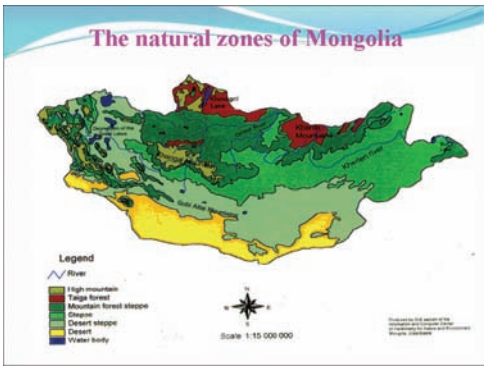
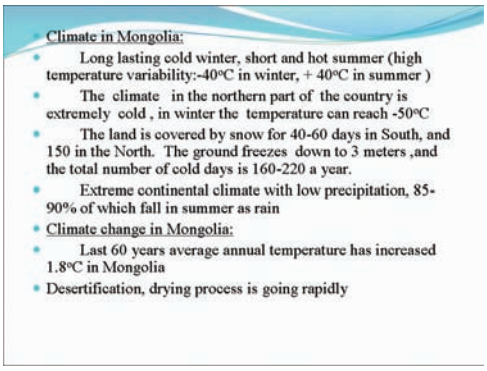
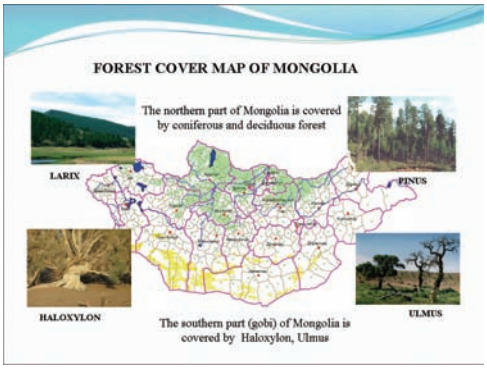
(Appendix 5.9.9)

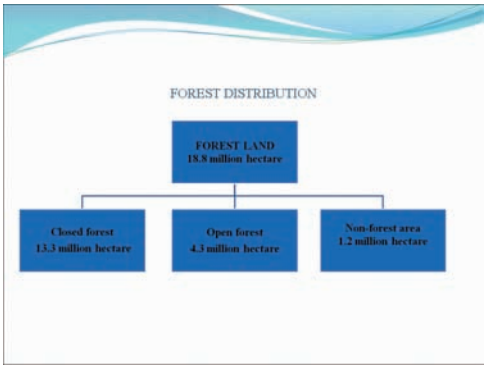
Extent of technical expertise in Mongolia

Mr. Batgombo Otgonsuren









Current Situation of Deforestation and Degradation

- Change of cloused natural Forests Area (million.ha)
  - 1990: 13.5
  - 2000: 12.7
  - 2008: 12.5
- Change of Growing Stock (m³/ha)
  - 1990: 112.0
  - 2000: 112.0
  - 2008: 110.9

The natural forest area and growing stocks are decreasing every year. Main causes of Change are:

1. Forest fire (wild fire)
2. insects Disturbance
3. illegal logging

Forest fire (wild fire)

insects Disturbance

illegal logging

Brief history of NFI Mongolia

The Russian-Mongolian joint expedition started Mongolian national forest inventory in 1956 first time. Study results:

-First formal data about forest foundation of Mongolia

-National specialists were trained by Russian experience.

The second national level forest inventory was done by Russian and Mongolian joint expedition again in 1974. Study results :

-Forest inventory for aerial photographic new technology was used.

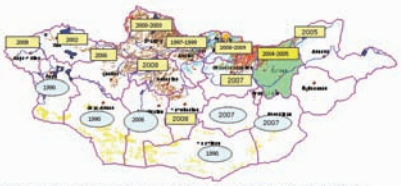
-General plan how to use the forest resource of Mongolia was refined.

After that forest inventory has not been done for national level.

Considered that since 1990 Mongolia changed to Market economy, national forest inventory policy was reformed. 1990-2005 forest inventory has been finished for provinces one by one. Since 2006 forest inventory is recurring.

Nowadays every year 1.9 million hectare forest areas are researched.

OVERVIEW OF FOREST INVENTORY IN MONGOLIA



The forest inventory have to be done every ten years according to the Mongolian Law on Forests
-NFI frequency is 10 years by province
1.9 million hectare area can be inventoried per a year.

Brief on National Forest Inventory

Latest National Forest Inventory Design

The forest inventory system has been described previously that is based on the Russian -forest inventory system. The forest is divided into compartments based on topographic features as natural boundaries (aspect, ridge, creeks).
The compartments are divided into sub-compartments (average area approximately. 100 ha) and delineated by main timber species, average diameter, and age class.
For each sub-compartment the species composition, diameter distribution, standing timber volume, natural/artificial regeneration, damage (fire, insects), and Non timber forest products -in some inventory projects – are recorded.
Prior to each forest inventory, a sample plot is delineated and all trees are sampled. This exercise is intended as a "calibration" of the forest inventory team in order to define which volume tables and site indices should be used for the inventory of the region.

