



LAND COVER CHANGE DETECTION USING MULTISENSOR SATELLITE IMAGERY IN SUMBERJAYA, LAMPUNG



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INTRODUCTION

Over the past decades large number of 'spontaneous migrant' settlers came from Java to Lampung and settled in the hills and mountain slopes where good soils could be found for growing coffee. Much of these areas are classified as 'protection forest' or even 'National Park' and provincial authorities have tried to remove the population in a 'local transmigration' program to new sites in the lowland peneplain (on much poorer soils). This created a lot of conflict which still lingers on ...

The various stakeholders have different perceptions on land use and how it should be classified. The existing series of land use maps (1970-1978-1984-1990) was made by Kantor Agraria (later BPN) is probably most complete. There was no recent information after 1990. One of the first tasks in the development of a negotiation support system to solve this conflict is the assessment of past and current land use changes.

RESEARCH OBJECTIVES

- Make a recent Land cover map of Sumberjaya (2000)
- Assess Land cover change in Sumberjaya using satellite imagery to complete and validate available LU maps

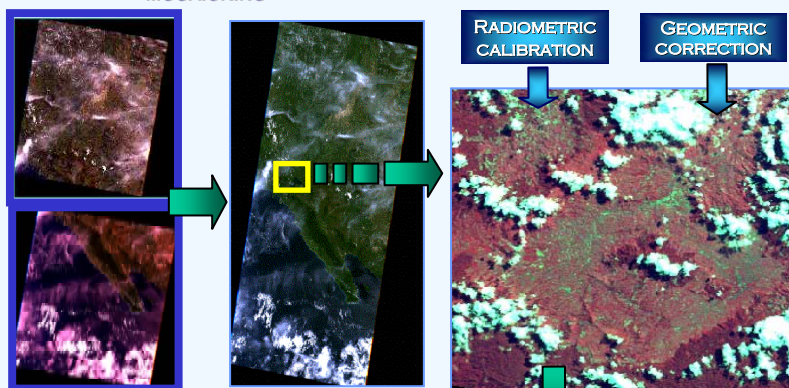
RESEARCH SITE



Bare soil, cleared land, young coffee, monoculture and multistrata coffee

METHODOLOGY

MOSAICKING



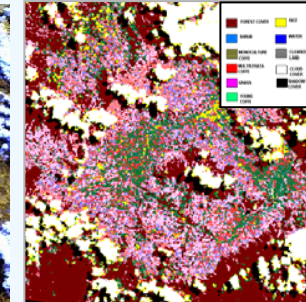
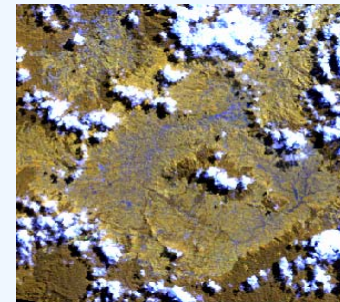
CLASSIFICATIONS

GROUND TRUTHING → ACCURACY ASSESSMENT

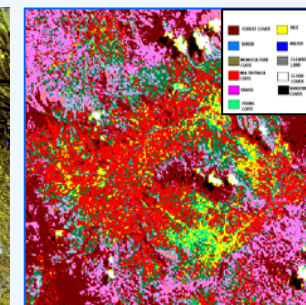
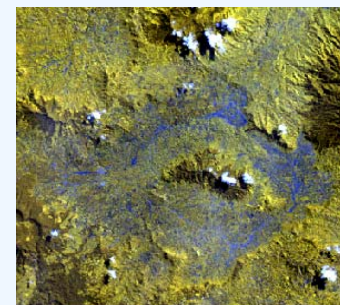


SATELLITE IMAGES

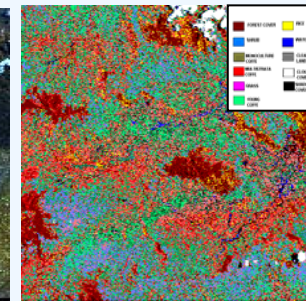
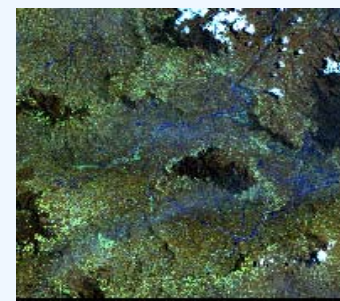
LANDSAT MSS 1973



