



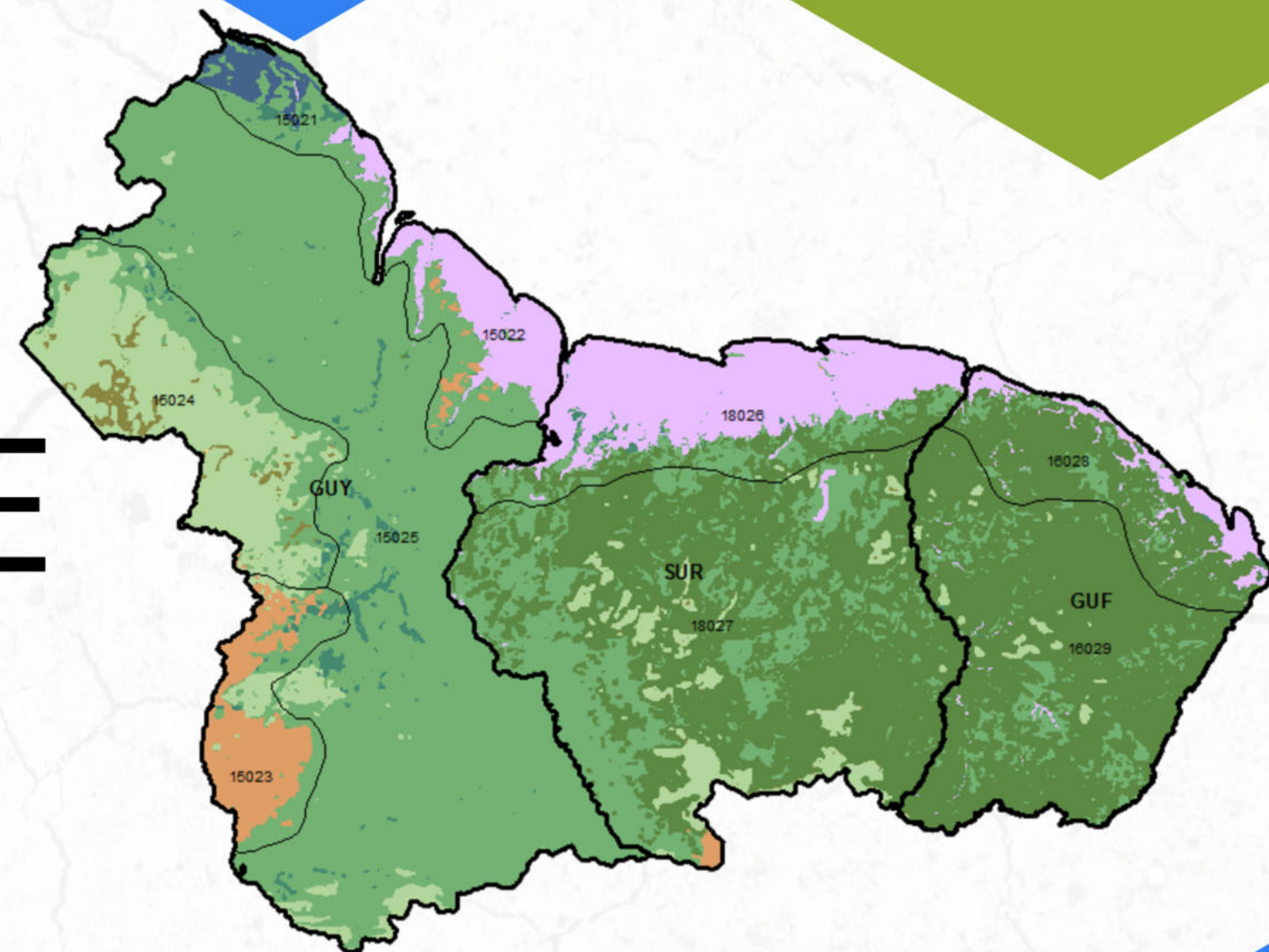
MAPBIOMAS  
SURINAME

# MAPBIOMAS GUYANAS INITIATIVE

GUYANA, SURINAME AND FRENCH GUIANA  
Land Use and Land Cover  
1985–2023

Kandhai Roche cherwood  
Tjon Sie Fat Dimitrti

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



# 01 Our Mission

Building Local Capacity in Tropical Countries

