UN-REDD PROGRAMME

National Forest Monitoring Systems for REDD+

Mongolia's National Forest Monitoring System Action Plan

Consultation Workshop

19-20th November 2013

Ulaanbaatar

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NATIONAL FOREST MONITORING SYSTEMS FOR REDD+:

Overview and Forest Monitoring for REDD+

19-20th November 2013

Ulaanbaatar

Presentation Outline

- International guidance on national forest monitoring systems for REDD+
- Forest monitoring for REDD+
- Satellite remote sensing
- Web-GIS portals
- Community forest monitoring

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National Forest Monitoring Systems for REDD+

INTERNATIONAL GUIDANCE

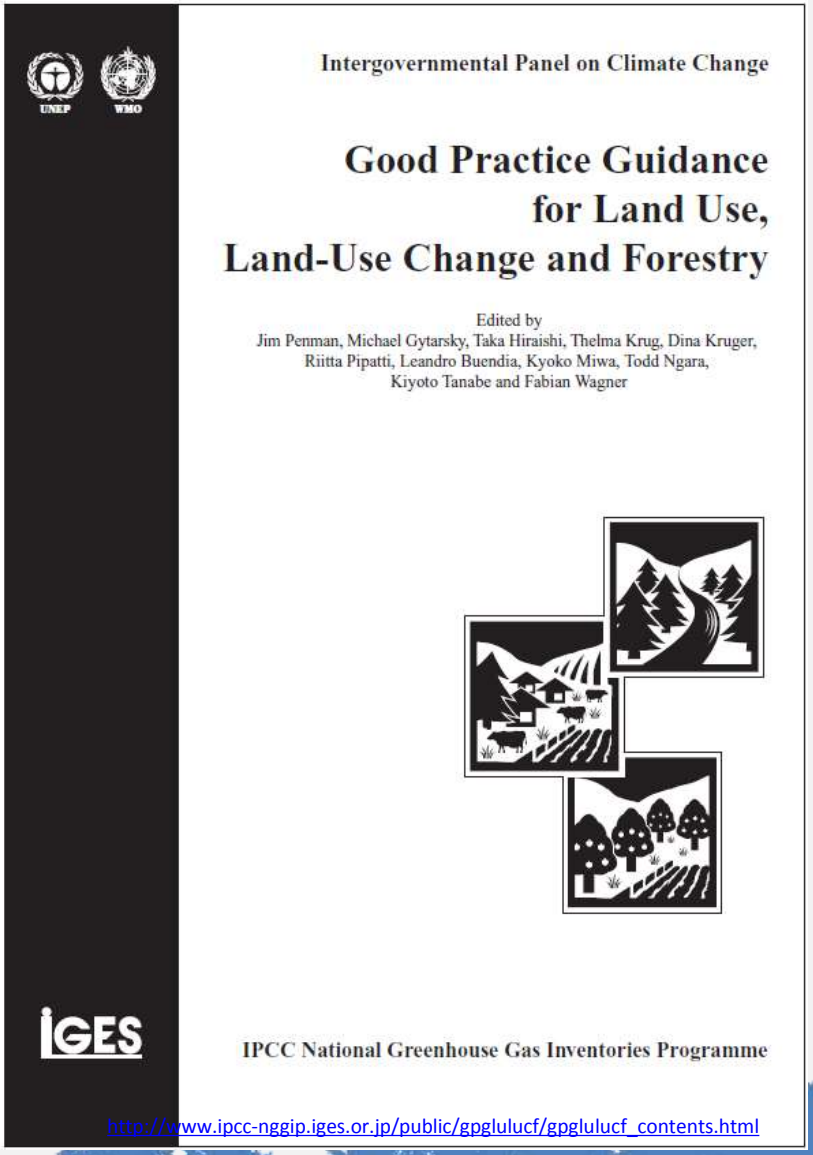
UNFCCC: **COP15 – Copenhagen, 2009**

- Decision 4/CP.15:

"Methodological guidance for activities relating to reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries"

- Article 1:
  - Requests **developing country Parties**, on the basis of work conducted on the methodological issues … in particular those relating to **measurement and reporting**:
    c. To use the most recent **Intergovernmental Panel on Climate Change** guidance and guidelines, as adopted or encouraged by the Conference of the Parties, as appropriate, as a basis for estimating anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes

IPCC Guidance and Guidelines



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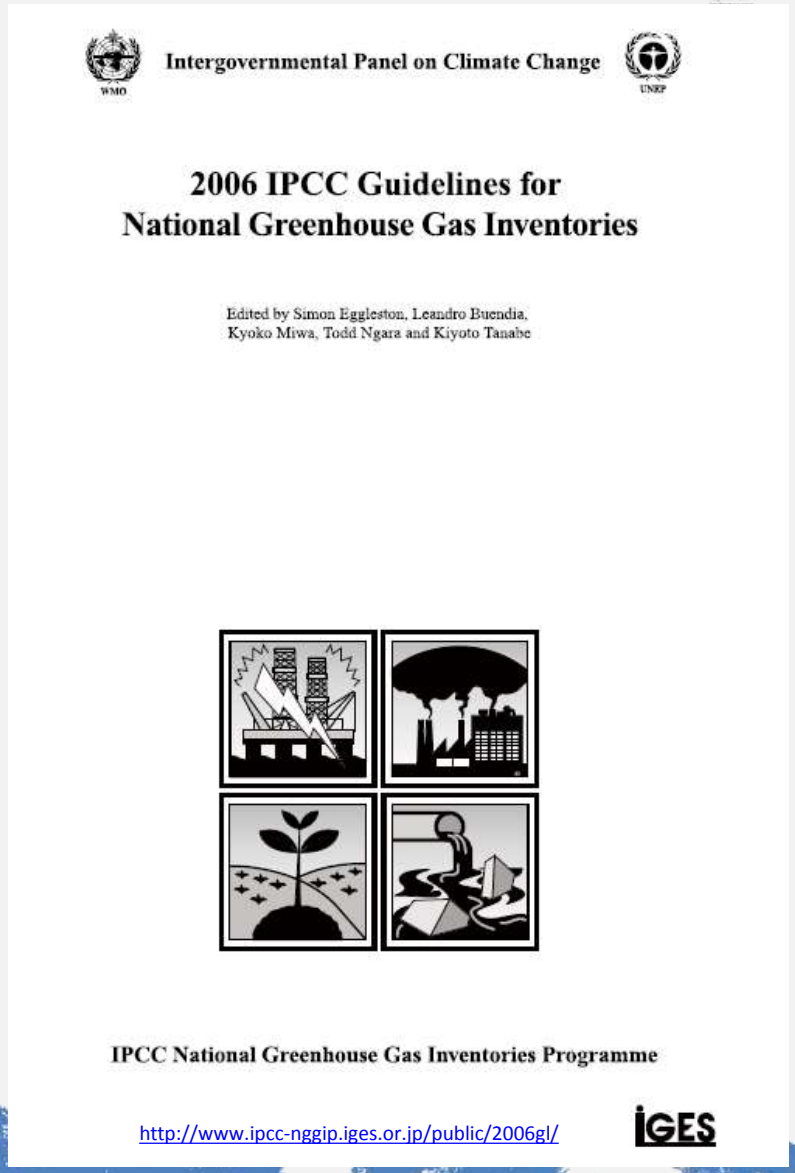


