

Use of Biomass Products in Ecosystem Monitoring and Early Warning Systems in CONABIO- Mexico



CONABIO

COMISIÓN NACIONAL PARA EL
CONOCIMIENTO Y USO DE LA BIODIVERSIDAD

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CONABIO

3rd GlobBiomass User Workshop
Rome, Italy
11 - 13 September, 2017

Objective

To show the current and future uses of biomass products

Outline

- ☐ Ecosystem Monitoring
- ☐ Early Warning System

The **National Commission for Knowledge and Use of Biodiversity** was created in 1992.



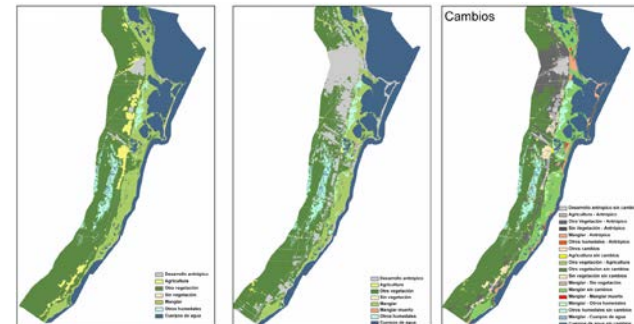
The mission of **CONABIO** is to promote, coordinate, support and carry out activities aimed at increasing awareness of biodiversity and its conservation and sustainable use for the benefit of society. Among the main functions of **CONABIO** are to implement and operate the [National Information System on Biodiversity \(NISB\)](#),

Remote sensing Division

Mission is to generate information, using remote sensing methods to contribute to the development of National Information System on Biodiversity.

Topics:

- Ecosystem monitoring
- Establish operational system for monitoring
- Early warning system



Mangrove monitoring system

Operational Systems

- Mexican Mangrove Monitoring System (SPOT, Aerial Photo) 1970-1980, 2005, 2010, 2015
- Early Warning System for Forest Fire (AVHRR, MODIS, VIIRS) Since 1999
- Land Cover Monitoring System (MODIS, LANDSAT, RAPIDEYE) 2005, 2010, 2011, 2012, 2014 MODIS

