The Global Forest Resource Assessment and Remote Sensing Survey:

Better global data on forest area change

work by FAO and partners

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Data provided by USGS and NASA

www.fao.org/forestry/fra2010-remotesensing/en/

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EUROPEAN COMMISSION

EuropeAid

JRC

USGS

science for a changing world

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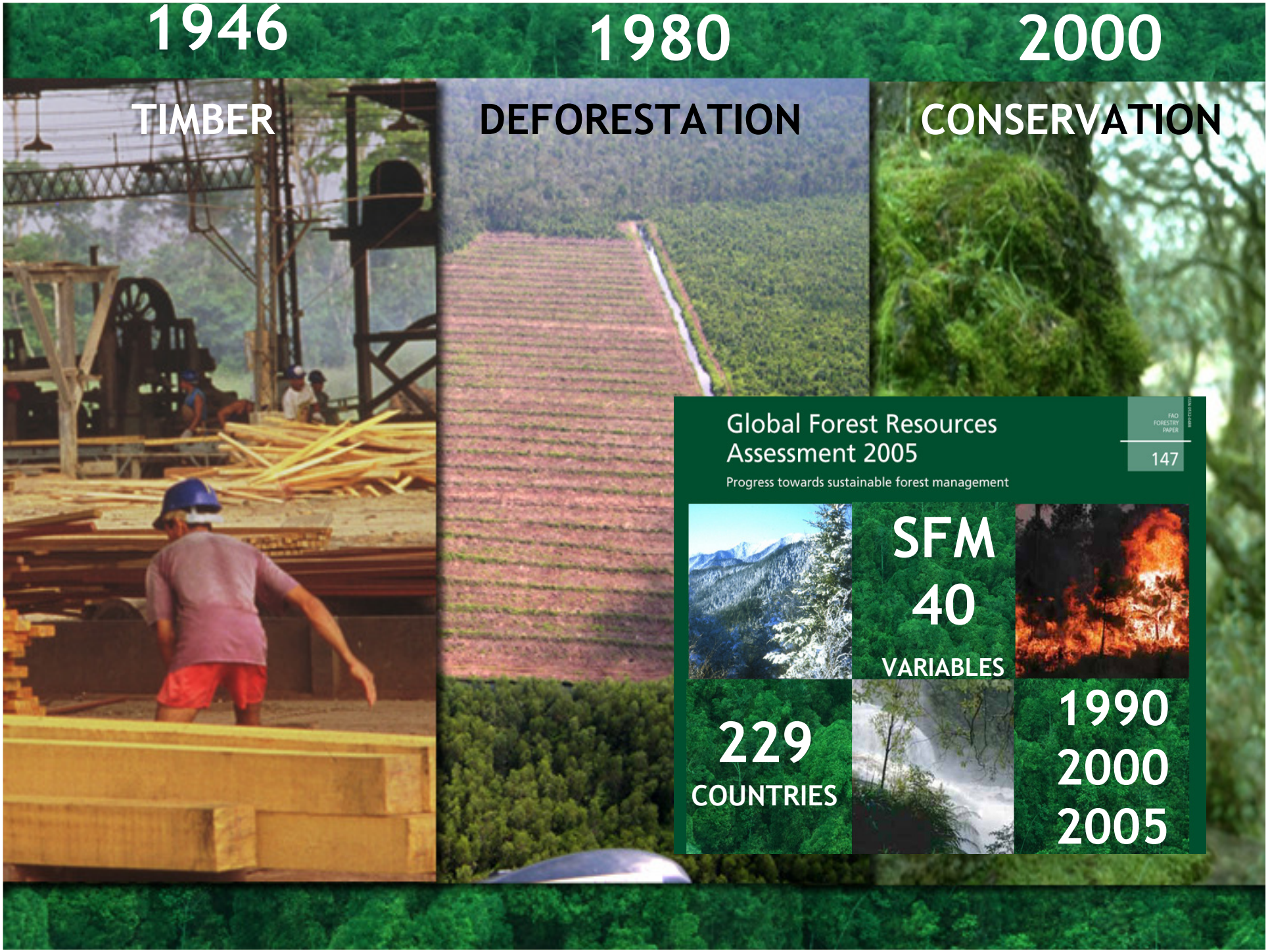
FRA-SAR

