

# **NATIONAL FOREST MONITORING AND ASSESSMENT IN TANZANIA**

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# INTRODUCTION

- Forests in Tanzania is estimated to cover 33.5 million hectares of land, which is about 40 percent of the total land area.
- About 57% of the area consists of woodlands on unreserved lands.
- Only about 13 million hectares of the forest area has been gazetted as forest reserves.

# INTRODUCTION

- Existing forest sector statistics are based on reconnaissance type inventories and unreliable assumptions about forest production and other impacts exerted by human activities
- It is estimated that forests are declining in the country at a rate of 92,000 hectares per annum due to human activities (illegal logging, refugees, mining, and encroachment.)

# FORESTS AND CARBON

- It is estimated that forest store about 87% of the planets above ground carbon
- A large proportion (20-30%) of global carbon emissions are thought to arise from tropical deforestation
- Reducing deforestation and increasing reforestation will have main impact on reducing carbon emissions
- There is a need for a relevant system for national monitoring, reporting and verification

# CARBON ESTIMATION PROCESS

- Acquire satellite data
- Processing of satellite data
- Detection of changes in forests
- In situ validation of the remotely sensed data
- Estimation of extent of forest change
- Calculations of carbon stock
- Estimation of carbon content

# FOREST MANAGEMENT

- Community Forestry and other decentralised forest management systems are harmonised to address forest degradation;
- NFA information is needed to improve forest and ecosystem management techniques;
- These data assist in assessing investment opportunities;
- NFA data are vital in making a review and analysis of the National Forest Policy, Legislation and NFP

# NATIONAL FOREST ASSESSMENT

- Currently, Ministry is working with stakeholders to formulate national guidelines for implementation of the Reduced Emissions from Deforestation and Degradation (REDD) programme with financial support from Norwegian Government.
- With financial & technical support from GOF & FAO, Tanzania is planning to carryout National Forest Monitoring and Assessment this year

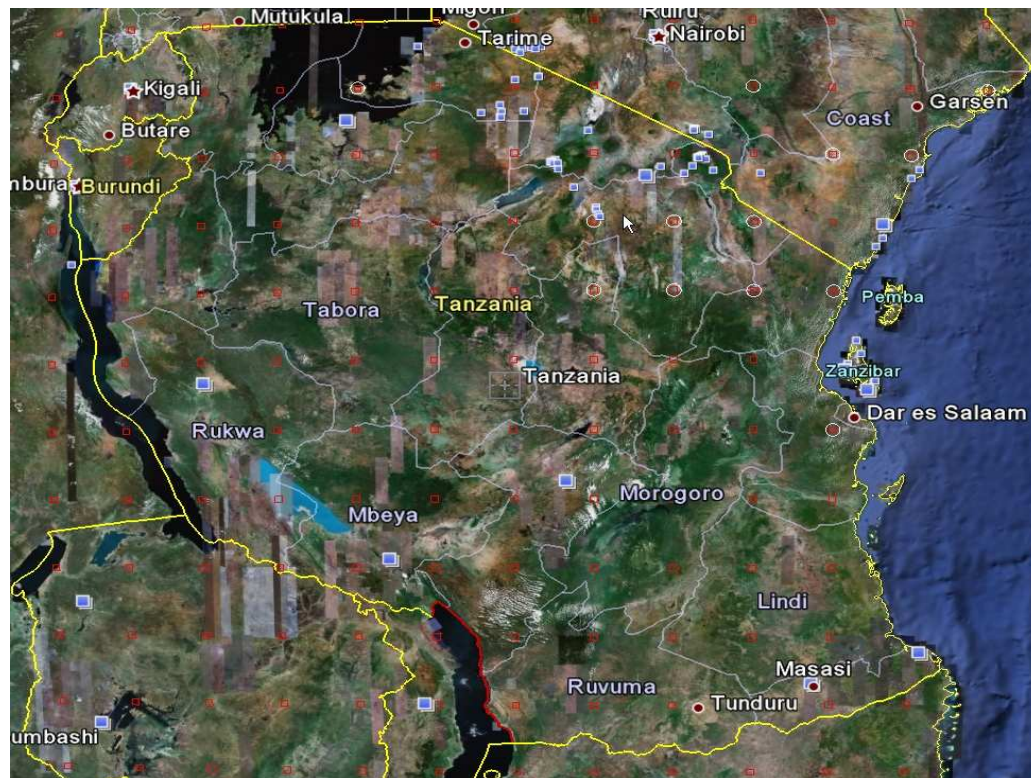
# NATIONAL FOREST ASSESSMENT

- Currently, we are working with FAO on Forest Resource Assessment FRA2010 and Remote Sensing Survey
  - **key data for climate analysis = forest area, type and change** (deforestation / afforestation)
- It is expected that Remote Sensing Survey will
  - **provide more consistent national forest area data**
  - **can be done same way for 1990, 2000, 2005 to get *trends***
  - **generate better historical data for forest area & change**
  - **improve the forest reporting capacity**

