Methodology for generation of the Deforestation Baseline in mainland Ecuador

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Objective

- Develop and validate a methodological protocol to monitor in a spatially explicit way the historical deforestation of forests nationwide.
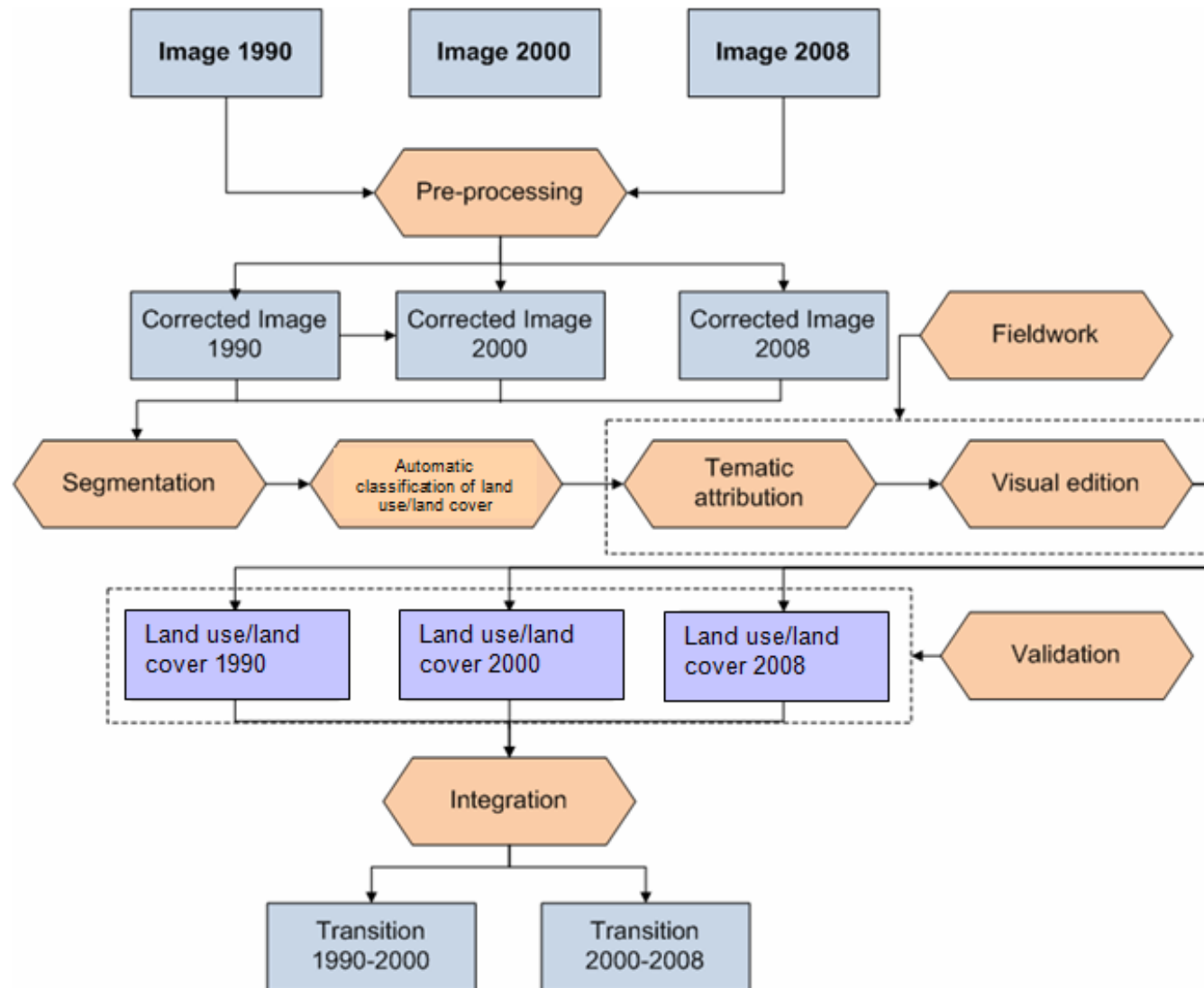
Specific objectives

- To build a methodological proposal to characterize the deforestation nationwide in the years 1990, 2000 and 2008 in a systematic and coherent way.

