

GHANA'S REMOTE SENSING APPLICATION TO FOREST MONITORING

GHANA TEAM
27TH FEBRUARY 2014
LIVINGSTONE

Outline

- Introduction
- Methodology
- Results
- Way forward

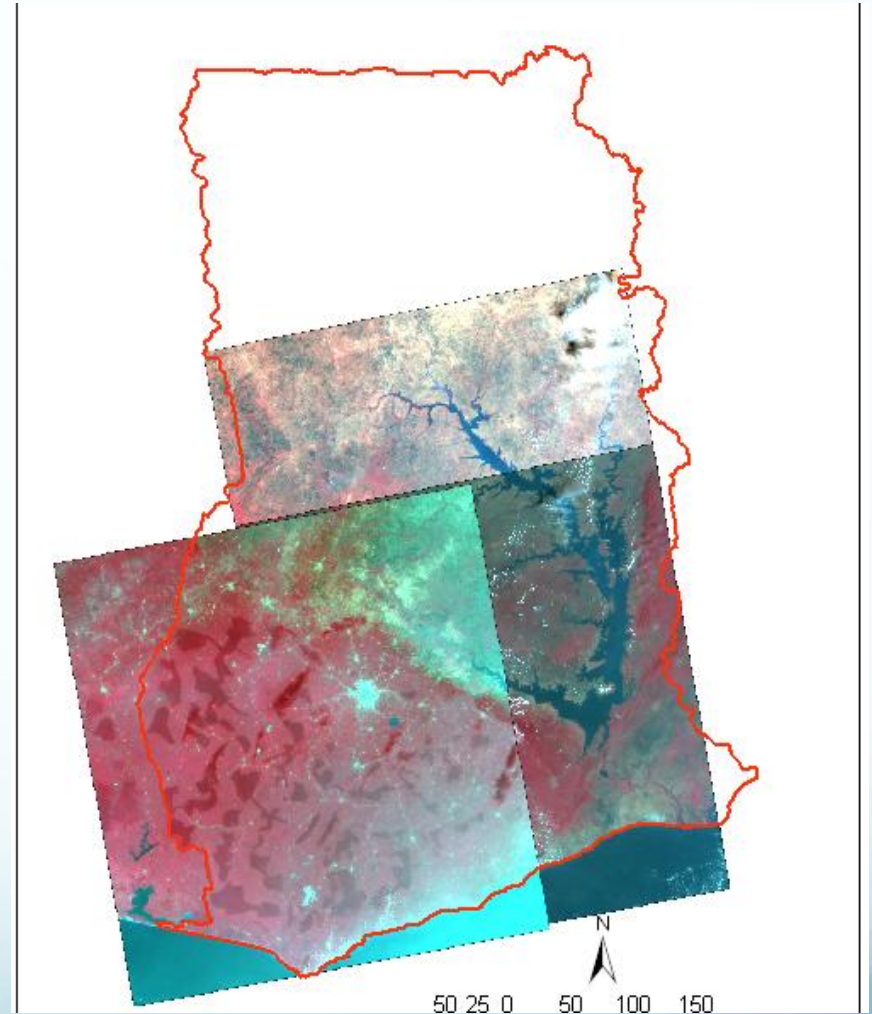
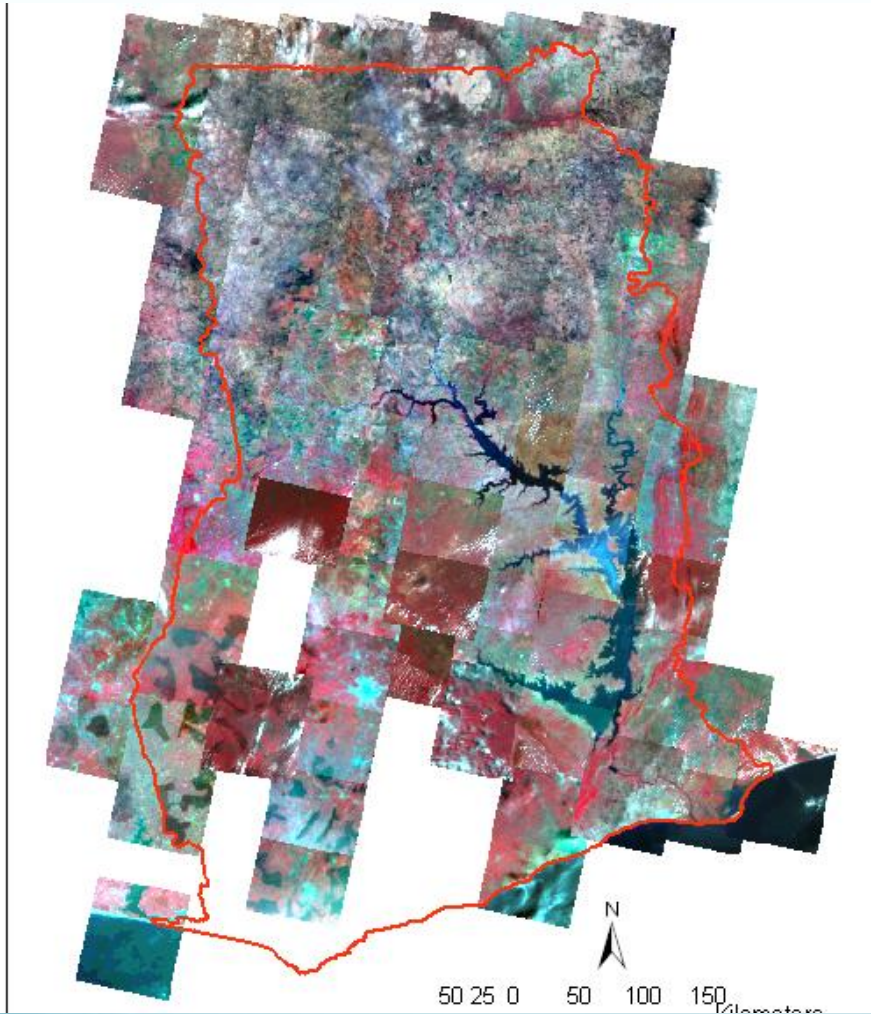
Introduction

