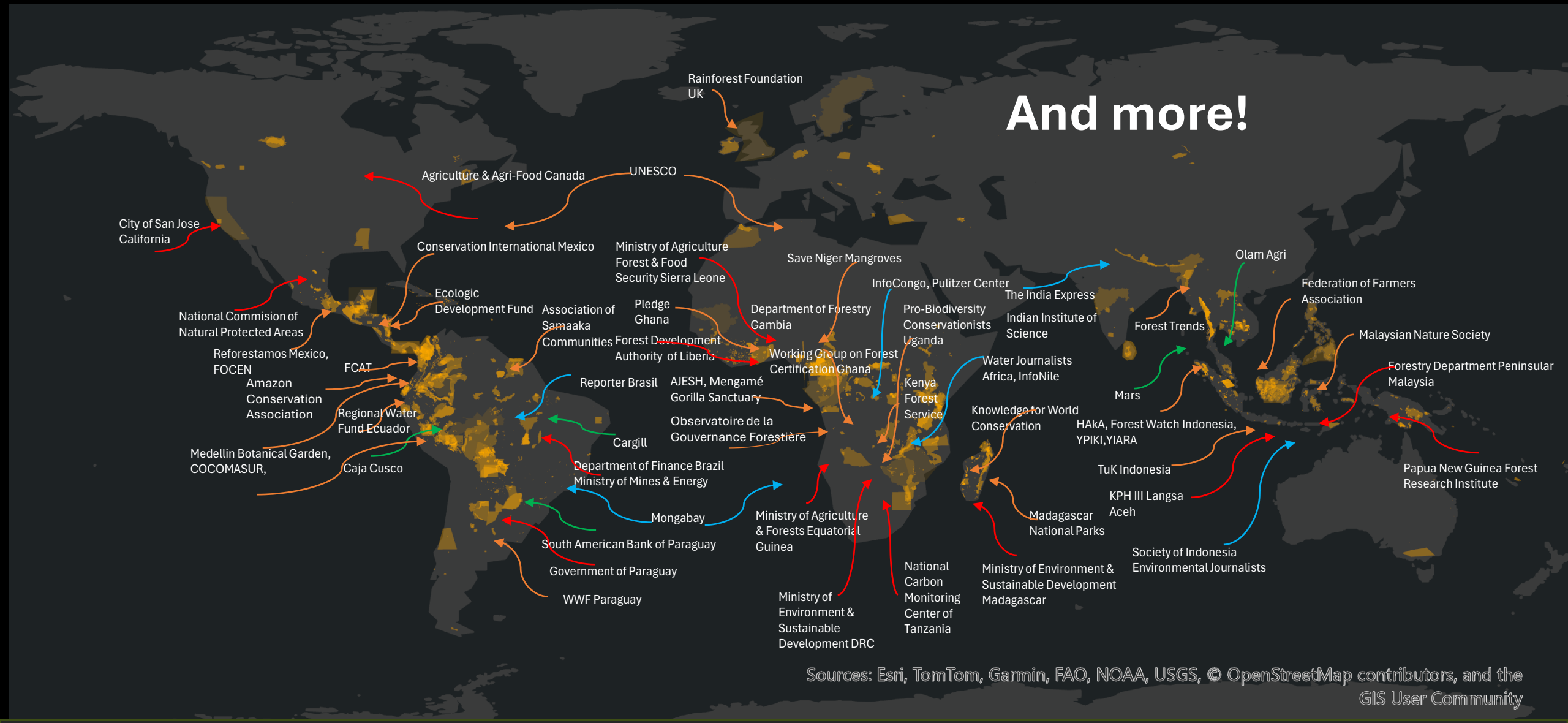
Journalists
InfoCongo

Government
KPH III Aceh

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Over the past 10 years, GFW has empowered a global community of journalists, NGOs, governments and financial institutions to detect deforestation in near-real-time.

Global Reach, Real Impact: Who Uses GFW



Over the past 10 years, GFW has empowered a global community of journalists, NGOs, governments and financial institutions to detect deforestation in near-real-time.

Photo: Amazon Conservation Association

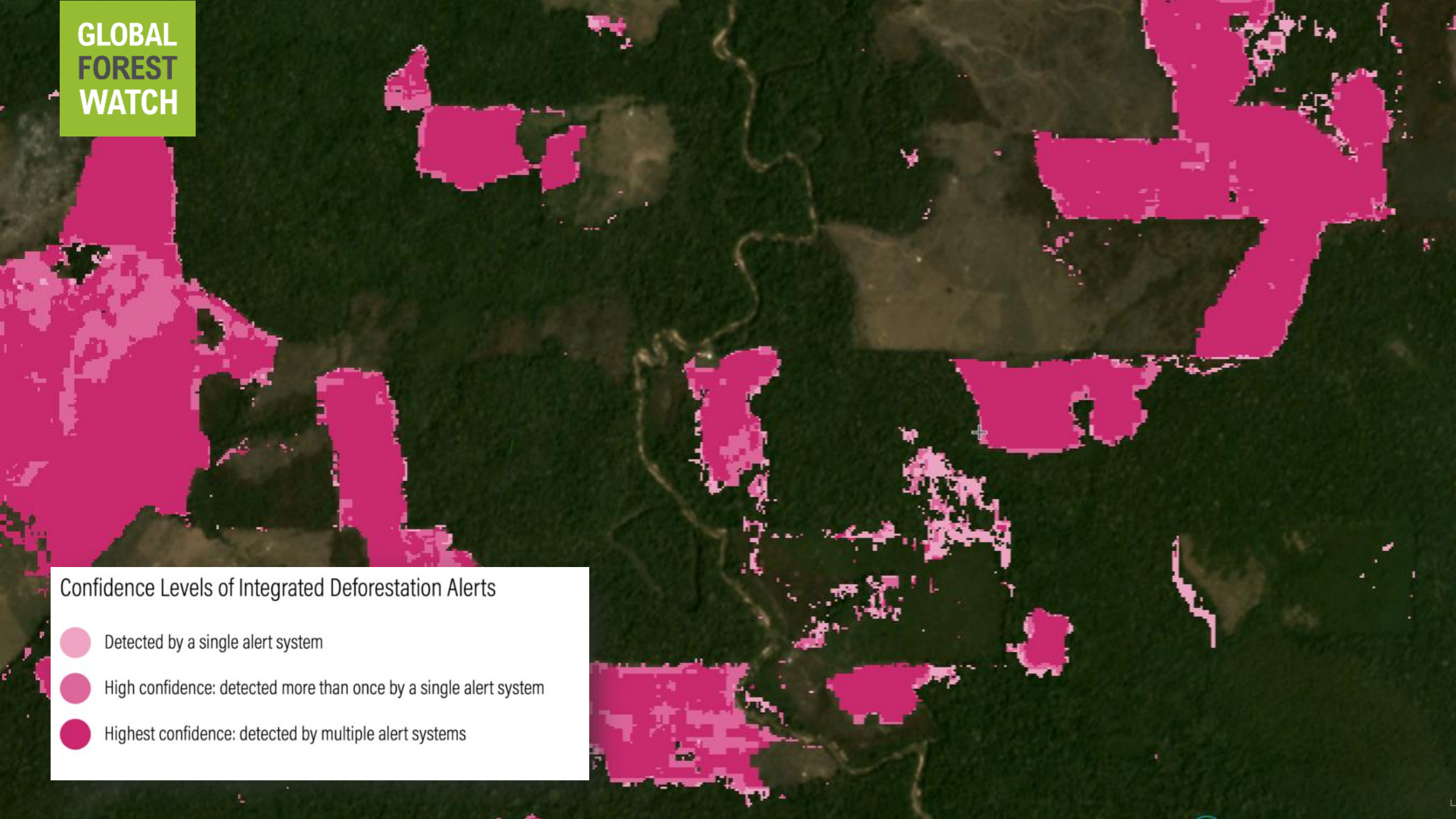
What can users do with alerts?

