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# Global Forest Watch GLAD Alerts

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February 23, 2019

*Workshop to Share Experience, Knowledge and Challenges on Implementation of Tools for  
Combating and Preventing Illegal Logging Activities and Associated Trade*

Santiago, Chile

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# About WRI



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**WRI'S MISSION** | To move human society to live in ways that protect Earth's environment and its capacity to provide for the needs and aspirations of current and future generations.



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**WRI'S WORK** | We work with  
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# Global Forest Watch





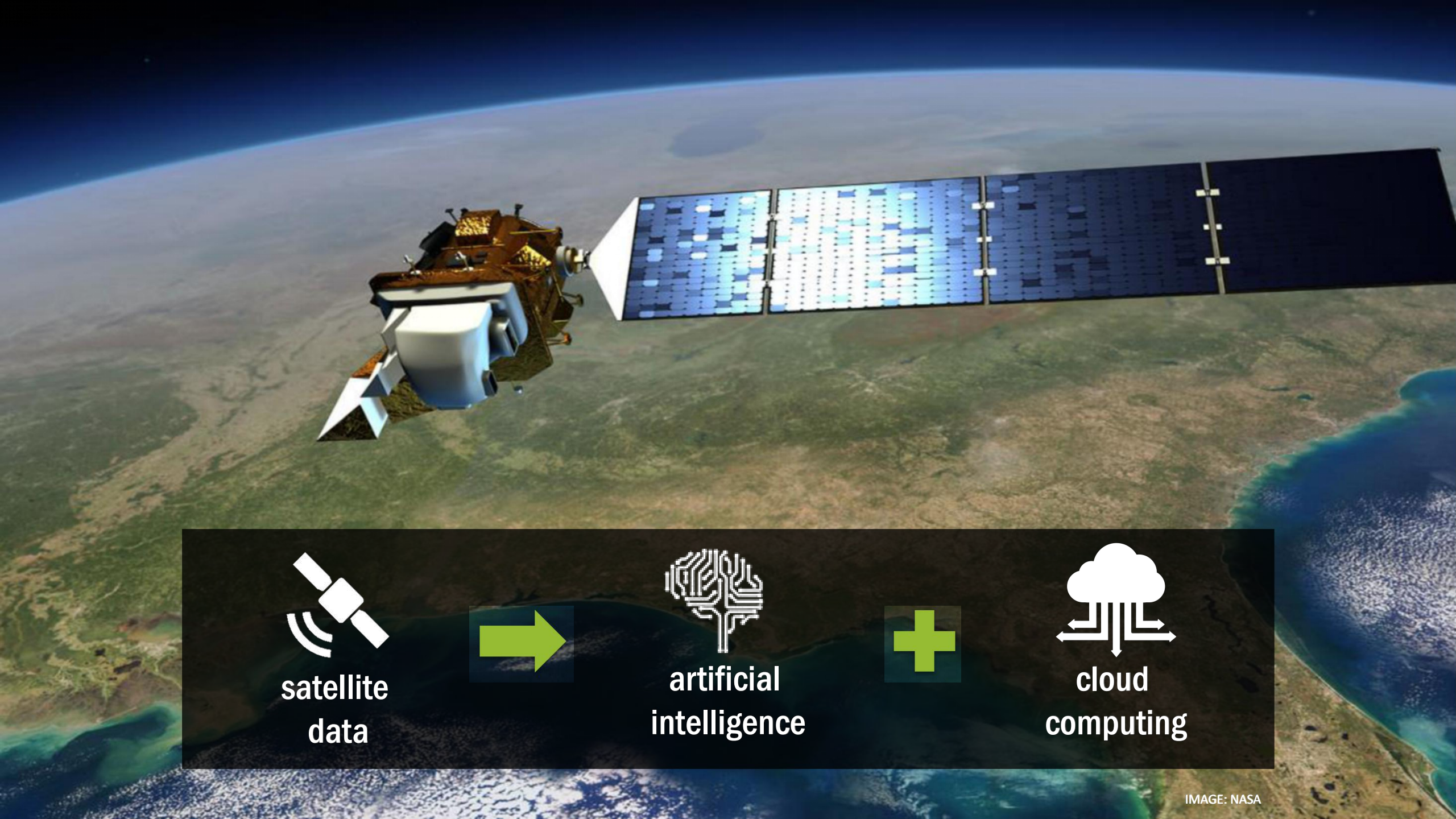


**Information  
Transparency**

**GLOBAL  
FOREST  
WATCH**

**Action  
Accountability**





satellite  
data



artificial  
intelligence



cloud  
computing



**Data**



**Platform**

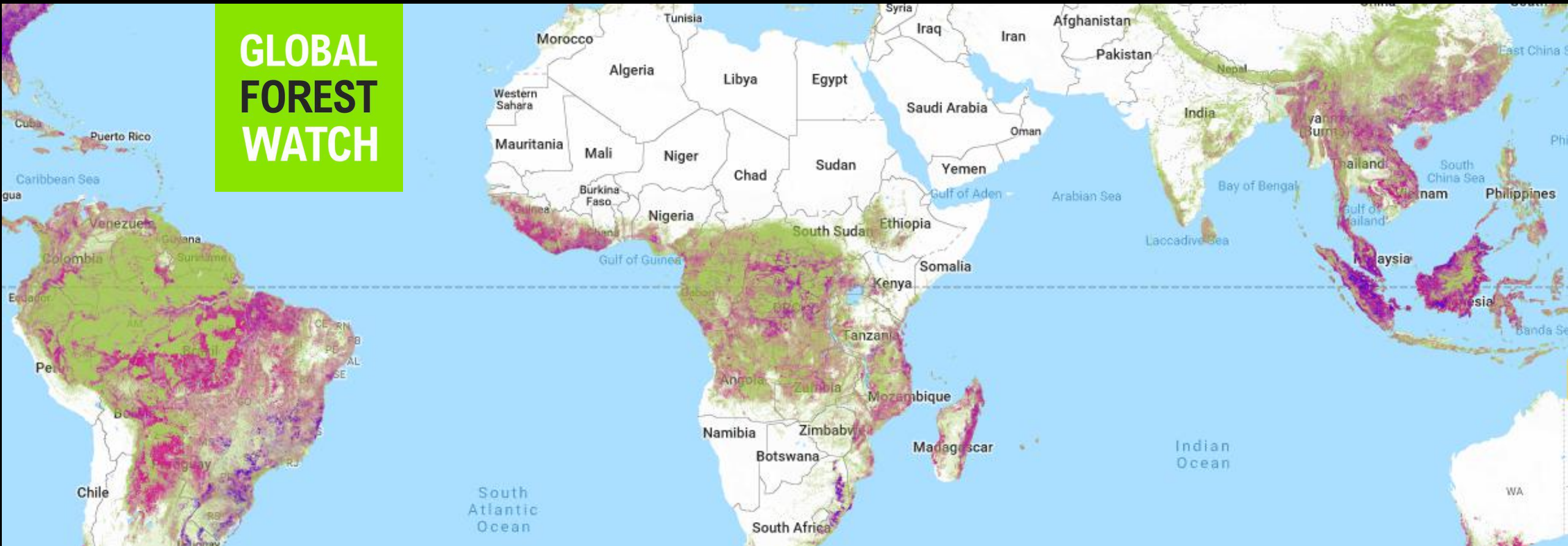


**Partners**



# Global Forest Watch

An online platform that provides data and tools for monitoring forests.