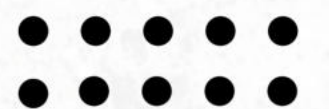
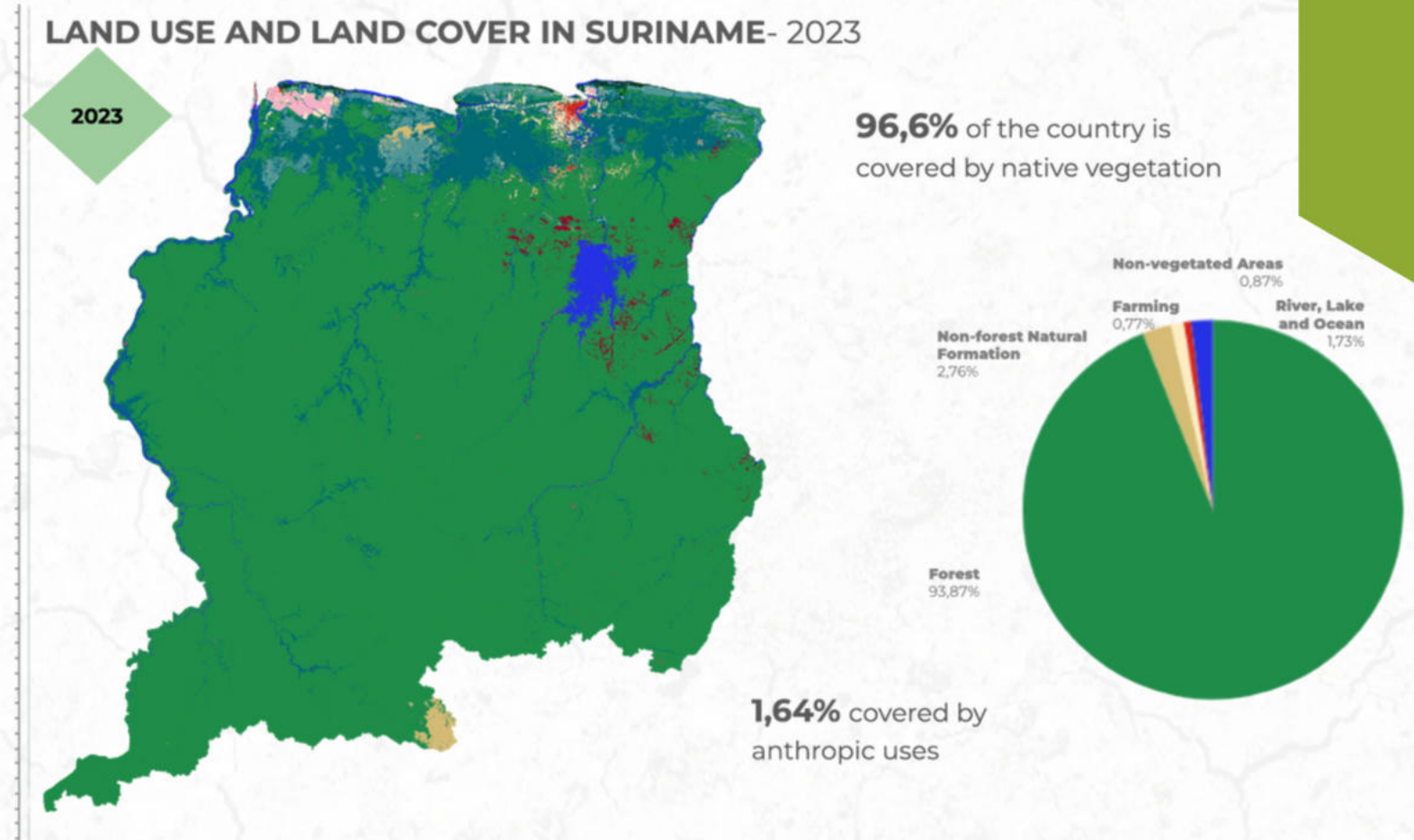
- **Generate land use and land cover data** using remote sensing techniques.
- **Ensure the data is useful, updated, accurate, and relevant to the local context.**
- Facilitate its use by **decision-makers** across public, private, and civil society sectors.