- Investigate an area for potential deforestation
- Subscribe to monitor alerts in an area
- On-the-fly analysis
- Download alerts as coordinates or a raster
- Bring to the field with Forest Watcher mobile app
- Visualize alerts
  - Play an animation of alerts over time
  - Share a link to a map view
  - Embed a map of alerts

DigitalGlobe (WV2), 01 Abril 2016

GLOBAL FOREST WATCH

Dataset	Function	Resolution	Geographic Coverage	Frequency of Updates
DIST-ALERT	Monitors global **vegetation** disturbance in near-real-time using harmonized Landsat-Sentinel-2 (HLS) imagery	30 X 30 meters	Global	Updated weekly, image revisit time every 2-3 days
Integrated deforestation alerts	Monitors **forest** disturbance in near real-time using integrated alerts from **three** alerting systems.	10 X 10 meters	30°N to 30°S	Daily
GLAD-L (Global Land Analysis and Discovery – Landsat)	Identifies areas of likely tree cover loss in near real-time.	30 x 30 meters	30°N to 30°S	Updated daily, revisit time every 8 days
GLAD-S2 (Global Land Analysis and Discovery- Sentinel 2)	Identifies areas of primary forest loss in near real-time using Sentinel-2 imagery.	10 x 10 meters	Amazon basin	Updated daily, image revisit time every 5 days
RADD (Radar for Detecting Deforestation)	Identifies near-real-time forest disturbance alerts in primary humid tropical forests using Sentinel-1's cloud-penetrating radar sensors.	10 x 10 meters, with a minimum mapping unit of 0.1 hectare	Humid tropical forest in South America, Central America, sub-Saharan Africa and Southeast Asia	Updated weekly, image revisit time 6-12 days

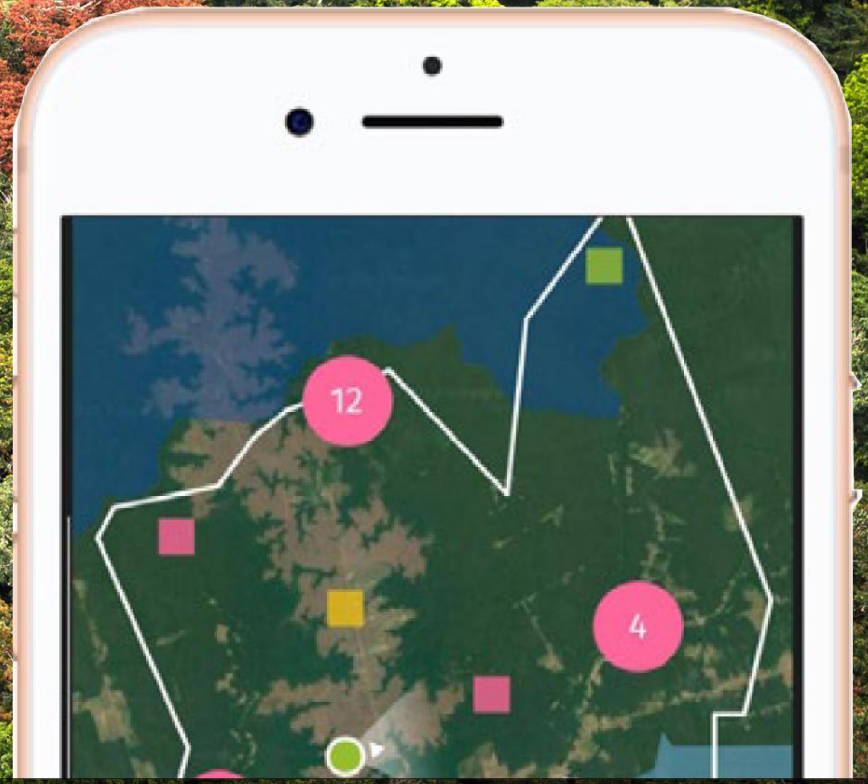

GLOBAL
FOREST
WATCH
Confidence Levels of Integrated Deforestation Alerts
Detected by a single alert system
High confidence: detected more than once by a single alert system
Highest confidence: detected by multiple alert systems