FAO FIAT PANIS


1946
1980
2000
TIMBER
DEFORESTATION
CONSERVATION
Global Forest Resources Assessment 2005
Progress towards sustainable forest management
FAO FORESTRY PAPER
147
SFM
40
VARIABLES
229
COUNTRIES
1990
2000
2005

Country reporting to FRA

Backbone of the FRA process

- over 176 countries, up to 233 incl. Territories

Status and trends for more than 50 variables

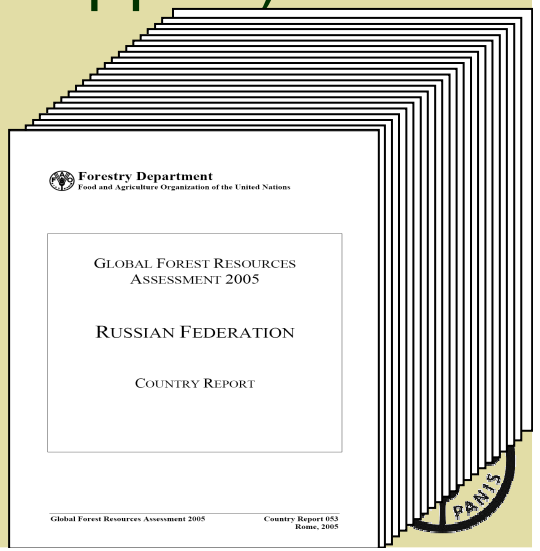
- extent of forest, growing stock, biomass, carbon
- same carbon pools as defined by IPCC

valuable Network of National Correspondents

Capacity building (workshops, direct support)

can be valuable input to UN-REDD

UN-REDD benefit to FRA as well!

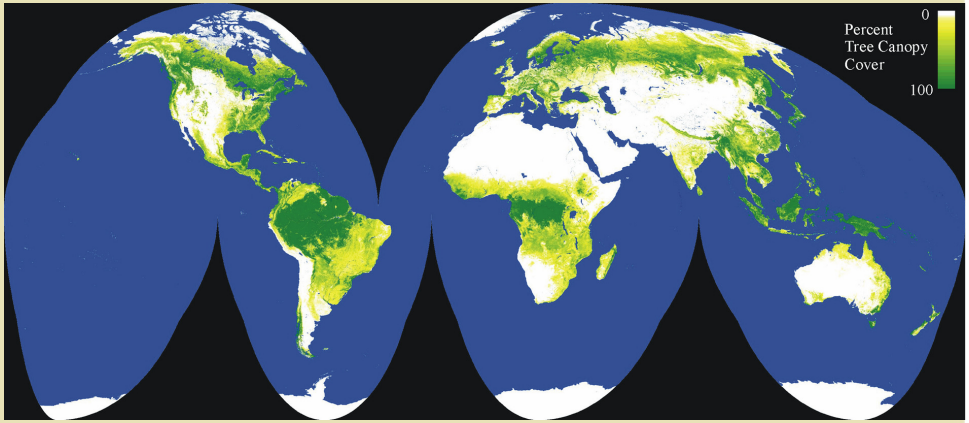


Why we are doing a Remote Sensing Survey

- **We need new updated global forest maps**
- **Strong links between forests and climate change**
  - key data for climate analysis = forest area, type and change (deforestation / afforestation, natural expansion)
- **Remote sensing can:**
  - provide more consistent global forest area data
  - can be done in the same way for different time periods
  - generate better historical data for forest area & change
  - improve the forest reporting capacity of many countries

Expected outputs – products

1. New global tree cover maps (250 m resolution) from MODIS satellite, will be annual from 2000



2. **Global and regional *trends* in forest extent for 1975 – 1990 – 2000 – 2005:**
   - area change stats (from Landsat samples 30m detail)
   - land use dynamics