Aim to promote **sustainable management of natural resources** and help aid in **climate change mitigation**.

# 02 Our Purpose

Initially, MapBiomass focused on **accurately** and **efficiently** revealing the **transformations** taking place within **Brazilian territory**. However, it has since transformed into a **multi-continental initiative**.

By providing **accessible information** on land **cover and land use**, we aim to foster the conservation and sustainable management of **natural resources** while also contributing to **climate change mitigation**.



## CO-CRIADORES



## INICIATIVA



## APOIO INSTITUCIONAL



## PARCEIROS TÉCNICOS



## FINANCIAMENTO



# Mapbiomas

## origin and goals?

- It originated in Brazil (2015) and has expanded through local leadership in South America and Indonesia
- MapBiomas was developed to enable people to understand how land and forests evolve over time. It transforms satellite imagery into valuable insights regarding deforestation, agriculture, water resources, and urban expansion.

## what is MapBiomas?

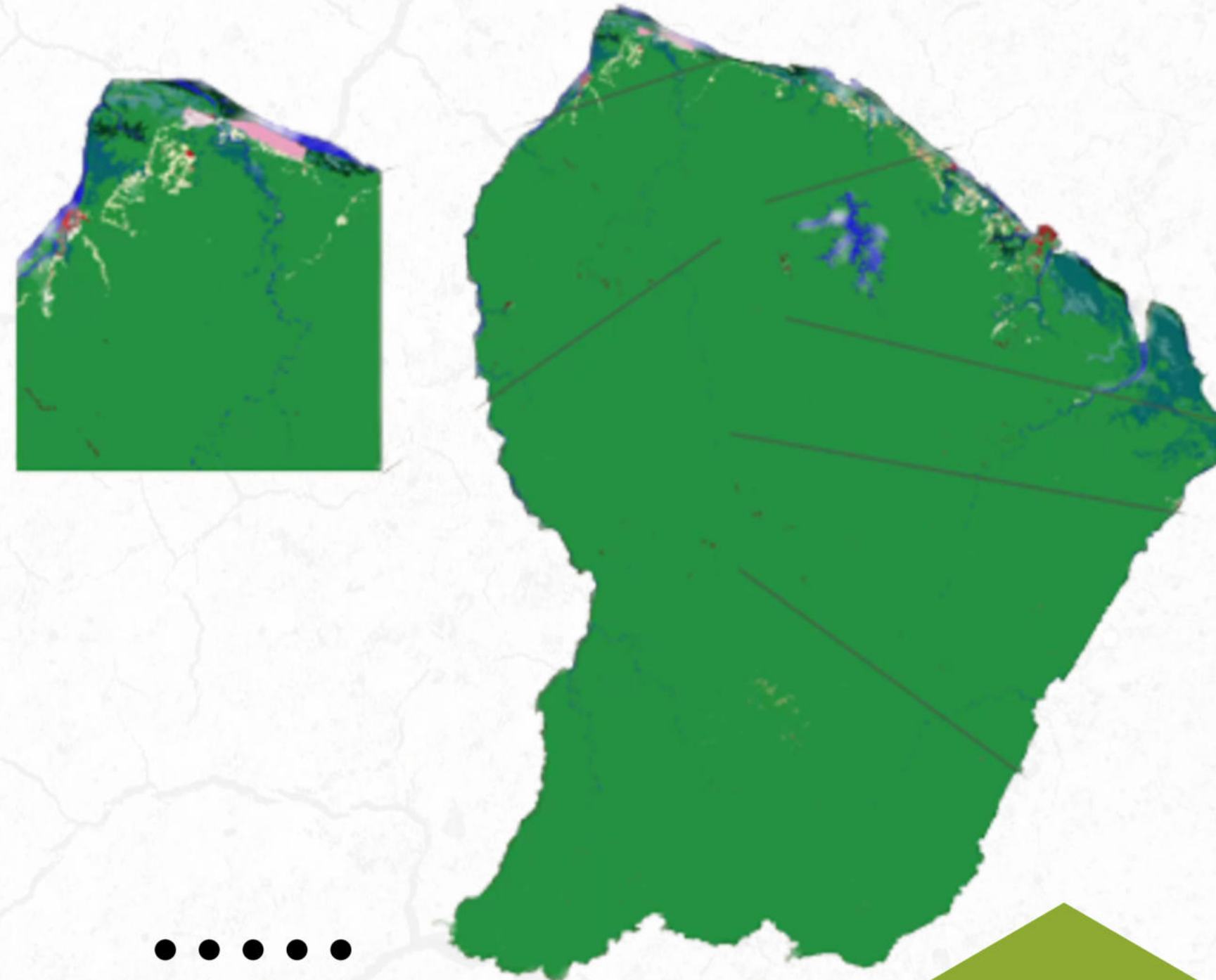
MapBiomas is a **multi-institutional (network)** initiative consisting of different organisations:

- environmental NGOs,
- research institutions and universities,
- technology companies, and
- local experts across any **type of related field**.

# Mapbiomas

## How does it work? Technology Methodology

- Through the use of **remote sensing, cloud computing, and artificial intelligence**, MapBiomas processes extensive satellite imagery from sources such as Landsat, Sentinel, and MODIS.
- By applying machine learning algorithms within the **Google Earth Engine (GEE) environment**, it classifies and monitors land cover and land use annually from 1985 to the present with national consistency.
- It covers multiple **thematic layers**: forest, agriculture, pasture, water surface, mining, infrastructure, secondary vegetation, etc.



# Mapbiomas

## Open Acces for Everyone

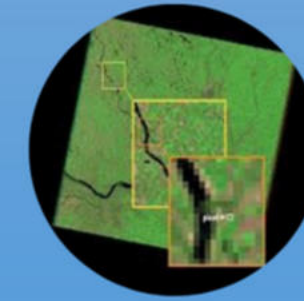
- All data, methods, classification codes, and source code produced by MapBiomas are freely available through its online and interactive portals.
- Every dataset is fully documented so users can trace how maps were made, verify accuracy, and replicate the process using the same open tools.

## Scalability and Local Adaptation

- Because MapBiomas' system is open and flexible, it can be **replicated** and **customized** by local institutions anywhere in the world. This makes it possible for new countries like Suriname **to adopt** the same framework, adapt it to **local conditions**, and **join the global** network of environmental monitoring.



