

2nd GEO Forest Monitoring Symposium
July 1-3, 2009 Chiang Rai, Thailand

Forest Cover Assessment in Thailand

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Outline

- 1. Background**
- 2. Forest Cover Assessment in Thailand between 1973 and 1998**
- 3. Forest Cover Assessment in Thailand between 2000 and 2005**
- 4. Conclusion**

1

Background

- The first project concerned with forest resources assessment in Thailand was conducted by the *Ordnance Survey Department* in 1961. The panchromatic aerial photographs of medium scale 1:25,000 were interpreted for the main land use classification. It reported that the forest cover of Thailand in 1961 amounted to 273,628.50 sq. km or 53.33 percent of the total area of the country.

2

Forest Cover Assessment in Thailand between 1973 and 1998

- In 1970, the National Aeronautics and Space Administration (NASA) introduced the usefulness and possible applications of data from Earth Resources Technology Satellite (Landsat presently) to the Government of Thailand (**Klankamsorn, 1992**). After that, the Thailand National Remote Sensing Program was set up in 1971 by cabinet decision as a new technology.

Forest Cover Assessment in Thailand between 1973 and 1998

- Early in 1973, several government agencies used Landsat-1 imageries in their activities including in the field of forestry. Landsat imageries proved to be an important tool for natural resource surveys and management by the government agencies. The RFD established the *Remote Sensing and Forest Mapping Sub-division* (Forest Resources Assessment Division presently) and started to use the Landsat imageries for natural forest cover assessment.

Forest Cover Assessment in Thailand between 1973 and 1998

- In 1973 the first report of assessment of forest cover using interpretation of Landsat-MSS at the scale of 1:250,000 was published. It was reported that the forest cover of Thailand in 1973 amounted to 221,725.00 sq. km or about 43.33 percent of the total area of the country.

METHODOLOGY

Forest Cover Assessment in Thailand between 1973 and 1998

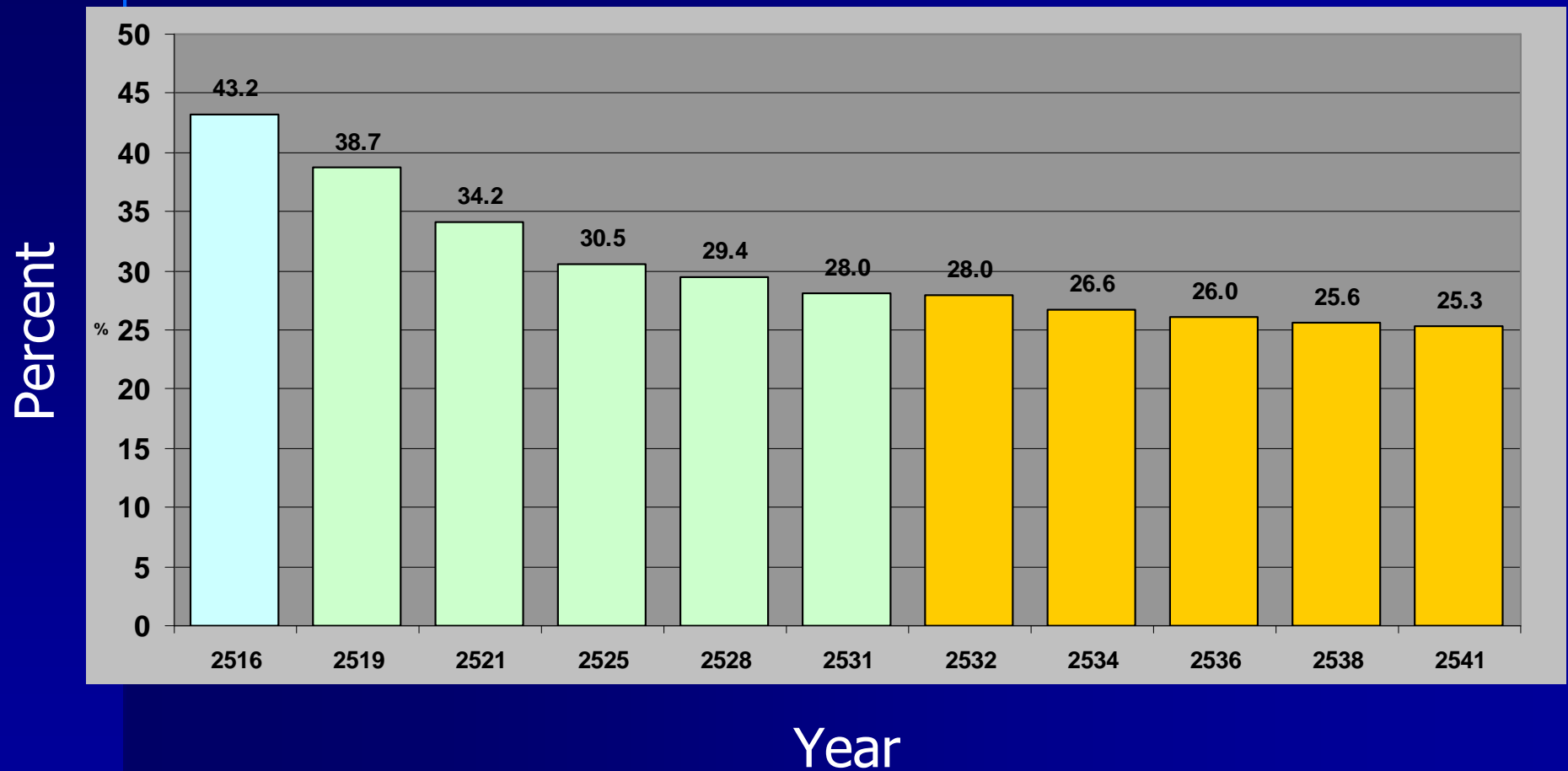
- Landsat imageries at the scale of 1: 250,000, with the aid of 1:250,000 topographic maps, are used for the classification of forest and non-forest land;
- Ground truth surveys and data collection activities are conducted to verify the interpretation;
- The results obtained from satellite data interpretation with correction are transferred onto a base map;
- The forest cover area is evaluated using the dot grid method;
- The base map is then transformed into a final map by cartographic reproduction techniques. A final report and final maps was published.