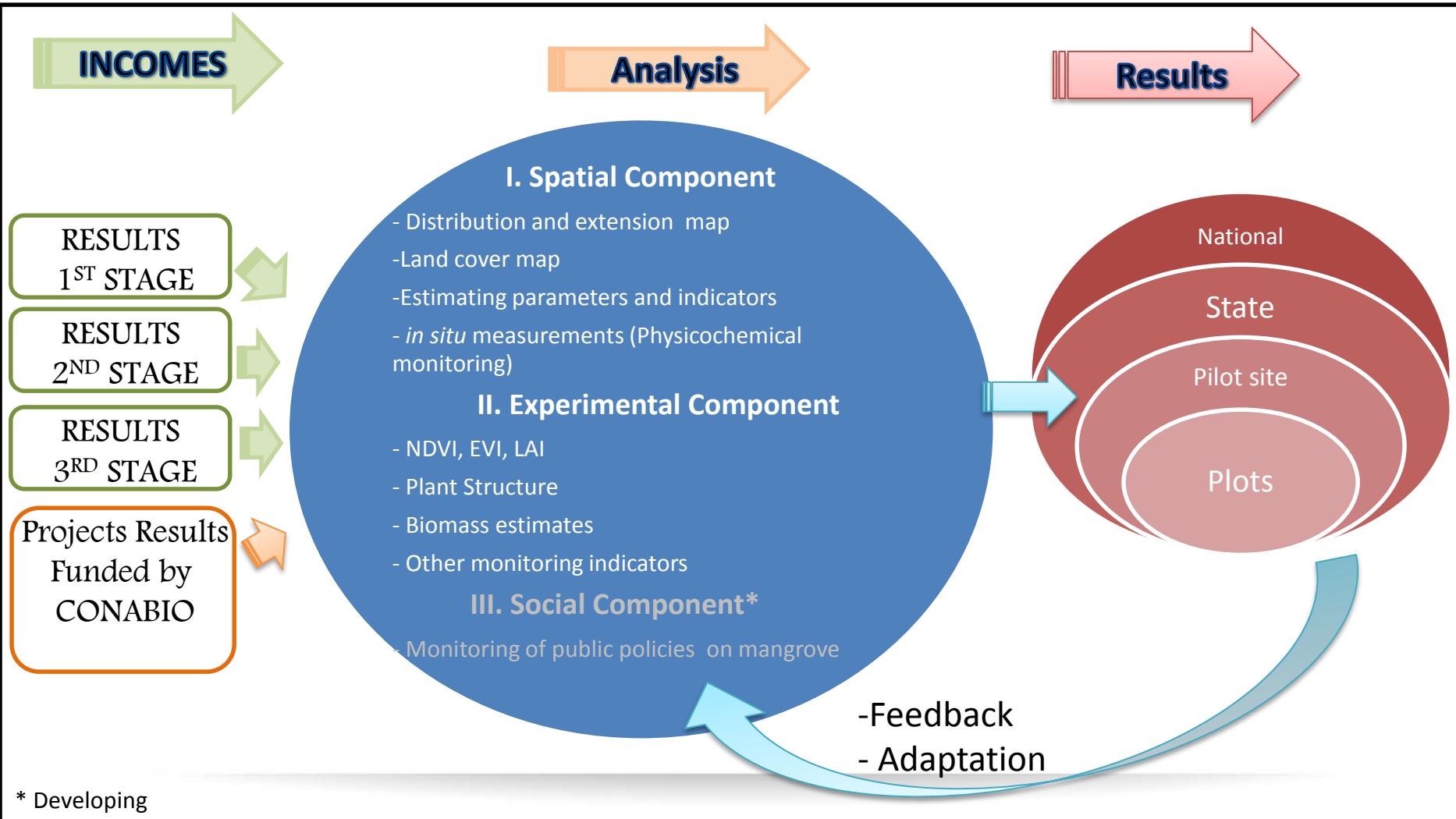
In developing

- Wetlands (RAPIDEYE)
- Cloud forest (LANDSAT, SENTINEL 2)
- Vegetation monitoring (MODIS, LANDSAT)