- To establish procedures for documentation, verification and validation to assess the quality of the information generated.

- To implement and validate the methodology on a set of pilot sites representing the diversity of environmental conditions associated with forest ecosystems in Ecuador.

Process diagram

Initial considerations

- Spatial resolution and study years

Reference years	Periods
1990	1986-1991
2000	2000-2002
2008	2005-2008

- National coverage

- Pixel size 30 m

- MMU 1 ha

Initial considerations
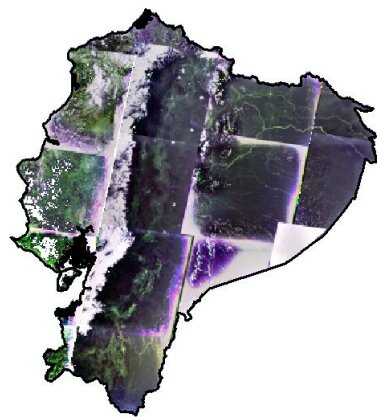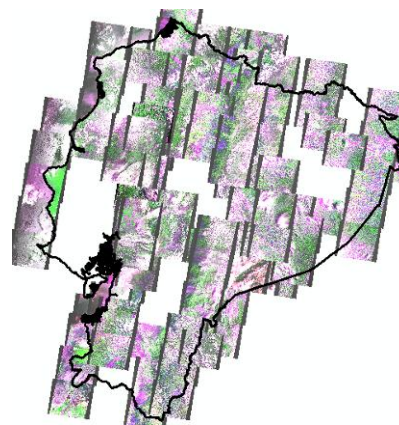
- Selection and gathering of satellite images

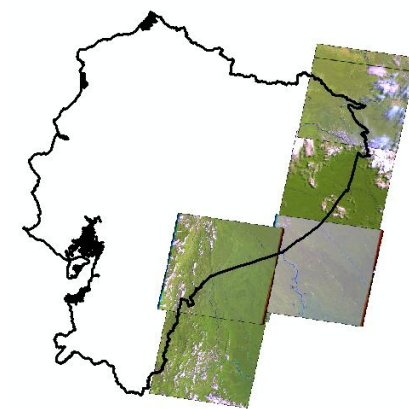**1990 Landsat**

2000 Landsat

2008 Aster

2008 Landsat

Initial considerations

- Definition of sub – regions:

Clasification of satellite images

Unsupervised
(ISODATA – 255 Classes)

HYBRID

SEGMENTATION

Supervised (39 classes)