Expected benefits

3. A long-term monitoring framework for forests, land use and environment **(e.g. can contribute to REDD)**

4. Improved capacity to consistently monitor forest area and change over time

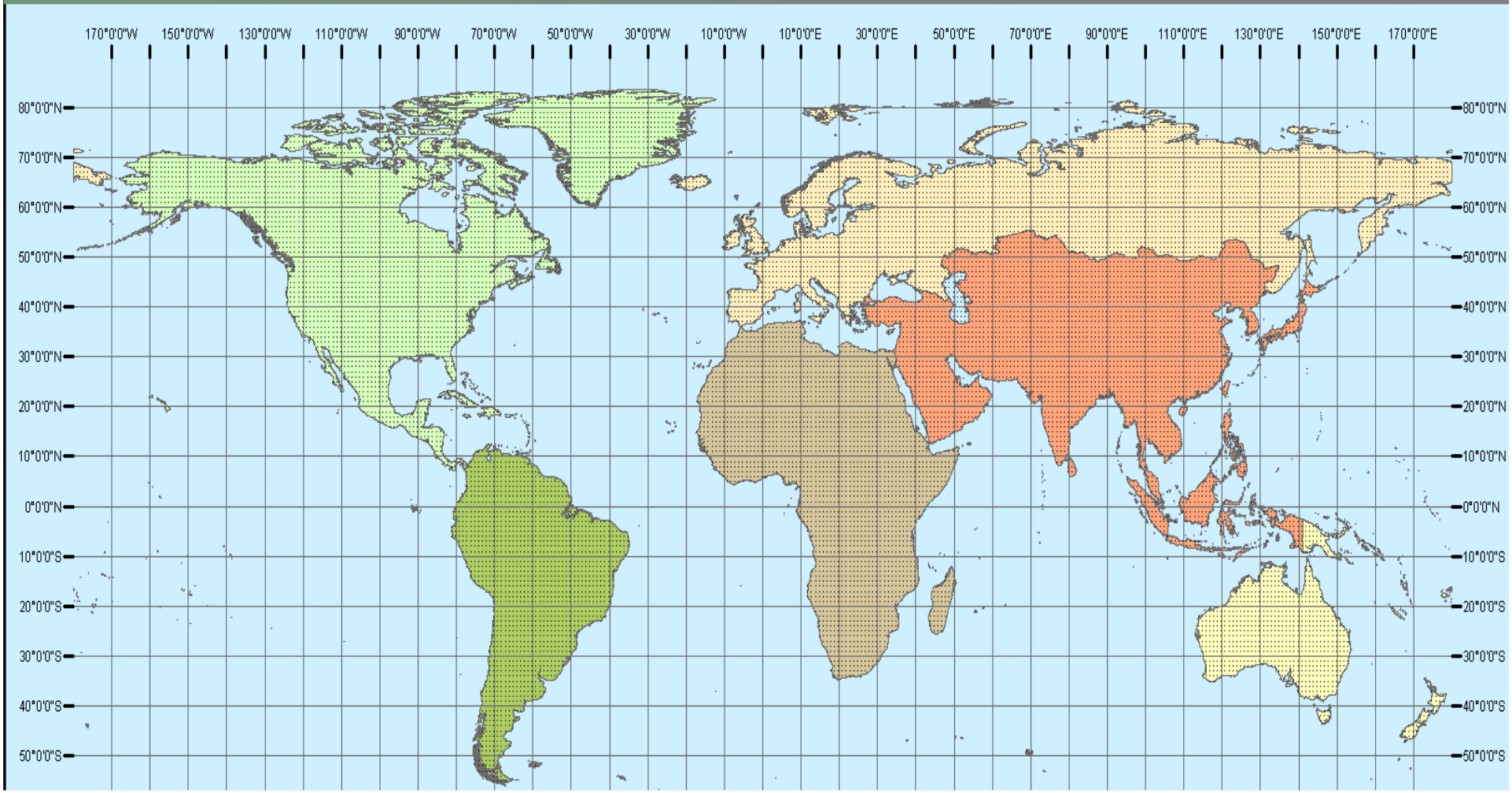
5. Baseline data for research & modeling