- 2010 launching of Forest Preservation Programme (FPP)
- Assistance from Japanese Government
- Part of the preparation for REDD+
- Objectives
 - Implementing a comprehensive forest resource change assessment for historical period 1990- 2010
 - developing MRV protocols for a set of sub-national REDD demonstration activities that meet the accepted principles and procedures for the estimation and reporting of carbon emissions and removals

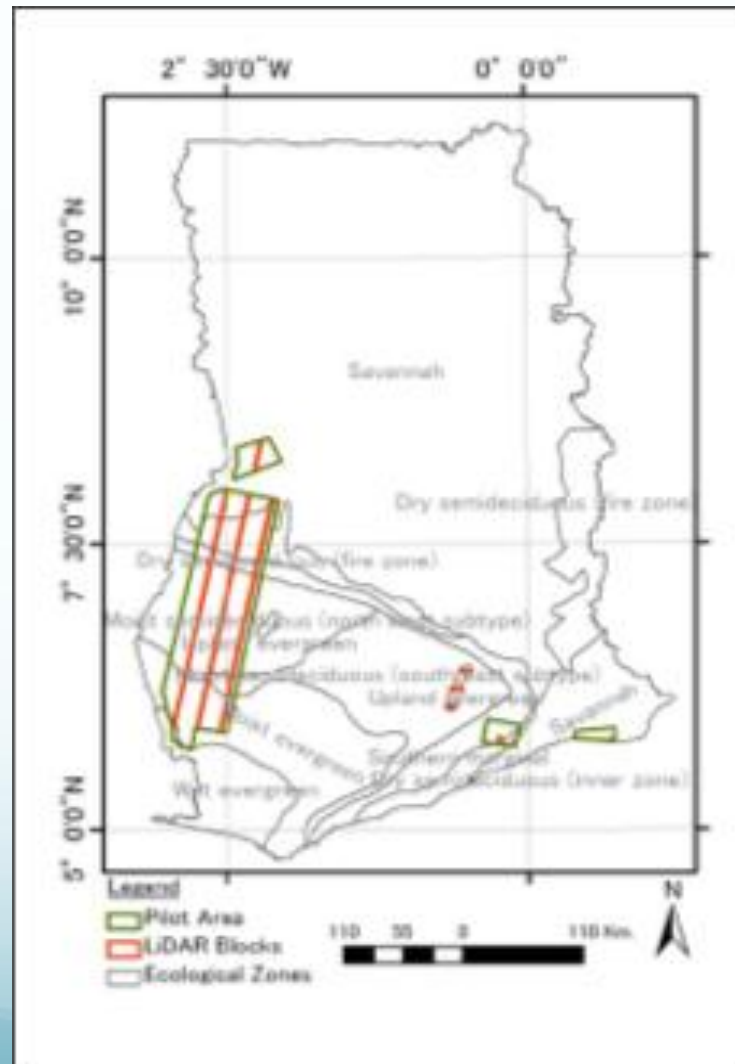
Methodology

- Data Acquisition and processing
- Selection of pilot area
- Forest stratification
- Image classification
- Ground validation and accuracy assessment