# GLAD alerts



# GLAD deforestation alerts

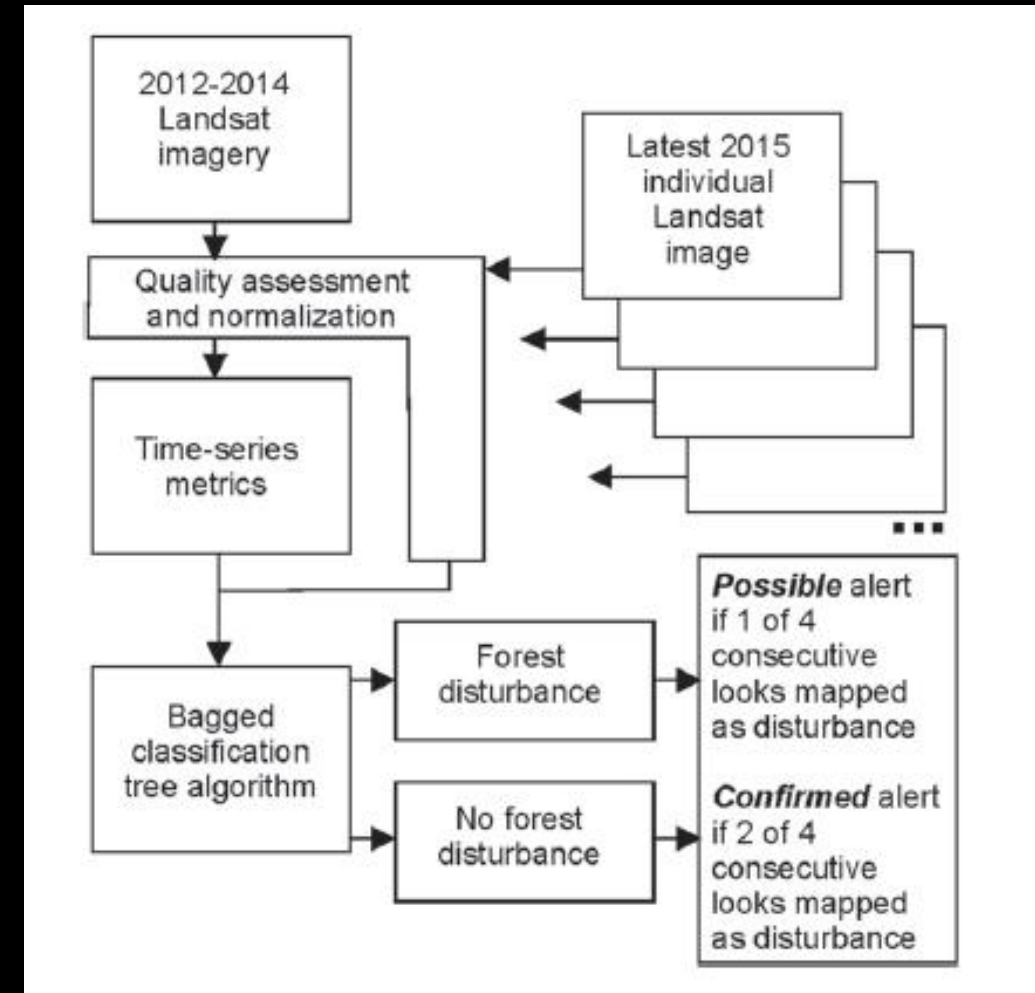
Weekly deforestation alerts from the University of Maryland  
(Global Land Analysis and Discovery (GLAD) Lab)

Characteristics:

- Updated weekly on GFW
- Temporal frequency depends on cloud coverage
- 30 meter spatial resolution
- Currently available for all the tropics

# GLAD alerts

- “Forests” trees with at least 5 meters high and canopy density of at least 60%
- An alert is a pixel with at least 50% canopy cover loss
- Based on the interpretation of the latest cloud-free Landsat image
- Two types of alerts:
  - Confirmed (at least 2 cover loss observations)
  - Un-confirmed





# Limitations

- False positives (for all alerts): 13.5%
  - Most (9.5%) bordering areas where change occurred
- False positives (confirmed alerts): 1%
- False negatives: 33%
- Alerts are conservative
- Cloud coverage is a significant limitation

# GLOBAL FOREST WATCH





# VIIRS Fire alerts



12-hour fire hotspot data  
from NASA

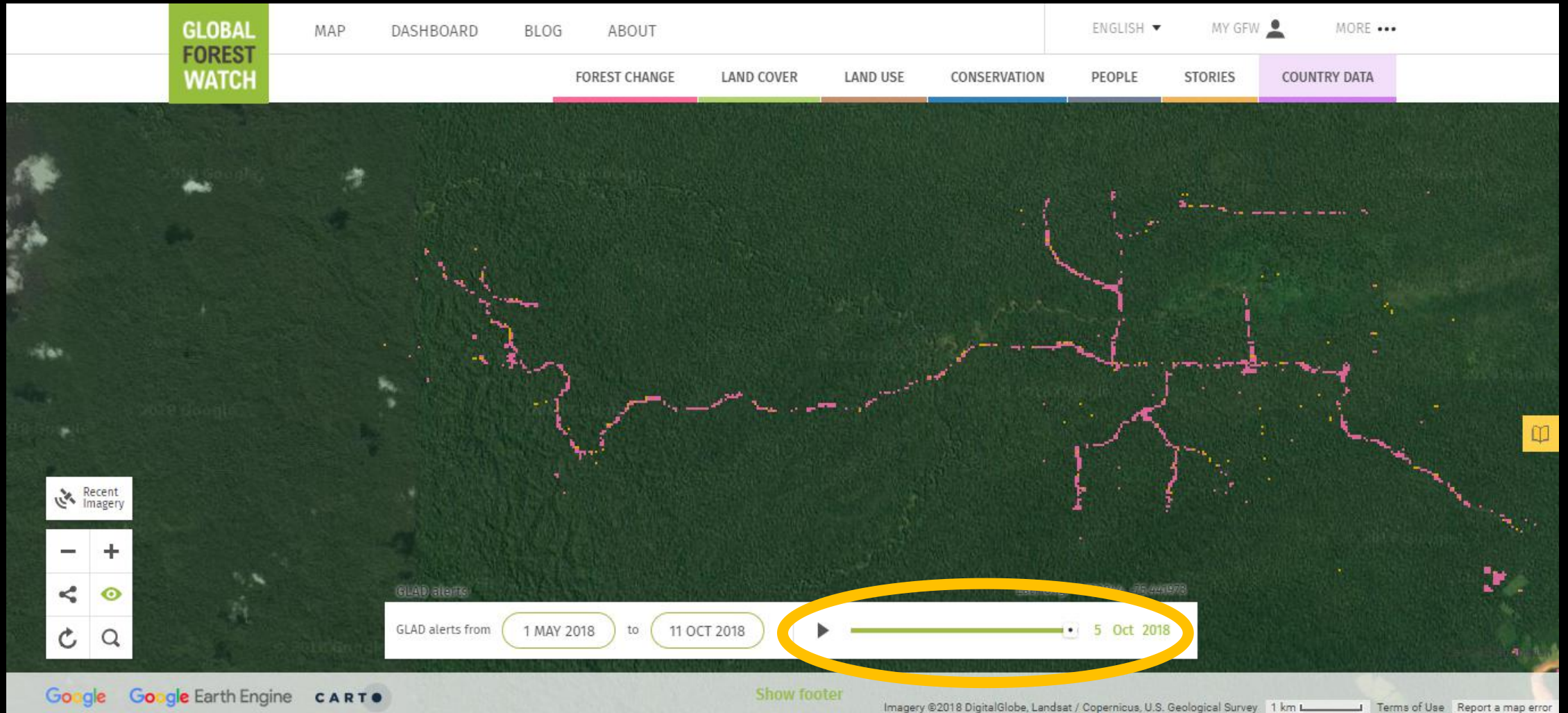
Features:

- 375 meter spatial resolution
- Updates every 12 hours
- Available globally

# GLAD alerts availability on GFW



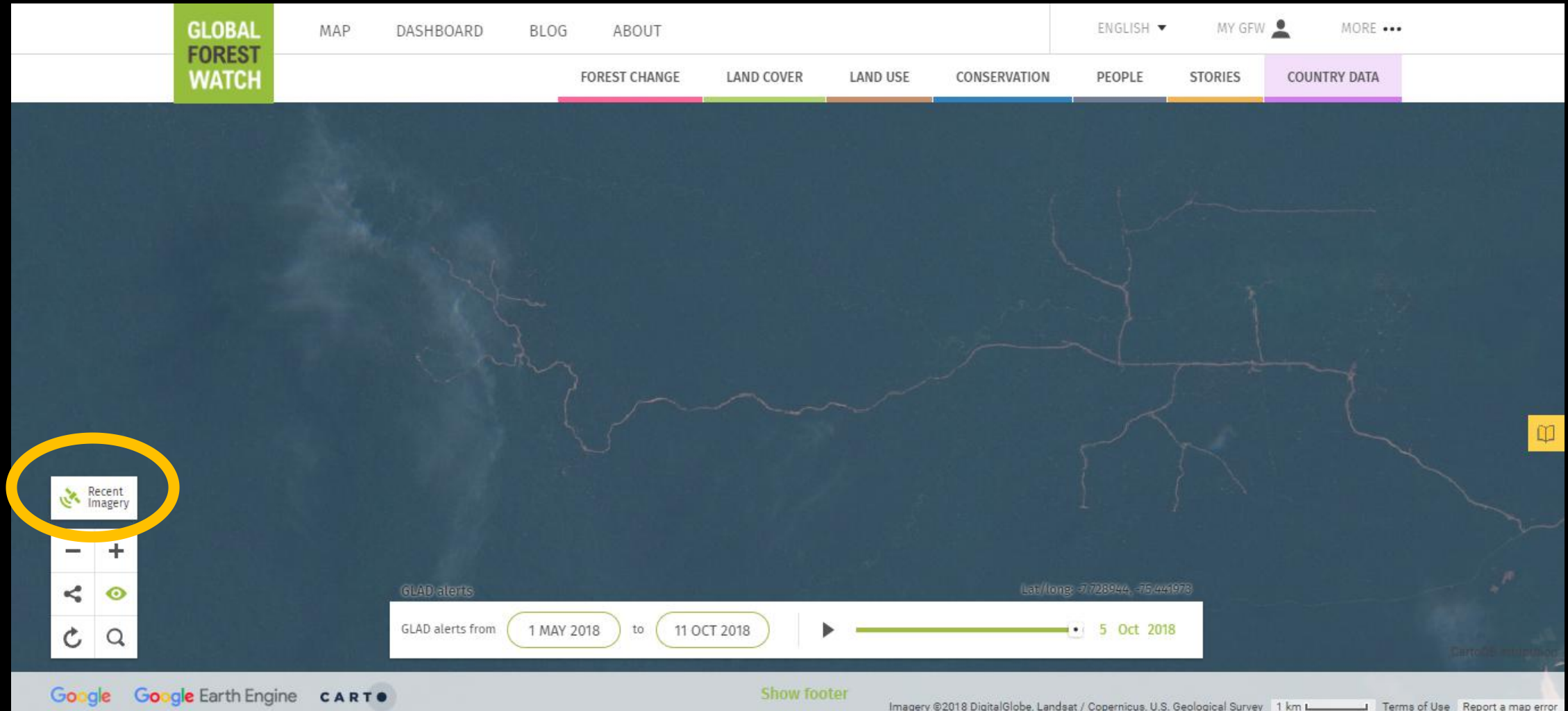
# GFW Map



View how alerts have changed over time

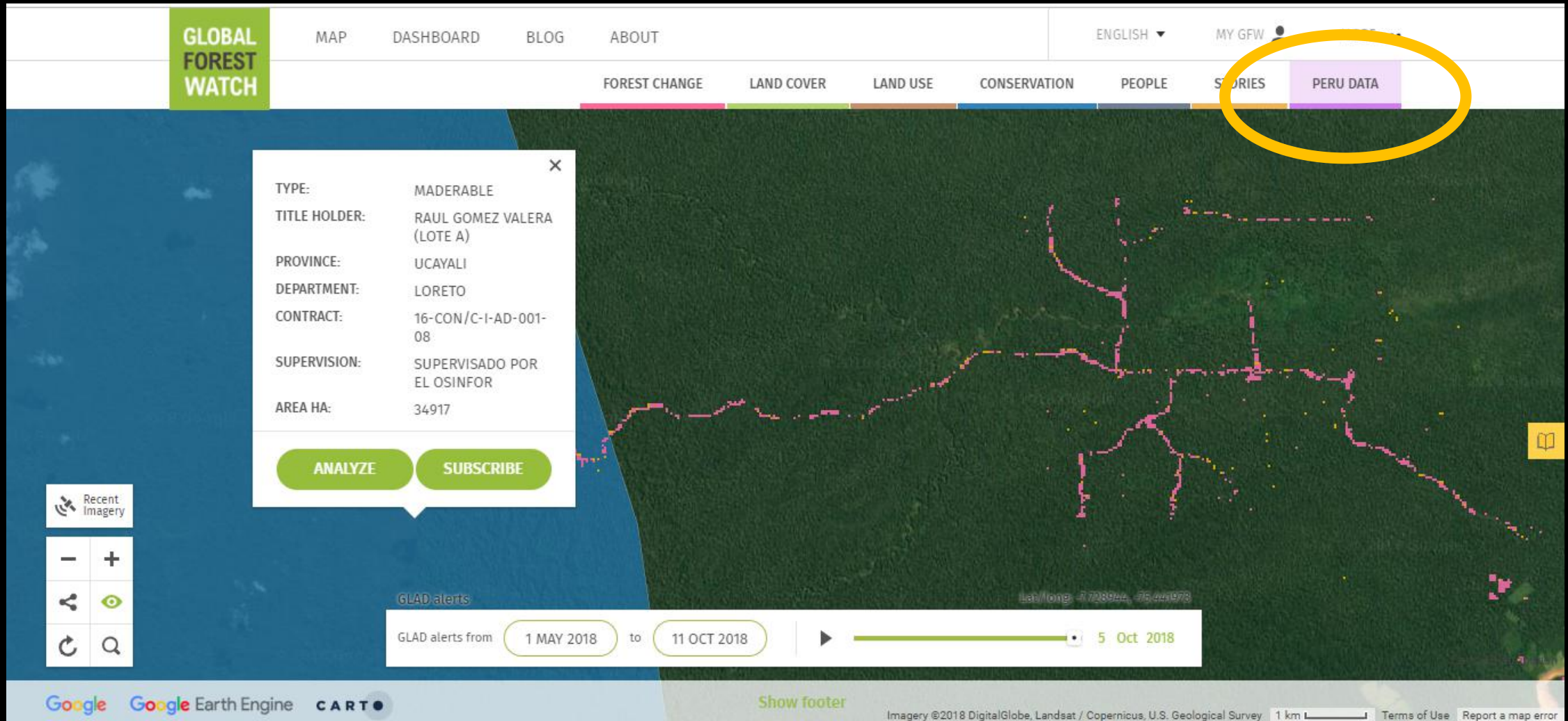


# GFW Map



Confirm alerts with recent Sentinel-2 images

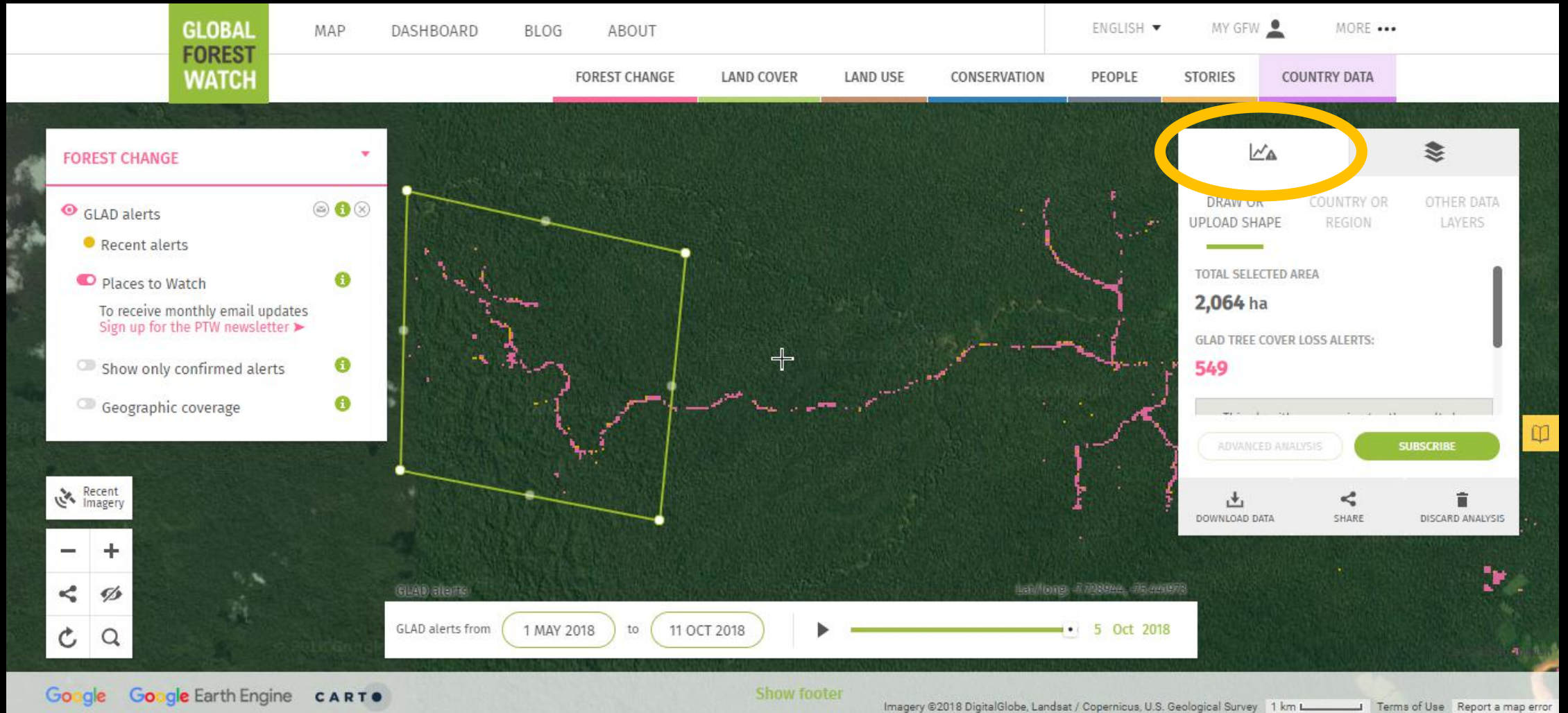
# GFW Map



Compare alerts with other spatial information



# GFW Map



Analyze alerts within an area of interest



# GFW Map

The screenshot displays the Global Forest Watch (GFW) Map interface. At the top, the navigation bar includes the GFW logo and links for MAP, DASHBOARD, BLOG, and ABOUT. A secondary navigation bar shows categories: FOREST CHANGE, LAND COVER, LAND USE, CONSERVATION, PEOPLE, STORIES, and COUNTRY DATA. The main map area shows a satellite view with a green polygon highlighting a specific region. A modal window titled "Name your subscription" is open in the center, containing a form with the following fields:

- NAME \***: A text input field containing "New logging road".
- RECEIVE ALERT EMAILS IN...**: A dropdown menu set to "ENGLISH".
- Buttons**: "BACK" and "SAVE" buttons at the bottom of the modal.

On the left side of the map, a sidebar titled "FOREST CHANGE" lists options: "GLAD alerts" (with sub-options for "Recent alerts" and "Places to Watch"), "Show only confirmed alerts", and "Geographic coverage". On the right side, a panel displays map statistics: "TOTAL SELECTED AREA" of 2,064 ha and "GLAD TREE COVER LOSS ALERTS" of 549. A "SUBSCRIBE" button is highlighted with a yellow circle. Below the map, a timeline slider shows "GLAD alerts from 1 MAY 2018 to 11 OCT 2018" with a play button and a date selector set to "5 Oct 2018". The footer includes Google, Google Earth Engine, and CARTO logos, along with a "Show footer" link and copyright information.

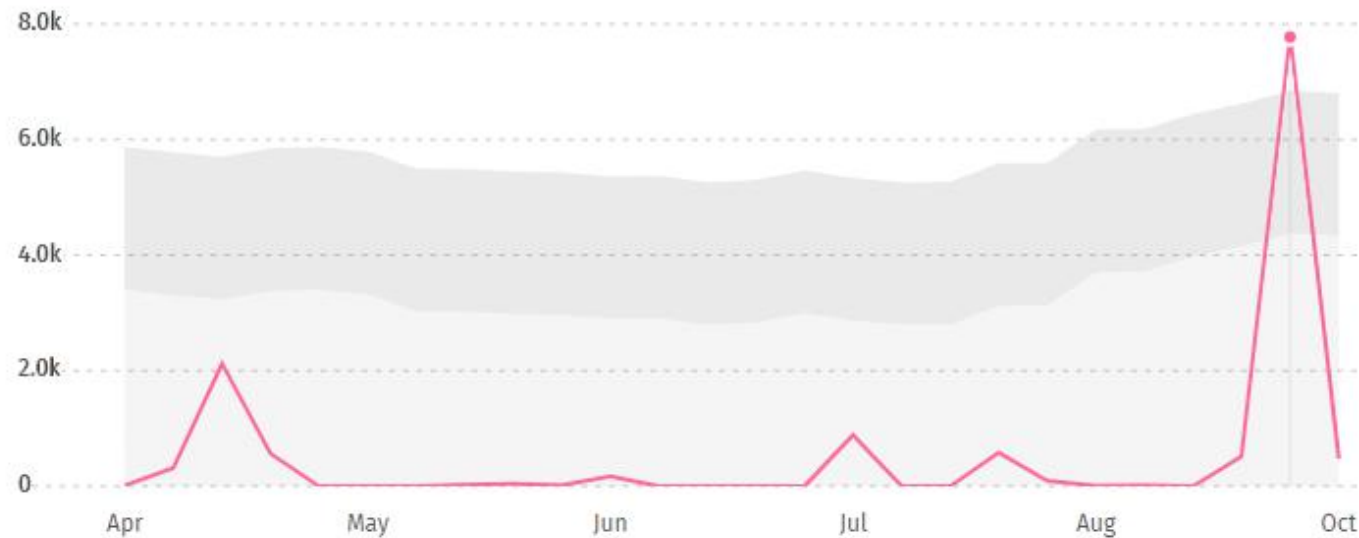
Subscribe to email notifications for new alerts