http://www.ipcc-nggip.iges.or.jp/public/2006gl/

Copenhagen Decision 4/CP.15

- Decision 4/CP.15, Article 1:

d) To establish, according to national circumstances and capabilities, robust and transparent **national forest monitoring systems** and, if appropriate, sub-national systems as part of national monitoring systems that:

i. Use a **combination** of remote sensing and ground-based forest carbon inventory approaches for **estimating**, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes; **MEASURABLE**

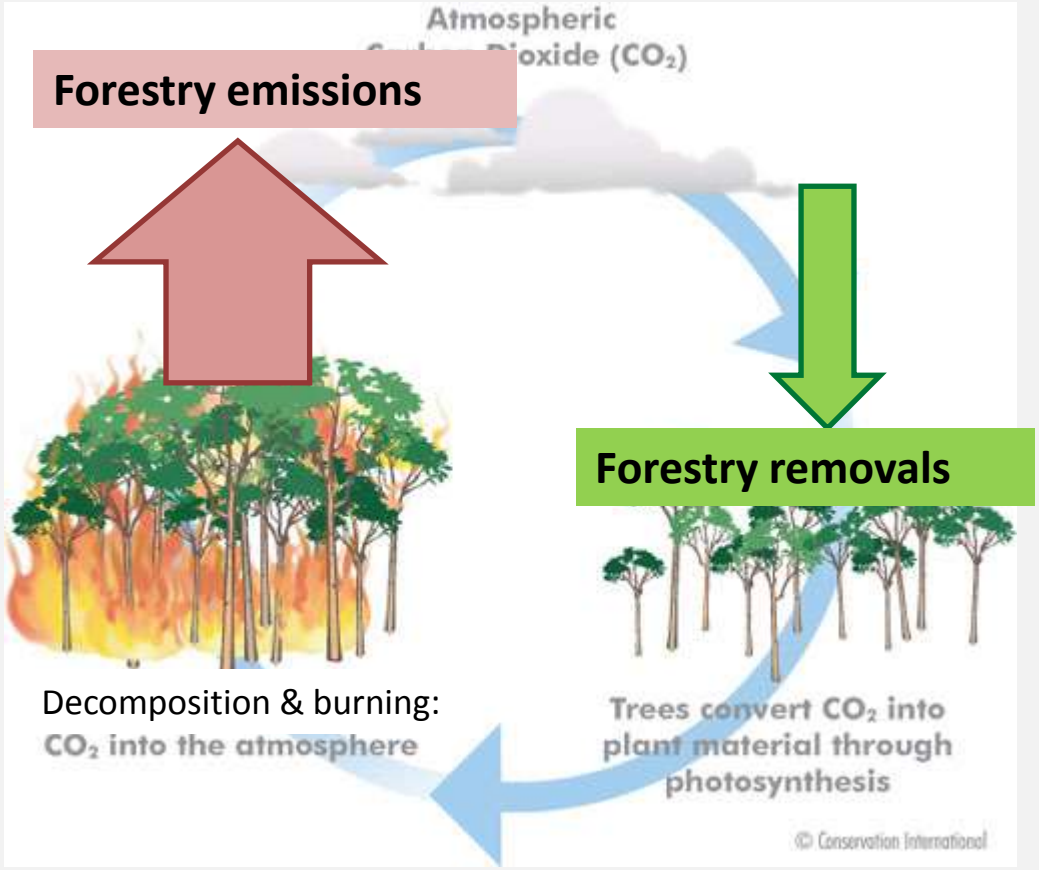
ii. Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities; **REPORTABLE**

iii. Are transparent and their results are available and **suitable for review** as agreed by the Conference of the Parties; **VERIFIABLE**

MRV

Copenhagen Decision 4/CP.15

- SUMMARY:
- Decision 4/CP.15 provides **methodological guidance for REDD+**
- → **National forest monitoring systems** are required to **measure GHG emissions and removals** from forestry



Cancun Decision 1/CP.16

- Paragraph 71: Requests developing country Parties aiming to undertake REDD+ activities to develop:
  - (c) A national forest monitoring system for the **monitoring and reporting** of **REDD+ activities** (with, if appropriate, subnational monitoring & reporting as an interim measure)
- Paragraph 77: … for the full implementation of **results-based actions**[8]
  - [8] these actions require national forest monitoring systems
  - REDD+ actions must be "**results-based**" (a key concept for REDD+)
- → National forest monitoring systems to be used to **monitor the outcomes** of REDD+ activities