VIIRS Active Fire alerts

New alert drivers data coming soon

GLOBAL FOREST WATCH

FOREST WATCHER

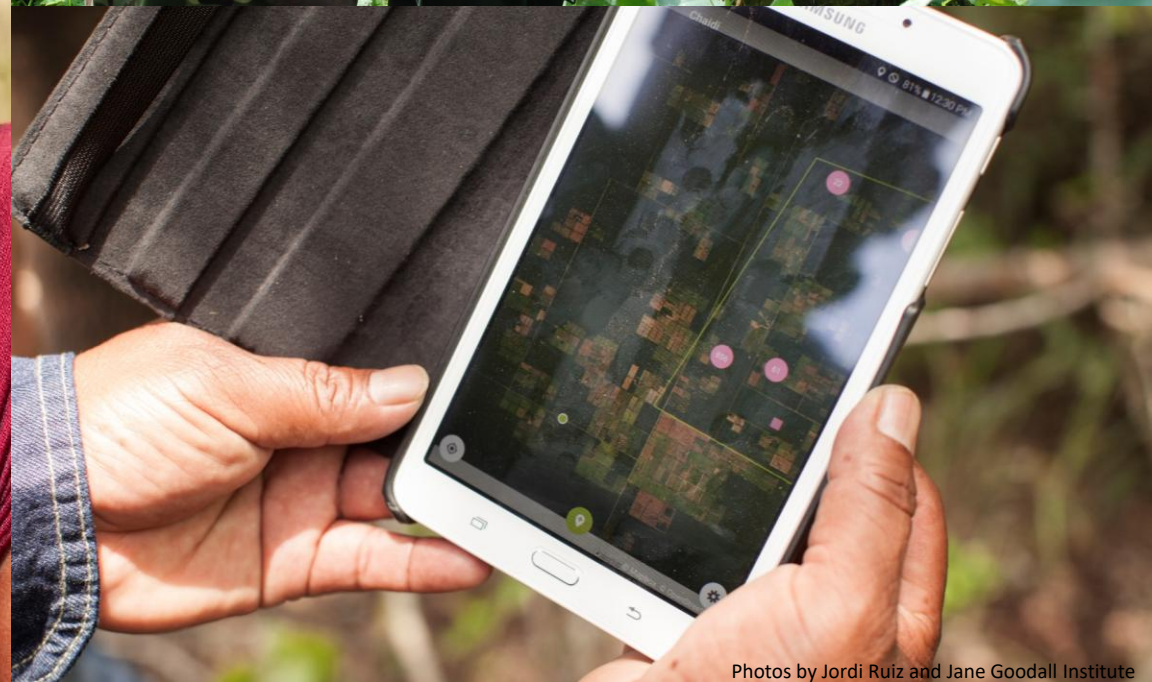


MOBILE SOLUTION FOR LOW CONNECTIVITY

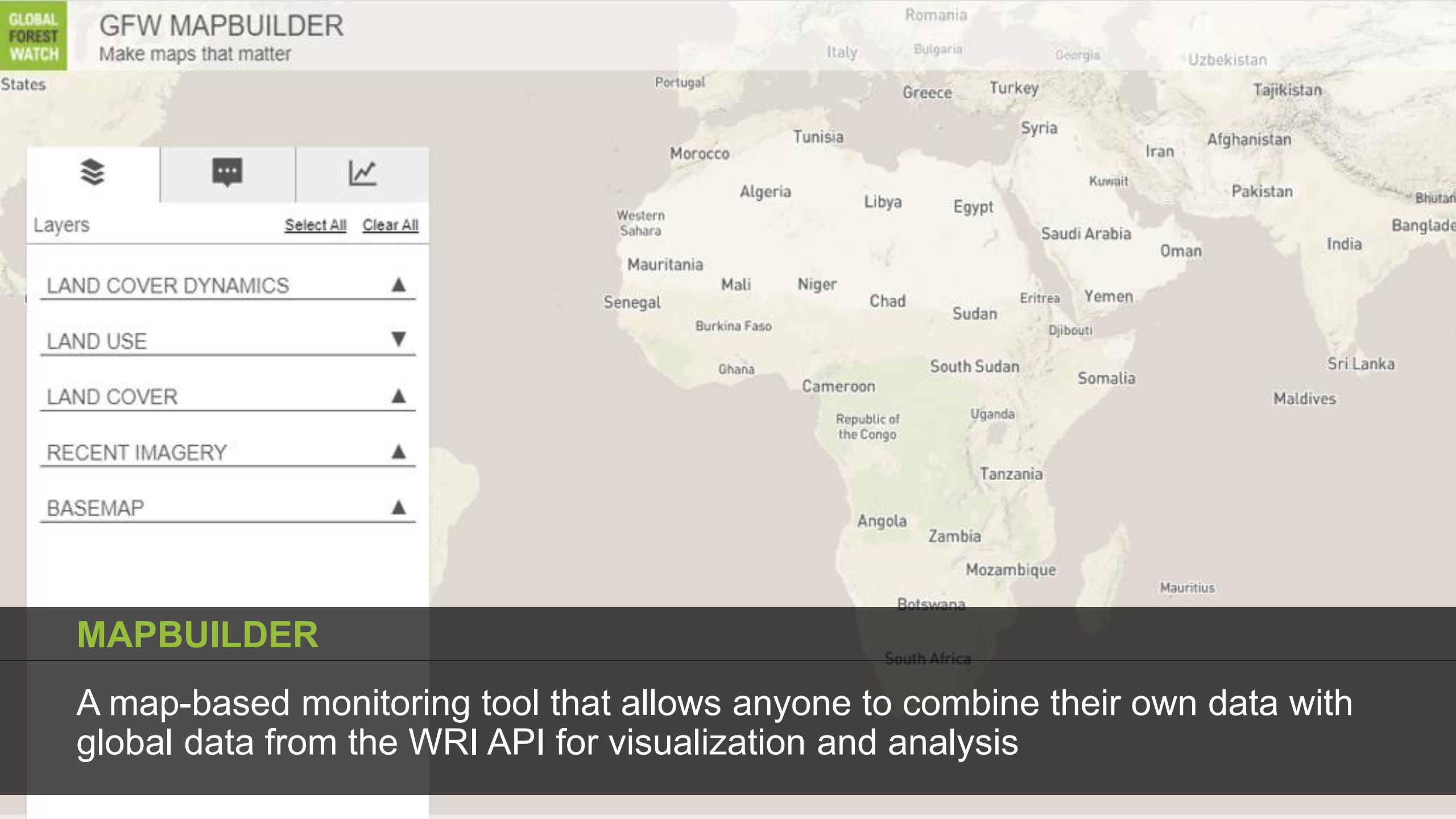
Photo: Axel Fassio/CIFOR

- Field project managers
- Forest managers
- Forest rangers and law enforcement officials
- Local communities and indigenous peoples
- Conservation NGOs
- Researchers

FOREST WATCHER



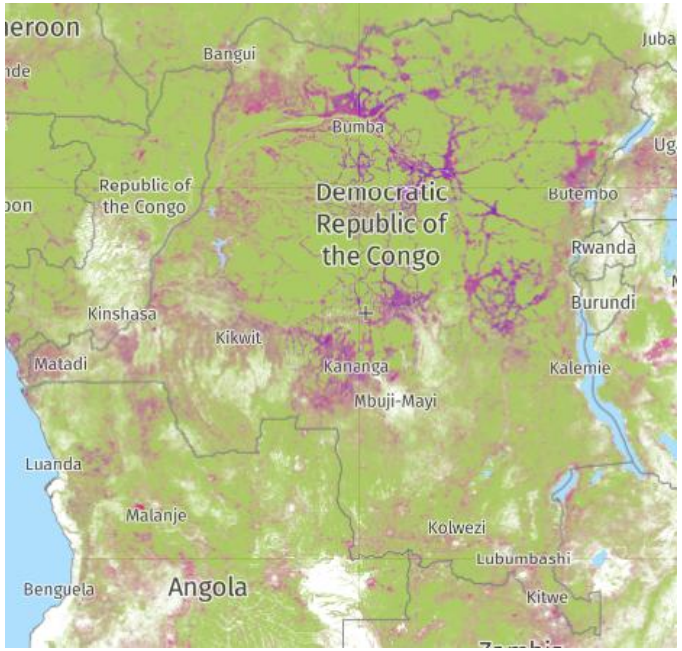
Photos by Jordi Ruiz and Jane Goodall Institute



MAPBUILDER

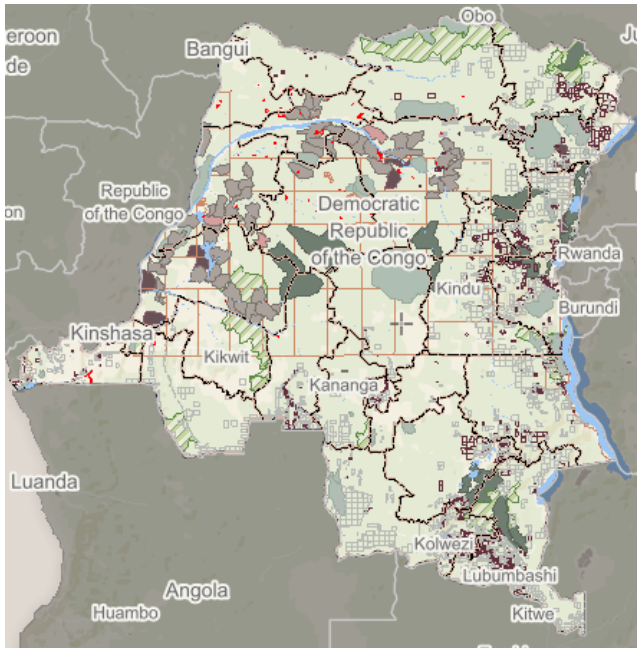
A map-based monitoring tool that allows anyone to combine their own data with global data from the WRI API for visualization and analysis

