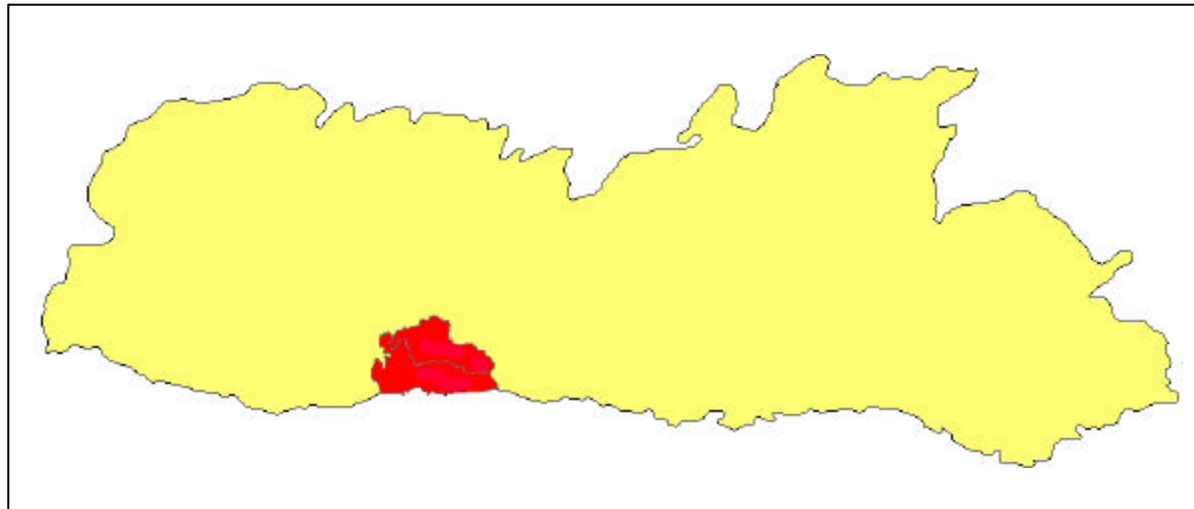




Technical Report

"Landuse/ Landcover Mapping using Remote Sensing & GIS Techniques in Balpakram Baghmara Community Conservation Landscape - Meghalaya"



Prepared by

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Supported by

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And finally we express our gratitude to Samrakshan Trust – Meghalaya Team who carried out the field survey, to collect empirical data required for the project.

Study Areas:

The Study area lies on the Southern part of the state of Meghalaya in the south Garo Hills district. It is surrounded by East Garo Hills in the north, West Khasi Hills in the east and Bangladesh in the South between **25° 21 38 N** to **25° 09 58 N** and **90° 42 00 E** to **90° 58 04E** . The Simsang River runs through the Western part of the study area. Balpakram hills is adjacent to the Study area. The forests of BBCCL can be broadly grouped under the tropical type and the temperate type.

