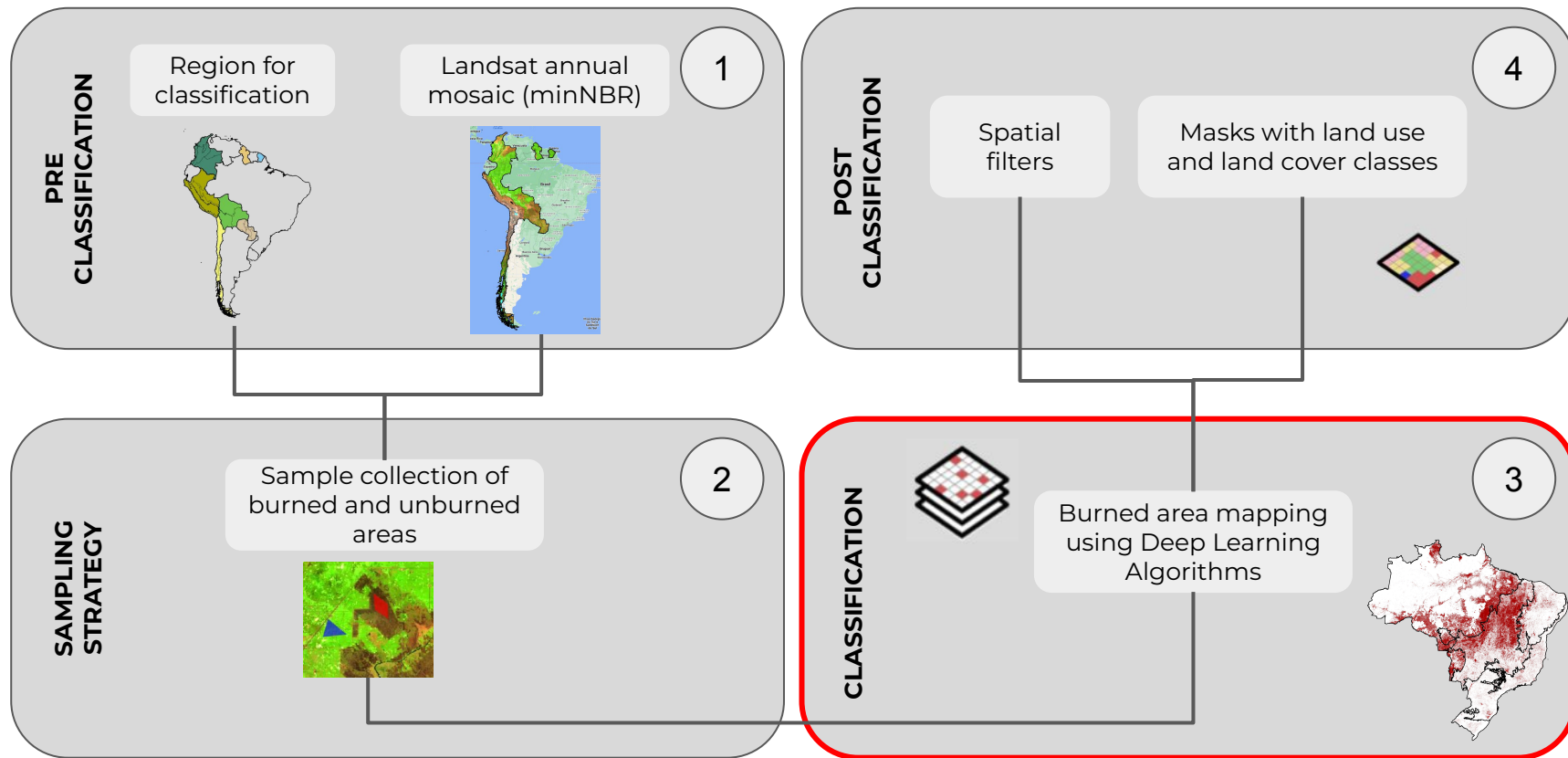


# **Entrenamiento de monitoreo de áreas quemadas en regiones de la red MapBiomas**

Rutina de mapeo de áreas quemadas en Google Colab

# Methodology for mapping burned areas



# Rutina de mapeo de áreas quemadas en el MapBiomass



<https://app.eraser.io/workspace/t7fQM7uFD26o6ci3NxA>  
2



## Principais ambientes, servicios y herramientas utilizadas



# Tools for South America MapBiomass Fire Collection 1

- Google Drive Folder:  
<https://drive.google.com/drive/folders/1BM2rzqF-feHNpPlwUkHKKzBtT1kB7Z6d>
- Google Groups: <https://groups.google.com/g/mapbiomas-fire>
- GEE Repository:  
[https://code.earthengine.google.com/?accept\\_repo=users/mapbiomasworkspace1/mapbiomas-fire](https://code.earthengine.google.com/?accept_repo=users/mapbiomasworkspace1/mapbiomas-fire)
- Toolkit for evaluation and sample collection: [GEE Toolkit](#)
- Looker studio:  
[https://lookerstudio.google.com/u/0/reporting/f12d731c-fe29-48e8-8623-d3fc41ff3b70/page/p\\_odbcyysyc](https://lookerstudio.google.com/u/0/reporting/f12d731c-fe29-48e8-8623-d3fc41ff3b70/page/p_odbcyysyc)