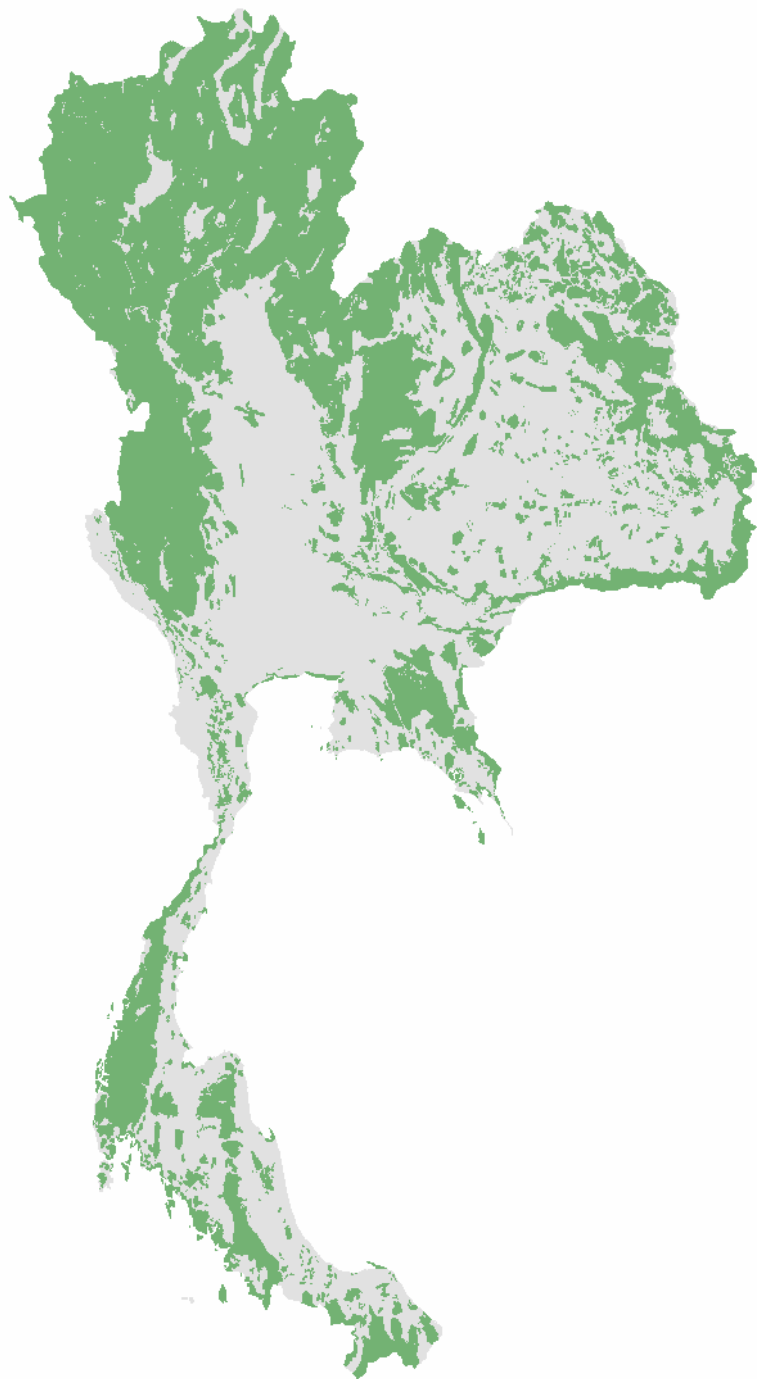
Forest Cover Assessment in Thailand between 1973 and 1998