**Building  
historical  
series for the  
entire  
territory**



**Processing  
pixel by pixel  
(30 x 30m)**

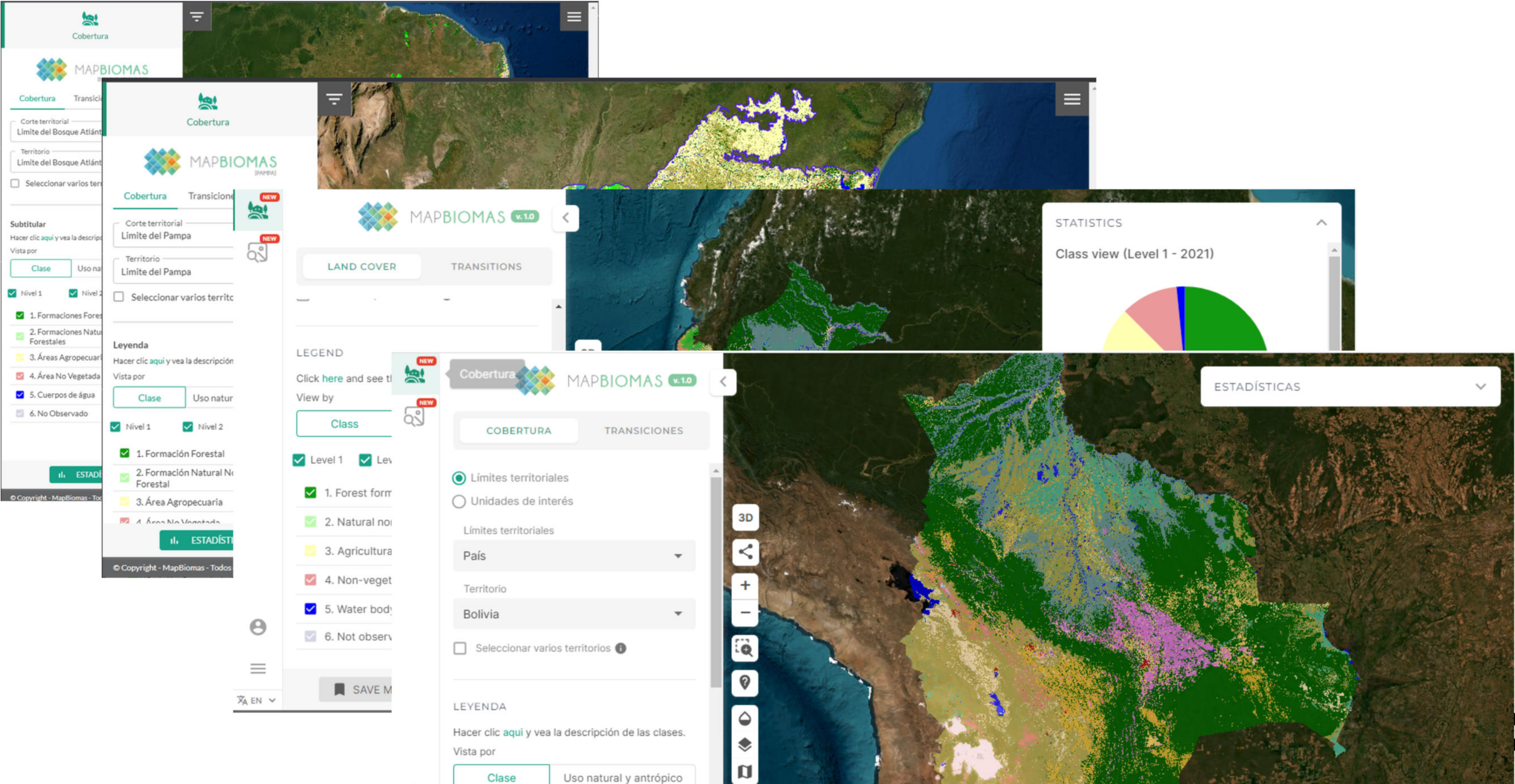


**Classification  
with Artificial  
Intelligence**



**Collaborative  
network and  
cloud based  
processing  
(GEE)**

# The Platforms

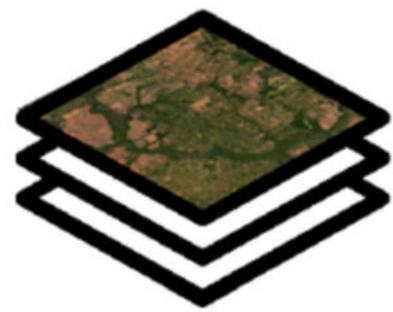


# Legend

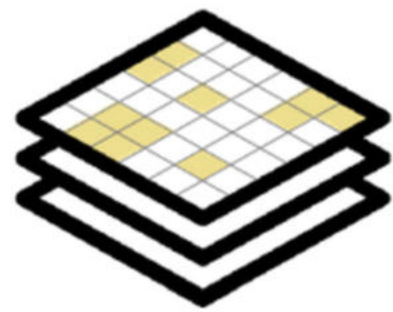
| Classes Evolution |                                  |                                        | Collection 6. 25 Classes         | Collection 7 27 Classes                 | Collection 8 29 Classes                 |
|-------------------|----------------------------------|----------------------------------------|----------------------------------|-----------------------------------------|-----------------------------------------|
| Collection 1      | Collection 2                     |                                        | Collection 3 and 4               | Collection 5                            |                                         |
|                   | 1. Forest                        | 1. Forest                              | 1. Forest                        | 1. Forest                               | 1. Forest                               |
|                   | 1.1. Natural Forest              | 1.1. Natural Forest                    | 1.1. Natural Forest              | 1.1. Natural Forest                     | 1.1. Forest Formation                   |
|                   | 1.1.1. Natural Forest Formation  | 1.1.1. Forest Formation                | 1.1.1. Forest Formation          | 1.1.1. Forest Formation                 | 1.2. Savanna Formation                  |
|                   | 1.1.2. Savanna Formation         | 1.1.2. Savanna Formation               | 1.1.2. Savanna Formation         | 1.1.2. Savanna Formation                | 1.3. Mangrove                           |
|                   | 1.1.3. Mangrove                  | 1.1.3. Mangrove                        | 1.1.3. Mangrove                  | 1.1.3. Mangrove                         | 1.4. Herbaceous Sandbank Vegetation     |
|                   | 1.2. Forest Plantations          | 1.2. Forest Plantation                 | 1.2. Forest Plantation           | 1.2. Forest Plantation                  | 1.5. Herbaceous Sandbank Vegetation     |
|                   | 2. Non-Forest Natural Formations | 2. Non Forest Natural Formation        | 2. Non Forest Natural Formation  | 2. Non Forest Natural Formation         | 2. Non Forest Natural Formation         |
|                   | 2.1. Non-forest Natural Wetlands | 2.1. Wetland                           | 2.1. Wetland                     | 2.1. Flooded Grassland and Swamped Area | 2.1. Flooded Grassland and Swamped Area |