# FOREST MONITORING

- The Survey design is based on samples of satellite imagery collected at each of the junctions of the Latitude and Longitude lines around the Country.
- The coverage is comprehensive with the 10km square samples approximately 100 km apart.
- The small red squares are the 10 km sample tiles where Landsat data has been selected from 1990, 2000 and 2005.

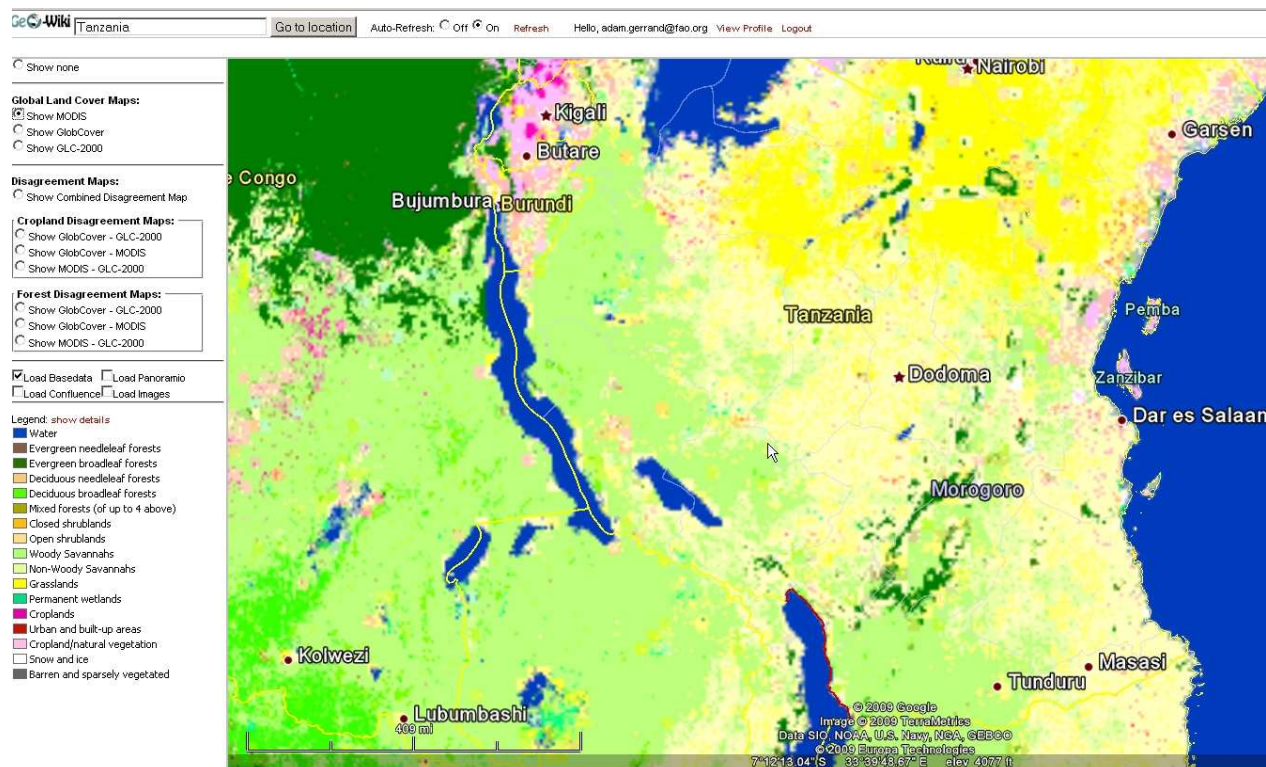
# FOREST MONITORING



# EXPECTED OUTPUTS

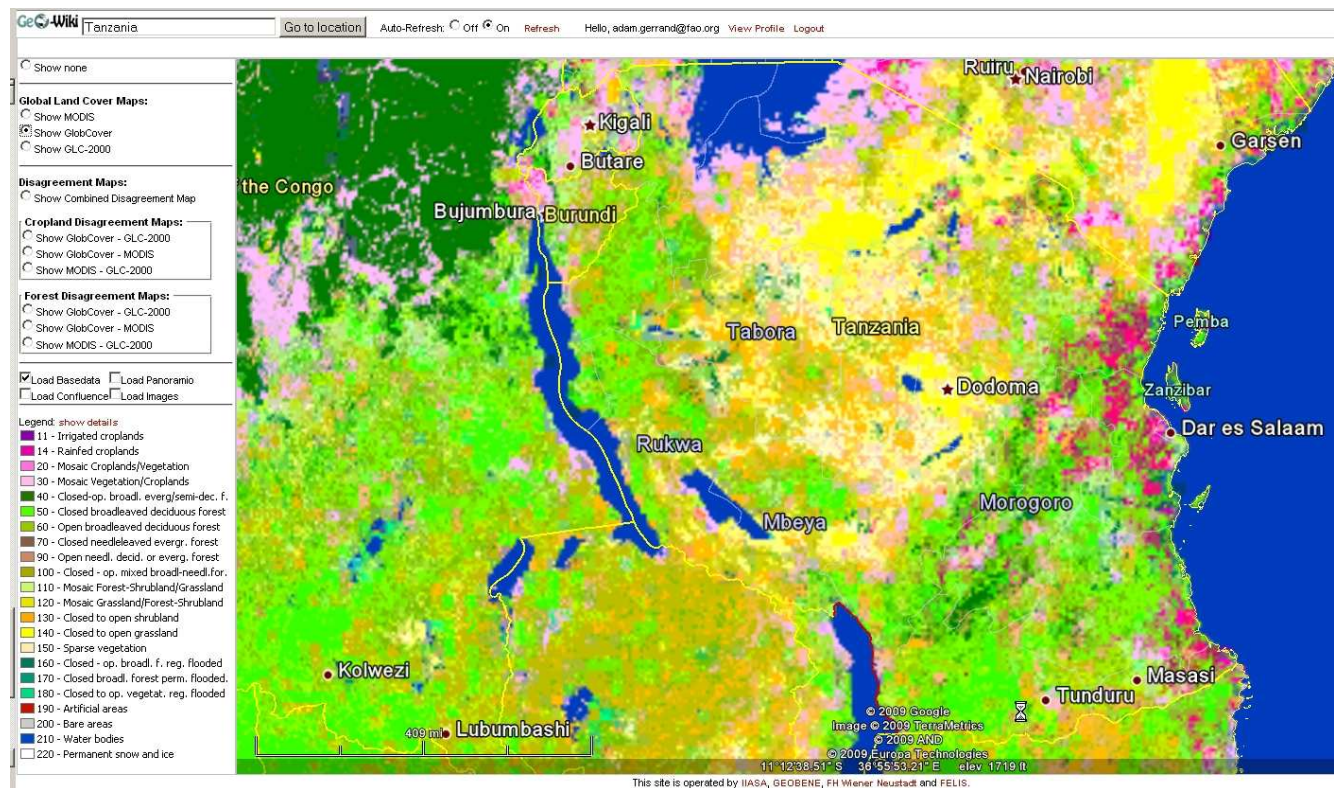
- Develop a long-term monitoring framework for forests, land use and environment **(e.g. can contribute to REDD)**
- Improved FD capacity to consistently monitor forest area and change over time
- Established baseline data for research & modeling
- **Easy access to Landsat satellite images supported**
- RS/GIS tools and equipment secured and strengthened to assist in future forest monitoring

# Vegetation map from MODIS



This site is operated by IIASA, GEOBENE, FH Wiener Neustadt and FELIS.