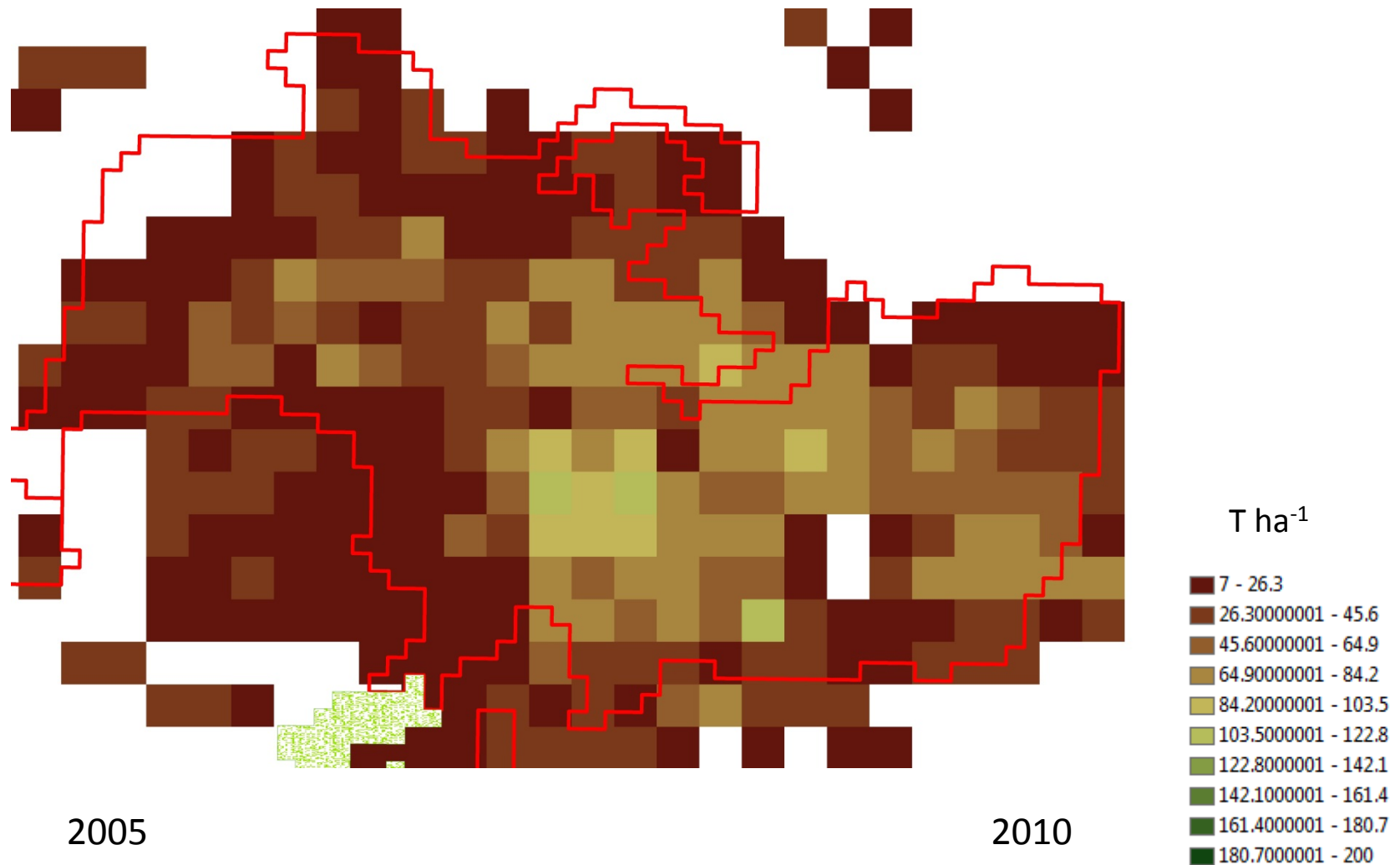
Mexican Mangrove Monitoring System

Objective:

to establish the Mexican Mangrove Monitoring System (SMMM, by its Spanish acronym), using remote sensing data and field data to determinate conditions on vegetation and main agents that cause transformation



An example



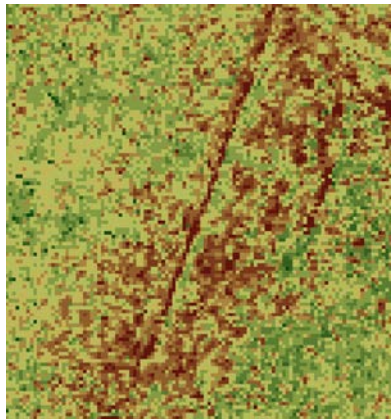
Mexican Wetlands

Characterization and Monitoring

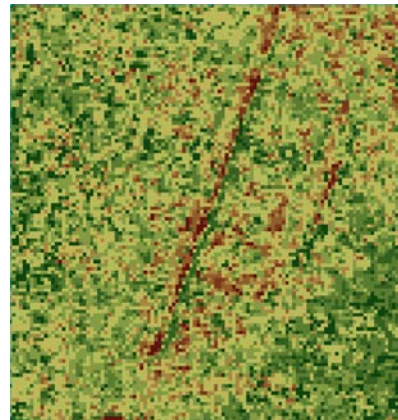
- To develop a method to identify, delimited and characterize wetland in four sites.
- To generate land cover and changes maps.
- To explore temporal variations of water bodies.
- To explore the relationship between biomass and remote sensing data.