ISODATA

Visual edition

FOREST LAND
CROPLAND
GRASSLAND
WETLANDS
OTHER LANDS
SETTLEMENTS
NO INFORMATION
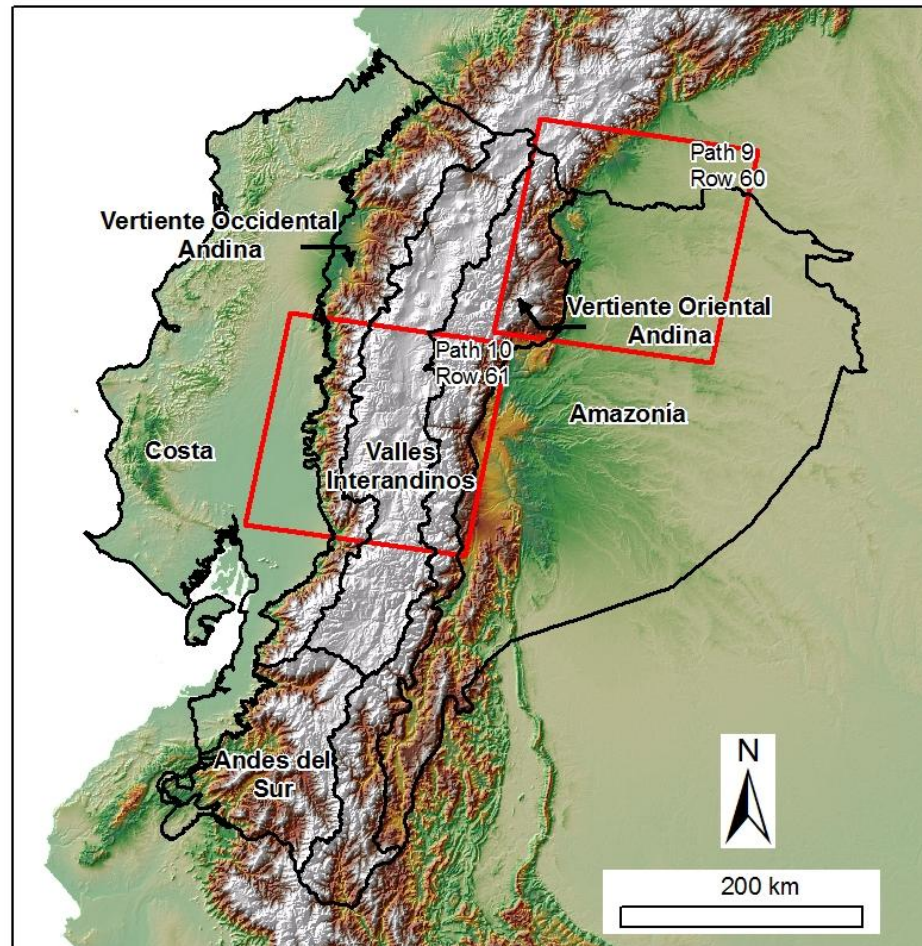
Ministerio
del Ambiente
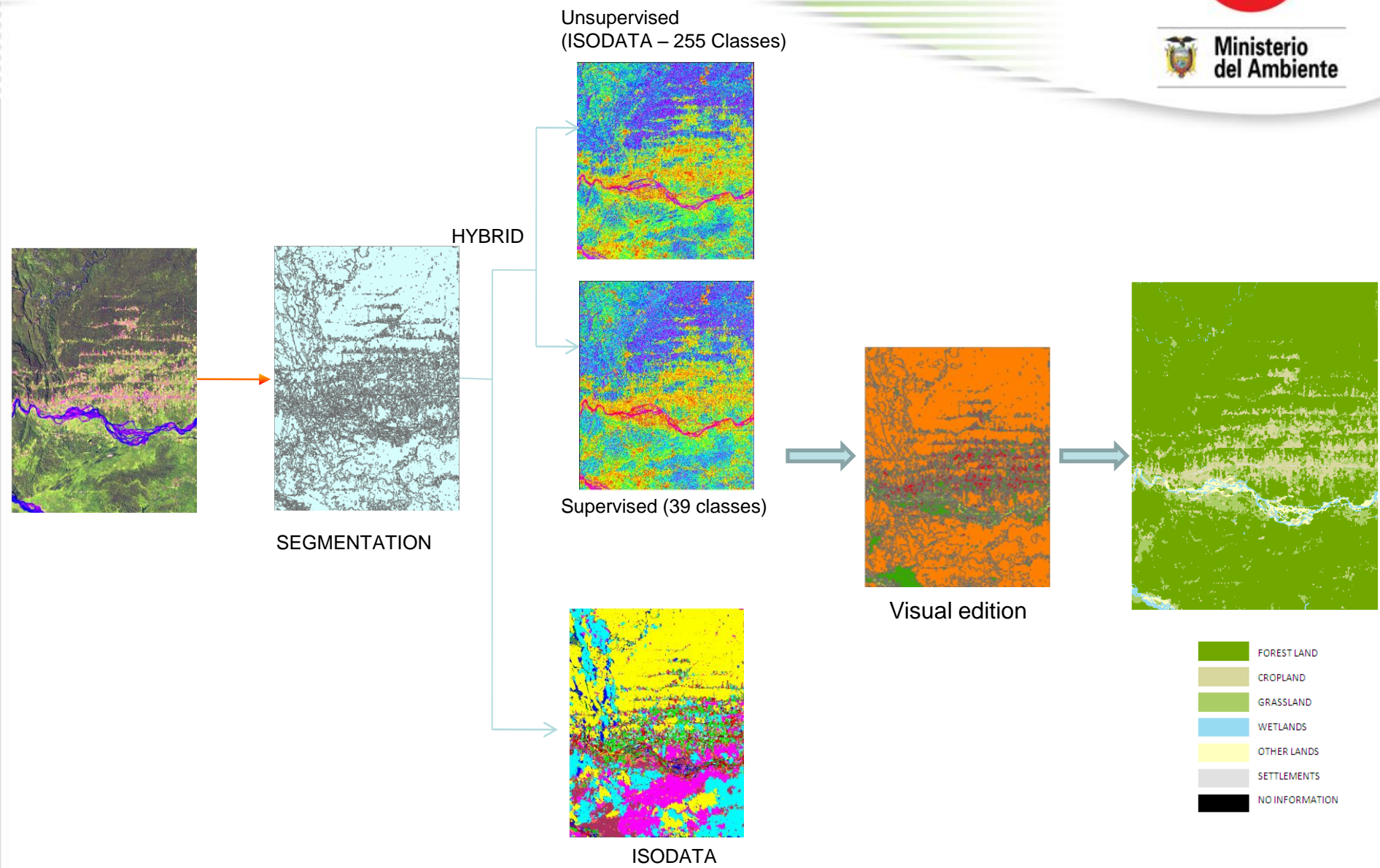
Accuracy Assessment