# ◆ Creando una cuenta de GitHub

<https://docs.github.com/en/get-started/start-your-journey/creating-an-account-on-github>



## Registrarse para obtener una nueva cuenta personal

1. Navegue a <https://github.com/>.
2. Haga clic en Registrarse.
3. Siga las instrucciones para crear su cuenta personal.

Durante el registro, se le pedirá que verifique su dirección de correo electrónico. Sin una dirección de correo electrónico verificada, no podrá completar algunas tareas básicas de GitHub, como crear un repositorio.

Si tiene problemas para verificar su dirección de correo electrónico, existen algunos pasos para solucionarlos que puede seguir. Para obtener más información, consulte "[Verificar su dirección de correo electrónico](#)".

# Acceder al Google Collab Notebook

1. acceder al Google Collab Notebook:

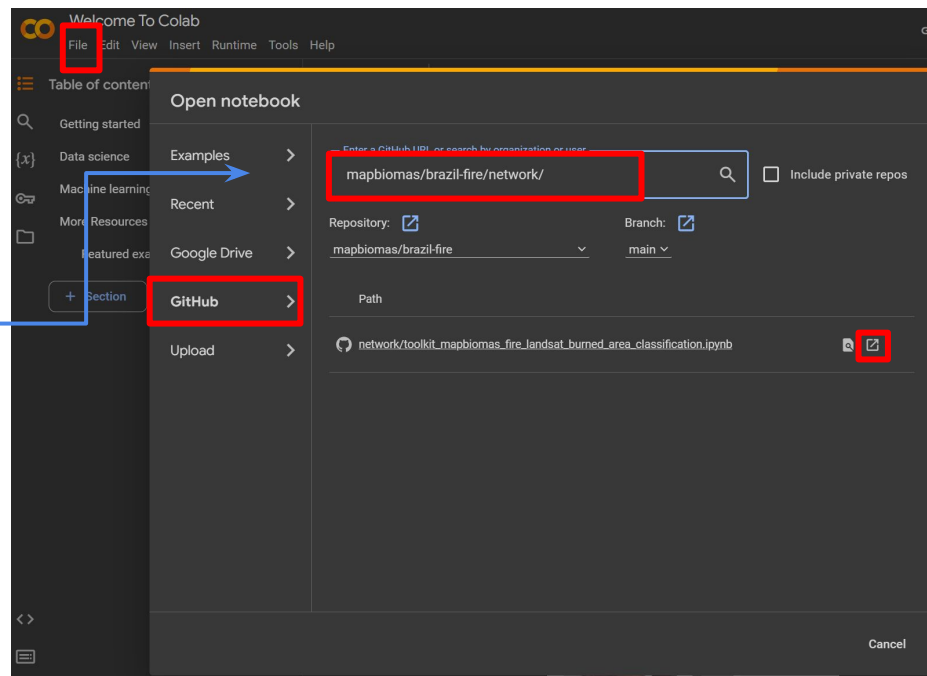
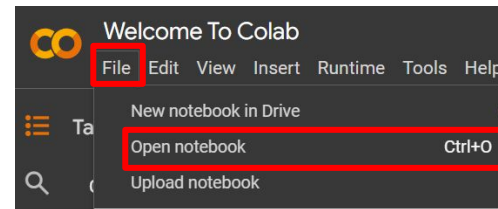
- <https://colab.research.google.com/>

2. sincronizar con GitHub y acceder al notebook de referencia de mapeo

- [mapbiomas/brazil-fire/network/](https://colab.research.google.com/github/mapbiomas/brazil-fire/blob/main/network/mapbiomas_fire_classification_v1.ipynb)