Year	Forest Area (sq. km)	Percent	Deforestation Area (sq. km)	Periods (Years)	Annual Deforestation Rate (sq. km)
1973	221,725.00	43.33			
1976	198,417.00	38.67	23,308.00	3	7,769.33
1978	175,224.00	34.15	23,193.00	2	11,596.50
1982	156,600.00	30.52	18,624.00	4	4,656.00
1985	150,866.16	29.4	5,733.84	3	1,911.28
1988	143,803.49	28.03	7,062.67	3	2,354.22
1989	143,417.00	27.95	386.49	1	386.49
1991	136,698.05	26.64	6,718.95	2	3,359.47
1993	133,553.55	26.03	3,144.51	2	1,572.25
1995	131,485.06	25.62	2,068.49	2	1,034.24
1998	129,722.28	25.28	1,762.77	3	587.59

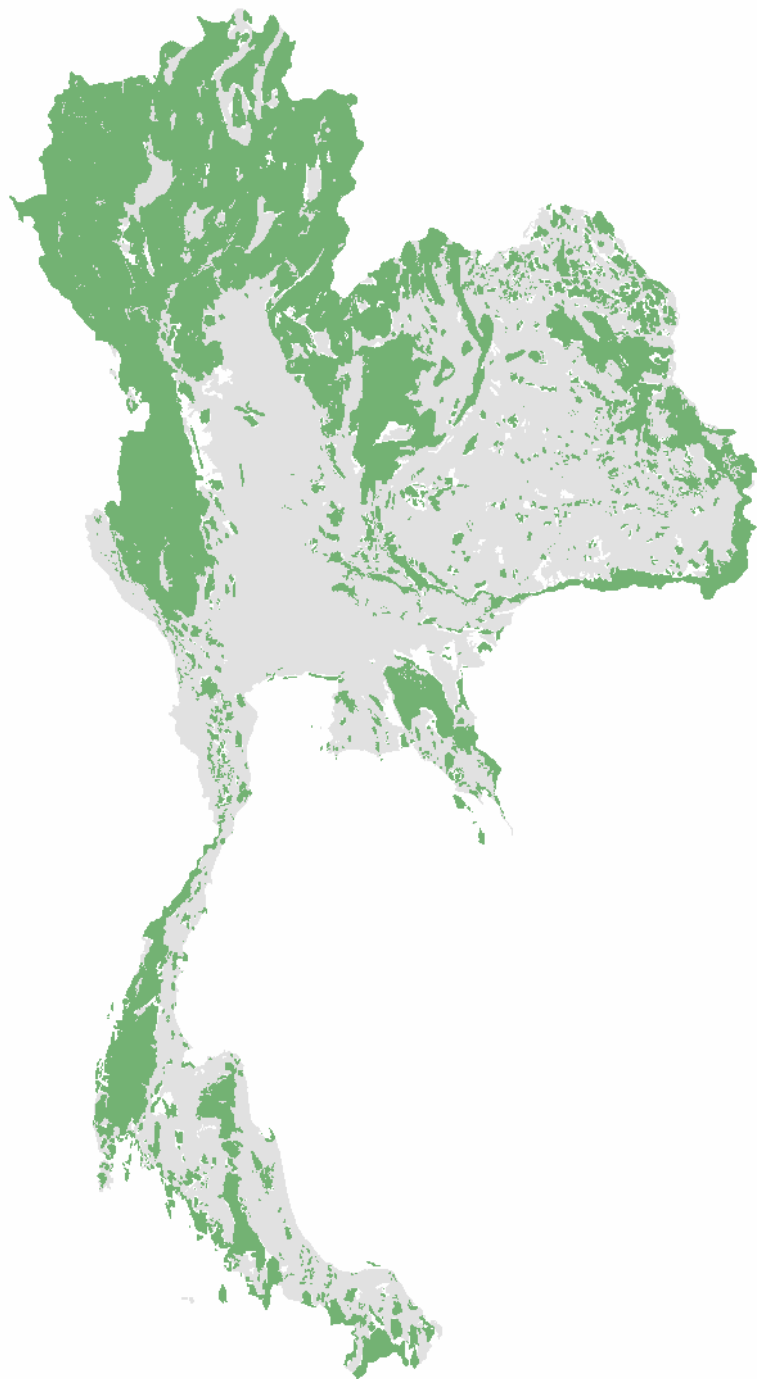
Source: Charupatt, 1998

Forest Cover Assessment in Thailand between 1973 and 1998

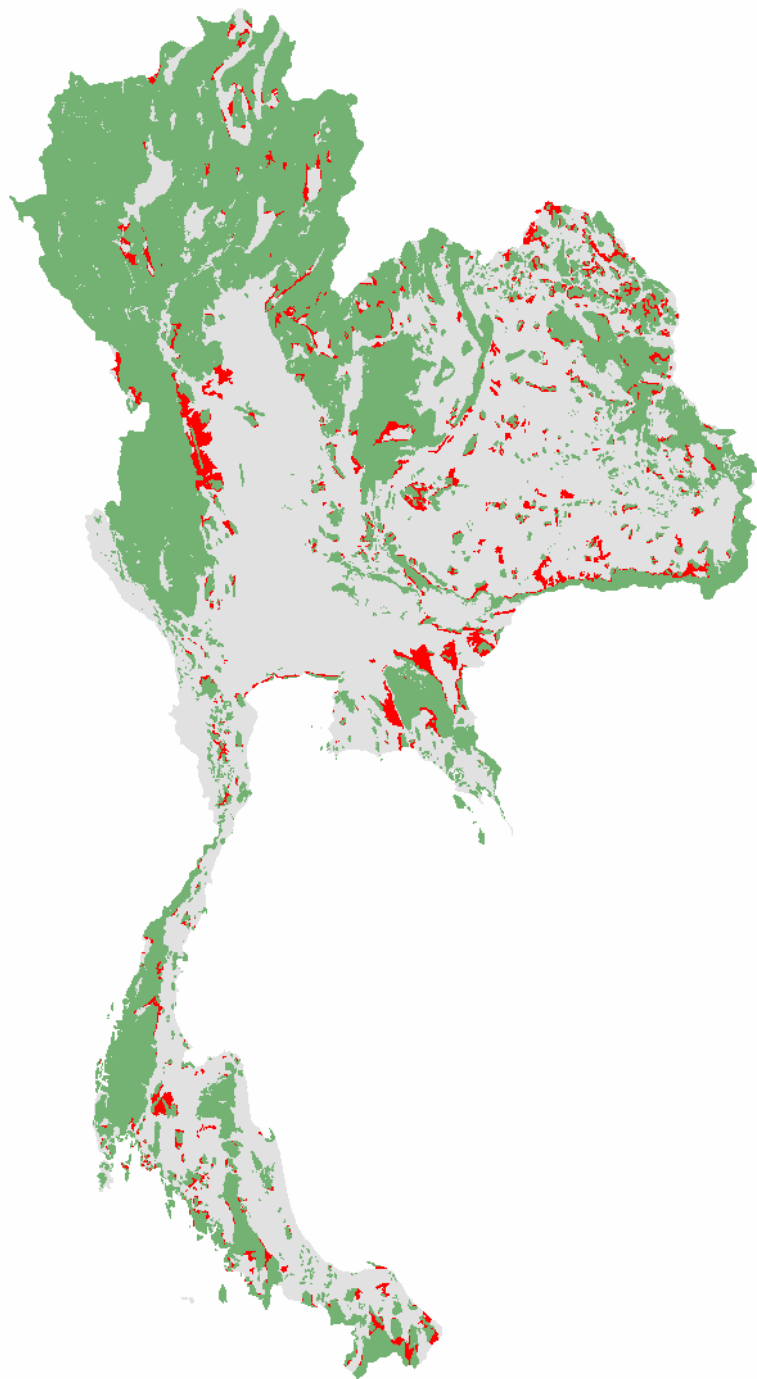




Forest area
in 1973



Forest area in **1976**



**Forest area
change**

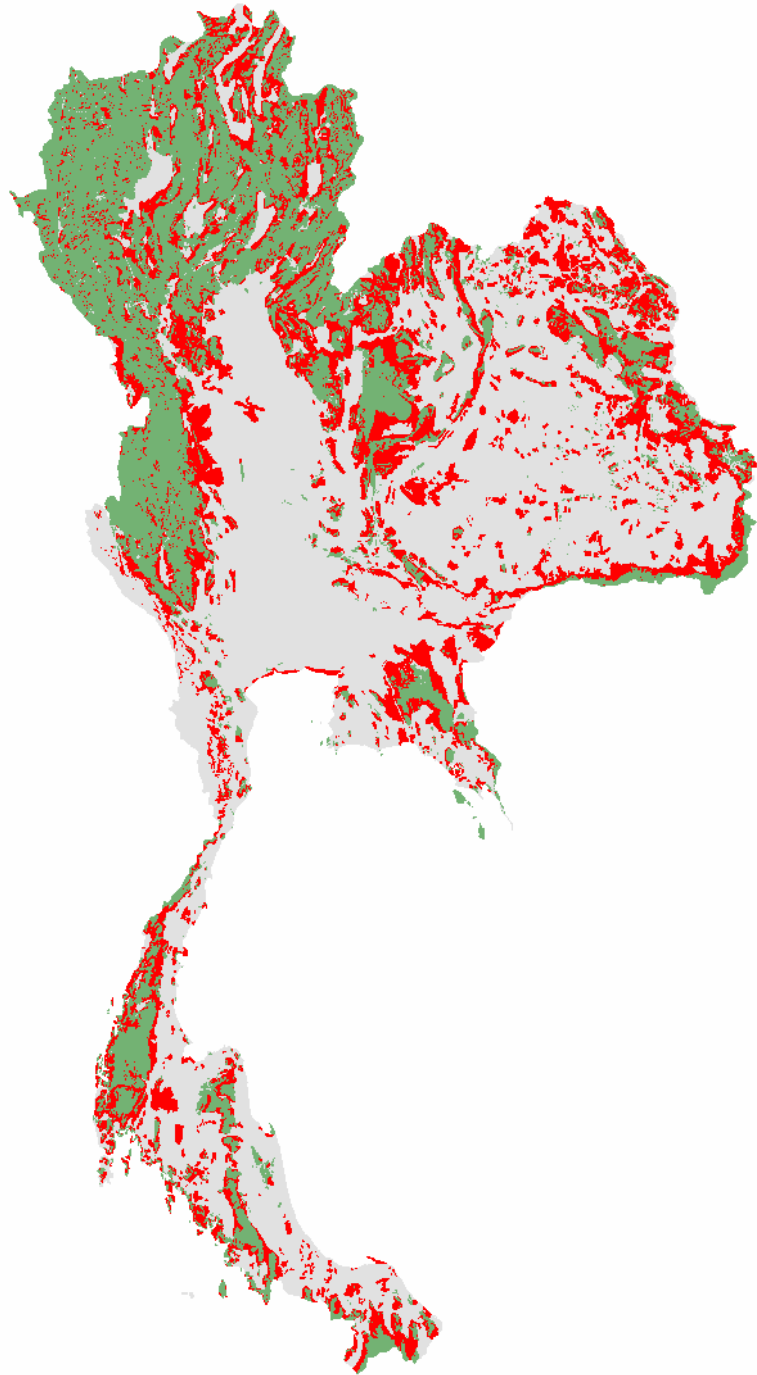
**between
1973 and
1976**



Forest area in **1993**



Forest area in **1998**



**Forest area
change
between
1993 and
1998**

3

Forest Cover Assessment in Thailand between 2000 and 2005

In 2000 the Forest Resources Assessment Division of the RFD has conducted the forest land use assessment by using visual interpretation of LANDSAT-TM imageries at the scale 1:50,000. The detail of forest types and other main land use was classified instead of forest and non-forest classes. In addition forest land use data was entered in GIS databases by using vectorization.