Data acquisition and processing



Selection of pilot area



Stratification

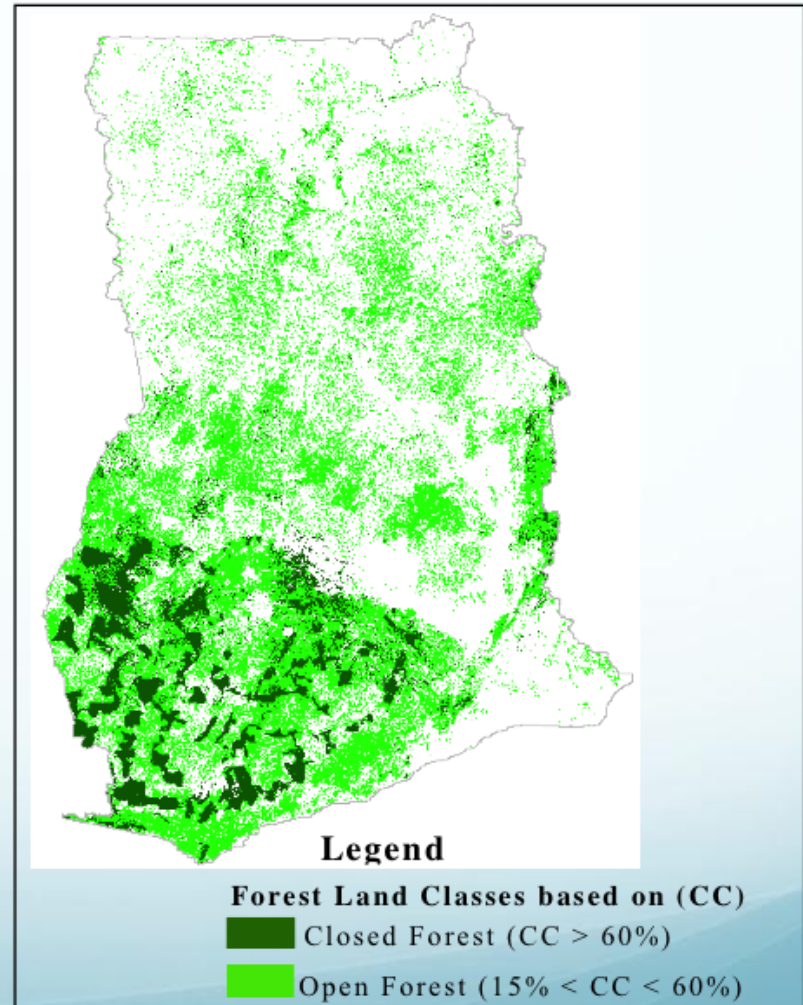
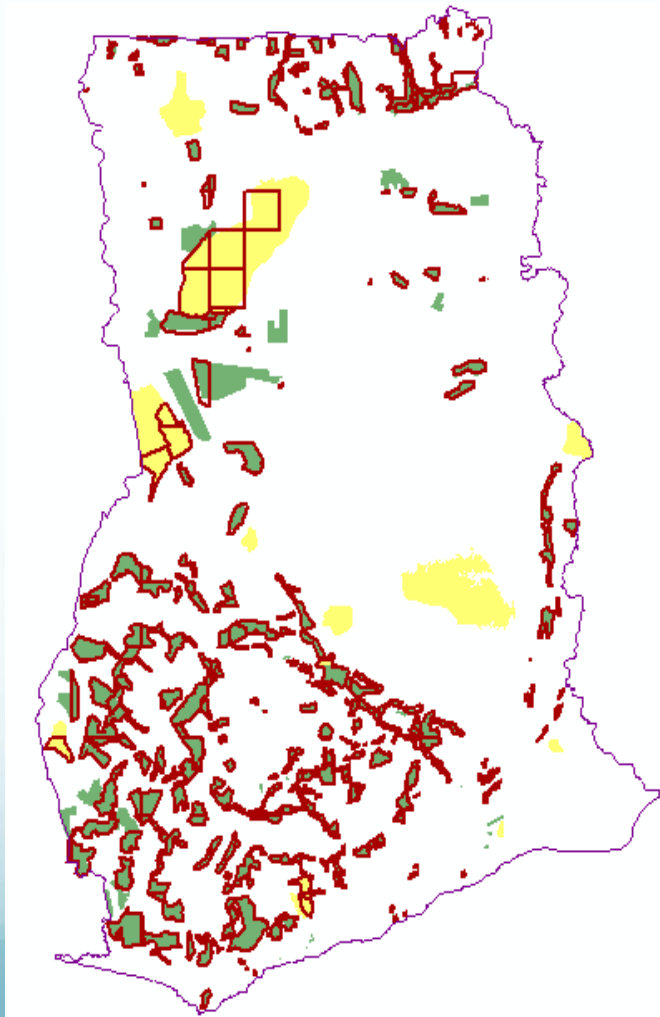
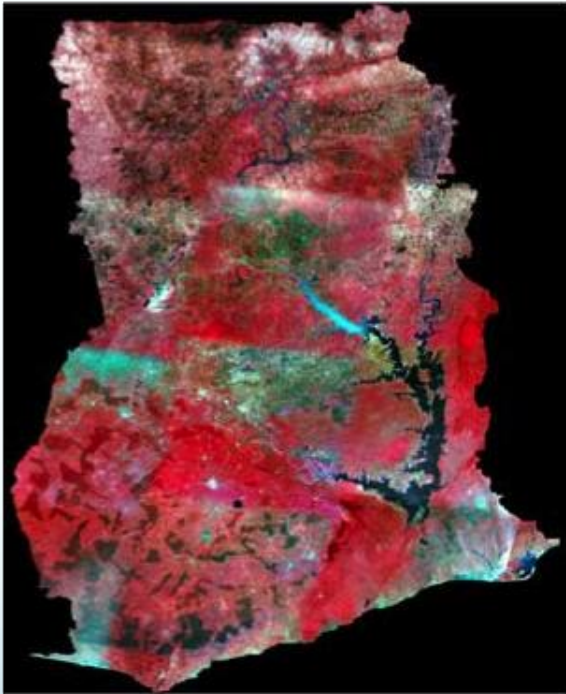