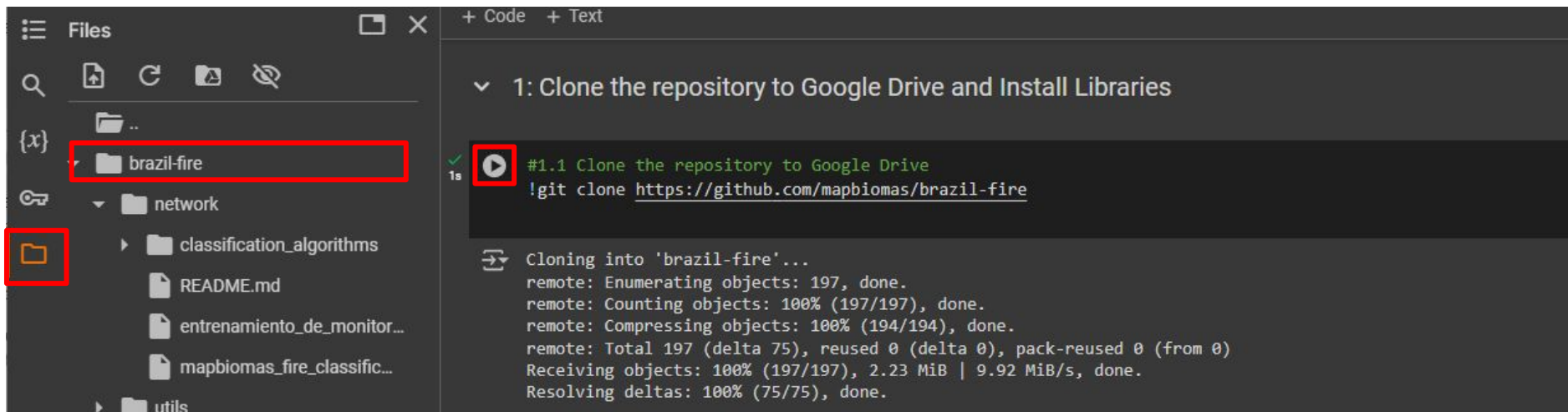
- o acceder directamente mediante el enlace:

[https://colab.research.google.com/github/mapbiomas/brazil-fire/blob/main/network/mapbiomas\\_fire\\_classification\\_v1.ipynb](https://colab.research.google.com/github/mapbiomas/brazil-fire/blob/main/network/mapbiomas_fire_classification_v1.ipynb)



# ◆ Mapeo por regiones de cada país

**1.1** Conectarse a un entorno de conexión y ejecutar la primera celda para clonar el repositorio de GitHub y tener acceso aos scripts.



The screenshot displays a JupyterLab environment. On the left, the 'Files' sidebar shows a directory structure with a folder named 'brazil-fire' highlighted by a red rectangle. Below it, a folder icon is also highlighted with a red rectangle. On the right, the code editor shows a cell titled '1: Clone the repository to Google Drive and Install Libraries'. The first cell in this section is highlighted with a red rectangle. The cell content is:

```
#1.1 Clone the repository to Google Drive
!git clone https://github.com/mapbiomas/brazil-fire
```

Below the code cell, the output shows the cloning process details:

```
Cloning into 'brazil-fire'...
remote: Enumerating objects: 197, done.
remote: Counting objects: 100% (197/197), done.
remote: Compressing objects: 100% (194/194), done.
remote: Total 197 (delta 75), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (197/197), 2.23 MiB | 9.92 MiB/s, done.
Resolving deltas: 100% (75/75), done.
```



# Mapeo por regiones de cada país

2. Parametrizar la segunda celda con el país y autenticar en los servicios de Google Earth Engine y Google Cloud Storage.

