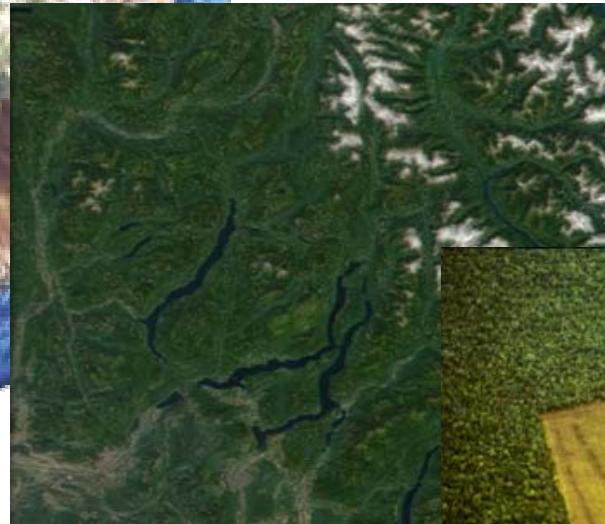


Global Monitoring of Forests: Plans for FRA 2010 Remote Sensing



THE FRA 2010 REMOTE SENSING SURVEY



Context

A. Potential Clients

1. FRA 2010, but also long-term and broader
2. Linkages with CBD, UNFCCC, C&I, UNFF etc,

B. Focus on Land use

FRA is about forest resources, their management, uses and values ie much more than area estimates. FRA 2010 objective is land use dynamics statistics.

C. Approach Considerations

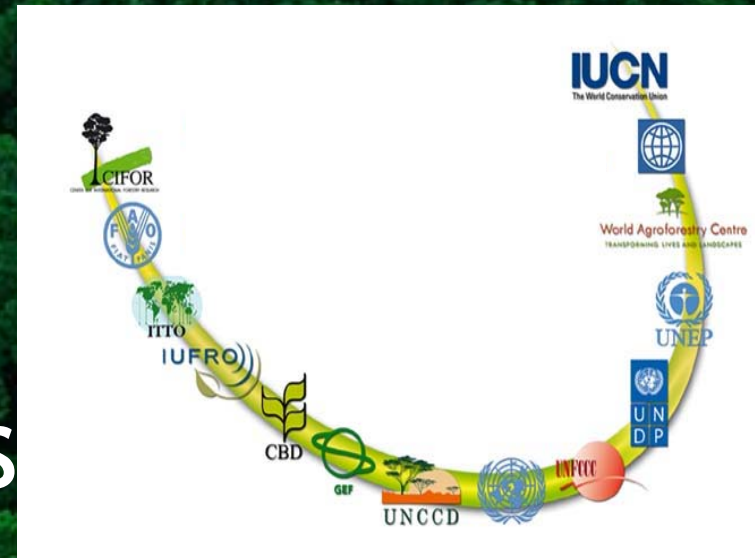
- Scope is bigger than forestry, approach is long term (Information framework)
- National expertise/institutions key to success, field knowledge needed for interpretation
- Decentralized approach and capacity building is an explicit objective
- Links to / Synergies with national monitoring systems are essential
- Should not be sensor specific. not even rs specific
- Sampling as opposed to wall-to-wall. Cost –effective and provides Statistics
- Objective is to provide strategic information, not operational

**INTERNATIONAL REPORTING
REQUIREMENTS**

**ADVOCACY GROUPS &
GENERAL PUBLIC**

NATIONAL DECISION MAKERS

FORESTERS



SCOPE & OVERALL PURPOSE

- Spatial distribution of forests at global & regional levels
- Land use change information (deforestation, fragmentation and forest degradation)
- Consistent information over time and space
- Independent monitoring system at global and regional level
- Complementary to national reporting and with close links to national monitoring systems
- Increased in-country capacity