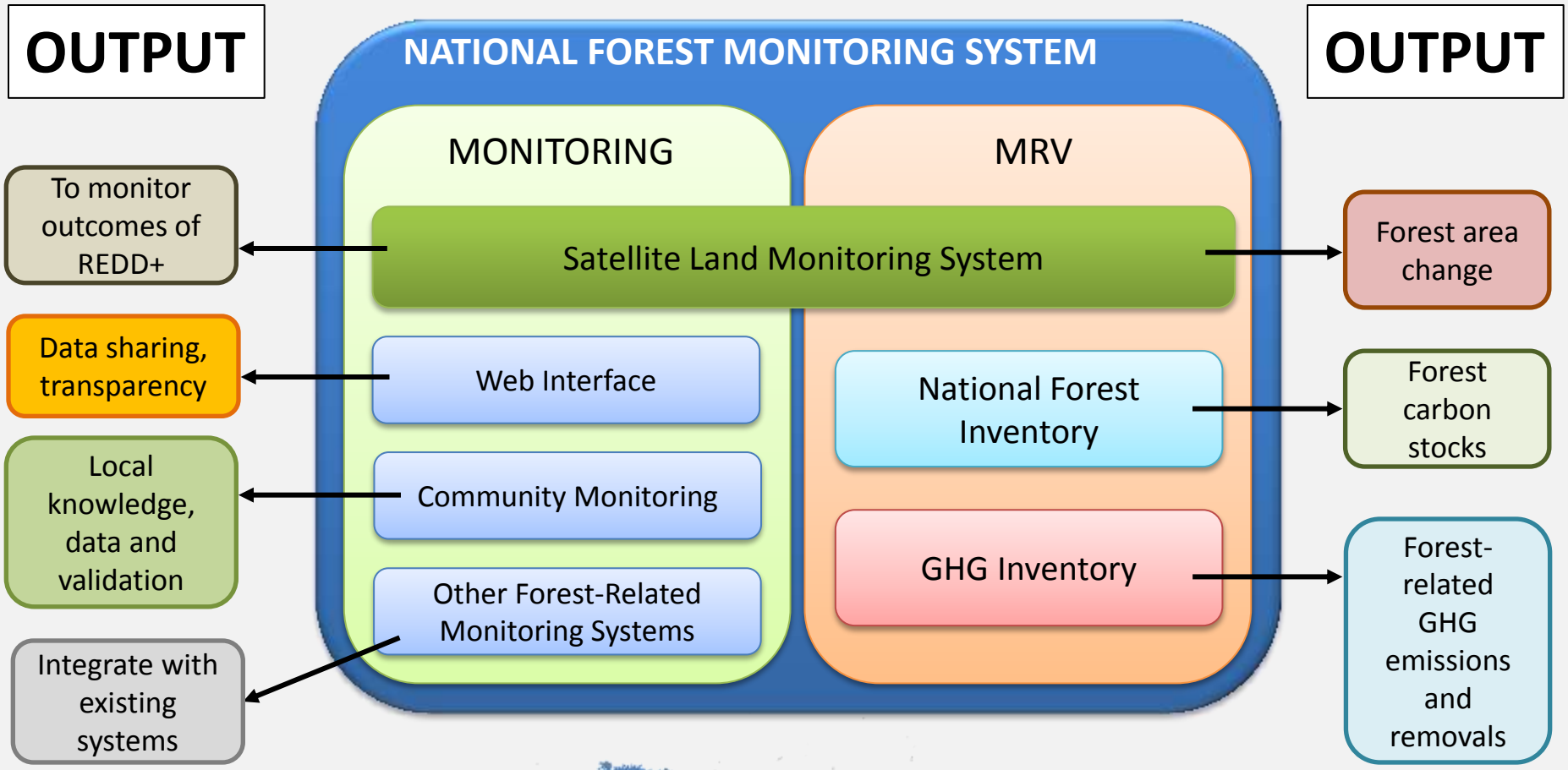
Two functions of a National Forest Monitoring System for REDD+

- UNFCCC decisions tell us that National Forest Monitoring Systems have **two functions**:

  - **A Monitoring Function**
    - To **monitor** **outcomes of REDD+ activities**

  - **A MRV Function**
    - To **measure** & **report** on the greenhouse gas **mitigation performance** of REDD+ activities (emissions & removals in CO_2-equivalents) to the UNFCCC; which then undergoes **verification**

Two functions of a National Forest Monitoring System for REDD+



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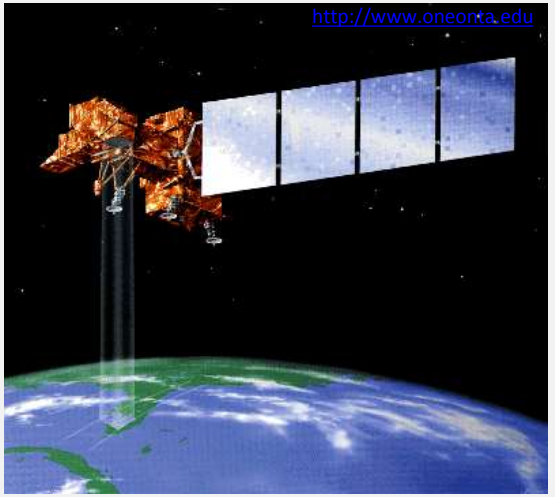
National Forest Monitoring Systems for REDD+

MONITORING FUNCTION

Forest Monitoring for REDD+

- Land and forest monitoring is not a new concept
- Governments need to monitor their forests for effective policy and decision making
- In the context of REDD+, policy makers need feedback to know whether their policies to implement REDD+ activities are working or not
- Central concepts of forest monitoring for REDD+:
  - Build on existing systems
  - Find sustainable, inclusive & cost-effective solutions
- One cost-effective and efficient way to do this is by using remote sensing data, including satellite imagery
  - Large area coverage
  - Lots of data available free



Forest Monitoring for REDD+

- Purpose of monitoring for REDD+: To assess whether REDD+ activities are working

- Phased implementation of monitoring for REDD+
  - ***Phase 2***: Monitoring of REDD+ demonstration activities
  - ***Phase 3***: National monitoring of REDD+ policies and measures

- Combination of tools to gather a range of data/information
  - ***Satellite remote sensing***: Cost-effective to large area coverage
  - ***Web-GIS portal***: To share data transparently
  - ***Community monitoring***: Bottom-up validation of satellite data, incorporation of local knowledge into national monitoring
  - ***Other forest monitoring systems***: Build on existing systems (e.g. systems to monitoring logging concessions or protected areas)