GFW Global Data



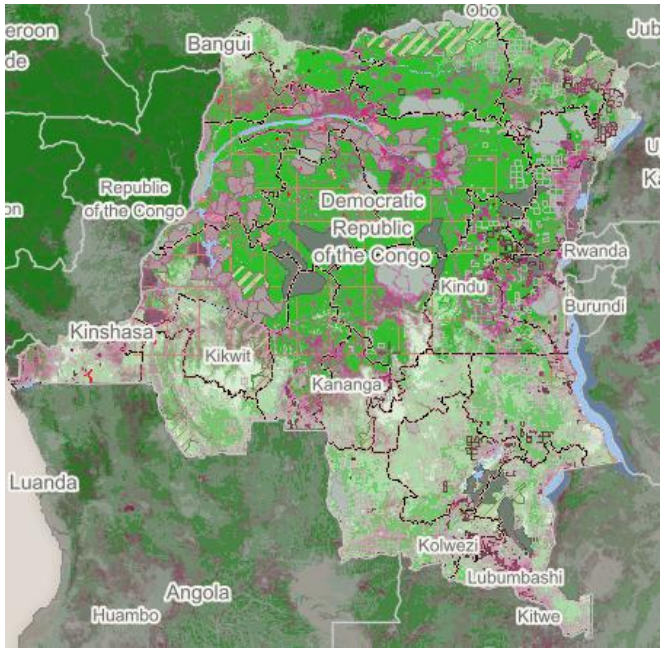
- Alerts
- Fires
- Tree cover loss / gain
- Land cover
- Intact forest landscape

Contextual Data

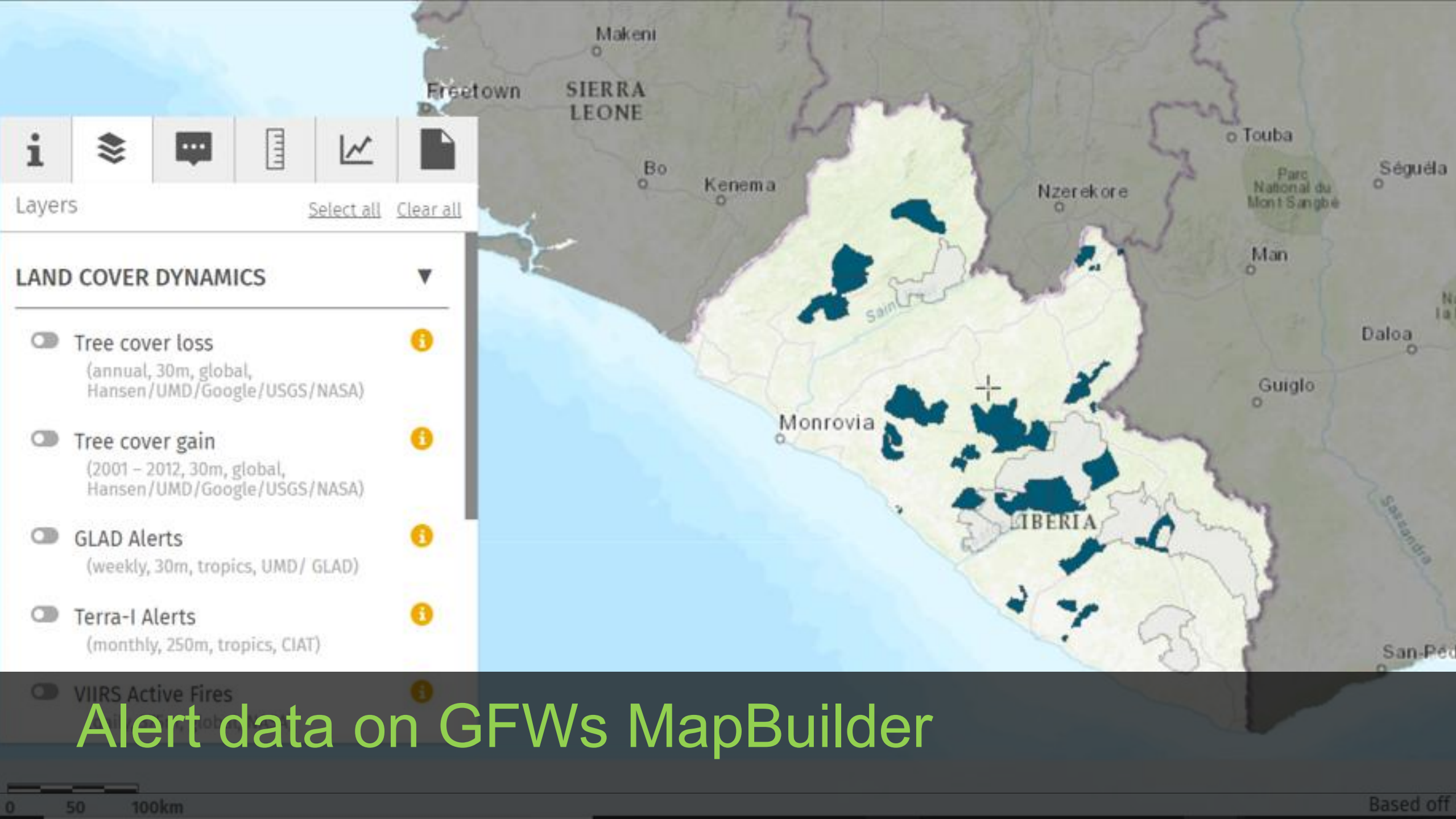


- Land use
  - Protected areas
  - Plantations
  - Community forests
- National land cover

MapBuilder!