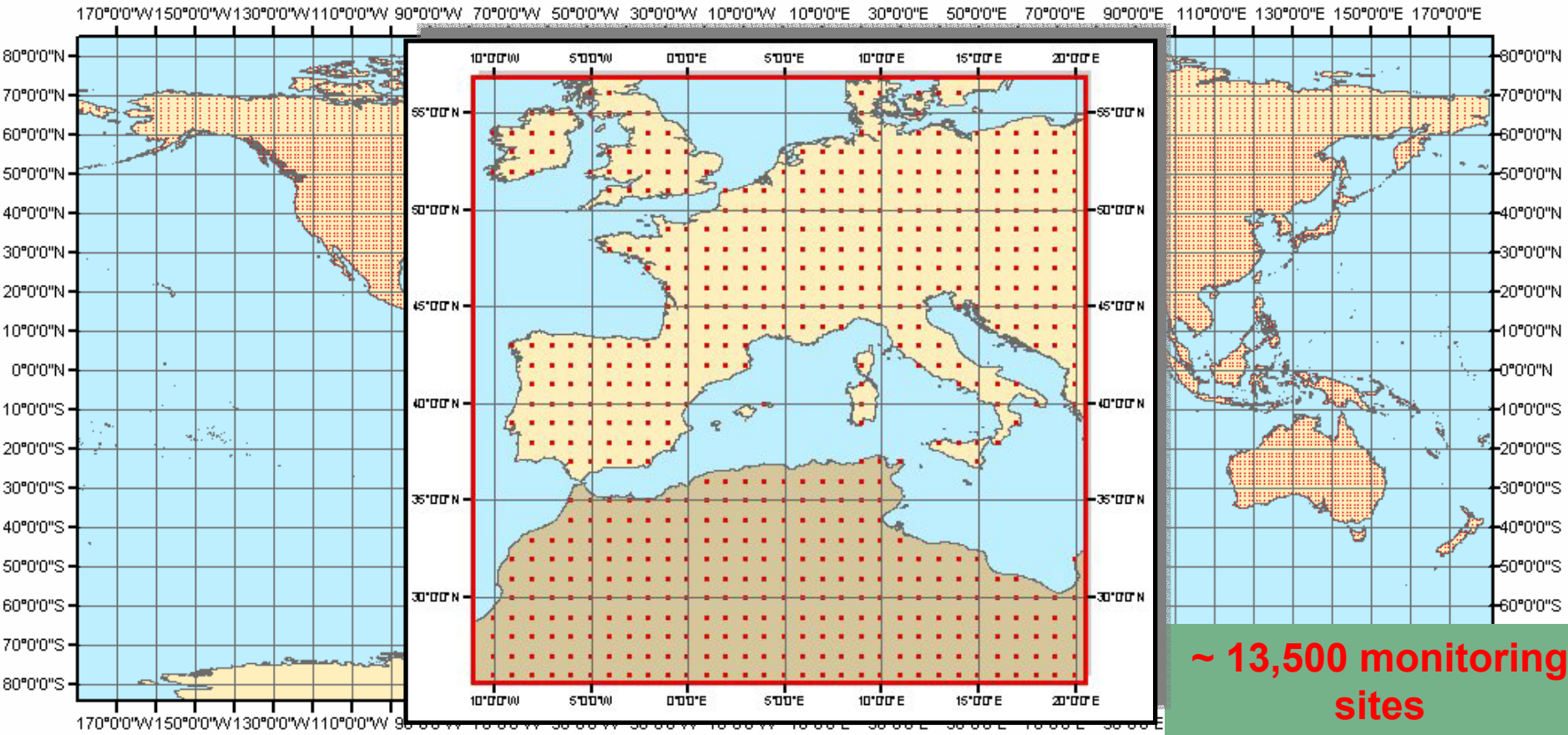
COMPONENTS

- High resolution sampling to produce area change statistics and change matrices on
 - Forest cover
 - Forest extent, forest characteristics, other land uses
- Full coverage medium resolution monitoring of tree cover and cover changes

KEY STEPS INVOLVED

- Agreement on scope
- Sampling design
- Provision of images & information gateway
- Development of methodology & classifications
- Training
- Interpretation, verification
- Analysis and reporting of results
- Establishment of partnership