# GFW Dashboards

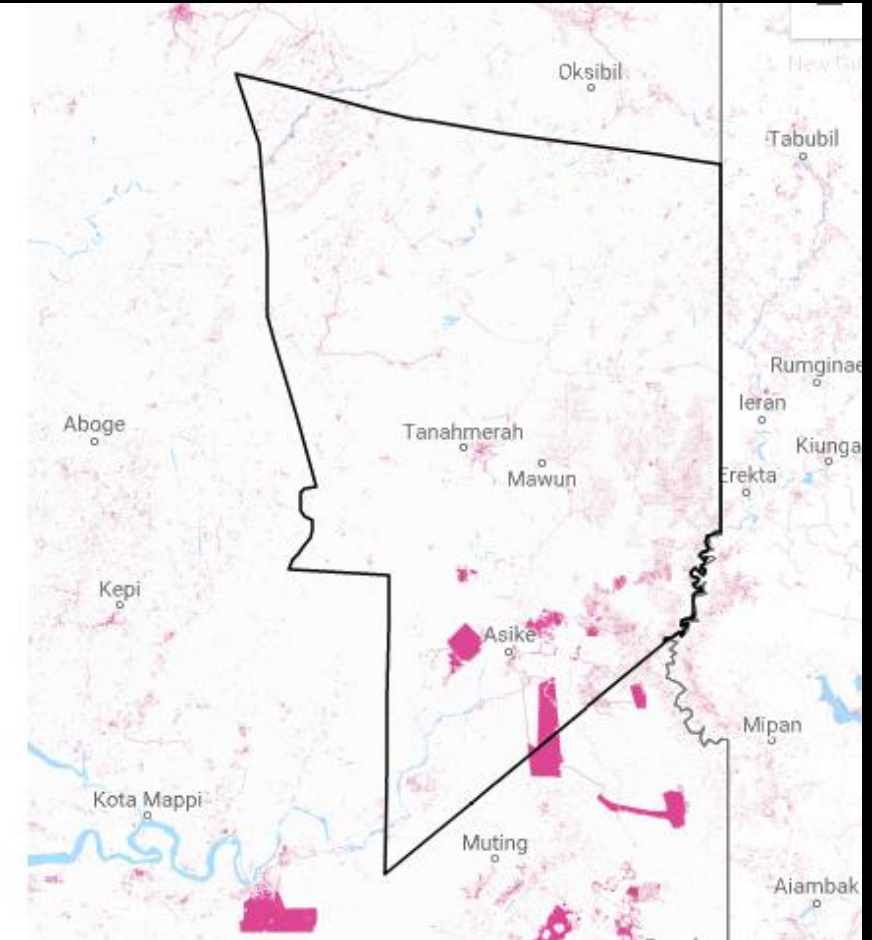
## DEFORESTATION ALERTS IN BOVEN DIGOEL

[SHOW ON MAP](#)

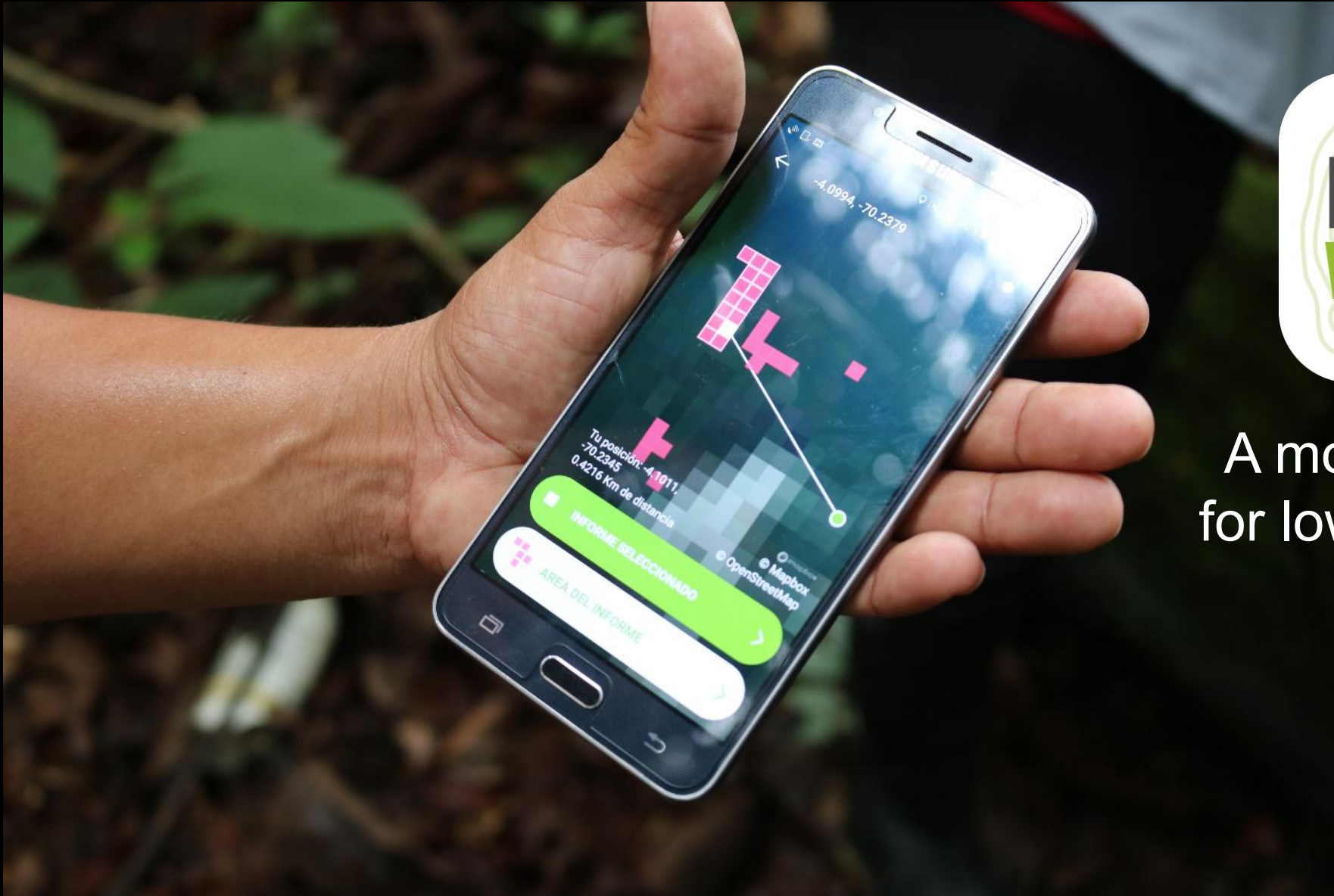
There were **7,776** GLAD alerts reported in the week of the **24th of September 2018**. This was **unusually high** compared to the same week in previous years.



these estimates do not take tree cover gain into account



# Forest Watcher



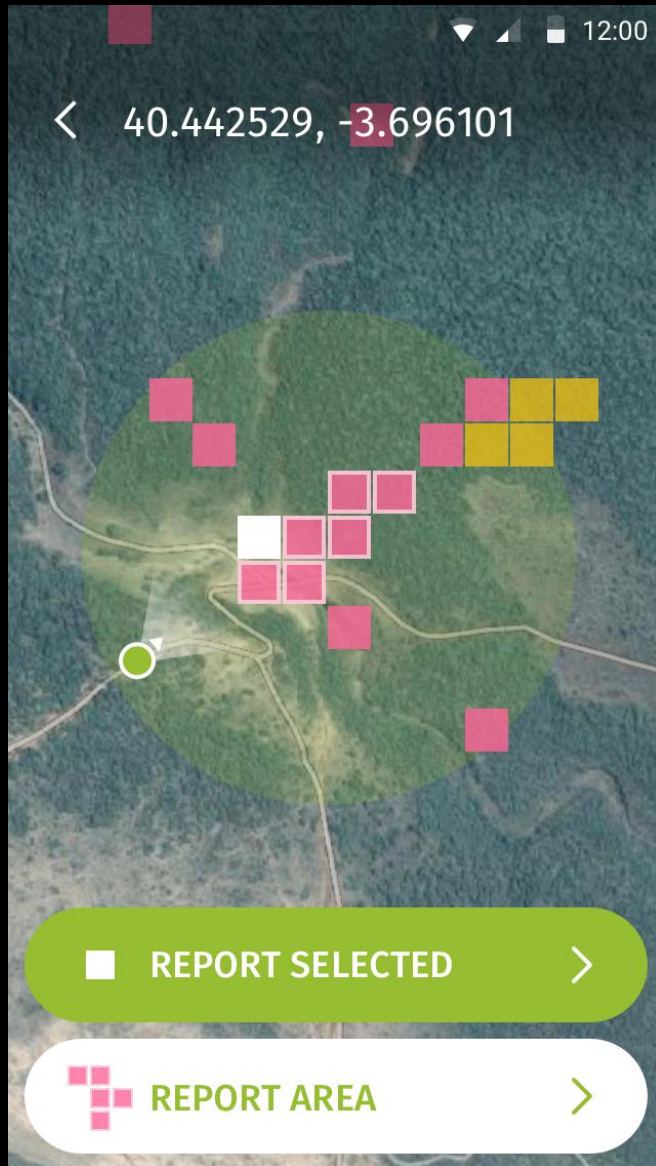
A mobile solution  
for low connectivity