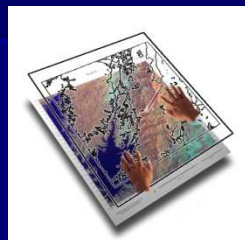
Methods

Forest Cover Assessment in 2000



1

Image processing and satellite imageries production



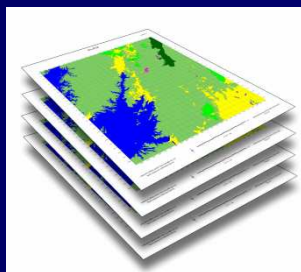
2

Interpretation of satellite imageries



3

Establishment of GIS data bases



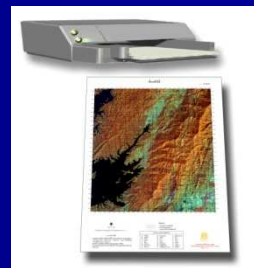
6

Maps and report



5

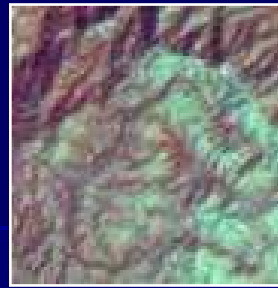
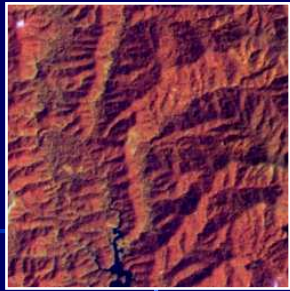
Ground verification



4

Preliminary forest land use map

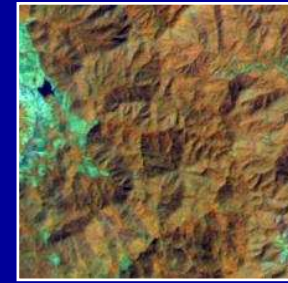
Evergreen Forest



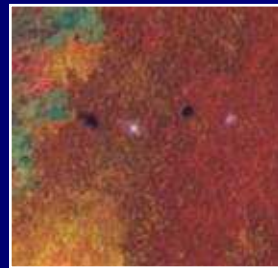
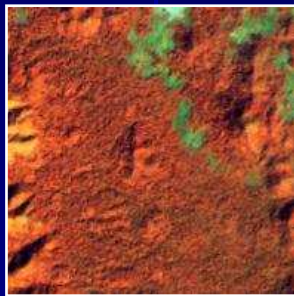
Moist Evergreen

Pinus Forest

Deciduous Forest

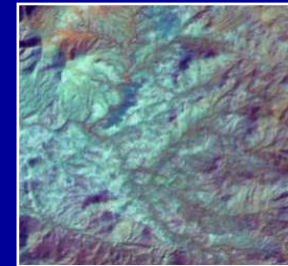


Mixed Deciduous



Dry Evergreen

Swamp Forest



Dry Deciduous



Hill Evergreen

Mangrove Forest



Bamboo Forest

Forest Cover Assessment in 2000

Based on the forest land use data in 2000 GIS database, it was found that forest cover of Thailand in 2000 was about **172,111** sq. km or about **33.14** percent of total country area. The result shown that forest assessment in 2000 by using visual interpretation of large scale image (1:50,000) and using GIS for calculate forest land use areas are more reliable and accurate than small scale (1:250,000) (**Ongsomwang, 2003**)