REMOTE SENSING SAMPLING DESIGN



- Covers the whole land surface of the Earth
- Systematic grid based sampling: a monitoring site at each latitude and longitude degree
- Sampling intensity reduced above a certain latitude (60 degrees)

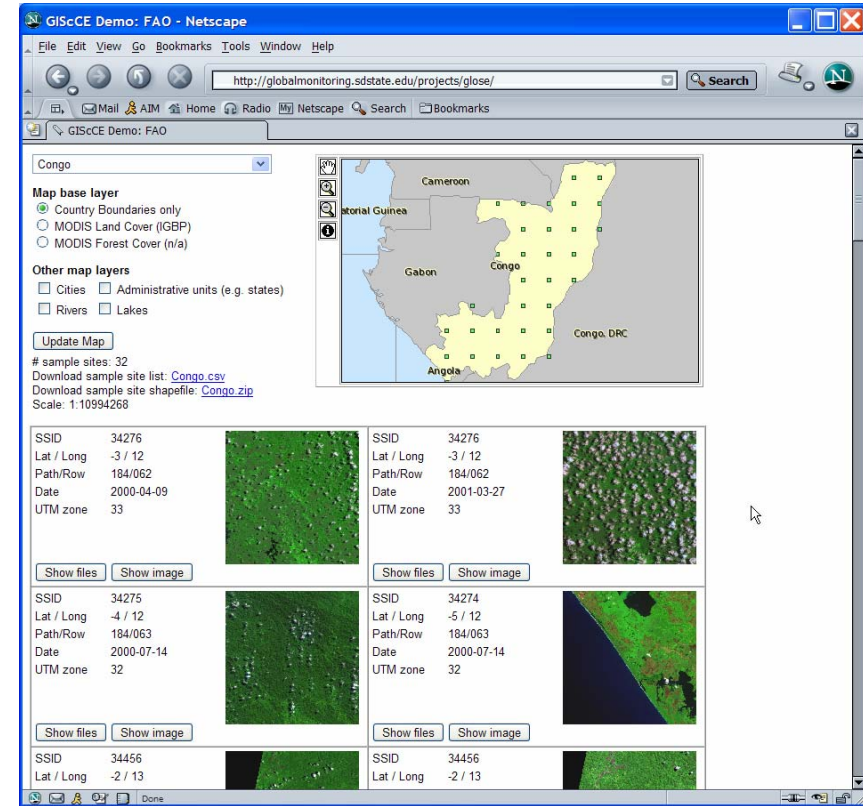
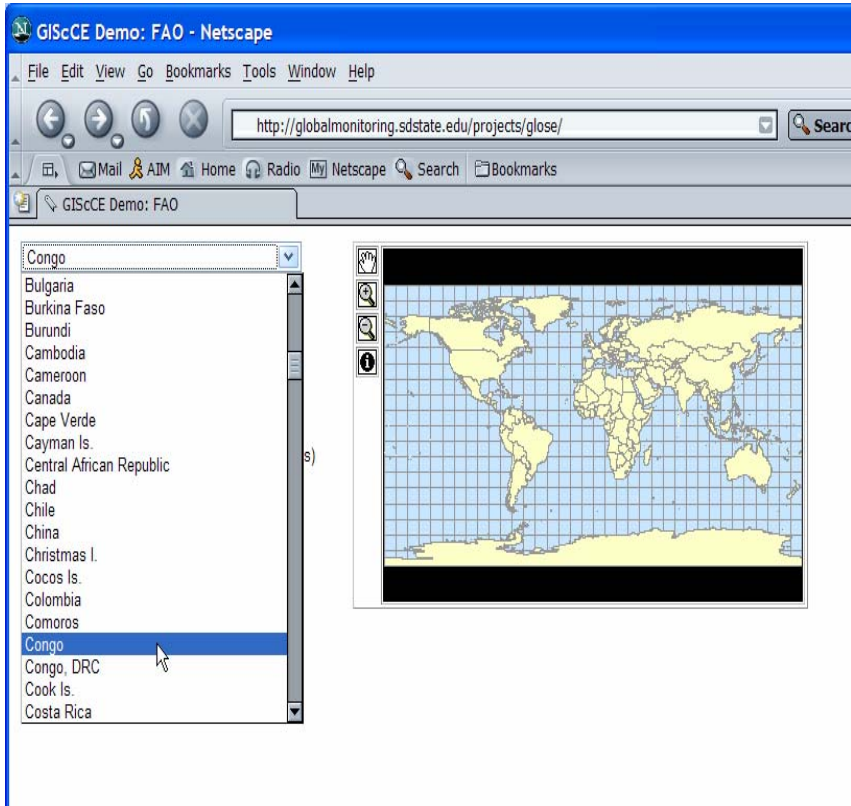
REMOTE SENSING SAMPLING DESIGN