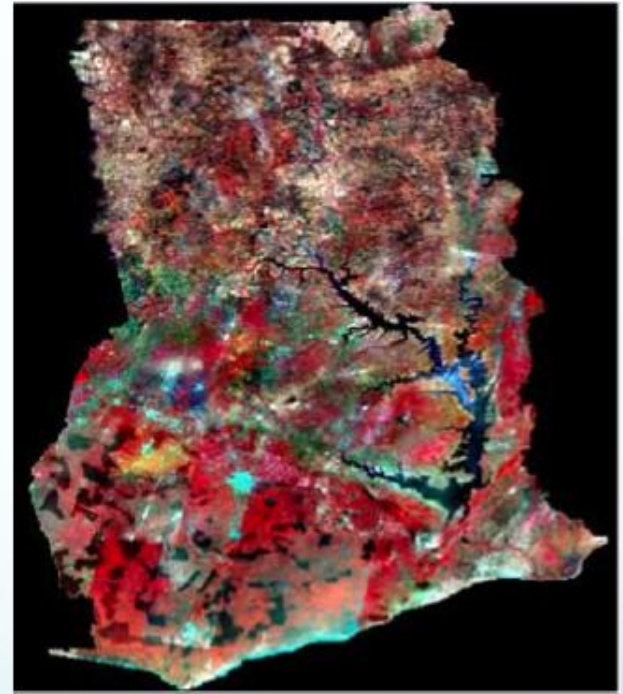
Image classification



a) Mosaicked 1990 Landsat
TM Images



b) Mosaicked 2000 Landsat
ETM+ Images

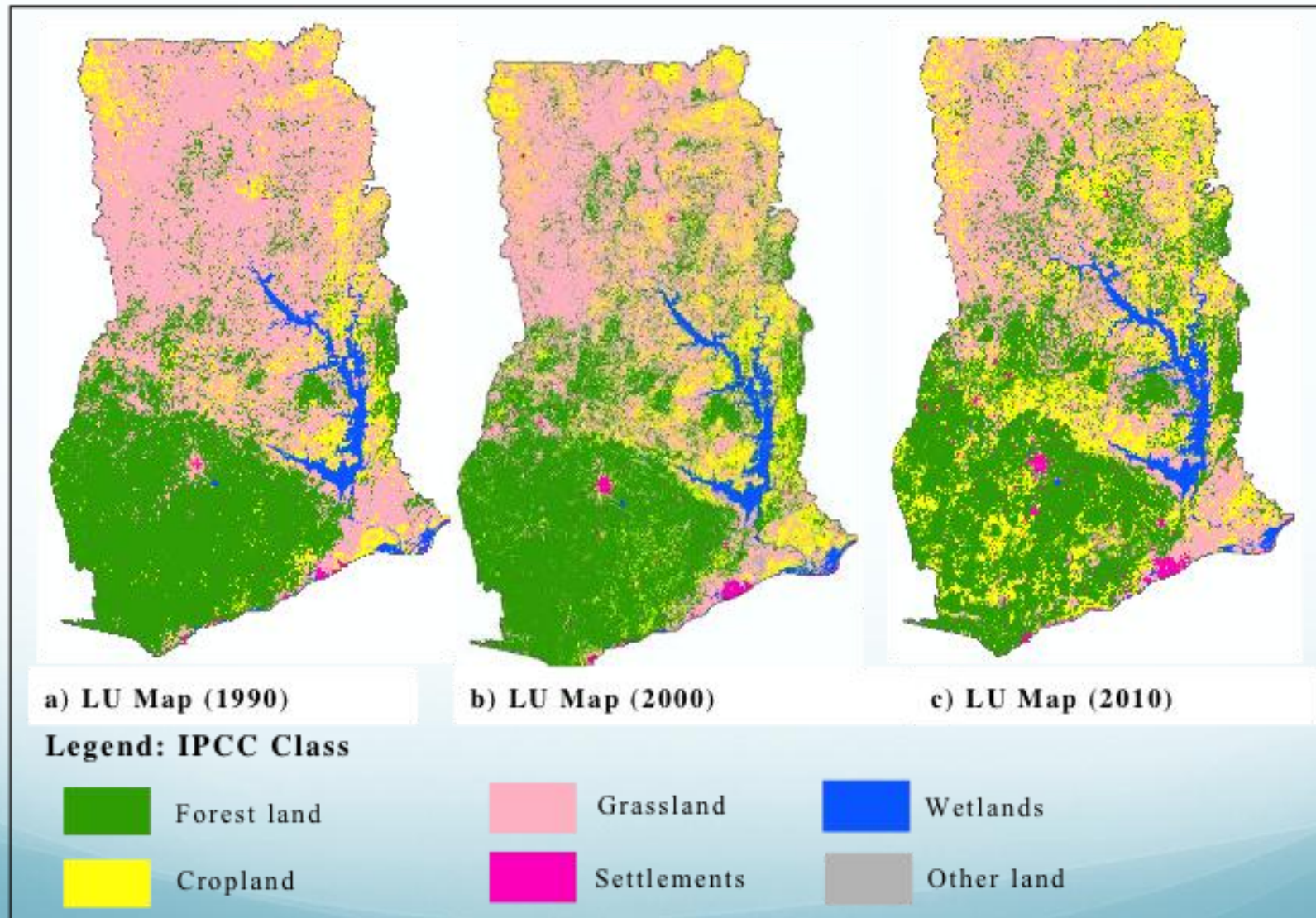