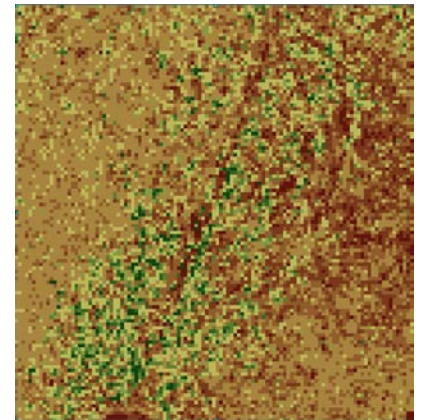
Mangrove



2005



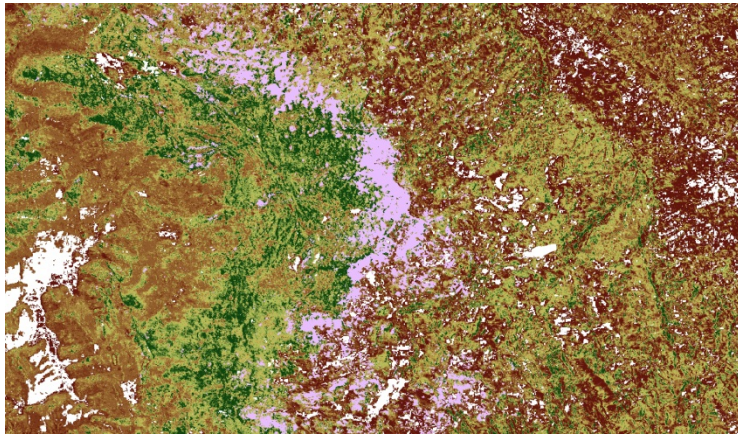
2010



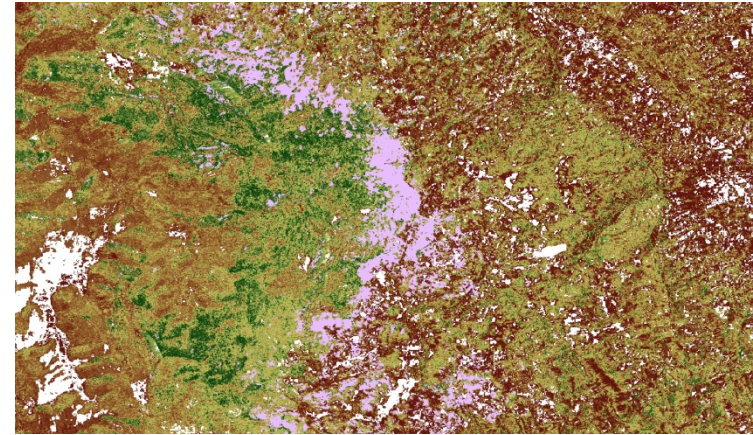
2015

Cloud Forest

To explore time series methods for identify cloud forest using Landsat or Sentinel data.

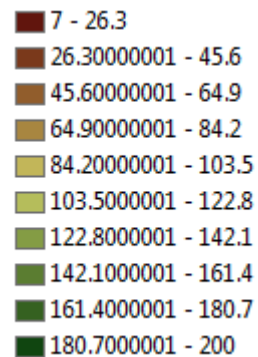


2005



2010

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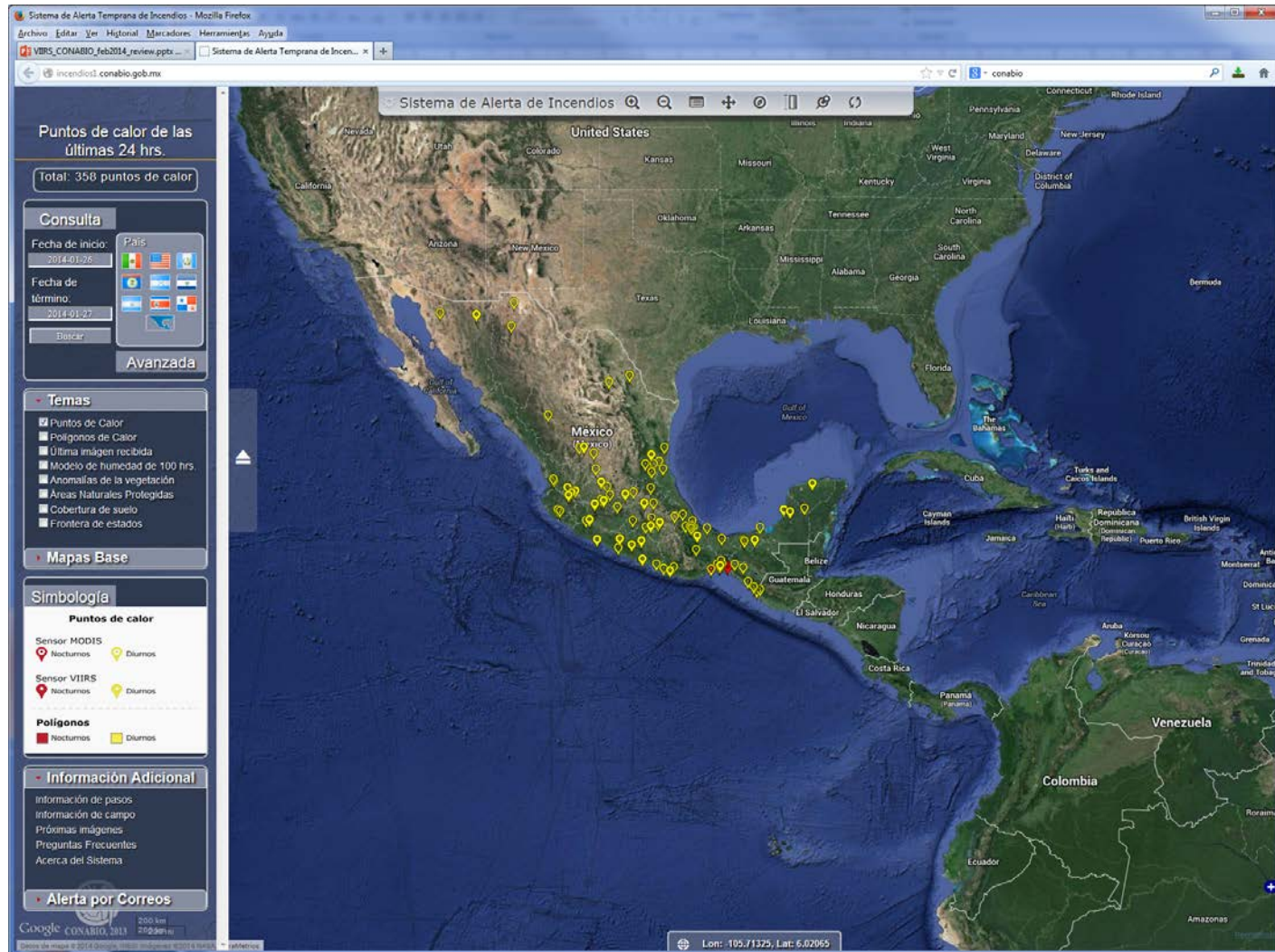