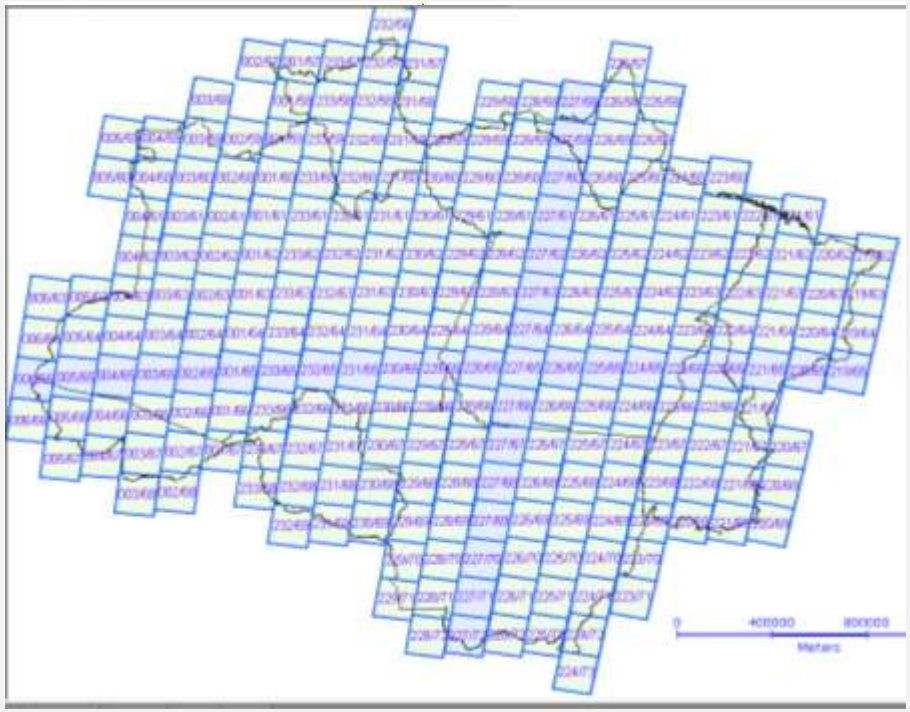
Forest Monitoring for REDD+

Satellite Remote Sensing: Brazil

- Brazil uses remote sensing satellite data to monitor deforestation and degradation in the Brazilian Amazon biome, which covers an area of 4.7 million square kilometers

- A deforestation map and deforestation rates are produced annually and disseminated over the internet

- The monitoring system requires complete satellite image coverage, with 20 to 30 meters resolution, which is acquired and processed automatically, then analyzed by technicians



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Satellite Remote Sensing: Brazil

- **TERRA-AMAZON**
  - GIS tool: multi-user editor of geographic vectorial data
  - Free software
  - Up to 20 concurrent users during the interpretation phase

- **PRODES – Amazon Deforestation Monitoring Project** (Deforestation Assessment)
  - Annual deforestation inventory – shared online via web-GIS portal

- **DETER – Near real-time Deforestation Detection with MODIS**
  - Daily detection of deforestation and forest degradation
  - Support for law enforcement for deforestation control

- **DEGRAD – Amazon Degradation Monitoring Project**
  - Annual forest degradation inventory

Forest Monitoring for REDD+

Satellite Remote Sensing: Brazil: TerrAmazon

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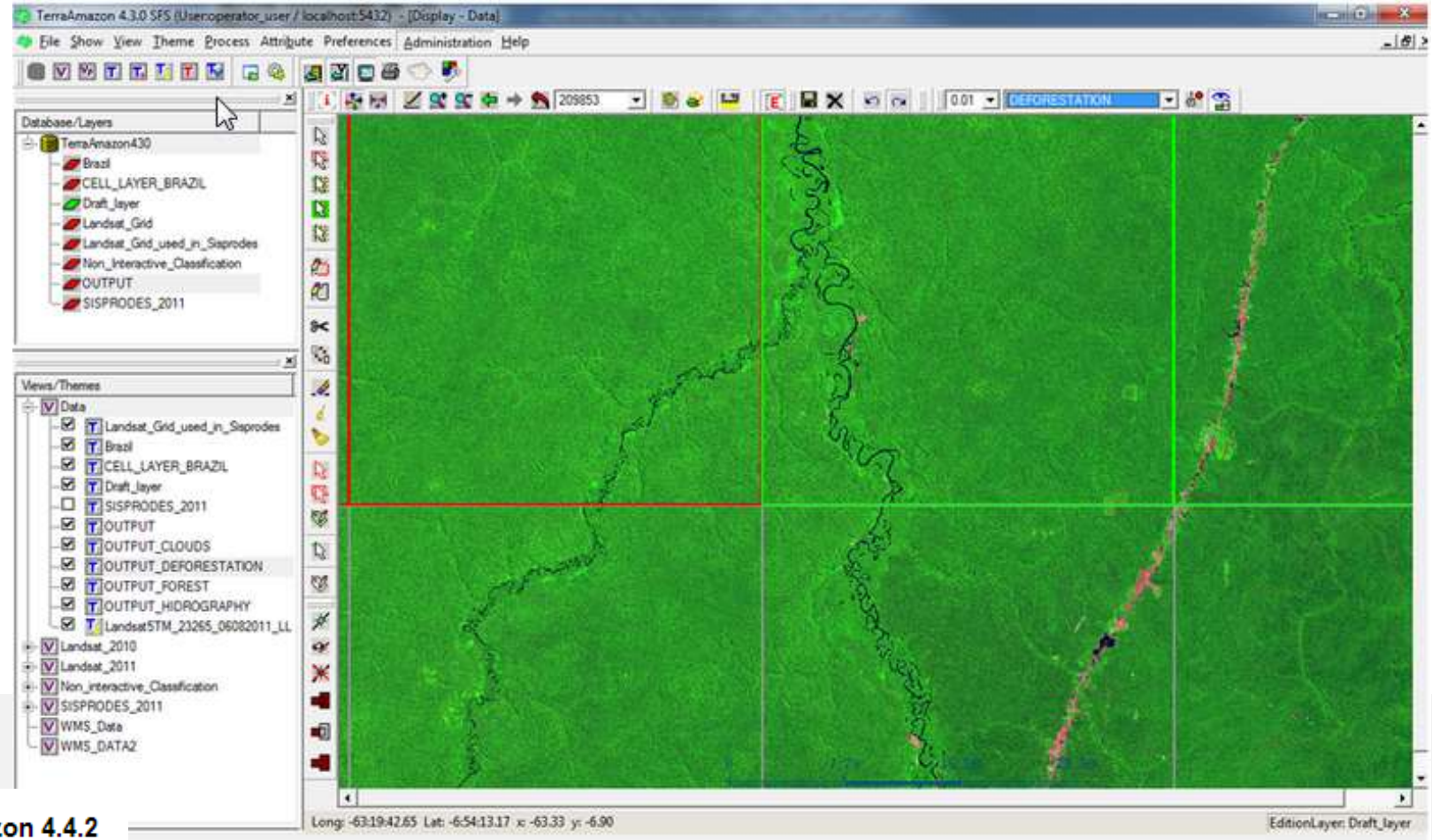