Brief on National Forest Inventory

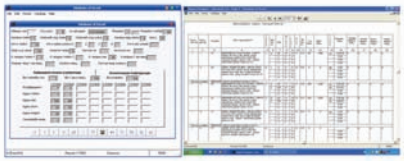
MAPPING FOREST COVER

Mapping on Arc View 3.3 GIS application /since 2002/

Scan the topographic map with compartment and sub-compartment polygon based on air-photograph. Geo-process /geo-reference/ scanned map and digitize forest cover polygons. Join attribute data to map to classify forest types

Brief on National Forest Inventory

Data processing on database software "FOREST"/Visual fox pro 6.0/



Entering field data into the forest database software "FOREST" /visual fox pro 6.0/. Developing data analyze and creating results for forest management planning.

Brief on National Forest Inventory

The Results of National Forest Inventory forest detailed map, forest management report and forest database book have made for particular given area /province, sub-province/ of the country

REMOTE SENSING (SPACE) TECHNOLOGY IN FORESTRY INVENTORY OF MONGOLIA

Current situation

The remote sensing (space) technologies are only beginning to use for forest inventory, forest mapping and forest management

The first remote sensing method was used in forest survey for 60 thousands hectare area in 2002

Under the joint research of GTZ project and Forest research center of Ministry of Nature and Environment have used remote sensing technology on forest inventory, forest mapping and forest management planning in Khan-Khentii special protected area of Mongolia

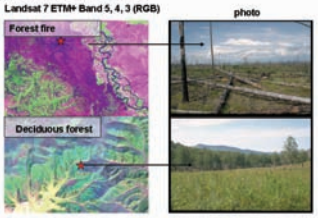
REMOTE SENSING (SPACE) TECHNOLOGY IN FORESTRY INVENTORY OF MONGOLIA

STUDY RESULTS

- Developed forest cover map based on satellite image / scale 1:100 000, 1 : 50 000/ for special protected area.
- Developed detecting keys of forest type on satellite images
- Geo-referenced
- Used the systematic sampling design
- 12 trees are measured on sample plot
- Forestry sector's specialists are trained in remote sensing method.

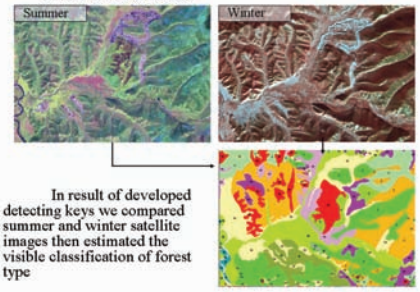
REMOTE SENSING (SPACE) TECHNOLOGY IN FORESTRY INVENTORY OF MONGOLIA

METHOD OF DEVELOPING DETECT KEYS



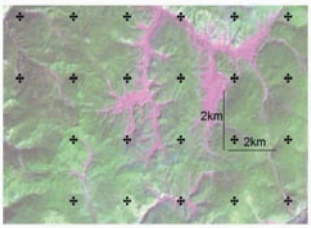
Developing the detecting keys to identify forest type on satellite image by using color. Then ground truth work have been done.

METHOD OF CLASSIFICATION



In result of developed detecting keys we compared summer and winter satellite images then estimated the visible classification of forest type

Systematic sampling design used on sample plot
Destination of sample plots are 2 kms
The closest 12 trees with the central point are measured



Collected data on sample plot /12 tree/

- COORDINATE
- SLOPE
- TREE SPECIES
- DIAMETER OF BREAST HEIGHT
- TREE HEIGHT
- AGE CLASS
- TIMBER VOLUME
- FOREST DAMAGE (FIRE, INSECT, INJURY)

Benefits

•Estimate forest cover change in short time caused by forest fire, insect, illegal logging
•Geo-reference forest cover map on each sub-provinces and provinces
•Collecting new datas of the recent years

Challenges:

Remote Sensing technologies are not used NFI in Mongolia because of not enough budget forest satellite data, lack of professional capacity, non licensed Remote Sensing software

Suggestions for promoting and strengthening NFI System

Problems:

The frequency of the "national" forest inventory is set at 10 years.

At the moment, it is avarage 20 years. The reasons are a lack of forest inventory survey crews as well as no adapted design for a national forest inventory

. The technical term used for forest inventory is "forest taxation". The existing legal regulations provide precise guidelines. Existing old method have been used for 35 years.

Beginning to create GIS database of forest inventory, updating is every year for certain area but not used for national level

Lack of professional capacity /GIS, Remote sensing specialists/

From nowadays forest inventory are tendered and professional organizations have an opportunity to submit a quote.

Even though Remote sensing technology is planned in 2002 it can not be implemented for whole forest found area on account of economy problem .

Suggestions for promoting and strengthening NFI System

- Suggestion for forest Policies

Forest inventories are a tool for the forest manager to obtain needed information serving its objectives. Forest inventories are differentiated according to objectives and size. All planning of forest inventory and the drafting of forest management plans has to be in strict correlation with the purpose of the land management and the need for information. The collection of unneeded information increases unjustified costs. In Mongolia, only one type of forest inventory (regional inventory) is conducted Consequently, the general approach of forest inventory has to be fundamentally changed. Different forest inventory techniques should be developed at the:

-National level: national forest inventory (State of Mongolia);

-Regional level: reconnaissance inventories (Province, District);

- Local level: working plan surveys (Forest User Group, Forest Concession);

New methods needs to be implemented in Field monitoring and assessment (surveys, inventories)

The need assistance for development countries

Mongolia forest inventory working announce Tender professional private sector improve the ability support of educate specialist necessary.