The 1 degree lat-long sampling grid

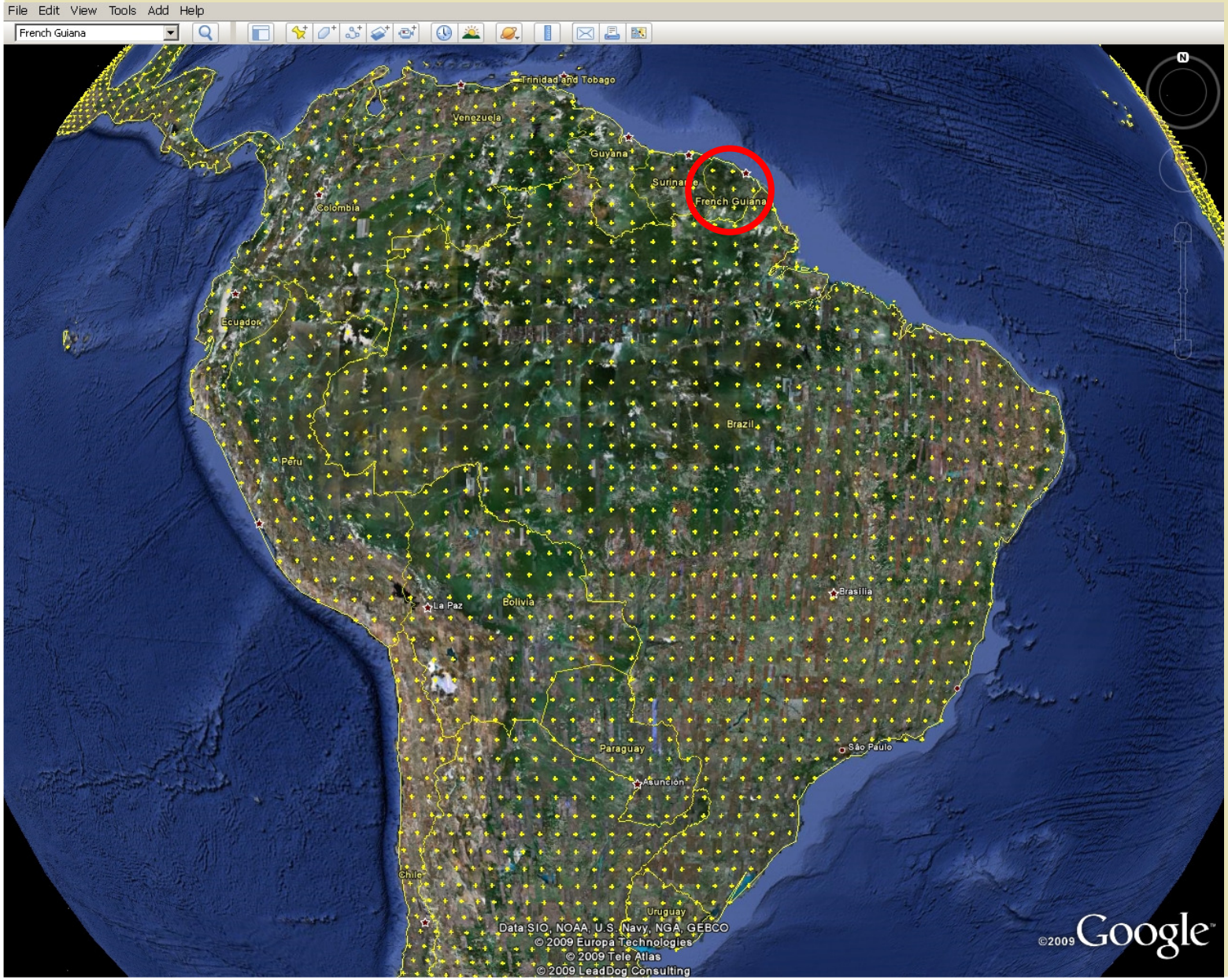
- LANDSAT imagery (30m resolution) every 1 degree lat-long: 10 km x 10 km

⇛ ~ 13 000 sampling sites (excluding poles and deserts)