Cloud forest

Early Warning System for Forest Fire

CONABIO started monitoring active fires in 1999 with AVHRR data.

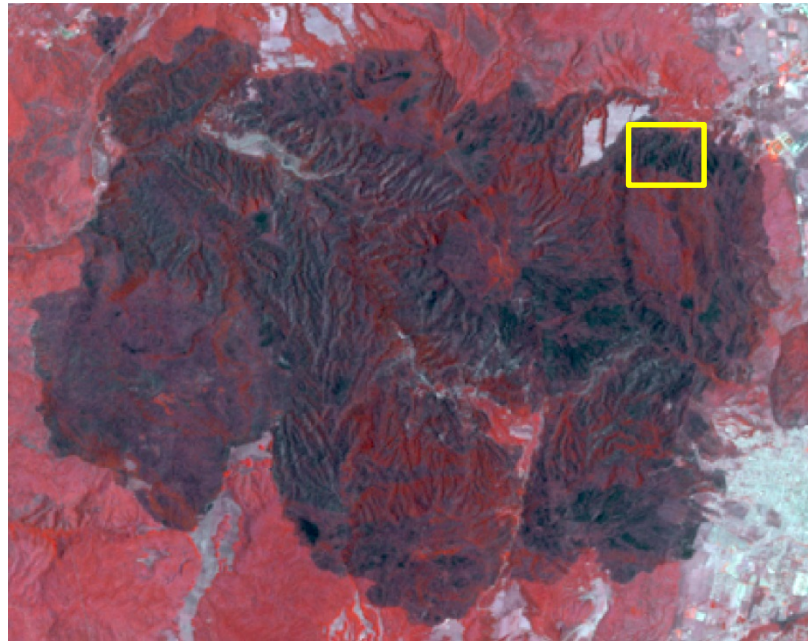
<http://incendios1.conabio.gob.mx/>
(2014 version)