GLOBAL FOREST WATCH



Alert data on GFWs MapBuilder

Forest Watcher on the ground

- Asociación Amazónicos por la Amazonía (AMPA)
  - Trained members of the Voluntary and Communal Conservation Network of the San Martin region of Peru on GFW and Forest Watcher, which is now used by 42 conservation initiatives that cover an area of approximately 605,000 hectares of Amazon forest
- Rainforest Foundation US (RFUS)
  - RFUS partnered with two regional Indigenous organizations in Peru to build four satellite data hubs that service 64 native communities helping them to quickly download alerts, analyze satellite imagery, and conduct more efficient field patrols to protect their territories

AMAZÓNICOS POR LA AMAZONÍA

GLOBAL FOREST WATCH

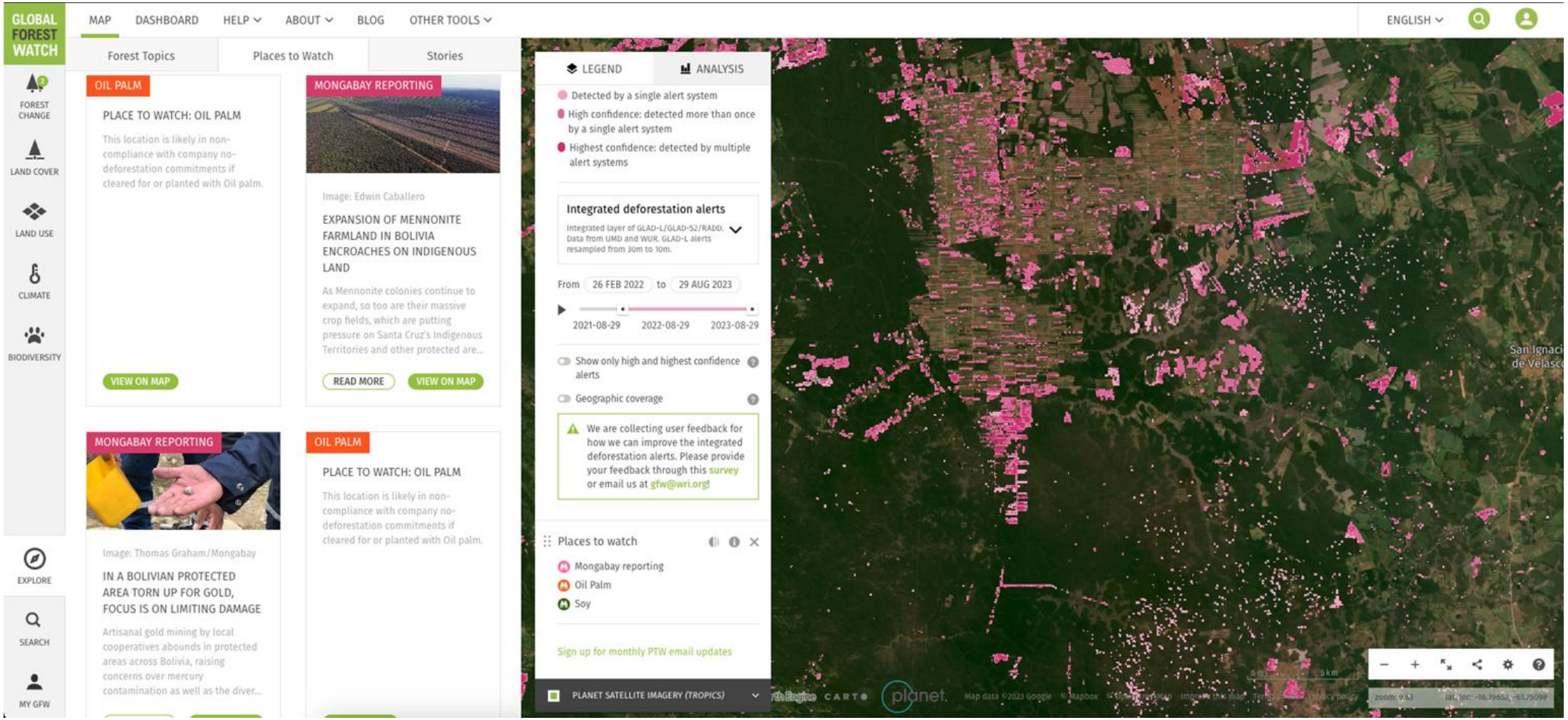
Photo: World Resources Institute

Alerts in action

- In Colombia, Medellin Botanical Garden has integrated GFW alerts with national alerts from Instituto Hidrologia, Meterologia, y Estudios Ambientales (IDEAM) to create a bespoke platform that features both alert systems for the most up-to-date information for citizens and civil society to take action
- HAkA, a grassroots NGO based in Indonesia use alerts on GFW to coordinate field investigations on deforestation. Local forest authorities requested capacity building from HAkA after seeing how successful their model was. Deforestation in Aceh decreased by 5% from 2022 to 2023 and law enforcement cases against illegal deforestation increased due to their activities.
- Fundacion Conservacion de los Andes Tropicales (FCAT), Ecuador has created a platform called Chocó Forest Watch. They've developed the platform on MapBuilder and created a semi-automatic workflow that continuously updating local forest maps

Photo: World Resources Institute

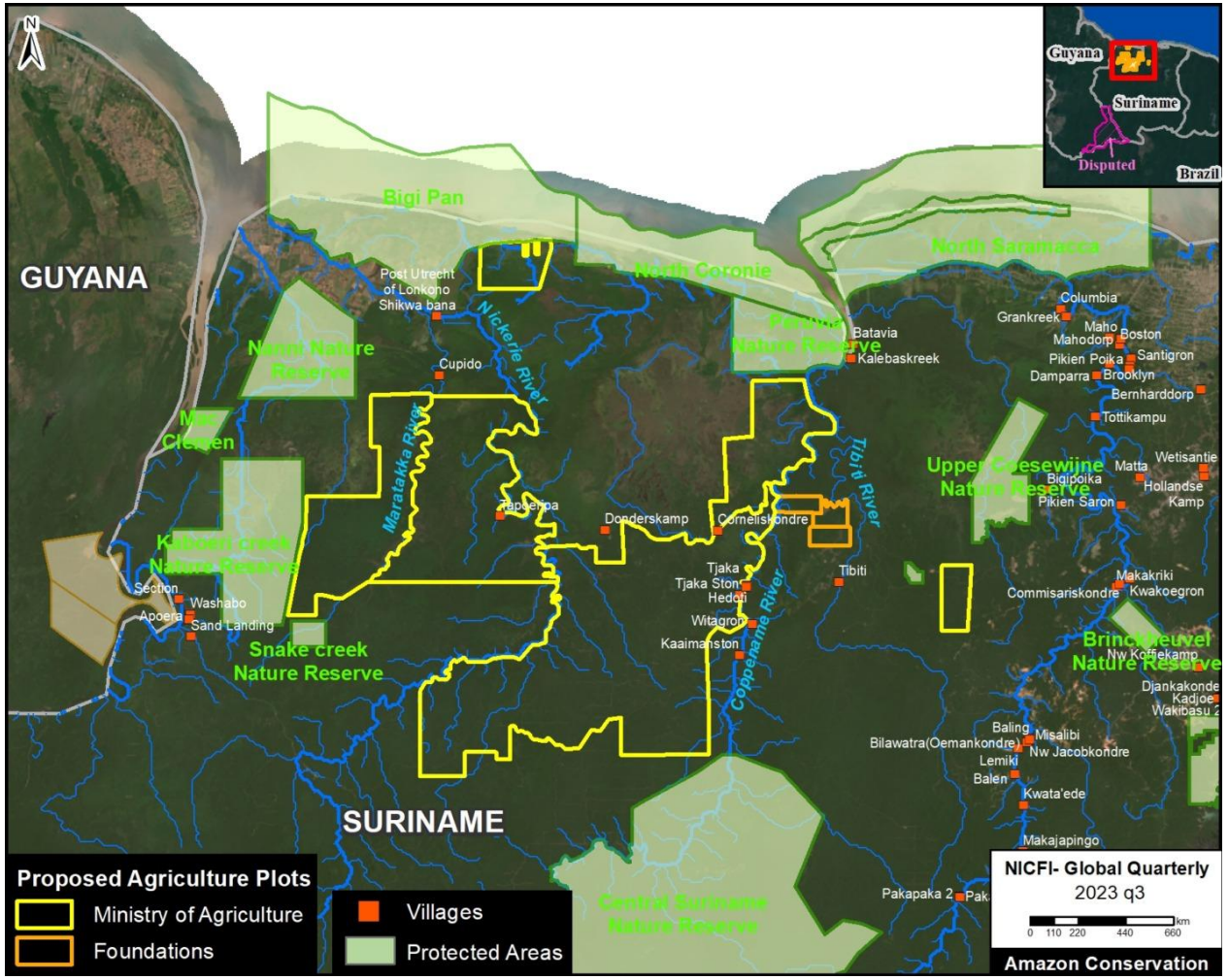
Deforestation Alerts: the near-real time path to impact