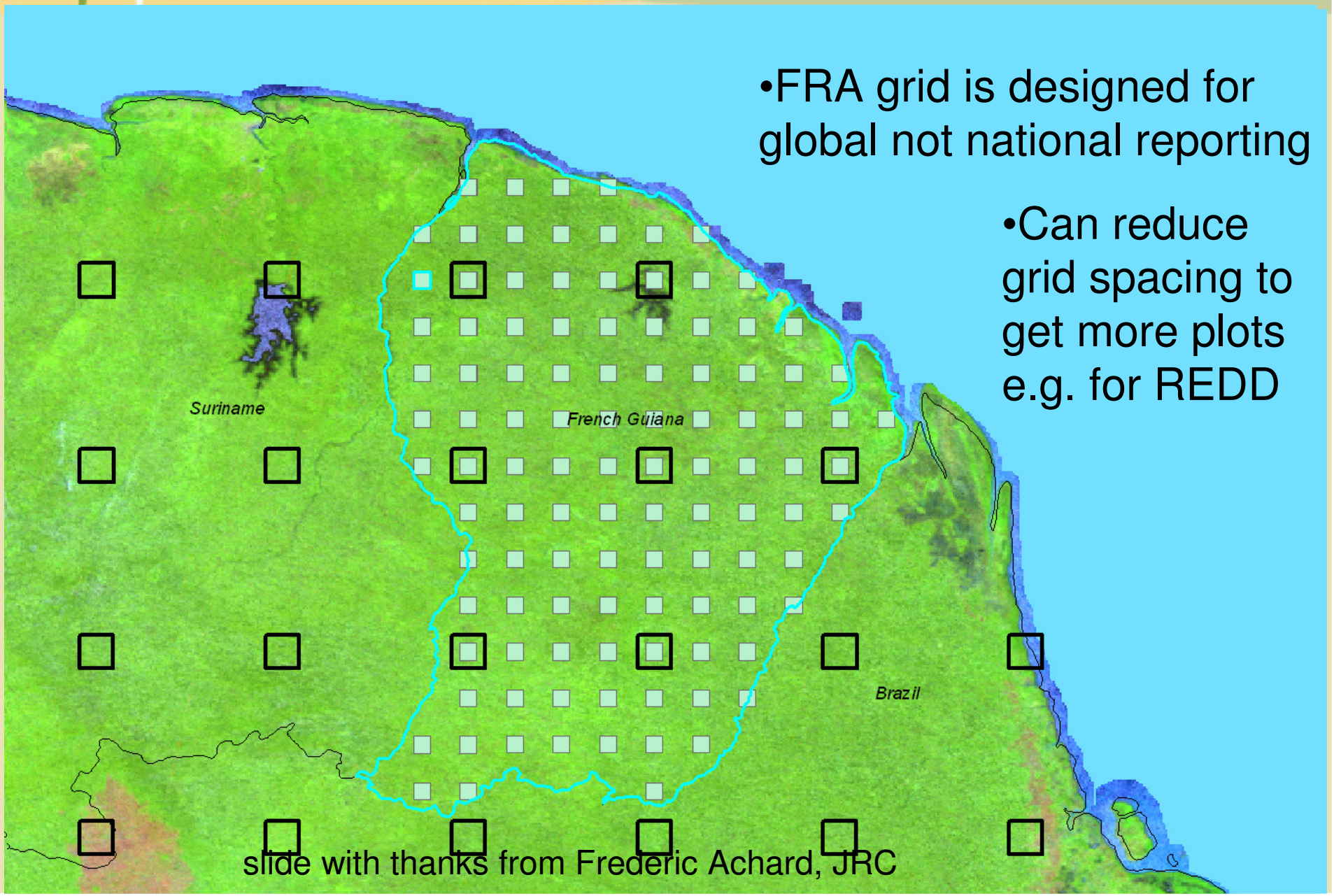
⇛ Sampling intensity: about 1 % (1.2 % of land surface)