|                   | 2.2. Grasslands                  | 2.2. Grassland                         | 2.2. Grassland                   | 2.2. Grassland                          | 2.2. Grassland                          |
| 7 Classes         | 3. Farming                       | 3. Farming                             | 3. Farming                       | 3. Farming                              | 3. Farming                              |
|                   | 3.1. Pasture                     | 3.1. Pasture                           | 3.1. Pasture                     | 3.1. Pasture                            | 3.1. Pasture                            |
|                   | 3.2. Agriculture                 | 3.2. Agriculture                       | 3.2. Agriculture                 | 3.2. Agriculture                        | 3.2. Agriculture                        |
|                   | 3.3. Agriculture or Pasture      | 3.2.1. Annual and Perennial Crop       | 3.2.1. Annual Crop               | 3.2.1. Annual Crop                      | 3.2.1. Annual Crop                      |
|                   | 4. Non-Vegetated areas           | 3.2.2. Semi-perennial Crop             | 3.2.1.1. Soybean                 | 3.2.1.1. Soybean                        | 3.2.1.1. Soybean                        |
|                   | 4.1. Beach and dune              | 3.2.2. Perennial Crop                  | 3.2.1.2. Sugar Cane              | 3.2.1.2. Sugar Cane                     | 3.2.1.2. Sugar Cane                     |
|                   | 4.3. Other non-vegetated areas   | 3.3. Mosaic of Agriculture and Pasture | 3.2.1.3. Other annual crops      | 3.2.1.3. Rice                           | 3.2.1.3. Rice                           |
|                   | 4.2. Urban Infrastructure        | 4. Non vegetated area                  | 3.2.1.3.1. Coffee                | 3.2.1.4. Cotton (beta)                  | 3.2.1.4. Cotton (beta)                  |
|                   | 5. Water                         | 4.1. Beach and Dune                    | 3.2.1.3.2. Citrus                | 3.2.1.3. Other annual crops             | 3.2.1.3. Other annual crops             |
|                   | 6. Not Observed                  | 4.2. Urban Infrastructure              | 3.2.1.3.3. Other Perennial Crops | 3.2.2. Perennial Crop                   | 3.2.2. Perennial Crop                   |
| 13 Classes        |                                  | 4.3. Mining                            | 3.3. Forest Plantation           | 3.2.2.1. Coffee                         | 3.2.2.1. Coffee                         |
|                   |                                  | 5. Water                               | 3.4. Mosaic of Uses              | 3.2.2.2. Citrus                         | 3.2.2.2. Citrus                         |