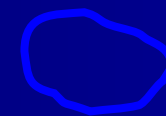
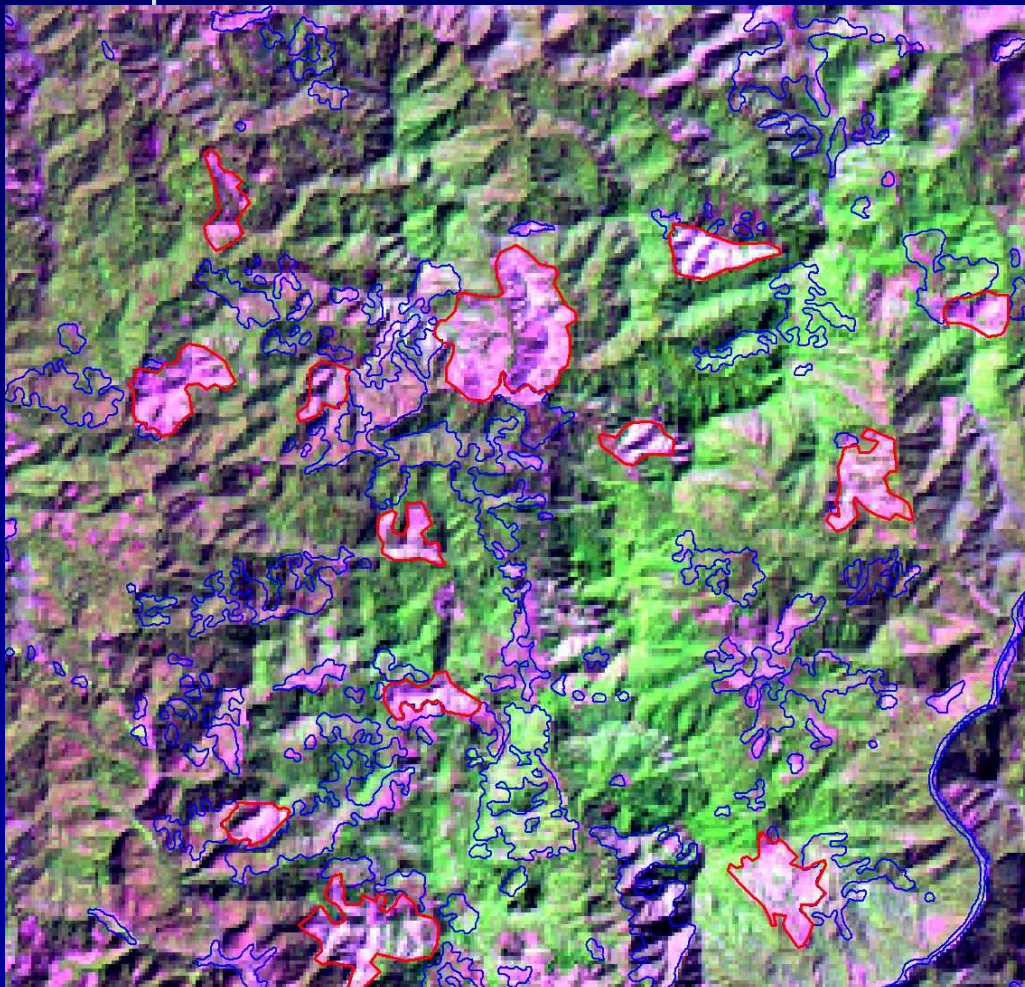
Forest Cover Assessment in 2004

In 2004, *Department of National Park, Wildlife and Plants Conservation*, which was established in 2002 by the Government Reform Law, had conducted the forest land use assessment by using visual interpretation of LANDSAT-TM imageries at the scale **1:50,000**. It was found that forest cover of Thailand in 2004 was about **167,591** sq. km or about **32.66** percent of total country area.

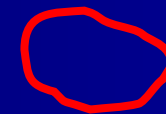
Rapid Forest Cover Assessment in 2005

In 2005, the **Permanent Secretary Office** under Ministry of Natural Resources and Environment (MNRE), joined with **Department of National Park, Wildlife and Plants Conservation, Royal Forest Department,** and **Department of Marine and Coastal Resources** to do a Rapid Forest Cover Assessment in 2005 Program. it was found that forest area of Thailand in 2005 was about **165,781** sq. km or about **32.31** percent of total country area.

Rapid Forest Cover Assessment in 2005



Forest cover in 2004



Forest Cover Change
2004-2005

Change of forest cover between **2004** and **2005**

Region	Area of Region (sq. km.)	Forest area in 2004 (sq. km.)	Forest area in 2005 (sq. km.)	Deforestation (sq. km.)
Central	21,478	1,544	1,538	6
East	36,440	8,240	8,165	75
Northeast	166,972	28,096	27,943	152
North	171,929	92,068	90,584	1,484
West	45,988	19,699	19,665	34
South	70,365	17,943	17,885	58
Total	513,172	167,591	165,781	1,810
Percentage		32.66	32.31	

4

Conclusion

Forest cover assessment in Thailand was mostly based on visual interpretation of satellite data while GIS was utilized for forest cover assessment. The introduce of digital image processing of remotely sensed data for national forest cover assessment and change detection should be considered for operative works after the launching of THEOS satellite. In fact, digital image processing of satellite data is more economic in term of time but well trained staffs in digital image processing might be required.

Current Methodology