The 1 degree lat-long sampling grid



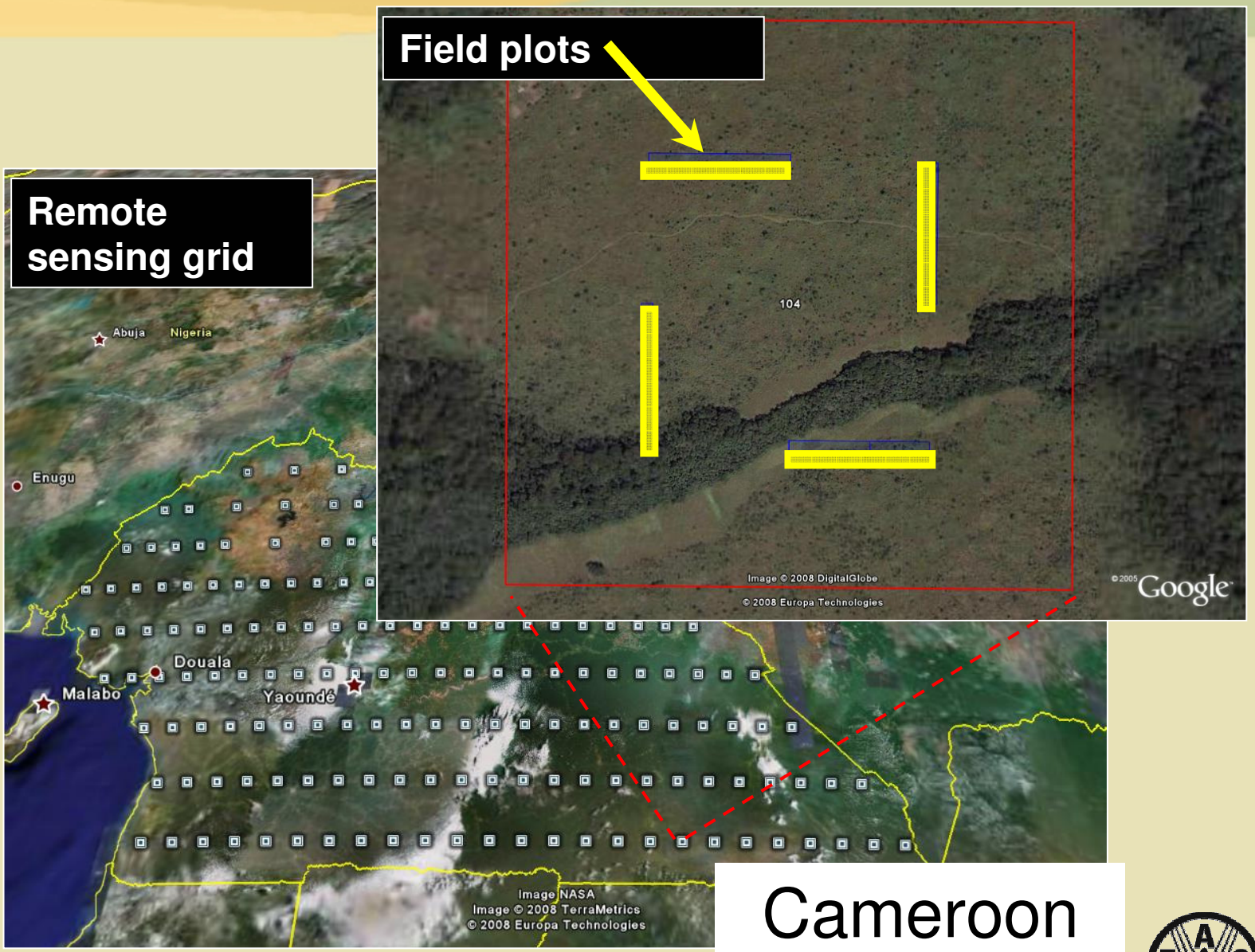
Countries can build on the global grid framework



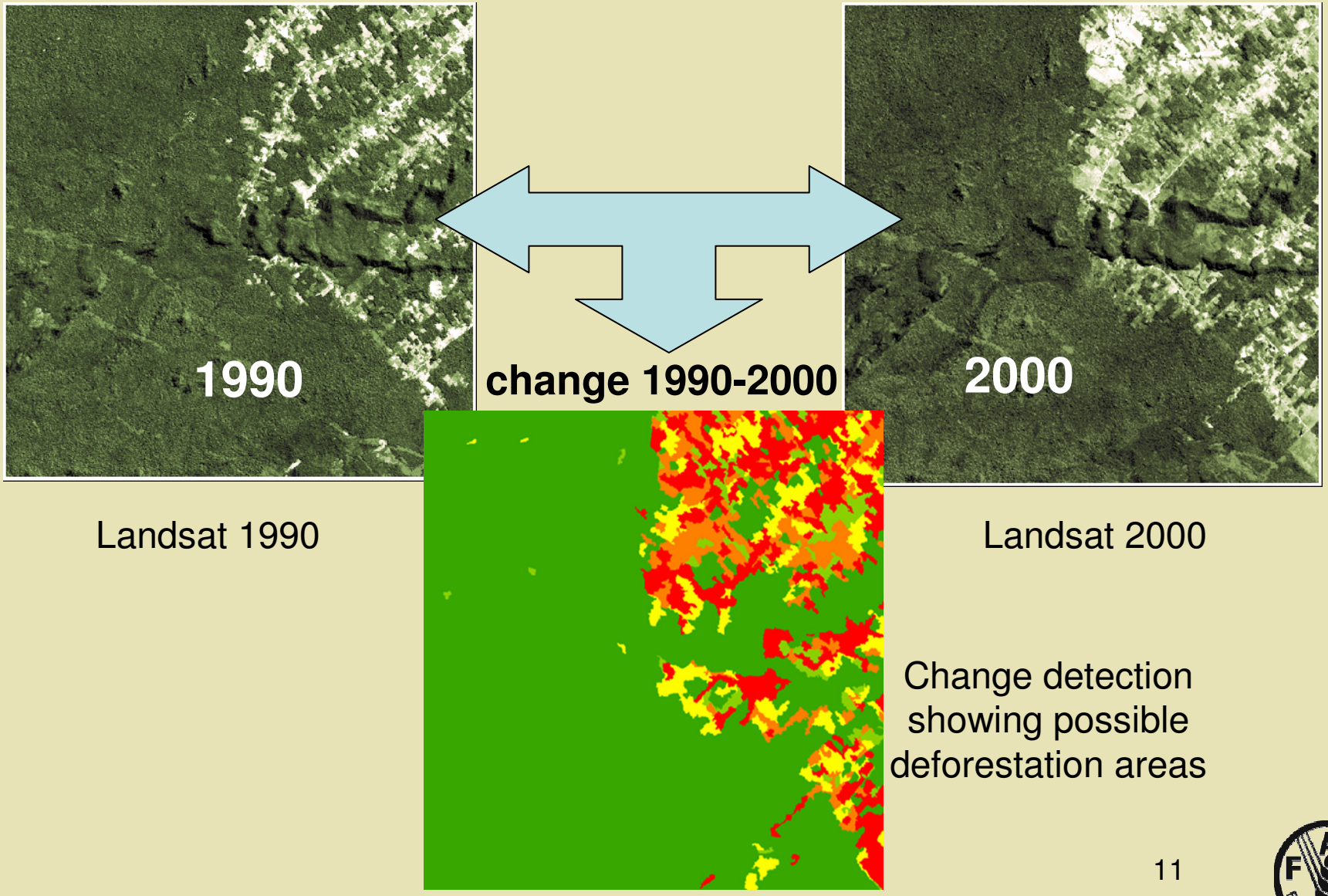
- FRA grid is designed for global not national reporting
- Can reduce grid spacing to get more plots e.g. for REDD