MENNONITE COLONIES HALTED IN SURINAME

In December 2023, Mongabay revealed plans to develop the 535,000 hectares of rainforest, around 1% of the country's forest cover. The projects would have been carried out by Mennonites, the Ministry of Agriculture and private entities.

In June 2024, a court in Suriname approved an injunction filed on behalf of twelve Indigenous and maroon groups. After reviewing the injunction, the court said the government doesn't have the right to grant land without free, prior and informed consent, a process in which developers meet with residents to explain how projects would impact daily life.



GFOI guidance materials: Deforestation Alerts

https://www.reddcompass.org/mgd

Deforestation Alerts

Information on making the most from deforestation alerts identified through the interpretation of satellite imagery for forest policy experts, decision-makers and forest-management and conservation practitioners.

Download

Accounting and Estimation

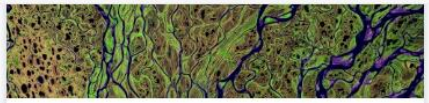
Information on the rules and modalities to guide and maintain integrity of estimates within National GHG inventories and accounting for projects and programs in the context of REDD+ results based payments.

Coming Soon

Biomass Maps

Information on the potential and limitations of global or regional biomass datasets in the context of National greenhouse gas inventories.

Coming Soon



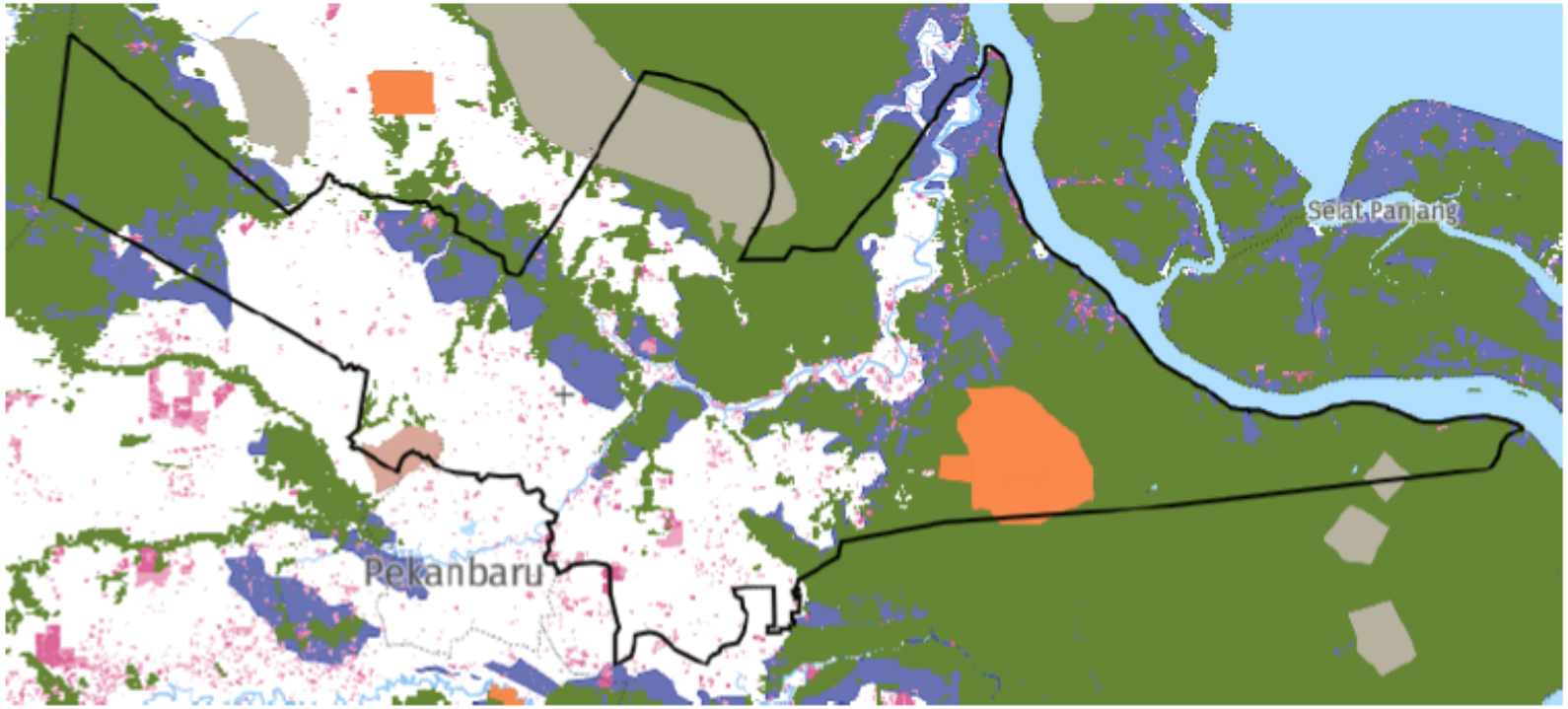
Blue Carbon

Methodological advice on reporting report emissions and removals from coastal wetlands in the context of REDD+ results based payments and Blue Carbon Initiatives.