REGION	SU Nb
Africa	2,558
Asia	3,077
Europe	3,088
North and Central America	2,487
Oceania	778
South America	1,545
TOTAL (excl. Antarctica)	13,533

COUNTRY	SU Nb	% (of Land area)
Brazil	707	0.8%
Cameroon	38	0.8%
Guatemala	9	0.8%
Italy	35	1.2%
Philippines	32	1.0%
USA	977	1.2%

- Area covered at sample site: 10 km x 10 km
⇒ Sampling intensity: about 1 % of land surface
- Plot density enough in some countries to produce national estimates
- Linked to NFA tracts at same site (1 km x 1 km)

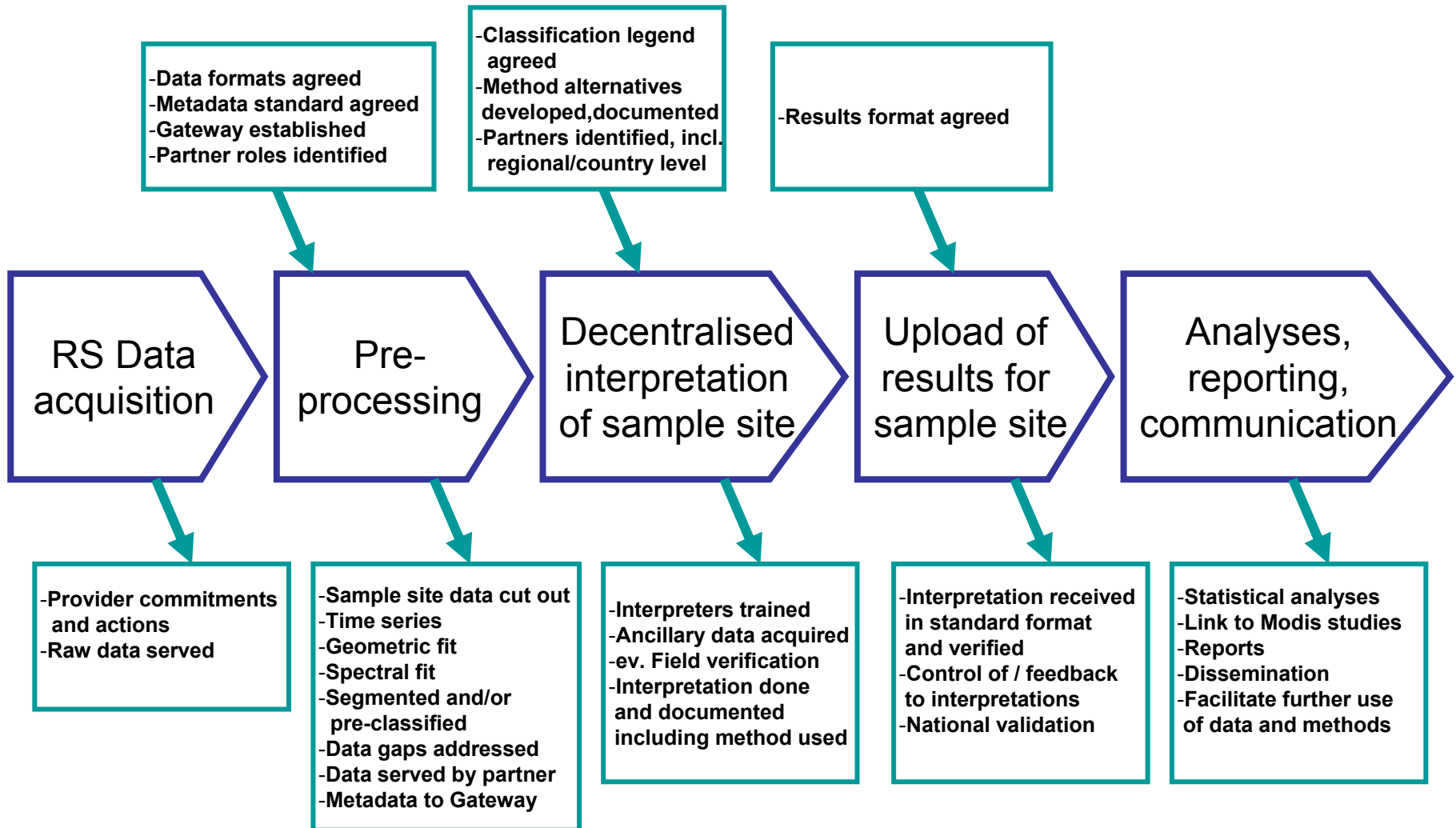
PROVISION OF IMAGES & INFORMATION GATEWAY