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TERRAMAZON

TerraAmazon 4.4.2
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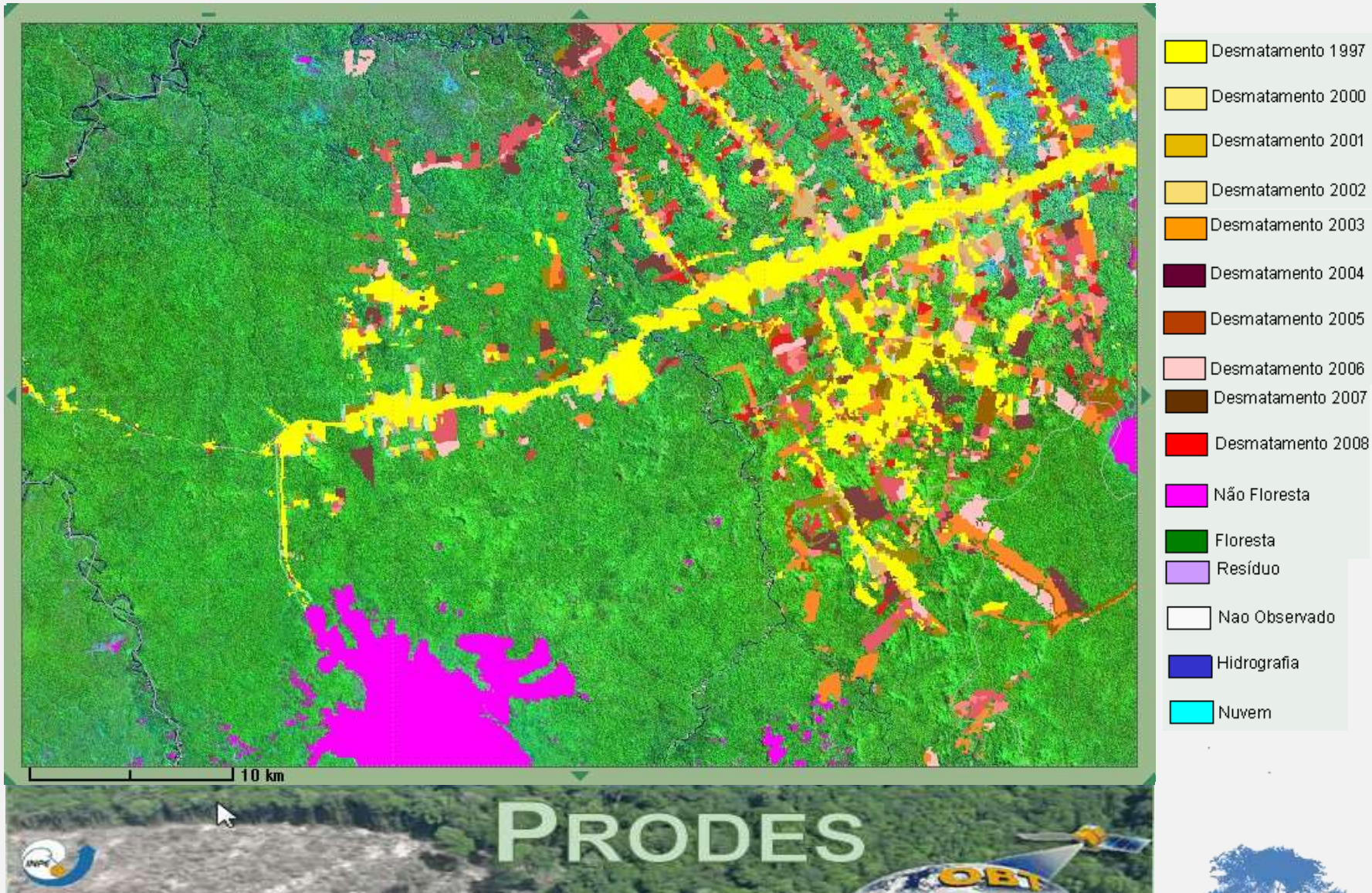
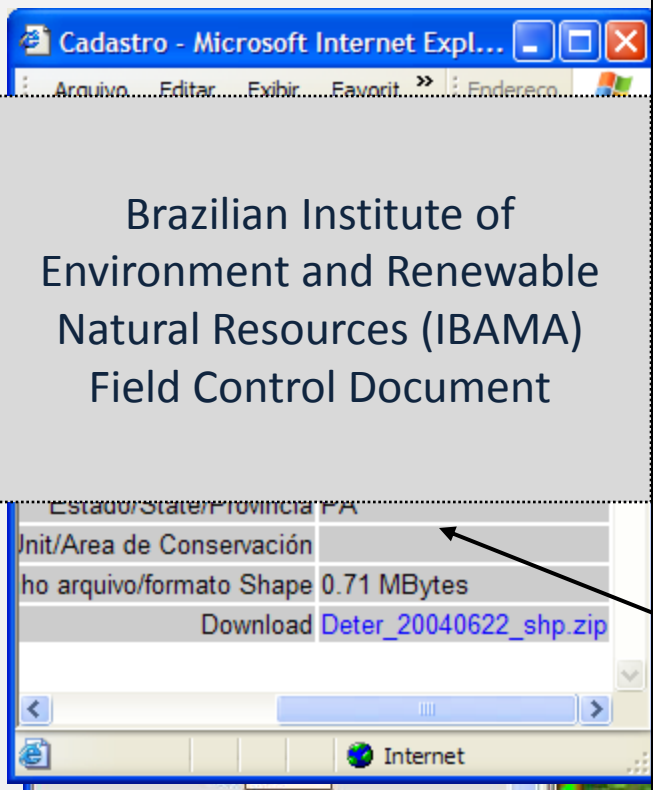
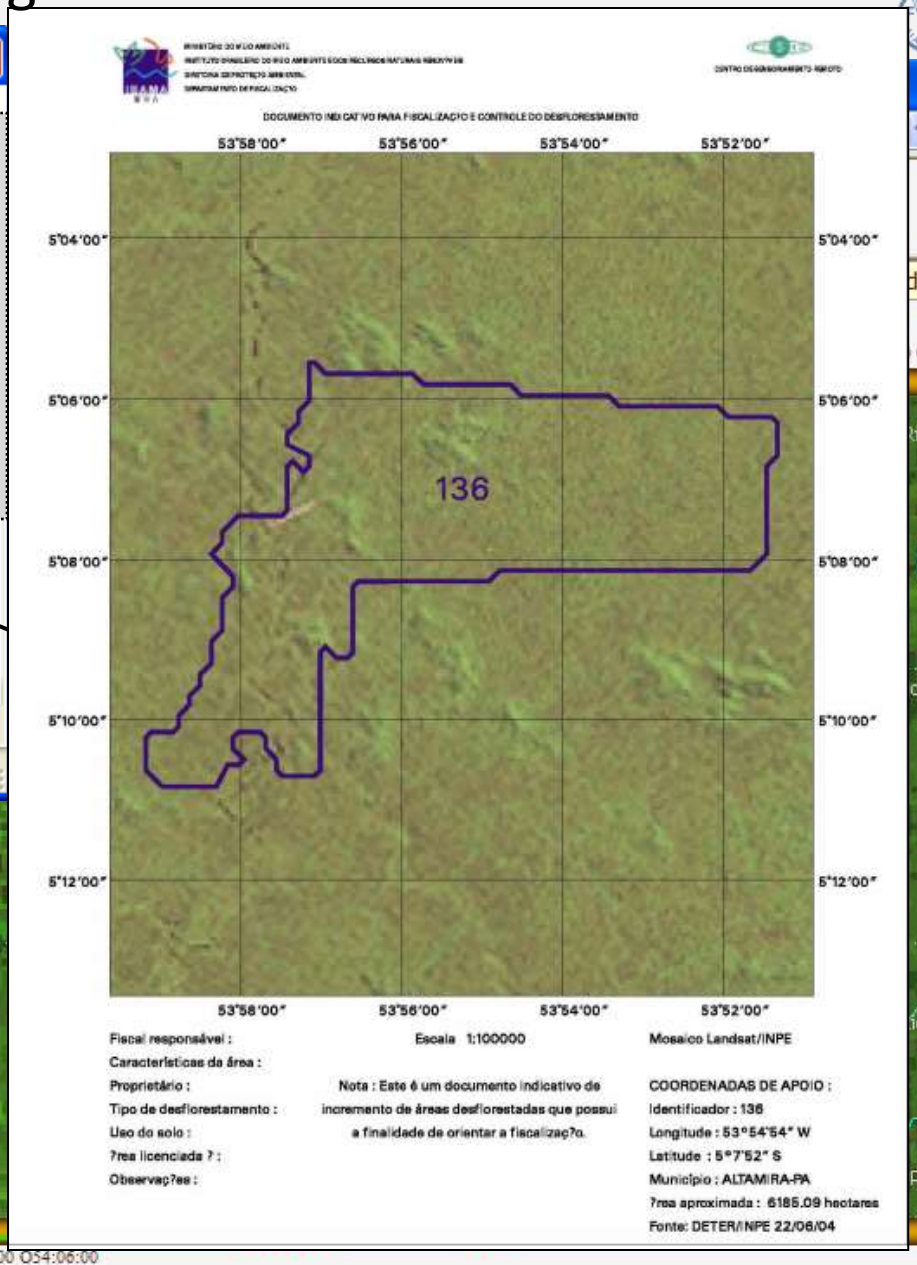
Satellite Remote Sensing: Brazil: PRODES