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# Forest Watcher



## App features

- Monitor an area of interest
- Download GLAD and fire alerts to use offline
- Navigate to areas of recent change
- Collect information via customizable forms

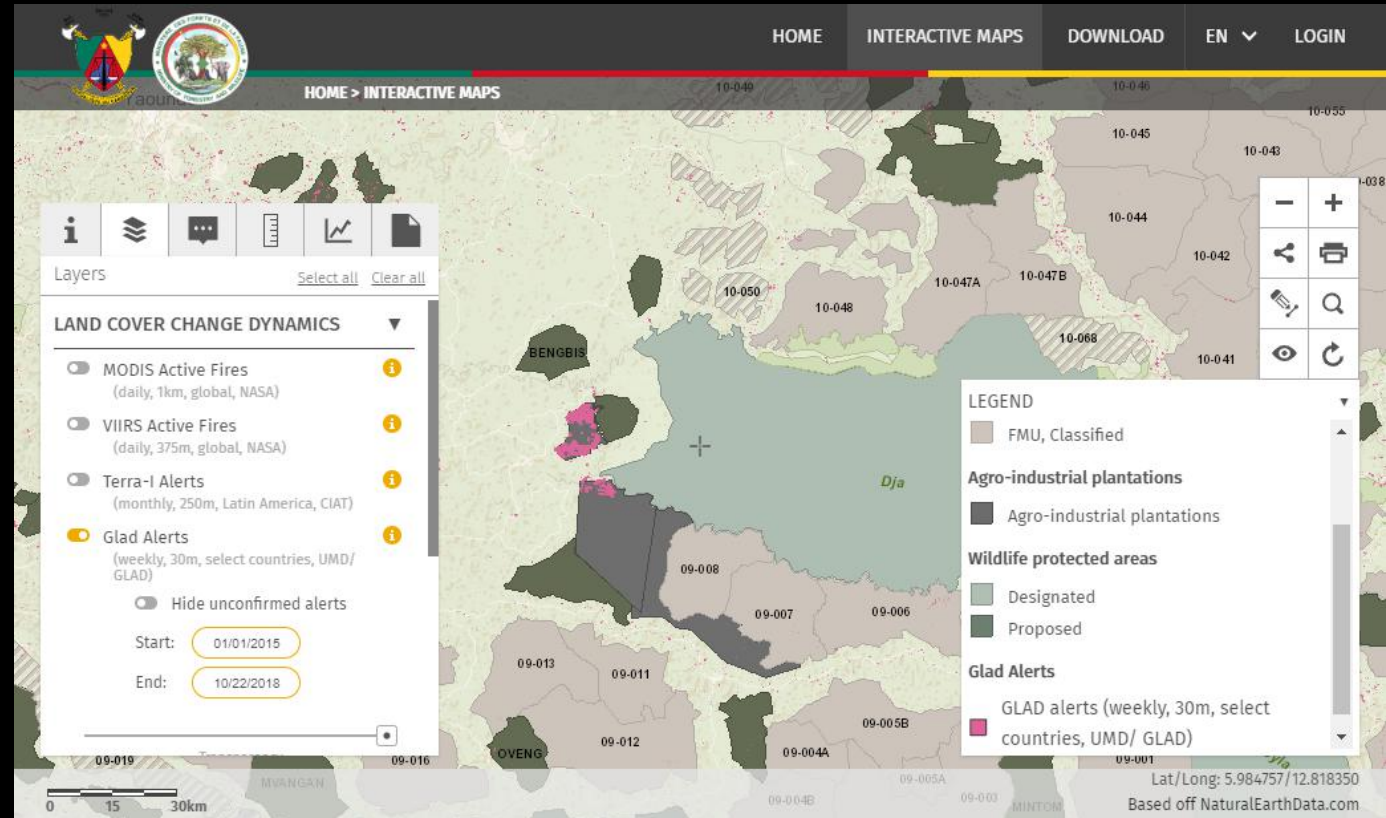
## Forest Watcher is...

- Free to use and open source
- Available on Android and iOS
- Available in English, French, Spanish, Portuguese, and Bahasa Indonesian



# Other ways to access alerts

- Download alerts for an area of interest as a csv
- Access analyses via Global Forest Watch's API
- Build custom web applications that incorporate GLAD alerts through the MapBuilder platform template



# User cases

# Uses



Awareness raising



Empowerment



PES & to pay ilegal  
logging fines



Protected areas  
management



Law enforcement



# Awareness raising

HOMEARCHIVESECTORS • SYNTHESIS • INTERACTIVE • COUNTRIES • OTHER • ABOUT MAAP

GLAD weekly alerts

It is worth emphasizing how quickly and precisely the new GLAD weekly alert system picked up the new access road construction in 2016 (see Image 27c). Also, click here to see this view on Global Forest Watch [🔗](#).

GLOBAL FOREST WATCH

FOREST CHANGE

GLAD alerts

(weekly, 30m, select countries, URS / GLAD)

Recent alerts

Geographic coverage

CONSERVATION

Protected Areas

Imagery

UrtheCast

OPEN ADVANCED SETTINGS

ACQUIRED DATE MINIMUM

Monday, 14 Dec, 2015

ACQUIRED DATE MAXIMUM

Monday, 14 Mar, 2016

GLAD alerts from 2 Jan 2016 to 3 Mar 2016

29 Feb 2016

Image 27c. Data: UMD/GLAD, GFW, UrtheCast

Notes

\*According to the Supreme Decree (No. 018-2015-MINAGRI) approving the Regulations for Forest Management under the framework of the new 2011 Forestry Act (No. 29763), the official definition of primary forest in Peru is: "Forest with original vegetation characterized by an abundance of mature trees with species of superior or dominant canopy, which has evolved naturally." Using methods of remote sensing, our interpretation of that definition are areas that from the earliest available image (in this case, from 1985)