c) Mosaicked 2010 AVNIR-2,
DMC Landsat

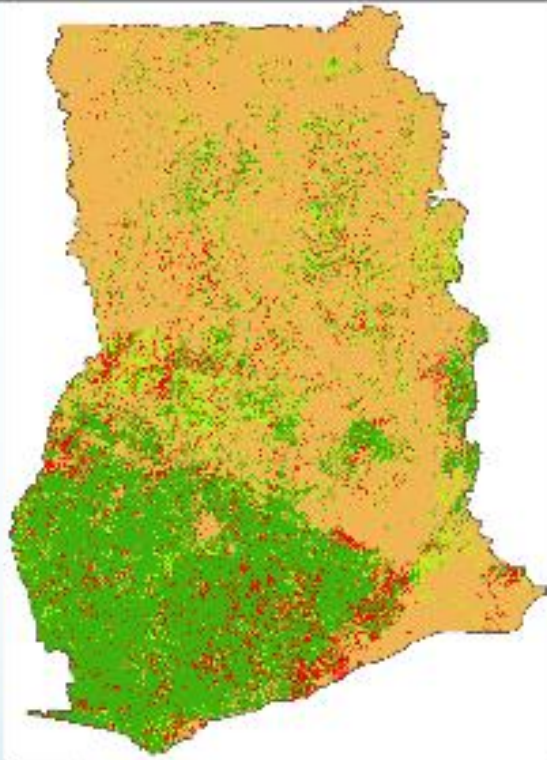
Results

- Land use maps for 3 epochs
- Land use change maps for 3 epochs
- Land use change matrix
- Above ground biomass map