Satellite Remote Sensing: Brazil: DETER

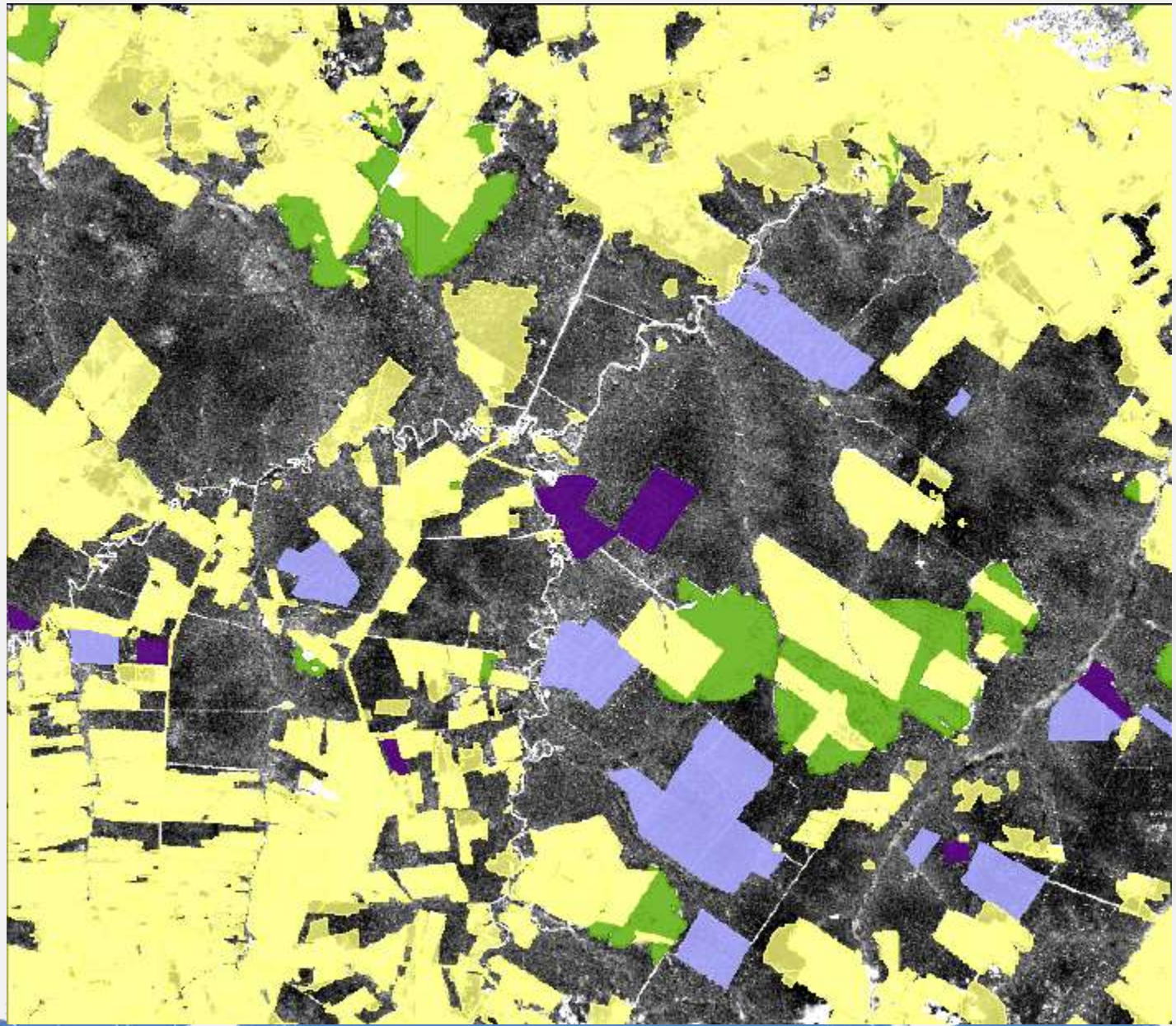
Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) Field Control Document