- Open and immediate access to pre-processed images & auxiliary data
- Data distribution and input of standardized interpreted results: Internet interface

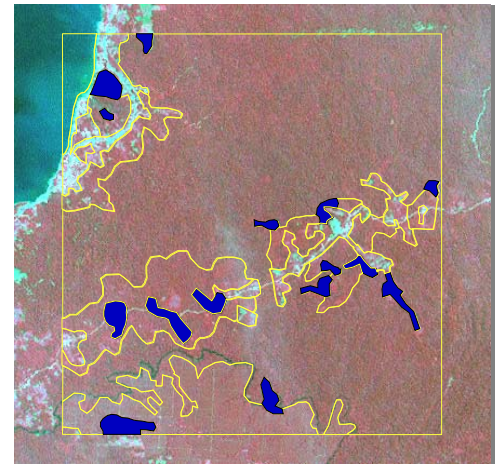
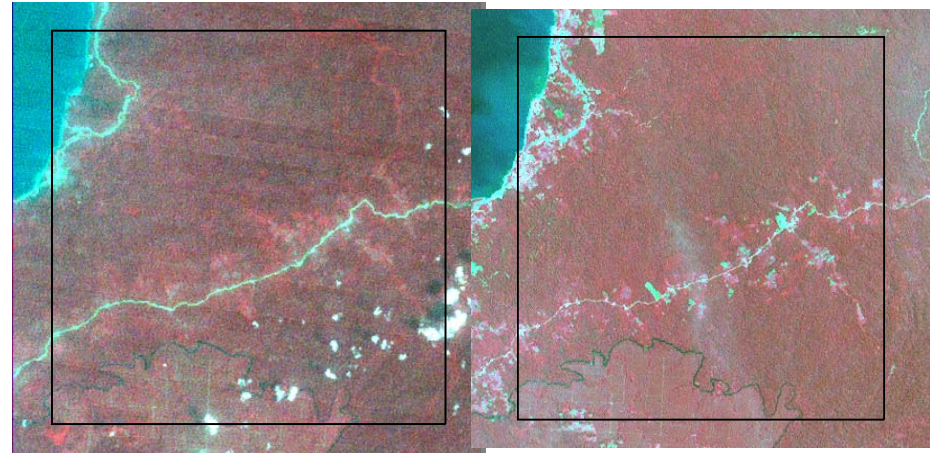
FRA 2010 Remote Sensing Survey