LANDSAT MSS 1986



LANDSAT ETM 2000



CLASSIFICATION RESULT

ACCURACY ASSESSMENT

Overall accuracy: 90 %, K-value: 88%

User's and Producer's Accuracy of classified Landsat ETM 2000 band 573

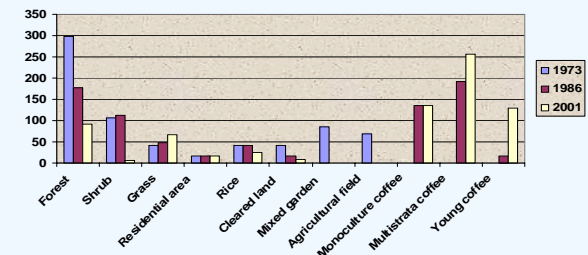
Land Cover Type	Producer's Accuracy *	User's Accuracy *
Rice	77.5	51.7
Monoculture coffee	93.7	92.1
Multistrata coffee	84.4	81.8
Shrub	54.3	92.6
Grass	80	86.5
Young coffee	90.4	82
Residential area	90.9	99.2
Cleared land	85.6	92.2
Forest	91.3	96.3

* Producer's accuracy results from dividing the number of correctly classified pixels in each category by the number of training set pixels used for that category (column total).

* User's accuracy are computed by dividing the number of correctly classified pixels in each category by the total number of pixels that were classified in that category (row total).

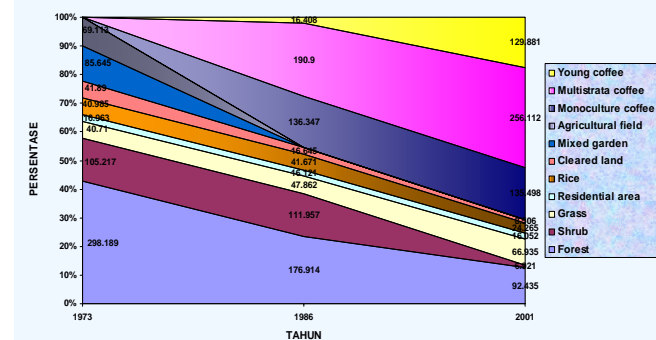
LAND COVER CHANGE IN SUMBERJAYA

SUMBERJAYA 1973-2000 LAND COVER COMPARISON BASED ON CLASSIFIED SATELLITE IMAGE

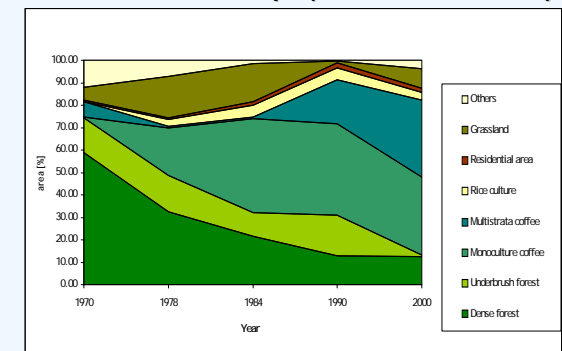


SATELLITE IMAGE PROCESSING

SUMBERJAYA LAND COVER CHANGE BASE ON CLASSIFIED SATELLITE IMAGE



Results from BPN maps (with addition of ETM 2000).



CONCLUSION

- The big trends of land use change of the BPN timeseries and the satellite imagery correspond, although there is a difference in legends. After deforestation there was a phase of extensive land use (shrubs, grass, cleared land), which was then followed by more permanent and intensive multistrata and monoculture coffeesystems.
- From the satellite imagery it appeared that quite some deforestation (41 % in 1973 to 13 % in 2000) took place at an earlier date than suggested by BPN - maps (1970 60% to 13% in 1990).
- There is a trend that more coffee fields are converted to various multistrata systems. These systems could fulfill some of the functions of protection forest and are also profitable.