|                   |                                  | 5.1. River, Lake and Ocean             | 4. Non vegetated area            | 3.2.2.3. Other Perennial Crops          | 3.2.2.3. Other Perennial Crops          |
|                   |                                  | 5.2. Aquaculture                       | 4.1. Beach and Dune              | 3.3. Forest Plantation                  | 3.3. Forest Plantation                  |
|                   |                                  | 6. Not Observed                        | 4.2. Urban Infrastructure        | 3.4. Mosaic of Uses                     | 3.4. Mosaic of Uses                     |
|                   |                                  |                                        | 4.3. Mining                      | 4. Non vegetated area                   | 4. Non vegetated area                   |
|                   |                                  |                                        | 4.4. Other non vegetated area    | 4.1. Beach and Dune                     | 4.1. Beach and Dune                     |
|                   |                                  |                                        | 5. Water                         | 4.2. Urban Infrastructure               | 4.2. Urban Infrastructure               |
|                   |                                  |                                        | 5.1. River, Lake and Ocean       | 4.3. Mining                             | 4.3. Mining                             |
|                   |                                  |                                        | 5.2. Aquaculture                 | 4.4. Other non vegetated area           | 4.4. Other non vegetated area           |
| 19 Classes        |                                  |                                        | 6. Not Observed                  | 5. Water                                | 5. Water                                |
|                   |                                  |                                        |                                  | 5.1. River, Lake and Ocean              | 5.1. River, Lake and Ocean              |
|                   |                                  |                                        |                                  | 5.2. Aquaculture                        | 5.2. Aquaculture                        |
|                   |                                  |                                        |                                  | 6. Not Observed                         | 6. Not Observed                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
| 21 Classes        |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |
|                   |                                  |                                        |                                  |                                         |                                         |