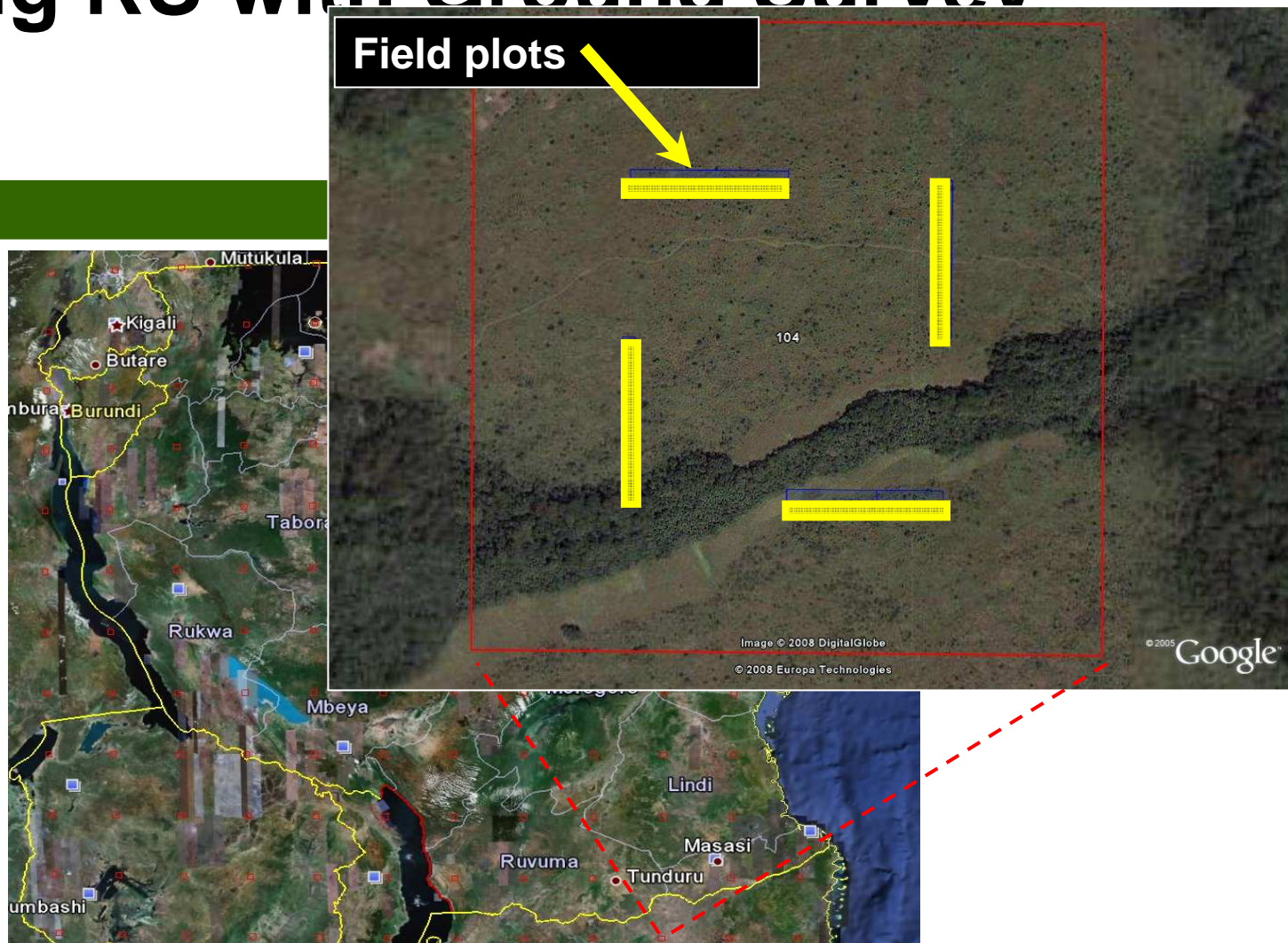
# Vegetation map from MERIS



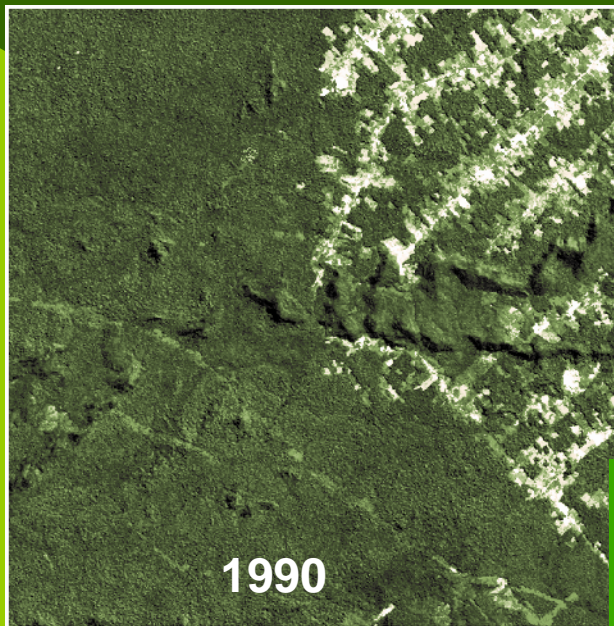
# EXPECTED OUTPUTS

- Biomass estimation is an important step for most Climate Change reporting, but this is **often very hard to get from remote sensing data alone.**
- **Linking remote sensing imagery with field plots on the ground** will help biomass estimation and particularly with later reporting on changes which can be detected using remote sensing.
- FAO has been working with Tanzania to set up National Forest Monitoring and Assessment systems that include field surveys using systematic sampling design as the global remote sensing survey.