Elige el país



Elige el GCS bucket

<https://console.cloud.google.com/storage/browser/mapbiomas-fire/sudamerica/bolivia>

```
2: Google Cloud Authentication

[2] ##### Google Cloud Authentication #####

# Country options: ['bolivia', 'colombia', 'chile', 'peru', 'paraguay', 'guyana']
# Specify the country for processing. Options: ['bolivia', 'colombia', 'chile', 'peru', 'paraguay', 'guyana']
country = 'guyana' # Set the country from the available options
# Define a name for the collection to generate log messages (can be customized for different logs)
collection_name = 'collection_1'

# Import and authenticate libraries for Google cloud services
ee_project = f'mapbiomas-{country}' # Set the project name based on the selected country
bucket_name = 'mapbiomas-fire'

def authenticates(ee_project, bucketName):
    import ee
    ee.Authenticate()
    ee.Initialize(project=ee_project)

    # Authenticate with Google Cloud (necessary when using Colab)
    from google.colab import auth
    auth.authenticate_user()

    # Initialize Google Cloud Storage client and define the bucket name
    from google.cloud import storage
    client = storage.Client()
    bucket = client.get_bucket(bucketName)

    # Call the authentication function with the correct project and bucket names
    authenticates(ee_project, bucket_name)

    # Define the path to the classification algorithms scripts
    algorithms = f'/content/brazil-fire/network/classification_algorithms'

    exec(open(f'/content/brazil-fire/utils/google_collab_pdf_show.py').read())
    pdf_path = '/content/brazil-fire/network/entrenamiento de monitoreo de cicatrices de fuego en regiones de la red mapBiomas.pdf'
    display_pdf_viewer(pdf_path, external_link="https://docs.google.com/presentation/d/1MPoqHMLw-jJqKUSTikJ0Cc-8oLuMuk74_c_kQA3DKQ")
```

# Mapeo por regiones de cada país

**3.** Paso opcional: ejecutar las celdas con interfaces de exploración de archivos en el bucket mapbiomas-fire en Google Cloud Storage.

3: Optional step to visualize files in the folders of the Google Cloud Storage bucket

```
[5] # Optional step to visualize files in the folders of the Google Cloud Storage bucket
# This executes a simple interface for exploring files in the bucket
exec(open(f'{algorithms}/A_0_1_simple_gui_to_gcs_explorer_optional.py').read())
```

Countries:

- ☐ mosaics\_col1
- ☐ mosaics\_col1\_cog
- ☐ result\_classified
- ☐ training\_samples

```
# Optional step to show the link of the GEE toolkit for collecting samples for burned area classification
exec(open(f'{algorithms}/A_1_0_gee_gui_collect_samples_burned_area_classification.py').read())
```

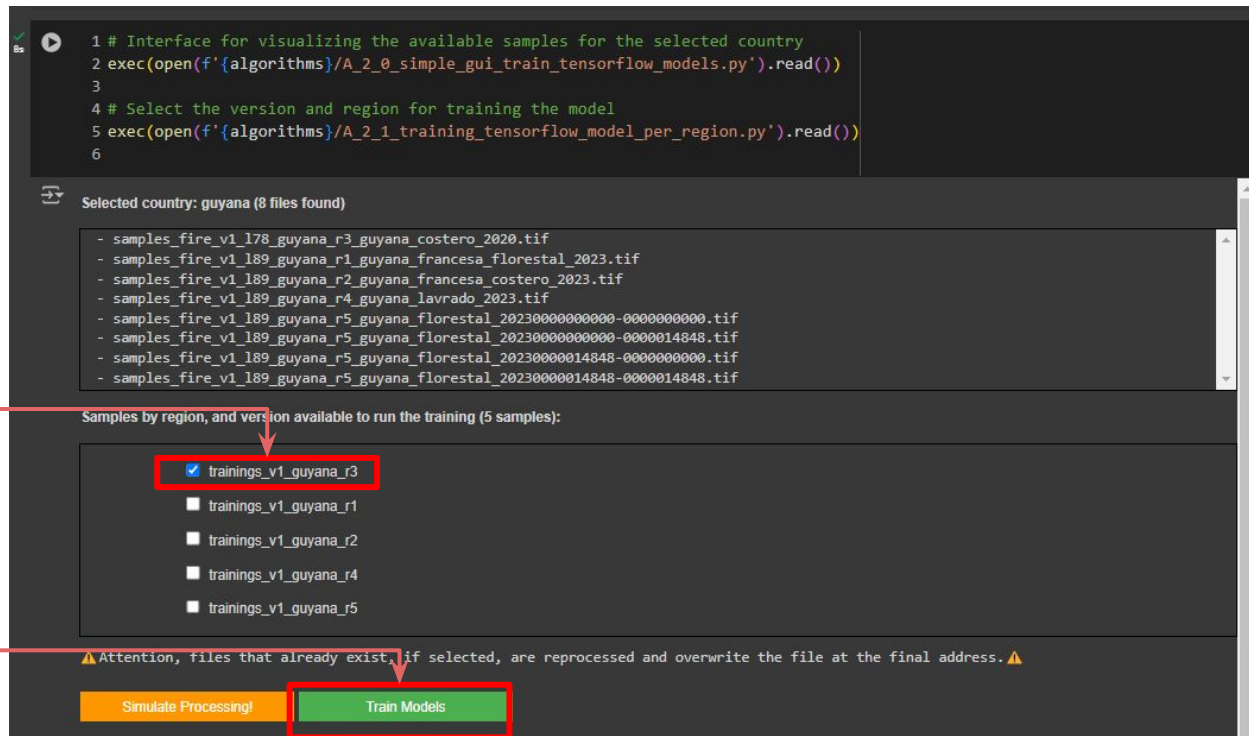
### How it works and how to use the toolkit ###  
Presentation: [https://docs.google.com/presentation/d/1iMRXRH4xoWTFPSSzD0Jk86c7KJLPggxrnvYzVQ3BzP0/edit#slide=id.g220825c6698\\_0\\_546](https://docs.google.com/presentation/d/1iMRXRH4xoWTFPSSzD0Jk86c7KJLPggxrnvYzVQ3BzP0/edit#slide=id.g220825c6698_0_546)