Methodology	Robustness criteria			Image data			Where
	Independent data source	Independent interpretation	Higher quality reference data	1990	2000	2008	
Visual Inspection with the same image	No	Yes	No	Yes	Yes	Yes	Everywhere
Visual Inspection of high resolution imagery	Yes	Yes	Yes	When available**	When available	When available	Where available**
Field Survey	Yes	Yes	Yes	No	No	Yes*	Where feasible

Report trajectories of change in forest cover

- Transition 2000-2008: Baeza-Papallacta

Initial \ Final	Forest Land	Cropland	Grassland	Wetlands	Settlements	Other lands	No information	Initial area
Forest Land	1537.56	0.36	239.4	2.16				**1779.48**
Cropland			19.17					**19.17**
Grassland	322.74	86.58	4452.93	28.71				**4890.96**
Wetlands	3.69		40.68	175.77				**220.14**
Settlements								**0.00**
Other lands								**0.00**
No information								**0.00**
Final area	**1863.990**	**86.940**	**4752.180**	**206.640**	**0.00**	**0.00**	**0.00**	**6910**
Net change	84.51	67.77	-138.78	-13.50	0.00	0.00	0.00	
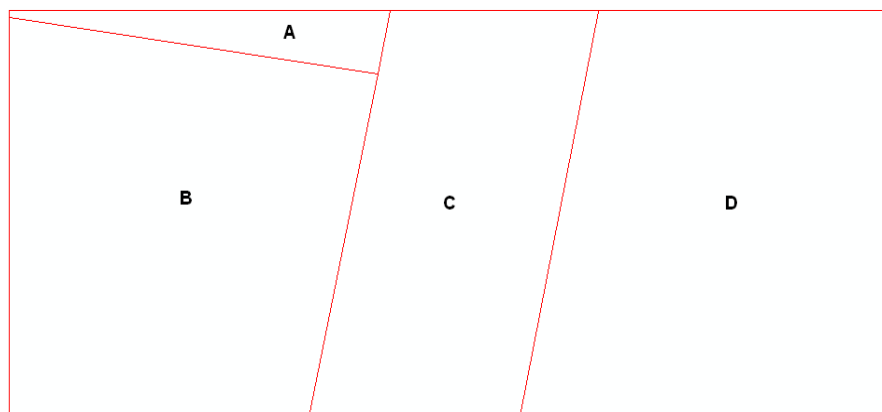
Annual rate of Deforestation		
Period	**Fragment**	**Rate %**
2001-2005	A	1.19
2001-2007	B	1.47
2001-2005	C	-2.31
2002-2005	D	-0.59

Recommendations

Implementation of the methodology

- Develop and implement training protocol / control.

- Continue access and systematization process of high resolution information (eg SIG-Tierras).

- Total or partial automation of processes in the methodology.

- Communication / socialization of the protocols.

- Implement continuous improvement and review program of methods.

Recommendations

Research and development topics should include:

- Complementary processes of pre-processing and classification

- Explore direct classification of changes

- Integration with detection change methods

- Use of active sensors (RADAR) in areas with permanent cloud cover / seasonal phenological variation

- Integration of sensors with low spatial resolution and high temporal resolution (MODIS)

Un compromiso de Ecuador con el clima, los bosques y las personas

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