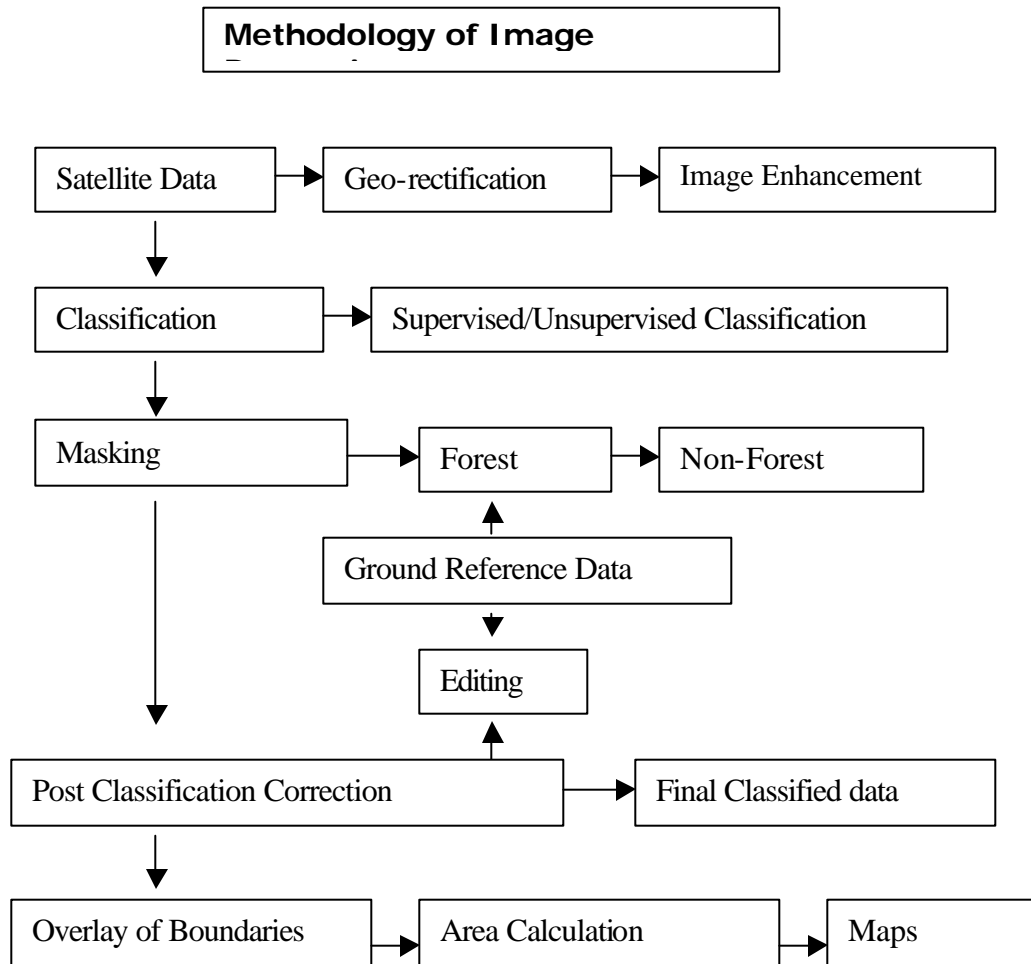
The nature of forest fragmentation in these landscapes is mainly attributed due to shifting cultivation; illicit felling, deforestation for creating agricultural lands (Khan et al., 1997).

Scientific management to control this kind of an environmental degradation would need comprehensive information on varying scale of forest cover type, resource component, land use practices and administrative details in the format of national geospatial data frame. Remote sensing based database should finally help the effort of saving forest resources.

GIS and Remote sensing Technology:

Remote sensing is the science and art of obtaining information about an object, area or phenomena through the analysis of data acquired by a device that is not in contact with the object, area, or phenomena under investigation. The data analysis process involves examining the data using various image processing techniques by a digital computer. Its application in the field of environmental management is of great prominence.

Methodology



Flow chart illustrating the methodology of Digital Image Processing

Methodology Adopted for Thematic Data Extraction from the Satellite Imageries:

ERDAS image processing software and ARC/GIS Software were used for the project. Erdas 8.7 Image Processing Software was used for digital processing of the spatial data. Digital image processing techniques were applied for the mapping of the land use/land cover classes of the provided area from the satellite data. The methodology applied comes under following steps:

Image Extraction:

Satellite imageries of was obtained from NRSA, Hyderabad on CD and a sub set for the Area of Interest was created through ERDAS image processing software.

Geo-Rectification:

Geometric correction includes correction for geometric distortions due to sensor, earth geometry variations and conversion of the data to real world coordinates (e.g. Latitude and Longitude) on the Earth's surface.

The satellite imagery was geometrically rectified with reference to the geo-referenced toposheets and vector data,

Image Enhancement :

Image enhancement is one of the important image processing functions primarily done to improve the appearance of the imagery to assist in visual interpretation and analysis.

Various options of image enhancement techniques were tried out to get the best image for visual interpretation. Histogram equalized stretch enhancement techniques was applied to the imagery of the study area for better interpretation of different features in the satellite imagery.

Classification:

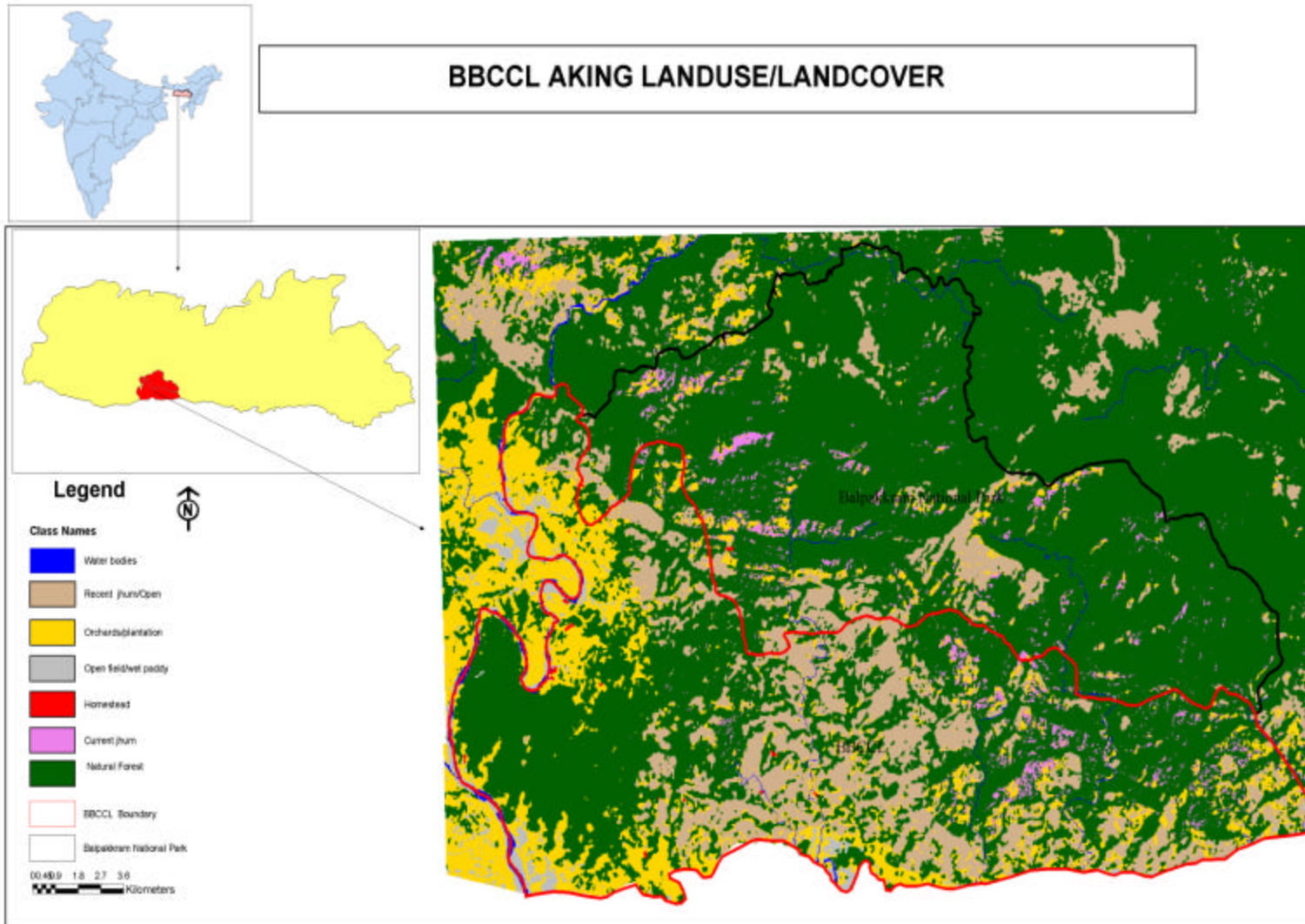
The classification of the imageries was performed by using unsupervised classification. In this particular type of classification spectral classes are grouped first, based solely on the numerical information in the data, and are then matched by the analyst to information classes. Unsupervised classifiers do not utilize training sets as the basis for classification. Rather it involve algorithms called clustering algorithms, that examine the unknown pixels in an image and aggregate them into a number of classes based on the natural groupings or clusters present in the image values. The analyst specifies the desired number of classes. Thus unlike supervised classification, it does not start with a pre-determined set of classes, however it is neither done completely without human intervention.

Output

A. Area covered by each "Land Use" category.

Sr.No	Land Use / Land Cover Class	Area In Sq Meters	Percentages
1	Natural Forest	39,65,18,409.0	67.853
2	Orchards / Plantations	6,88,24,161.0	11.777
3	Open Field / Wet Paddy Cultivation	70,44,327.0	1.205
4	Homestead	4,10,427.0	0.071
5	Recent Jhum	8,96,32,737.0	15.338
6	Current Jhum	1,70,19,234.0	2.913
7	Water Bodies	49,25,124.0	0.843
Total Area -		58,43,74,419.0	100.000

B. Imagery.



Boundaries of the Protected Areas Sourced from WII GIS Database.