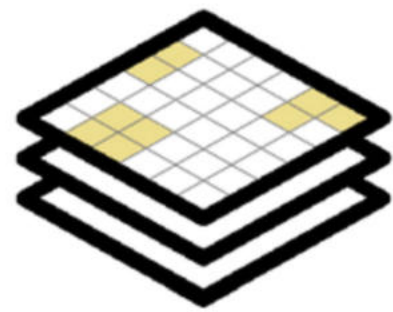
# Method



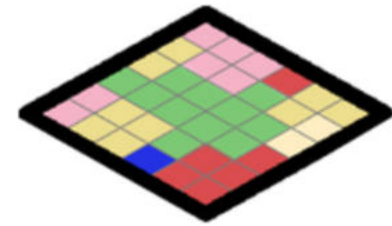
LANDSAT  
Mosaics



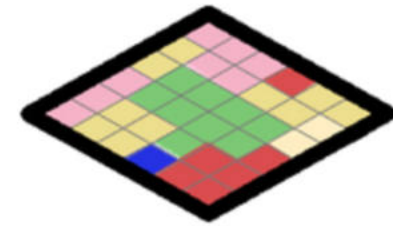
Classification



Spatial &  
Temporal Filters



Integration



Spatial &  
Temporal Filters



Transitions



Deforestation



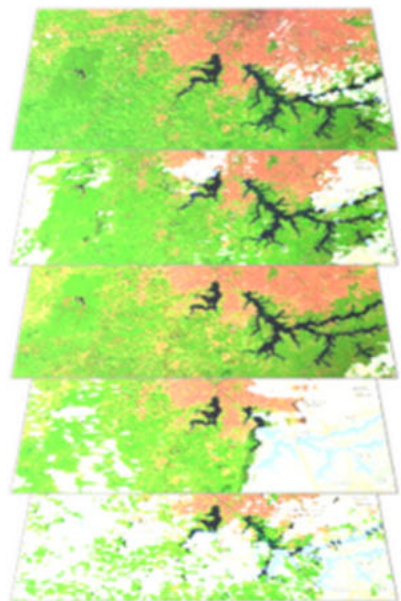
Secondary  
Vegetation



Accuracy



pre-calculated  
statistics for  
all territories  
of interest



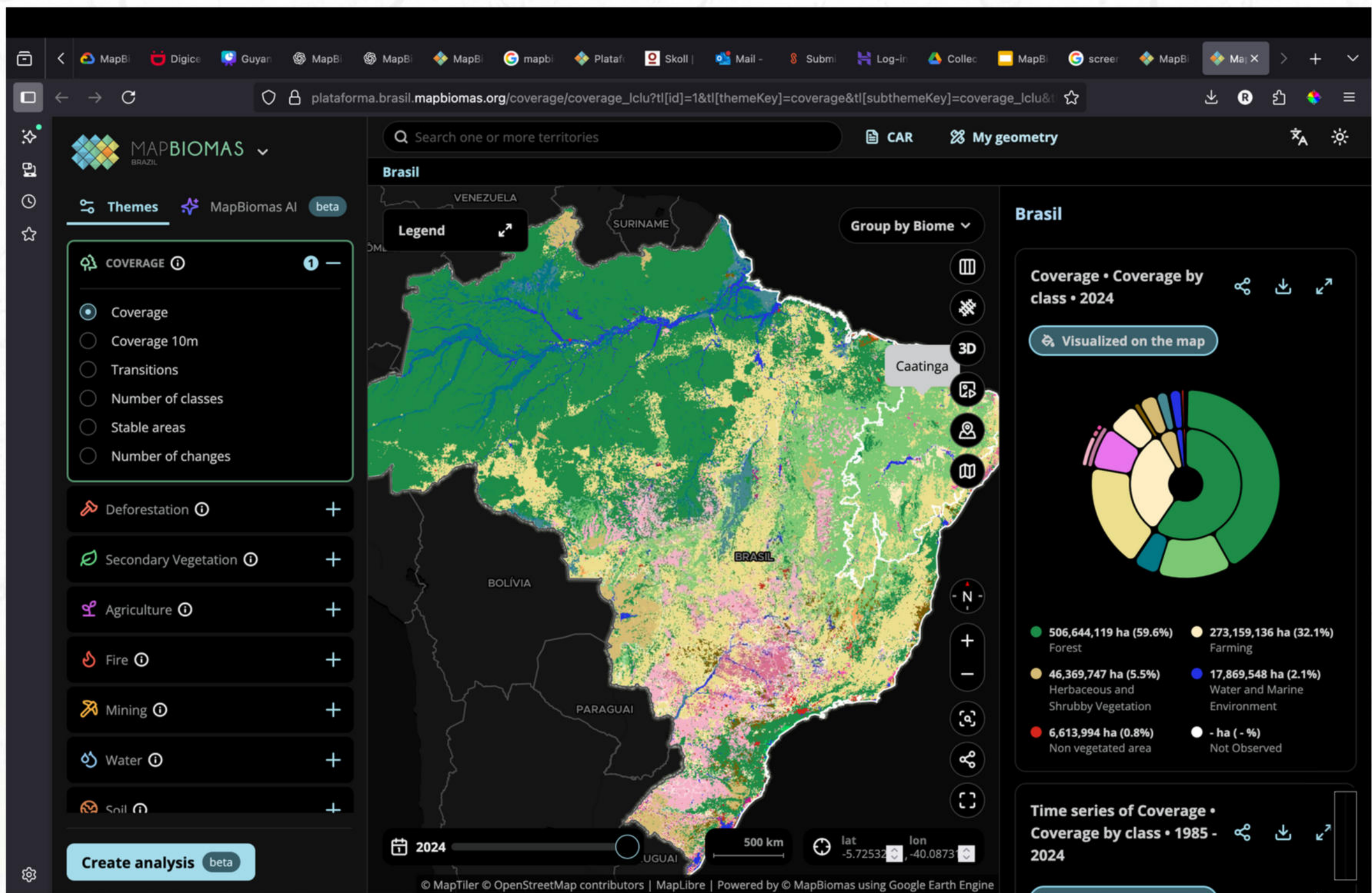
Annual mosaic with all  
images and spectral,  
temporal (wet & dry  
season) and texture indices  
- 100 bands



CLASSIFICAÇÃO **ORIGINAL**



# Demo





MAPBIOMAS  
SURINAME

# Thank You Q&A



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