Download

GFOI guidance materials: Deforestation Alerts

	Use case	Type of Deforestation alert system	Ownership	Purpose-built, or existing alert use
1	Mapbiomas, Brazil	Near-real-time	Civil society	Existing alerts
2	INPE, Brazil	Near-real-time	National	Existing alerts
3	Ethiopia	Near-real-time	NGO	Existing alerts
4	Guatemala	Near-real-time	National	Existing alerts
5	Indonesia	Near-real-time	NGO	Existing alerts
6	Lao	Near-real-time	National	Purpose built
7	Peru	Near-real-time	National	Purpose built
8	Forest foresight, Gabon	Early warning	NGO	Existing alerts



Data

Provides total number of alerts detected in near real time, but lack of focus on where deforestation occurs

Prioritization

Filter alerts that occur in concern areas to help mobilize effort more effectively

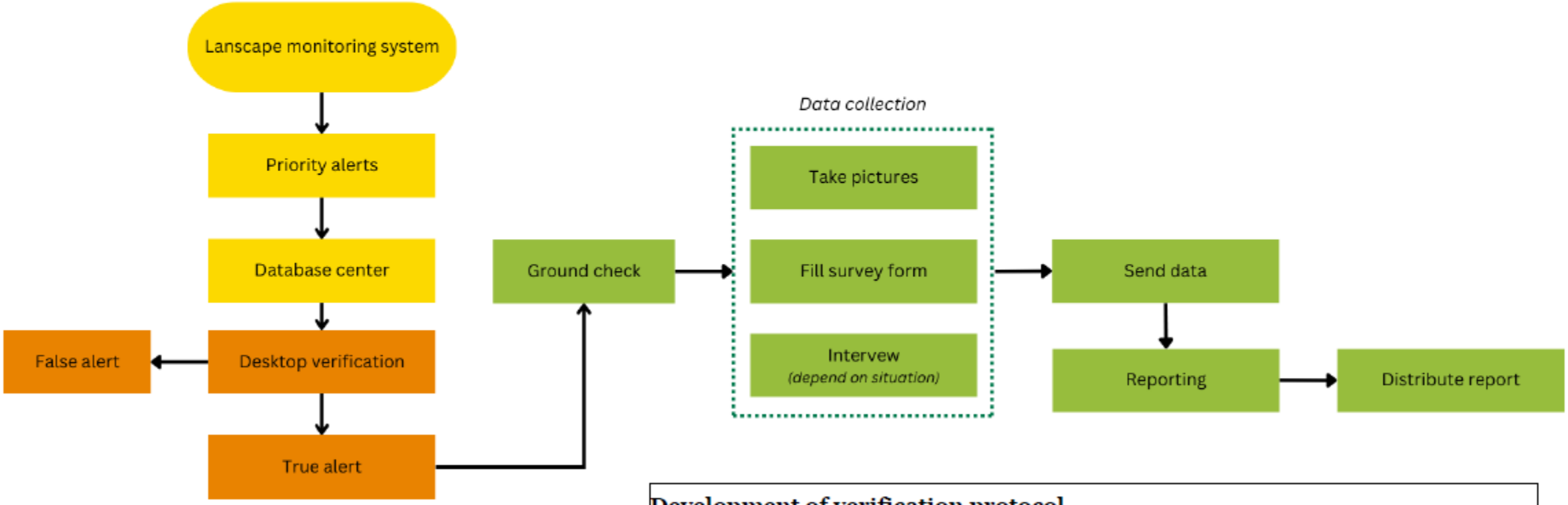
Jurisdiction

Provincial and district governments are decision makers regarding land use, have legal authority, and are close to the community

1 MONITORING SYSTEM

2 VERIFICATION PROTOCOL

Priority alerts that are produced every month **require a validation process** to confirm the alerts are true deforestation and to collect contextual data and information to determine the driver of deforestation. There are two methods to validate the alert, first is by using **high-resolution satellite imagery** (desktop verification), and second is by **field verification**.



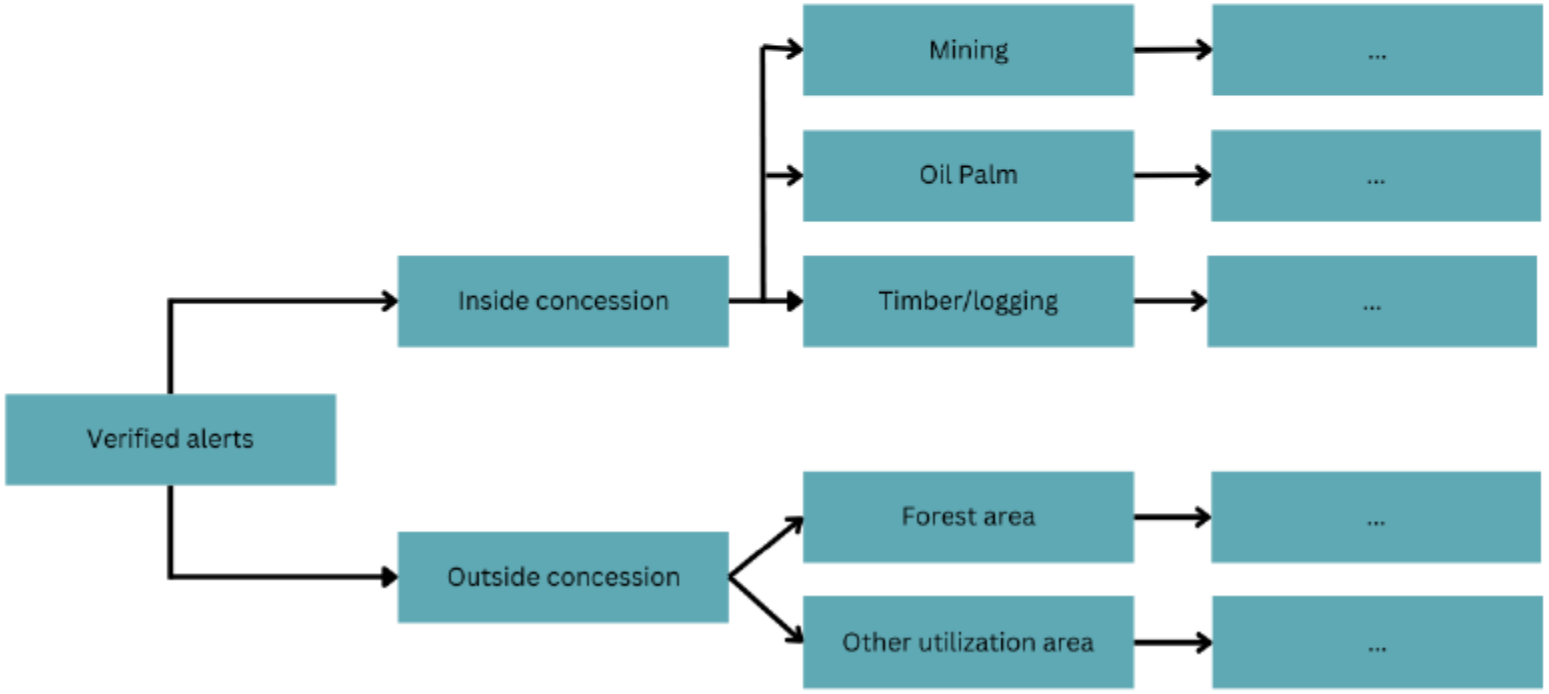
Development of verification protocol

- Form a monitoring/verification team to verify alerts (desktop and ground check)
- Create a standardize data collection and reporting
- Manage database and deliver report to broader stakeholders

3 RESPONSE PROTOCOL

The development of response protocol has considered various potential scenarios of forest and land clearing, **based on land status (forest area and non-forest area), and land ownership (concession and non-concession)**.

We structured this categorization to make it easier to incorporate this protocol into other approaches or initiatives, for instance, it is aligned with the Consumer Goods Forum (GCF) palm oil roadmap of deforestation monitoring and response framework (MRF). Also align with the existing law and regulation of Indonesia's government under Ministry of Environment and Forestry.