theguardian

sportssoccer tech arts lifestyle fashion business travel environment science

climate changewildlife energy pollution

Head of London-listed company linked to illegal clearing of Peru rainforest

GLOBAL FOREST WATCH

FOREST CHANGE

FOREST COVER

FOREST USE

CONSERVATION

PEOPLE

STORIES

COUNTRY LAYERS

Imagery

UrtheCast

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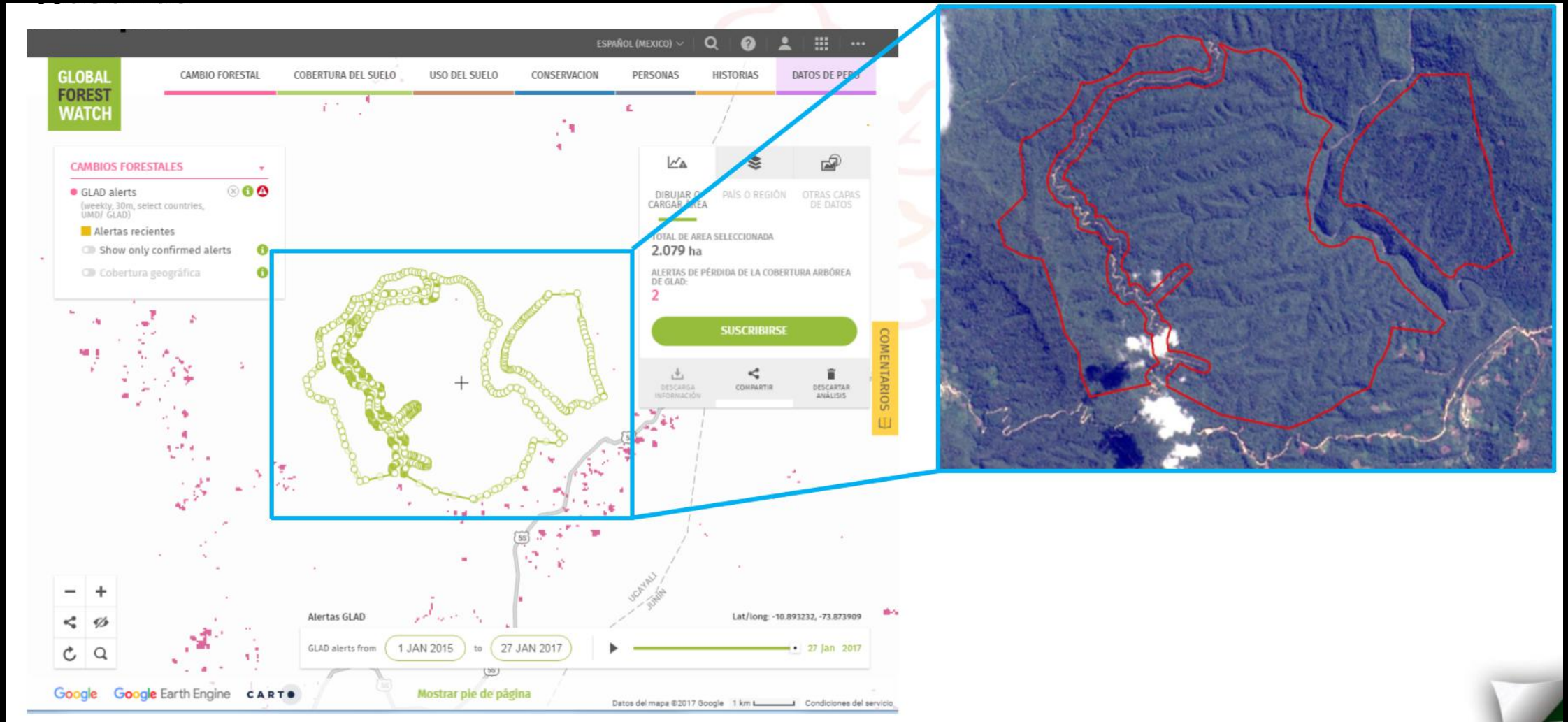