Forest Monitoring for REDD+

Satellite Remote Sensing: Brazil: DEGRAD



Forest Monitoring for REDD+

Web-GIS Portals

- Allows a country to monitor the outcomes of the implementation of its REDD+ policies and measures and communicate the results to the international community (transparent and open data access)

- Allows any user to interact with the system through a user-friendly web-interface
  - Visualise data
  - Manipulate data layers, e.g. to select areas and layers of interest
  - Download statistics
  - Visualise information on logging concessions, protected areas, REDD+ activities, etc.

- Allows users to provide feedback, e.g. on areas of deforestation

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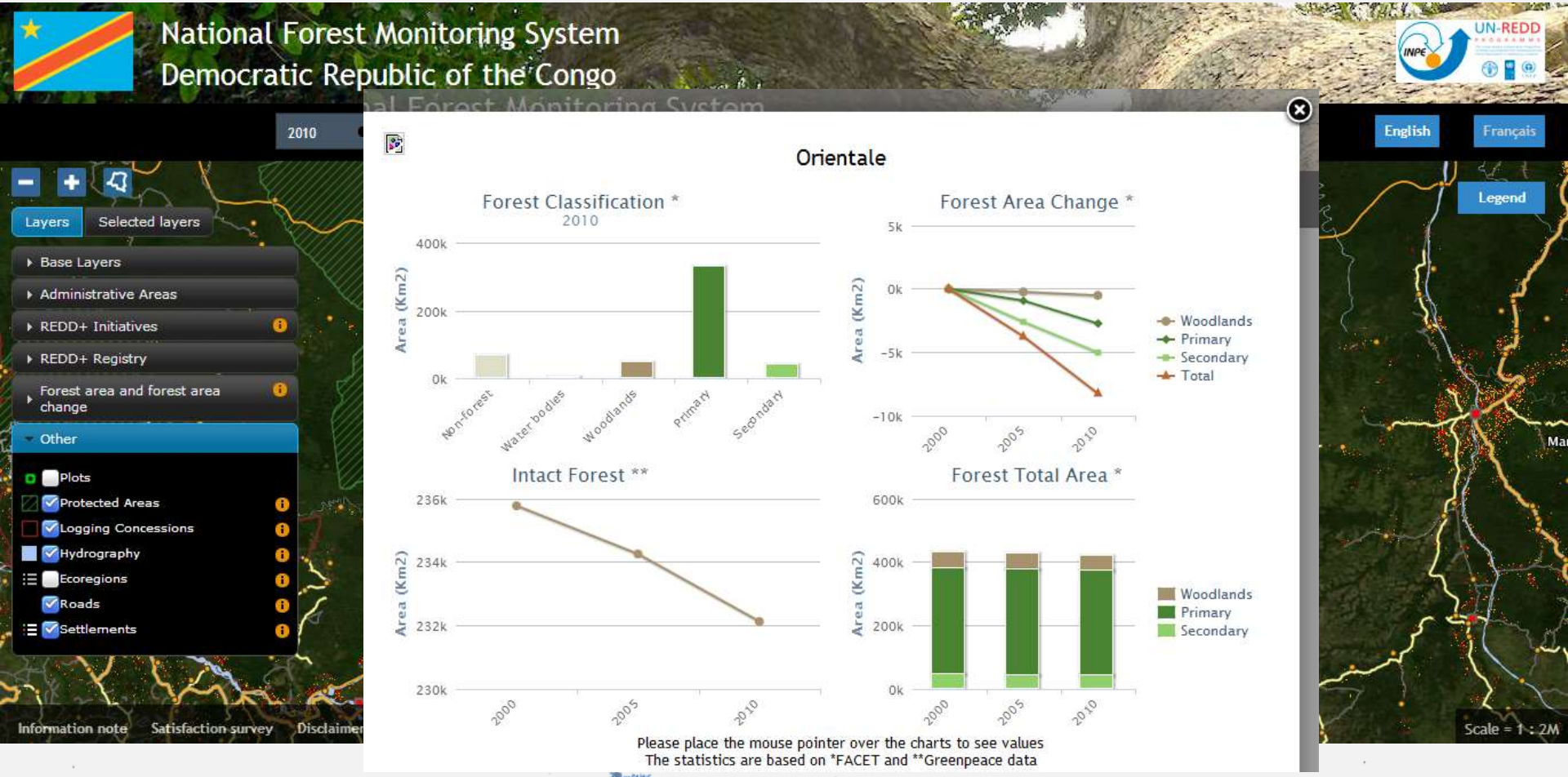
Web-GIS Portals: Democratic Republic of Congo