### Access the Toolkit on GEE ###  
Toolkit Link: [https://code.earthengine.google.com/?scriptPath=users%2Fmapbiomasworkspace%2Fmapbiomas-fire%3A1-Toolkit\\_Collection1%2FToolkit\\_sample](https://code.earthengine.google.com/?scriptPath=users%2Fmapbiomasworkspace%2Fmapbiomas-fire%3A1-Toolkit_Collection1%2FToolkit_sample)

# Mapeo por regiones de cada país

## 4. Entrenando el modelo

Elija la región y la versión para entrenar el modelo.



Modelo de tren

# Mapeo por regiones de cada país

## 5. Clasificación de áreas quemadas

Elija la región y la versión para generar la clasificación

Selecciona los años para generar la clasificación.

5: Burned area classification

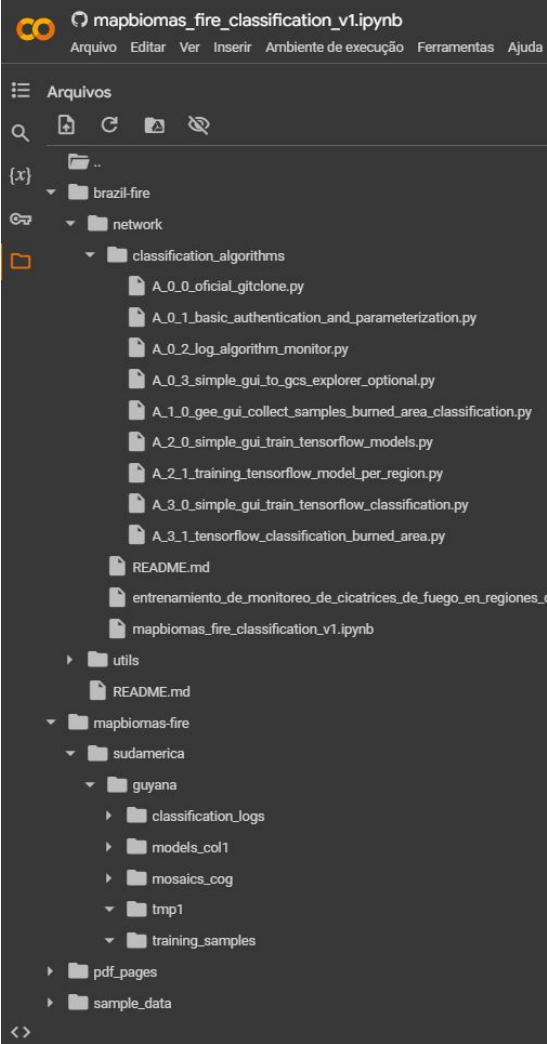
```
1 # Interface for visualizing and selecting available models for the chosen country
2 exec(open(f'{algorithms}/A_3_0_simple_gui_train_tensorflow_classification.py').read())
3
4 # Execute the script to select the years for burned area classification
5 exec(open(f'{algorithms}/A_3_1_tensorflow_classification_burned_area.py').read())
6
```

☒ col1\_guyana\_v1\_r1\_rnn\_lstm\_ckpt  
☐ col1\_guyana\_v1\_r3\_rnn\_lstm\_ckpt