Biomass Consumed by Fires

Fire date: from April 23th to May 8th, 2012

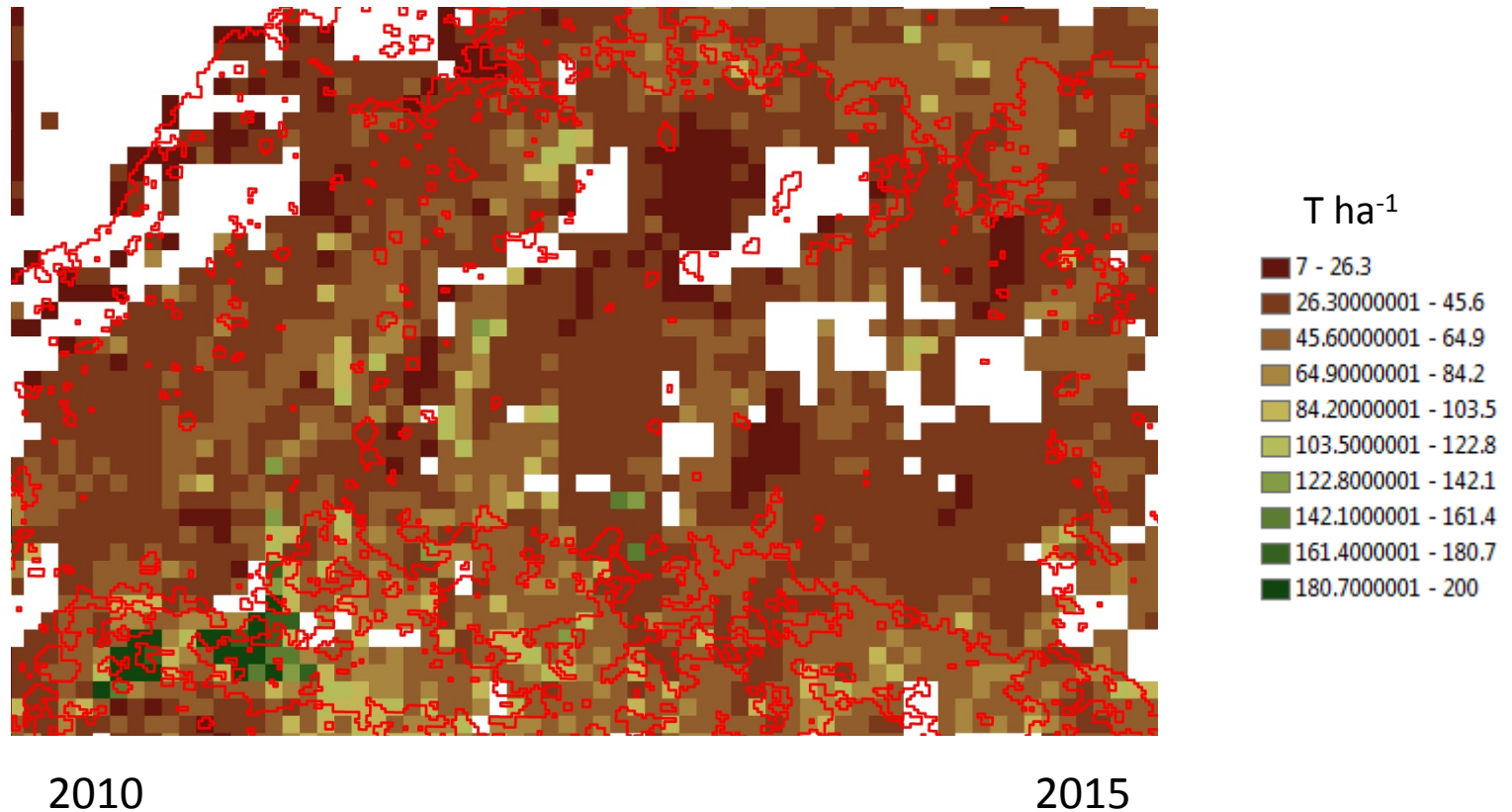
Burnt area was identified using RapidEye images



Burnt area in La Primavera Forest

We expected to find changes in this area between 2010 - 2015

Biomass Products



Uses:

- Quantify biomass consumed
- Evaluate effects over biodiversity
- Forest fires emissions

Summary

Uses

- Characterize mangrove and their changes
- Modelling land cover change
- Quantify and monitoring blue carbon
- Identify and characterize cloud forest
- Quantify biomass consumed
- Evaluate fire effects over biodiversity
- Emission

Challenges

- Evaluate 2015 map in order to identify the reason of differences
- Information about validation by areas (topography) or vegetation type.
- Due to variability in pixel level:
 - a) is it recommendable aggregate them?

Thank you

Gracias