slide with thanks from Frederic Achard, JRC

Linking remote sensing with ground surveys



Remote sensing change detection



Landsat 1990

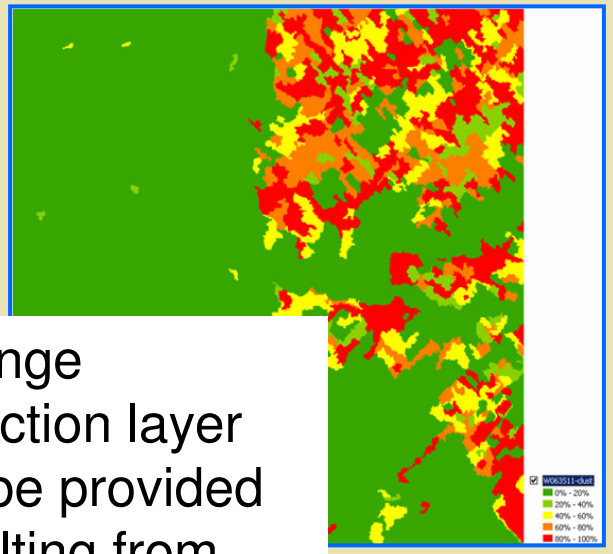
Landsat 2000

Change detection showing possible deforestation areas

Land use / land cover legend

- Countries will be asked to label changes in forest area, focusing on the red and yellow polygons where change is likely from RS imagery
- Simple legend based on the FAO Global Land Cover Classification System (LCCS)
- Where forest loss is identified, label with the new land use classes (e.g. most will be classes 4-7):

1. Forest
2. Other wooded land
3. Other land with tree cover
4. Grassland/range/herbaceous
5. Agricultural crops
6. Built-up area
7. Other non-vegetated areas
8. Water
9. No data



Change detection layer will be provided resulting from time series analysis

IMPLEMENTATION

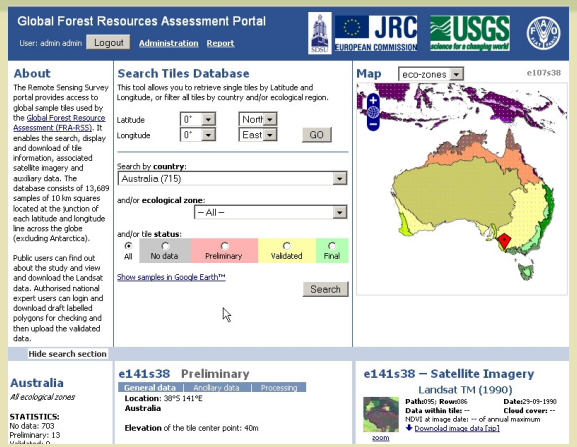
- Standard framework and classification system
- FAO and partners will do most processing (blue)
- Involvement of countries and national experts is vital step in 2009 and 2010 (green box)
- Support to countries to obtain and process satellite imagery
- Free computer software for viewing and labeling images and training workshops in 2009 & 2010