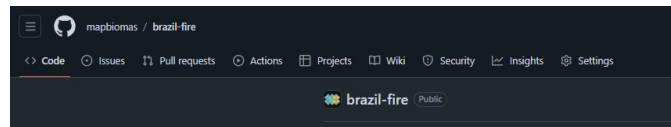
☐ Select All  
☒ 78\_guyana\_r1\_2013\_cog.tif  
☐ 78\_guyana\_r1\_2014\_cog.tif  
☐ 78\_guyana\_r1\_2015\_cog.tif  
☐ 78\_guyana\_r1\_2016\_cog.tif  
☐ 78\_guyana\_r1\_2017\_cog.tif  
☐ 78\_guyana\_r1\_2018\_cog.tif  
☐ 78\_guyana\_r1\_2019\_cog.tif

⚠ Files already classified. They will overwrite previous classifications if the checkbox remains checked.

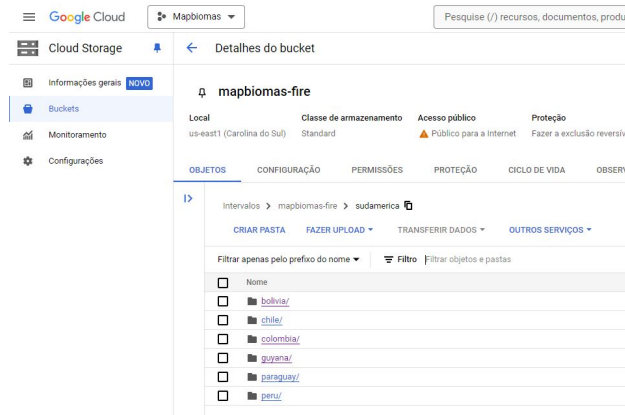
Simulate Processing! Classify Burned Area



repositorio de scripts: brazil-fire



repositorio de archivos: mapbiomas-fire



# ◆ Mapeo por regiones de cada país

## 5. Resultado de la clasificación del área quemada



Crea automáticamente una colección de imágenes para guardar una imagen para cada año y región.

▼ **mapbiomas-bolivia**

▶ AUXILIAR-DATA

▼ FIRE

▶ AUXILIARY\_DATA

▼ COLLECTION1

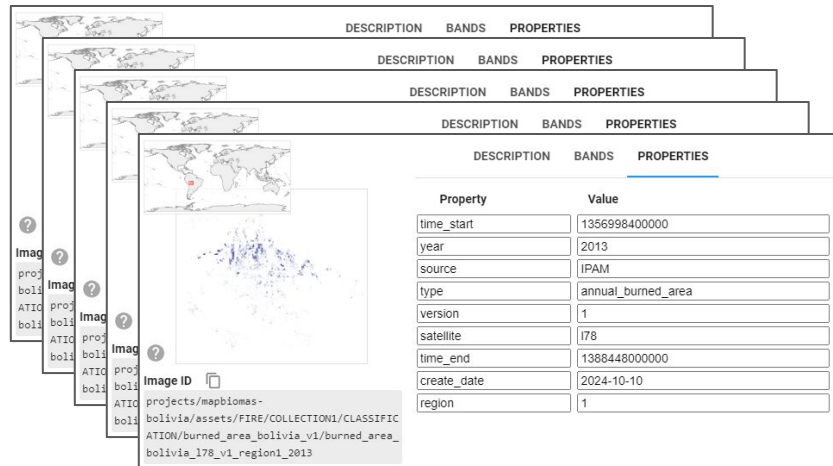
▼ CLASSIFICATION

▶ **burned\_area\_bolivia\_v1**

▶ CLASSIFICATION\_COLLECTIONS

▶ FINAL\_PRODUCTS

▶ SAMPLES



The screenshot shows the Google Earth Engine interface. On the left, a map of Bolivia is displayed with blue dots representing burned areas. On the right, the 'PROPERTIES' panel is open, showing the following table:

Property	Value
time_start	1356998400000
year	2013
source	IPAM
type	annual_burned_area
version	1
satellite	I78
time_end	1388448000000
create_date	2024-10-10
region	1

Below the table, the 'Image ID' is displayed: `projects/mapbiomas-bolivia/assets/FIRE/COLLECTION1/CLASSIFICATION/burned_area_bolivia_v1/burned_area_bolivia_178_v1_region1_2013`. A red arrow points from the 'burned\_area\_bolivia\_v1' item in the left sidebar to the 'Image ID' field in the properties panel.



# Próximos pasos

1. Organización del equipo de cada país.
2. Organización de la recogida de muestras.
3. Recogida de muestras por región y país.
4. Pruebas de clasificación con Google Colab