JOINT EFFORT IN DEFORESTATION MONITORING

Verification protocol and follow up action based on land status where deforestation alert occur

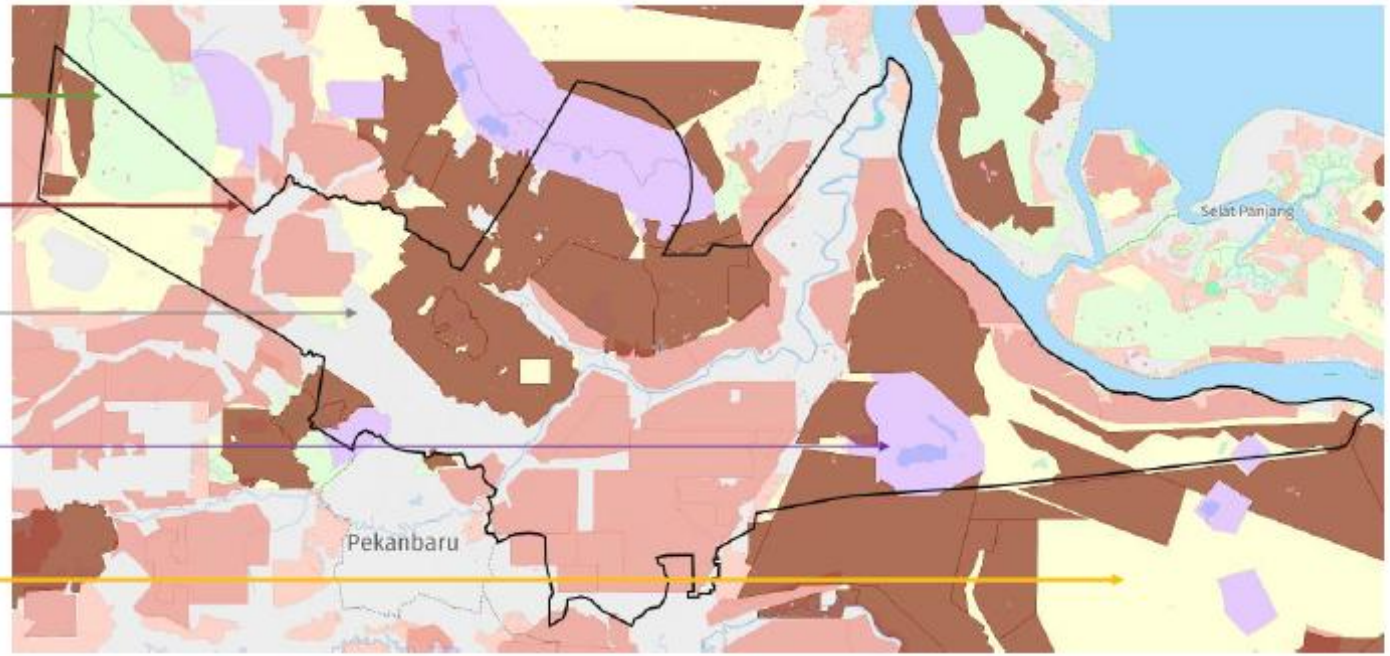
Forest Management Unit (KPH)

Concession Holder

Agriculture & Plantation agency

Conservation Agency (BKSDA)

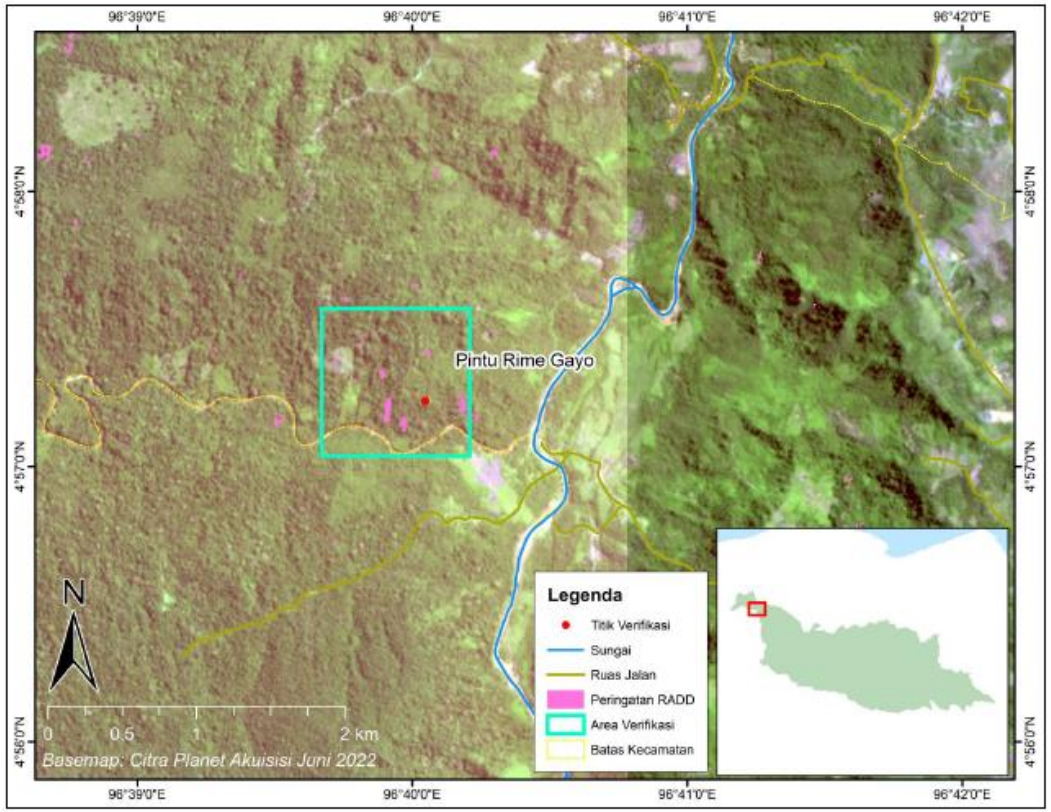
Forest Management Unit (KPH)



Prioritizing deforestation monitoring and collective effort aims to systematically address deforestation challenges, **set up monitoring protocols, and provide a framework for local stakeholders to collaborate and develop intervention mechanisms** to stop future deforestation

HIGHLIGHT STUDY CASES - 1

Bener Meriah – illegal logging in production forest



RADD Alerts in August – September 2022

Field Verification - Nov 2022

KPH Unit 2 found the encroachment area, estimated 15 ha. During the field verification, the team visited local community to socialize about prohibition of forest area encroachment

Revisit - September 2023

A revisit of the land clearing site was done in September 2023 as an exercise of response protocol. The team found that the land clearing site had been abandoned, with no sign of expansion or land utilization.

WRI INDONESIA

GLOBAL FOREST WATCH

Stay tuned for upcoming office hours and webinars on how to use new and existing datasets.

Find tutorials and resources on our Help Center: https://www.globalforestwatch.org/help/

For questions on Global Forest Watch, get in touch at GFW@wri.org

GLOBAL FOREST WATCH