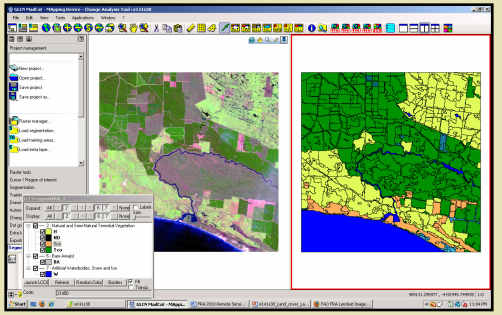
FRA RSS Timetable

- 2009 and 2010: work with 175 countries
  - Hold 15-20 regional workshops, training etc
  - preparation of draft samples
- 2010: Report preparation
- 2011: Final report (Internat. year of forests)

Capacity building is vital and in FRA

- **Easy access to Landsat**
  - **internet portal download**
- **Free image viewing and labelling software**
- **15-20 regional training workshops**





Benefits of Country involvement FRA RSS

- opportunity to start building a basic forest monitoring framework
- The FRA RSS could be intensified later if desired
- Links can be built to field inventory (e.g. NFI)
- Could provide a platform for more detailed national studies on carbon accounting and REDD
  - working with UN-REDD to develop consistent methods
- UN-REDD Pilot countries can test RSS methods
  - estimate the full implementation costs and issues
- FAO looks forward to active participation

Conclusions

1. FRA is robust design, partnerships with countries and high quality technical support
2. Providing data and tools to improve forest area and change estimates
3. Build capacity to improve future forest monitoring
4. Countries are encouraged to actively participate in the FRA and the Remote Sensing Survey
   - validate sample analysis and contribute experience
   - may help improve national forest monitoring system
5. With your interest and support FRA and the RSS will be the best global forest dataset so far

Thank you

- More information is available from:
- www.fao.org/forestry/fra
  - fra@fao.org
- adam.gerrand@fao.org

Seeing the forest... not just the trees

Remote sensing for global forest monitoring

The world's forests provide vital economic, social and environmental benefits. They help reduce climate change by storing carbon, provide wood and non-wood forest products, generate livelihoods, supply clean water and provide habitat for half the animal and plant species on the planet.

World leaders at the G8 Summit in 2008 encouraged the development of an international forest monitoring network as part of actions to reduce greenhouse gas emissions from deforestation and forest degradation in developing countries.

Under the umbrella of the Global Forest Resources Assessment, FAO, its member countries and partners are undertaking an ambitious remote sensing survey which will form the basis for a long-term global forest monitoring system.

We need reliable information on forests

Deforestation continues at an alarming rate of about 13 million hectares annually worldwide. It is responsible for about 17 percent of human-produced greenhouse gas emissions. To tackle this issue we need better information on deforestation: where is it occurring, at what rate and why – for conversion to what other land uses?

Quantitative information on progress in maintaining and expanding forests is also vital, particularly for realizing systems of payment for the environmental benefits that forests provide.

The remote sensing survey

The primary aims of the new global survey are to obtain information on the distribution of forests and on changes in forest area over time at regional, biome and global levels. It will complement, build on and in some cases strengthen national inventory systems but will not replace them.

The survey has two main components:

- Generating a new, validated global tree cover map using time-series imagery from MODIS satellites at 250 m resolution.
- Gathering and analysing the best existing global imagery (Landsat images at 30 m resolution) from 1975, 1990, 2000 and 2005 for improved estimates of forest area and forest area change.

Leading experts in over 150 countries will analyse the satellite data for the best possible results.

Why remote sensing?

- To obtain more consistent maps of the world's forests by using the same data and techniques globally
- For better estimates of trends and changes in forest area because data can be collected in the same way over time

Remote sensing does not replace the need for good field data. But combining remote sensing with field data collection provides better results than either method alone.

www.fao.org/forestry/fra2010-remotesensing/en/