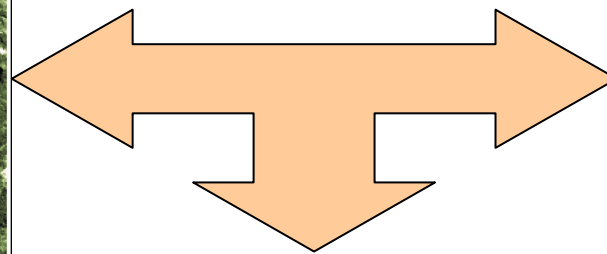
# Linking RS with Ground Survey



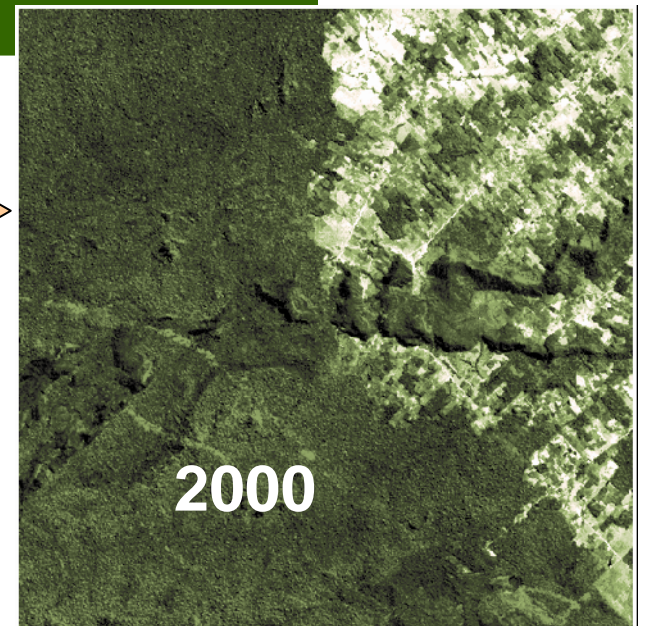
# CHANGE DETECTION



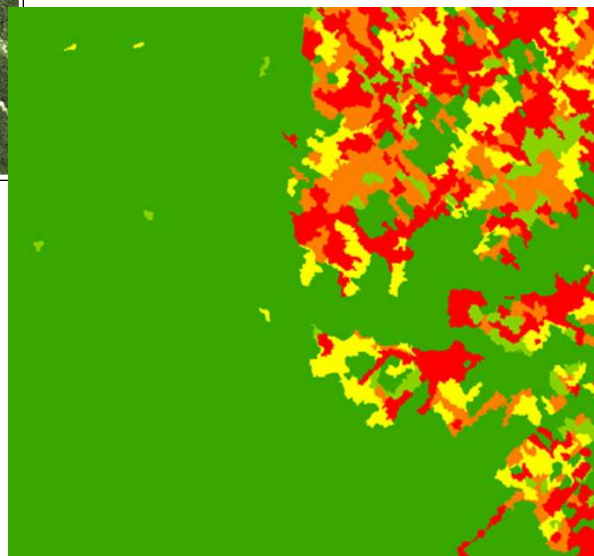
Landsat 1990



change 1990-2000



Landsat 2000



# DATA MANAGEMENT GAPS

- Different institutions produce data for their own uses
- Information sharing among these institutions is always lacking
- Format these data are captured and stored are not streamlined to meet the needs of data end users.
- Inadequate technical and financial support to establish efficient GIS & RS laboratory
- Inadequate supply of series of satellite images, processing software and technical know how.

# WAY FORWARD

- Continued support to SFM, REDD, Climate Change and NFMA initiatives
- National and International Community information sharing strengthened to reduce duplication of the same work and costs
- FD staff capacity building to undertake field data collection, image processing, validation and production of final results strengthened
- Forest resource database established, maintained and updated;
- Data producing Institutions required to produce and disseminate data into format suitable for end users.
- GEO & other Institutions are expected to support satellite images and other related technical requirement



**Ahsanteni**

**THANK YOU**

**Kob Khun Krub**