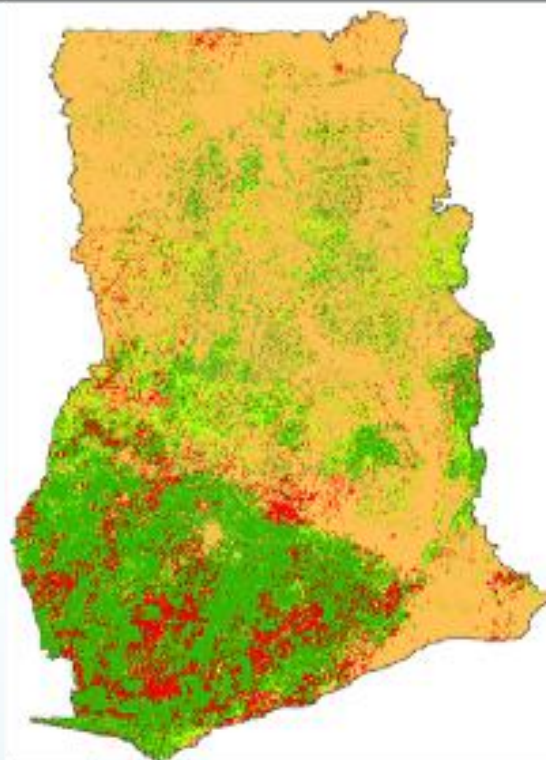
Historical land use for 3 epochs



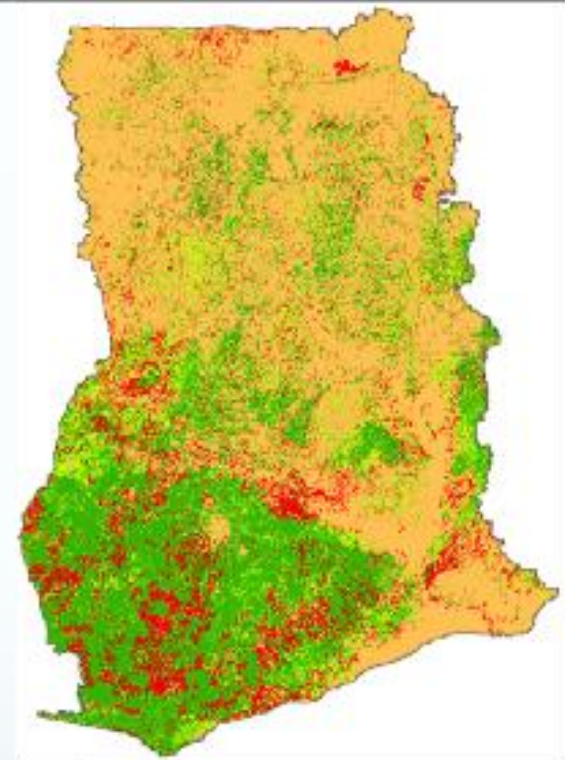
Land use change for 3 epochs



a) LUC Map (1990-2000)







b) LUC Map (1990 -2010)



c) LUC Map (2000 -2010)

Legend:

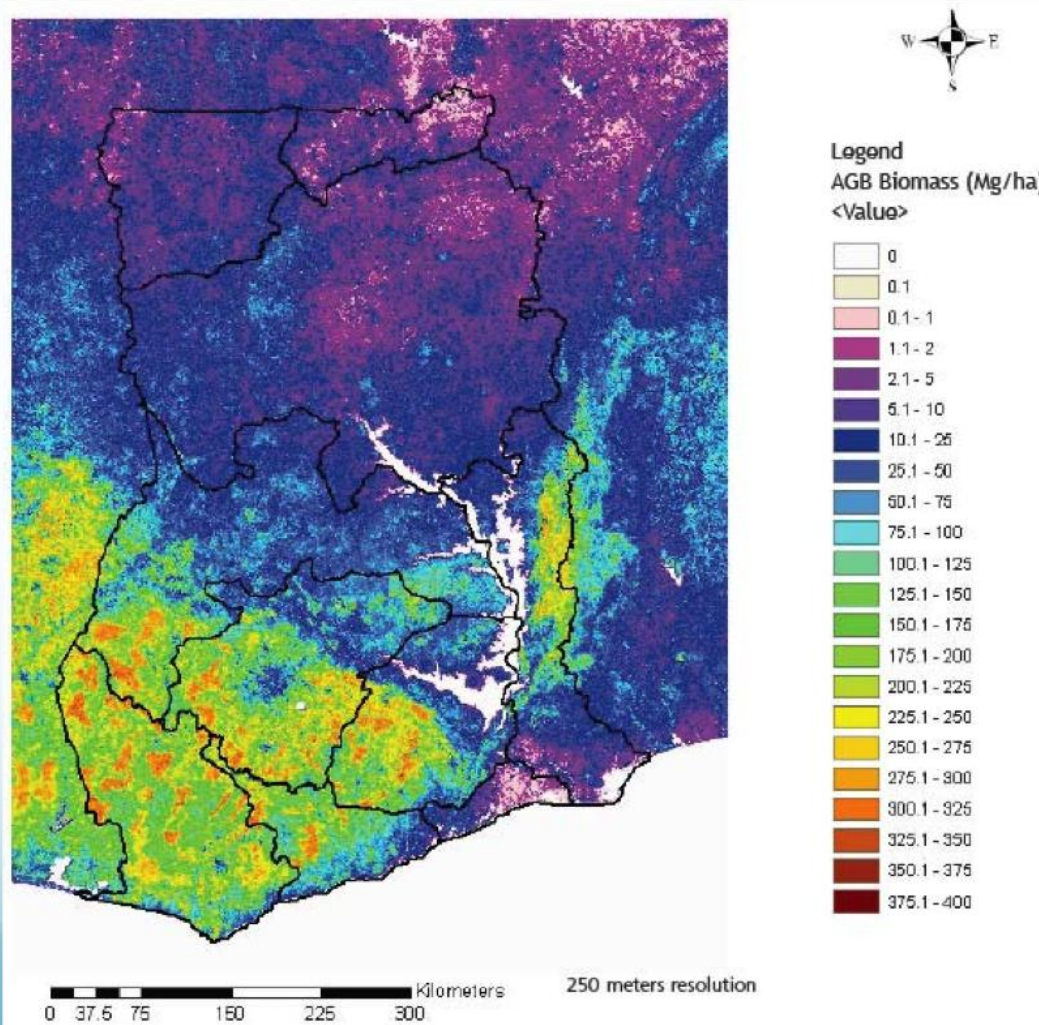
 Forest land to Forest land
 Forest land to Non-Forest

 Non-Forest to Forest land
 Non-Forest to Non-Forest

Land use change matrix

2010 \ 1990	Forest land	Cropland	Grassland	Settlements	Wetlands	Other land	Total LU Area in 1990 (Ha)
Forest land	6,718,627.10	1,218,912.30	615,327.70	45,828.30	11,302.50	17,404.10	8,627,401.90
Cropland	520,482.30	1,253,507.90	965,965.80	53,953.90	27,624.20	15,489.70	2,837,023.80
Grassland	1,950,799.50	2,741,931.70	6,566,839.70	136,399.90	92,576.60	76,194.10	11,564,741.50
Settlements	0	0	0	102,586.60	0	0	102,586.60
Wetlands	1,955.90	5,046.60	17,686.50	2,699.00	745,940.30	413.5	773,741.80
Other land	3,271.80	2,050.00	7,582.90	3,580.70	1,340.20	222.8	18,048.20
Total LU Area in 2010 (Ha)	9,195,136.60	5,221,448.50	8,173,402.60	345,048.30	878,783.90	109,724.10	23,923,543.90
Net LU Change Area (Ha)	567,734.70	2,384,424.60	3,391,339.00	242,461.70	105,042.10	91,675.90	!!

Above ground biomass map



Way forward

- Develop forest MRV
- Estimate the annual land use changes
- Updates of the land use map
- Quality checks
- Capacity building of staff

**THANK YOU FOR YOUR
ATTENTION**