http://www.rdc-snsf.org

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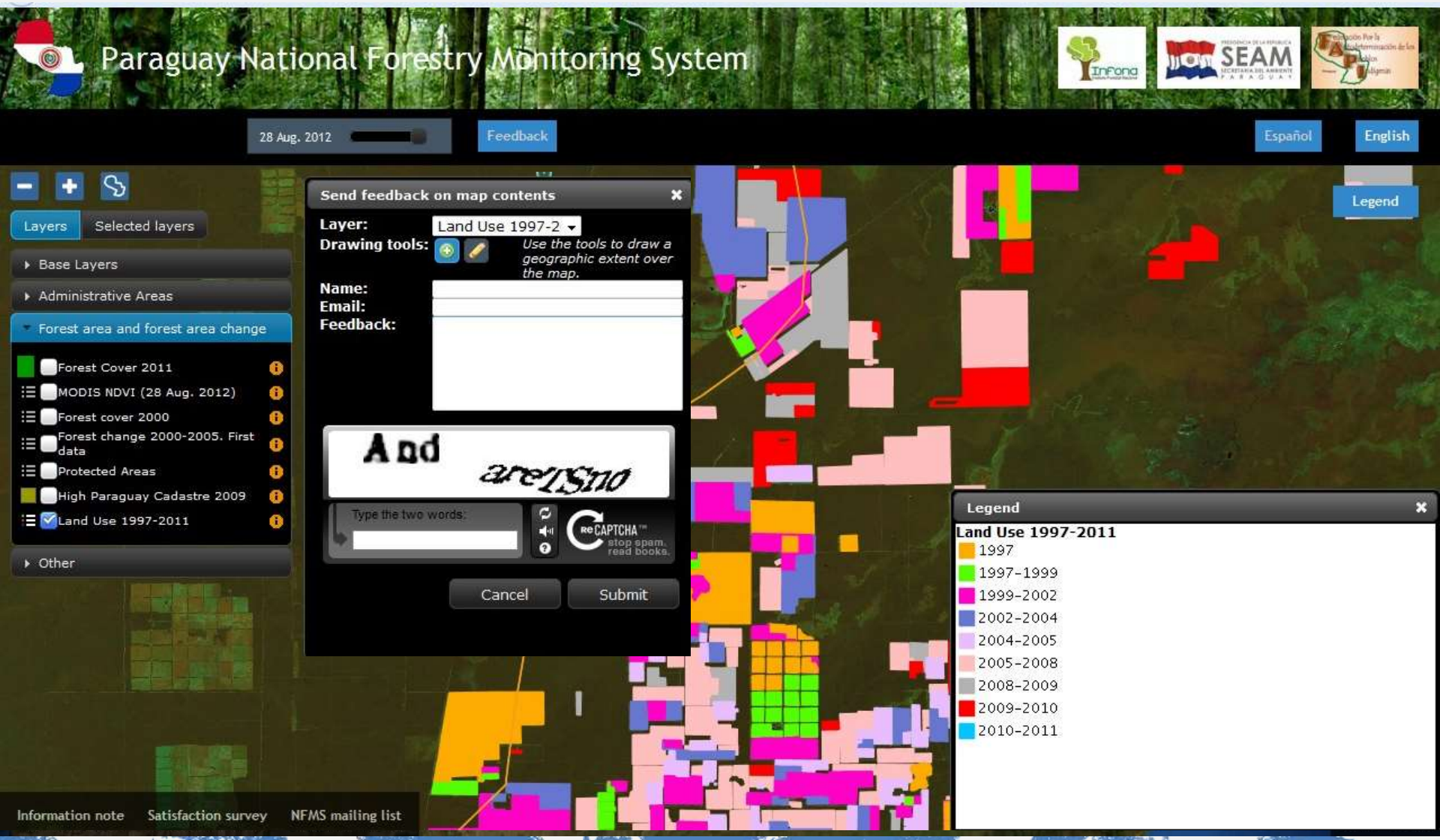
Web-GIS Portals: Paraguay



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Community Forest Monitoring

- Data/information collected at the community level can play a number of important functions for the national forest monitoring system:

1. Validate the accuracy of satellite data and its interpretation

2. Provide data that can only be collected at the local level, for example
    - GPS delineation of forest / crop / grassland areas
    - Tree counts
    - Information on forest monitoring / patrolling methods and frequency

3. Information on other impacts of REDD+, for example
    - Livelihoods and local income streams
    - Use and cost of forest products
    - Biodiversity conservation indicators

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Community Forest Monitoring

- Challenges for countries:
  - Determining which parameters they want monitored at the local level
  - Choosing indicators for monitoring
  - Providing training and equipment for community monitoring
  - Establishing two-way communication between local and national level monitoring
  - Determining the incentives to provide local communities for their monitoring efforts, and the means of distribution

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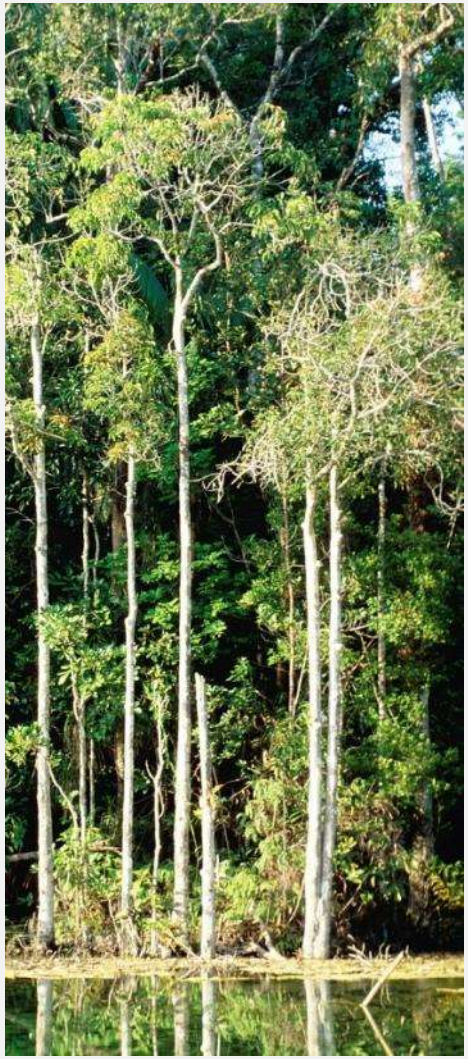

Thank you

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