# Empowering indigenous peoples



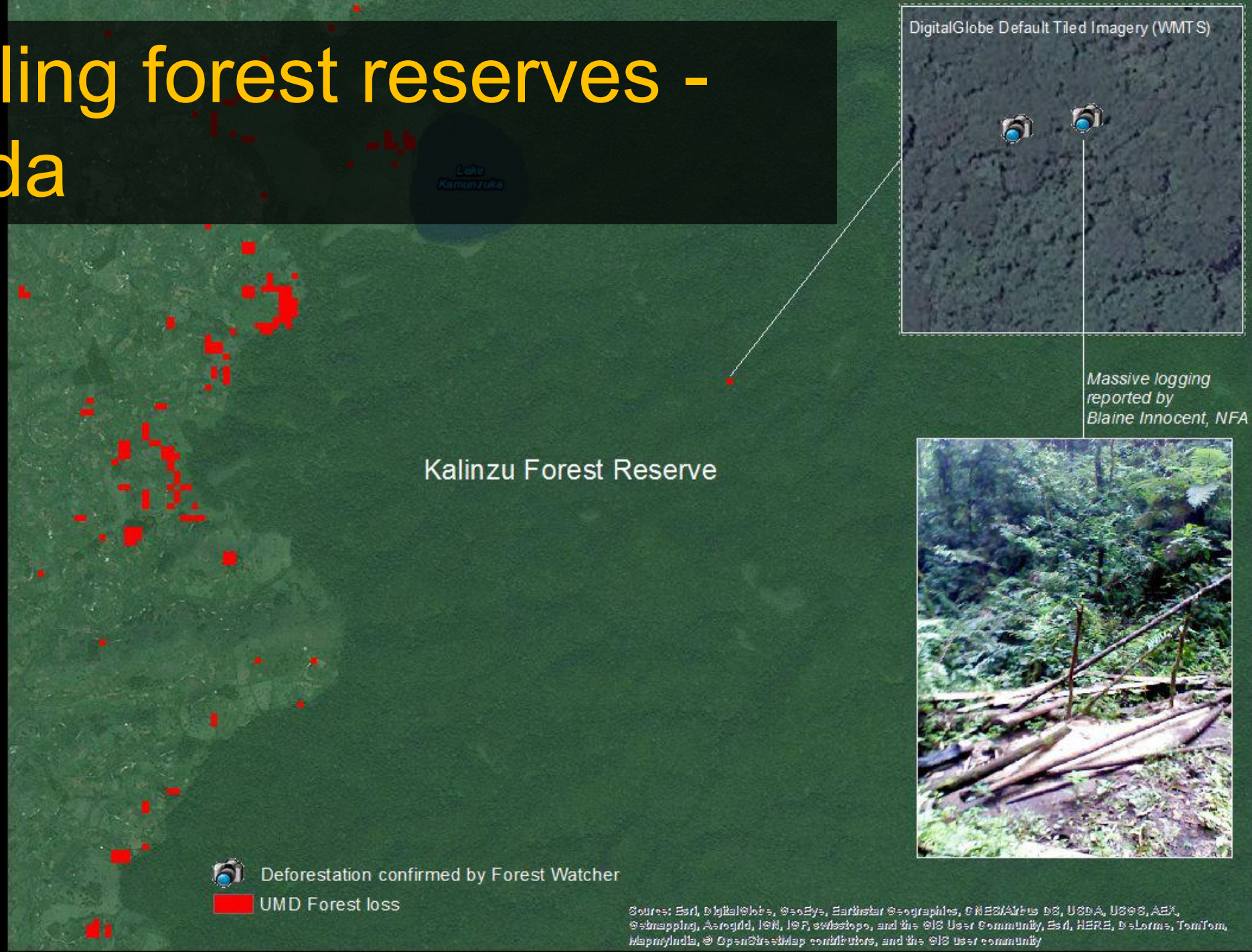


# PES & payment of fines for illegal logging





# Patrolling forest reserves - Uganda





# Law enforcement - Brazil





# Lessons

# Lessons

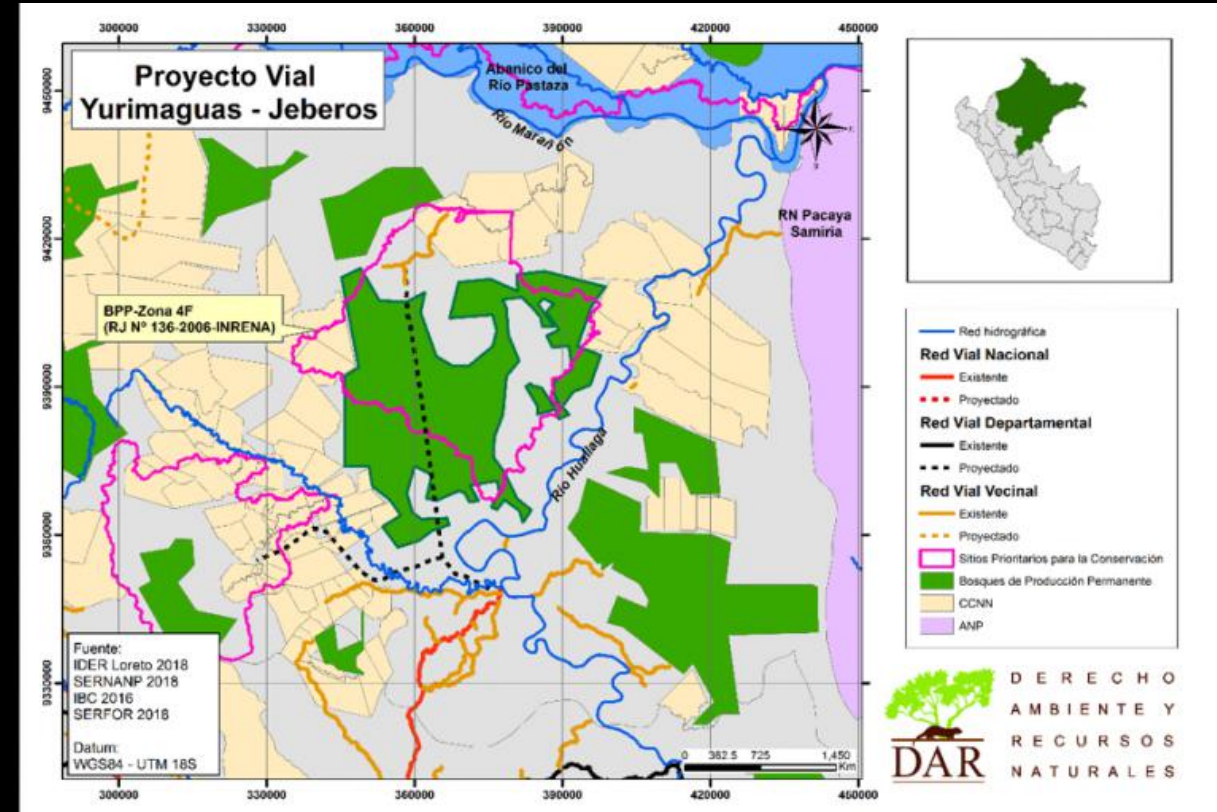
- Satellite monitoring is only the first step

## What Happens When an Alert is Triggered?



# Technical limitations

- Availability
- Accessibility
- Technical capacity
- Contextual data and analysis



# Governance limitations

- *“We have near-real time deforestation alerts, but un-real capacity to respond.”*

Luigi R. Vargas

Natural Resources Director, 2018

Regional Government of Ucayali, Peru

- Capacity
- Corruption
- Inter-agency coordination



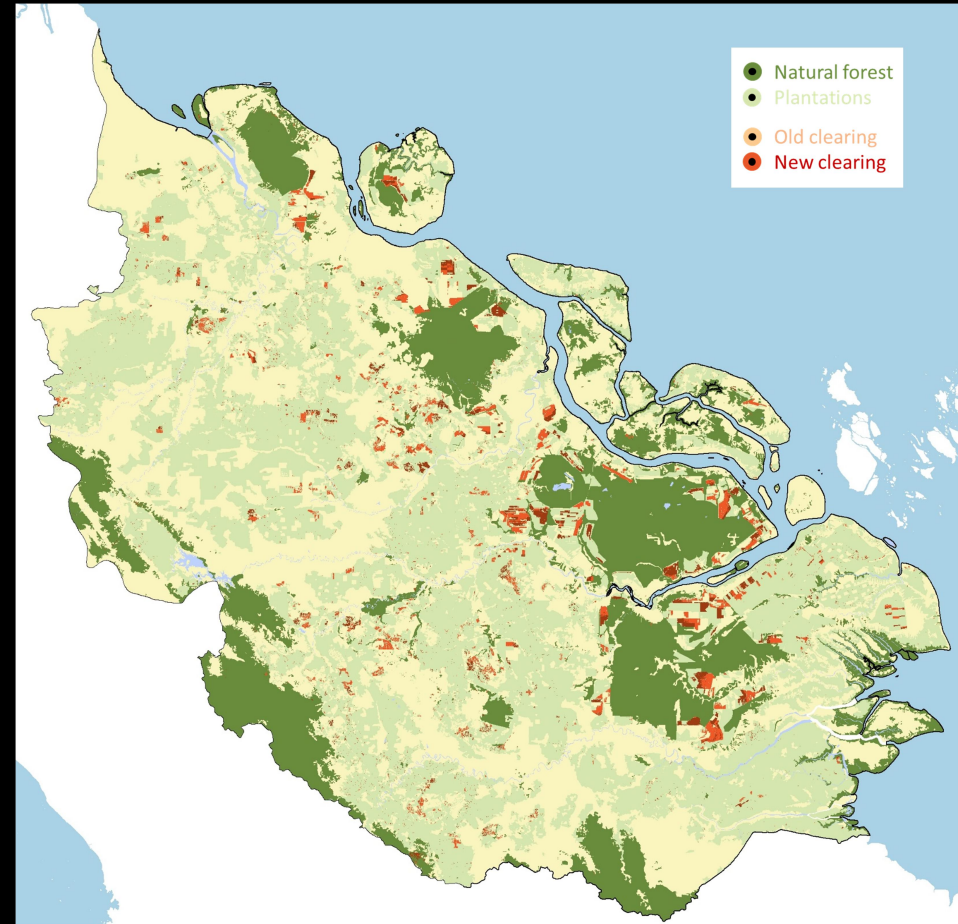


# Overcoming technical limitations



# Incorporation of new satellite data

- Incorporation of Sentinel-2 images into GLAD alerts to increase resolution and frequency
- Pilot test of Sentinel-1 radar data for alerts in Indonesia and Malaysia to overcome cloud cover



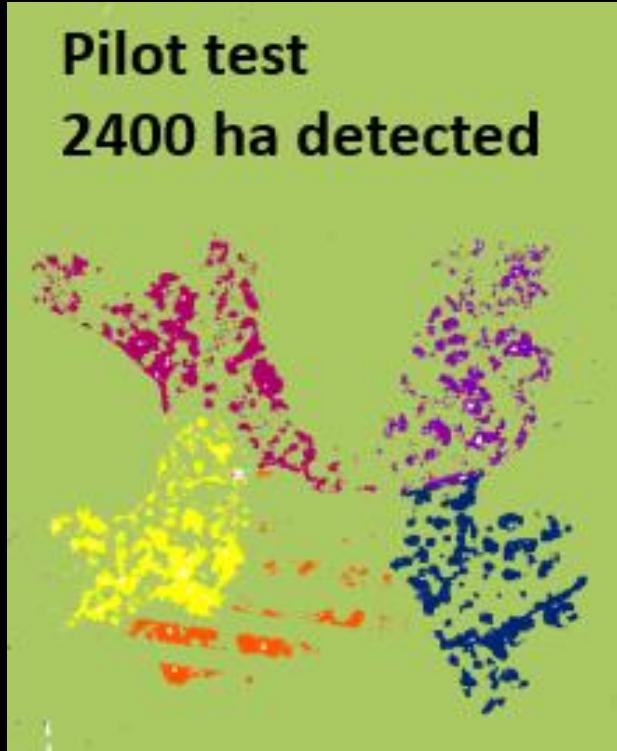


# Pilot test to identify selective logging

Global Forest Watch  
22 ha detected



Pilot test  
2400 ha detected



Collaboration with  
Sheffield University  
researchers to pair  
satellite images with  
field data on selective  
logging



# Enhanced identification of priority alerts

- Developing methods to identify priority alerts for particular users, e.g. based on cluster size, proximity to oil palm
- Machine learning to automate detection of drivers



# Improve access to contextual information



- Incorporating new sources of satellite imagery for verification of alerts
- Expanding GFW's available data on concessions, land rights





# Creating spaces to share lessons learned



- WRI convening the “Early Warning Working Group”
- Hosted a forum in July to share experiences, reflect on limitations, and lessons learned
- Increased emphasis on highlighting real examples of use



# Thank you!

[www.globalforestwatch.org](http://www.globalforestwatch.org)

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