Main Information Process



IMPLEMENTATION

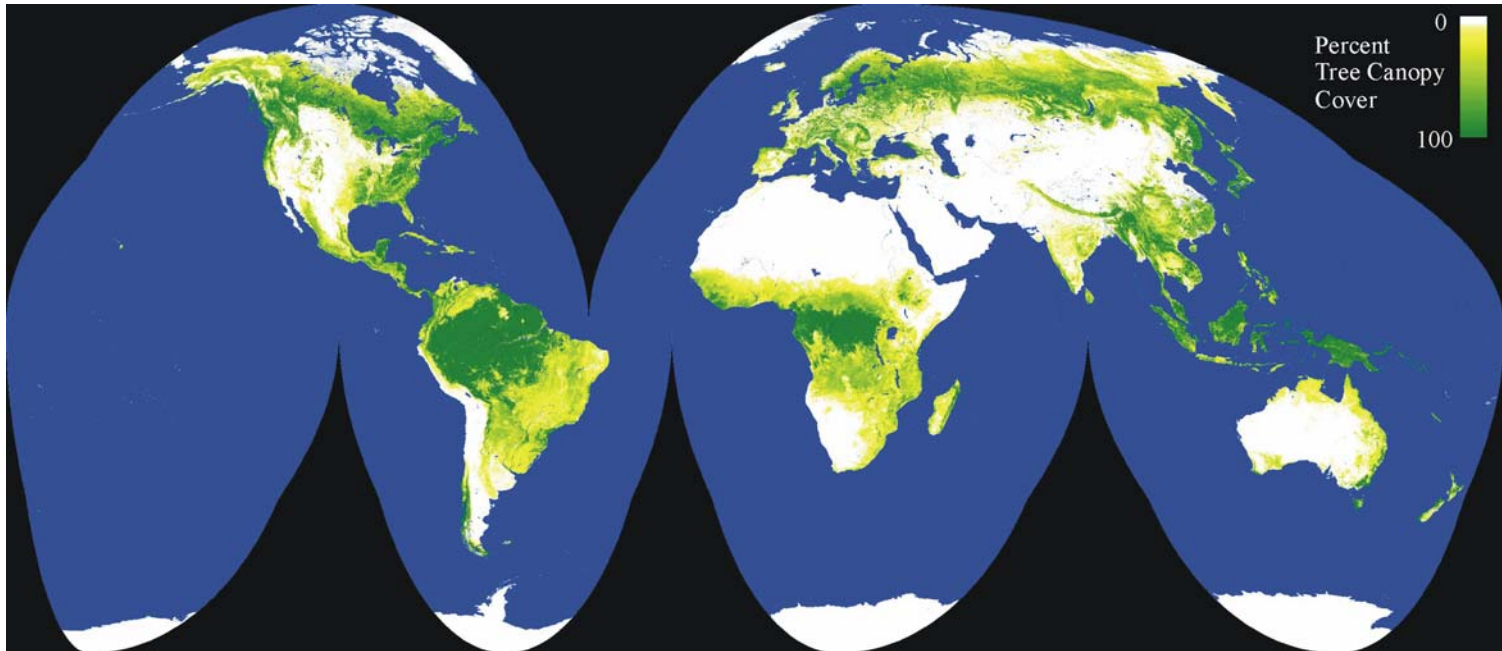
- Centralized pre-processing & gateway
- Ca. 9,000 sample units, 4 dates
- Standard methodology and classification
- Regional training workshops
- Interpretation by national / regional teams
- Regional validation workshops
- Centralized statistical analysis



Changes 2000-2005

FULL COVER MAP

- Complements high resolution sampling
- Locate forests and forest cover changes
- MODIS vegetation continuous fields (% tree cover)



OUTPUTS

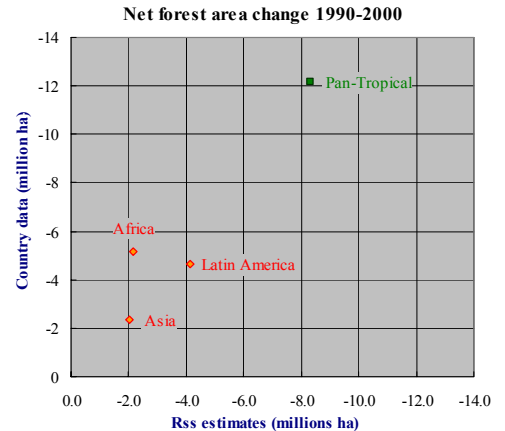
- Regional, biome and global monitoring of forests 1975-1990-2000-2005:
 - area change statistics
 - information on land use dynamics (including deforestation, expansion of forests, fragmentation and forest degradation)
- Forest maps
- A framework to support further monitoring of forests, land use and the environment
- Baseline data for research, modeling...

EXPECTED RESULTS AND OUTPUTS

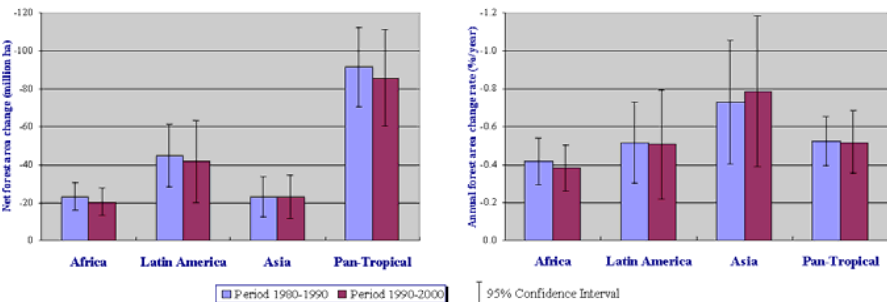
Regional, biome and global monitoring of forests 1975-1990-2000-2005

Area transition matrix 1990-2000

Land cover classes in 1990	Land cover classes in 2000									State 1990	% of total land area
	Closed canopy forest	Open canopy forest	Long fallow	Fragmented forest	Shrubs	Short fallow	Other land cover	Water	Plantations		
Closed canopy forest	1131.6	1.2	5.7	9.4	1.3	9.8	43.1	1.1	1.9	1 205.1	39.3
Open canopy forest	0.2	287.3	0.5	6.8	0.7	2.2	6.6	0.1	ε	304.5	9.9
Long fallow	1.1	0.1	63.2	0.2	ε	4.8	4.7	ε	0.2	74.4	2.4
Fragmented forest	0.5	0.4	0.2	202.1	0.5	2.2	11.2	0.1	0.2	217.5	7.1
Shrubs	0.1	0.1	ε	0.1	143.5	0.6	9.7	1.8	0.1	155.9	5.1
Short fallow	1.0	0.3	1.2	1.5	0.2	122.7	11.6	0.2	0.4	139.0	4.5
Other land cover	0.6	0.5	0.5	2.3	3.7	4.9	928.4	1.3	2.3	944.4	30.8
Water	0.2	ε	ε	ε	0.8	ε	1.2	5.6	ε	7.8	0.3
Plantations	ε	ε	ε	ε	ε	ε	1.1	ε	18.0	19.3	0.6
State 2000 →	1 135.2	290.0	71.5	222.5	150.6	147.3	1 017.6	10.2	23.2	3 068	
% of total land area →	37.0	9.5	2.3	7.3	4.9	4.8	33.2	0.3	0.8		



Transition matrices



Forest/ land use changes estimates

Calibration/validation of country data at regional and global levels

- Information on land use dynamics
- Forest maps
- Fragmentation and other indicators
- Country capacity building

POTENTIAL PARTNERS

- **Countries:** national agencies, regional hubs
- FAO
- UNEP
- NASA
- World Bank
- Heinz Center
- JRC
- Universities (SDSU, UMD, Jena, Boston, Mississippi)
- USGS/EROS data center
- WRI, CI
- GOFC-GOLD
- GEO Secretariat
- Open to others

THANK YOU !



www.fao.org/forestry/fra2005

