

**Mapping & Analysis of Land Use & Land Cover (LU/LC) Using Clustering
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Abstract—Nanded have rapid development in every aspect. By using satellite images and application of remote sensing and GIS for land use and land cover change detection were used. For the analysis, ETM+ image acquired from official websites USGS. The main challenge in land use and land cover changes using the remote sensing data which how to provide the accurate and geospatial information. Here we used very basic approach clustering to get LU/LC and analysis of that area.

IndexTerms—ISO Cluster, K Means, RS, GIS, LU/LC, Clustering

I. INTRODUCTION

Remote Sensing research focusing on image classification has attracted the attention of many researchers and a number of researches have been conducted using different classification algorithms. It should be noted that valuable surface information extraction and analysis is also well performed using image classification. Image classification is the process of assigning pixels of continuous raster image to predefined land cover classes. Here we have collected Landsat 8 Image from USGS website and created different LU/LC classes such as agricultural, vegetation, water body, follow land, settlement, and barren land.

II. IMAGE CLASSIFICATION

Multispectral classification is the process of sorting pixels into finite number of individual classes or categories of data based on their data file values, if a pixel satisfies certain set of criteria, the pixel assigned to the class that correspond to that criteria.

Grouping of similar pixels and separation of dissimilar one. Assigning class labels to pixels. The overall objective of image classification is to automatically categorize all pixels in an image into land cover classes. Multispectral classification performed using variety of algorithms

1) Unsupervised Classification**2) Supervised Classification****3) Object based Classification****1) Unsupervised Classification**

Approach attempts spectral grouping that may have an unclear meaning from the user's point of view. Having established this analyst then tries to associate an information class with each group.

1) ISO Cluster 2) K-Means**2) Supervised Classification**

Supervised classification can be defined normally as the process of samples of known identity to classify pixels of unknown identity. Samples of known identity are those pixels located within training areas.

3) OBJECT BASED CLASSIFICATION

To classify raster image first we create segmentation and then generate statistics of that image and apply machine learning algorithms which will improve accuracy of classification, here we used different kernel function which eventually improve performance as well as accuracy.

Kernel Functions

- 1) RBF 2) Sigmoid 3) Linear 4) Polynomial

III STUDY AREA AND DATA USED

The scanned images of the SOI toposheets no fifty six E/3, E/4, E/8 and E/11 on the size of 1:50000 have furthermore been used for the learning space; the images are downloaded from usgs website.

Image Sensor	Year	Source
a) ETM+	Year 2000	USGS

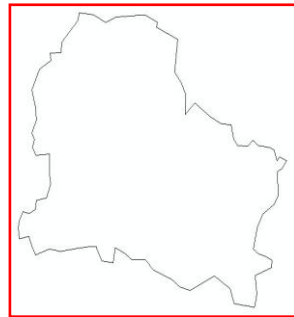


Fig.1NandedTaluka Boundary

IV RESULT AND DISCUSSION

Here we have shown the land use land cover statistics of different classes, using ISO cluster and K Means algorithm overall area occupied is **367.3158335 Sqm** and we have shown how much covered by each class in sqm as well as in percentage,

TABLE 1 Area Covered

Sr. No.	LULC Class	Area Covered Square Kilometer per Class (km ²) ISO CLUSTER	Percentage % ISO CLUSTER	Area Covered per Class (km ²) K Means	Percentage % K Means
1	AL	84.48264171	23	80.80948	22
2	WB	6.24436917	1.7	4.775106	1.3
3	VG	66.48416586	18.1	60.46019	16.46
4	FL	81.54411504	22.2	76.58535	20.85
5	S	58.40321753	15.9	72.36122	19.7
6	BL	70.1573242	19.1	72.32449	19.69
7	Total	367.3158335	100	367.3158335	100

AL :Agricultural Land **WB** : Water Body **VG** : Vegetation
S : Settlement **FL** :Follow Land **BL** : Barren Land

Fig.2 LU/LC Map ISO Cluster

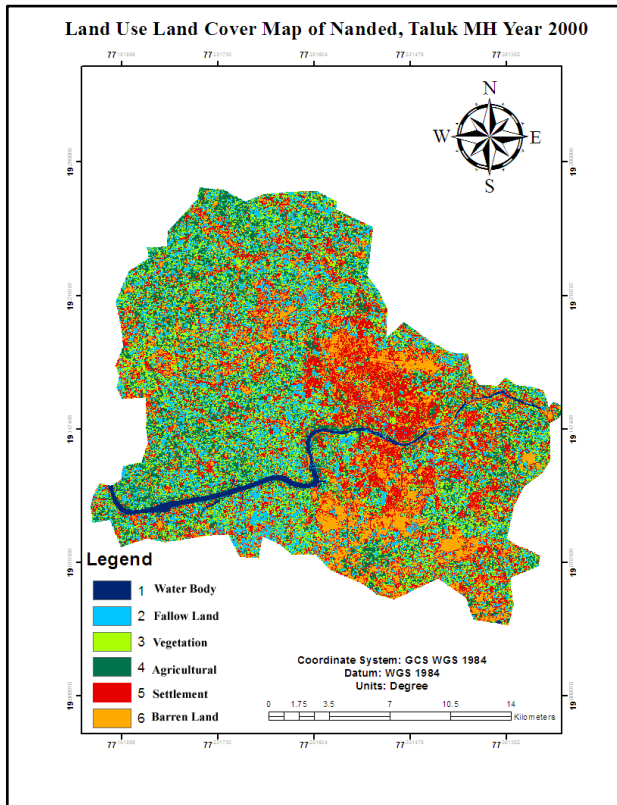


Fig.3 LU/LC Map K-Means

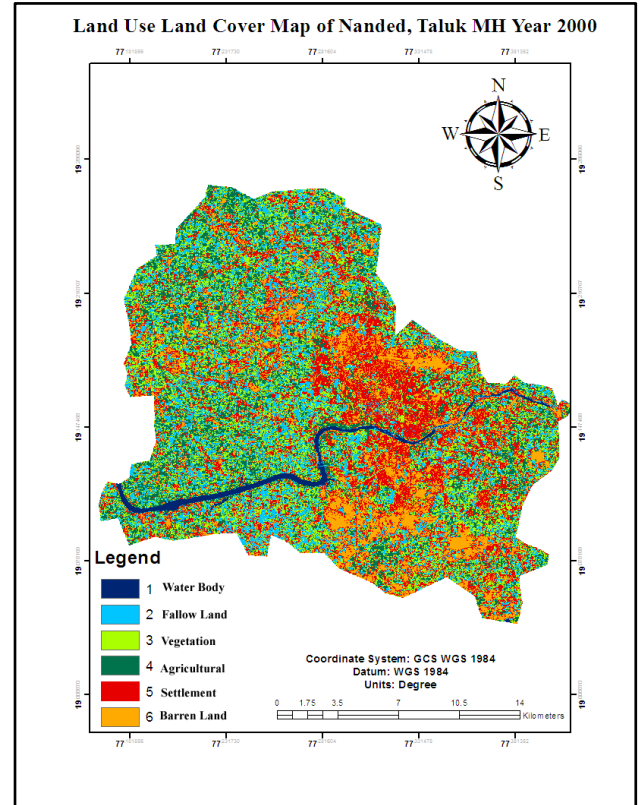
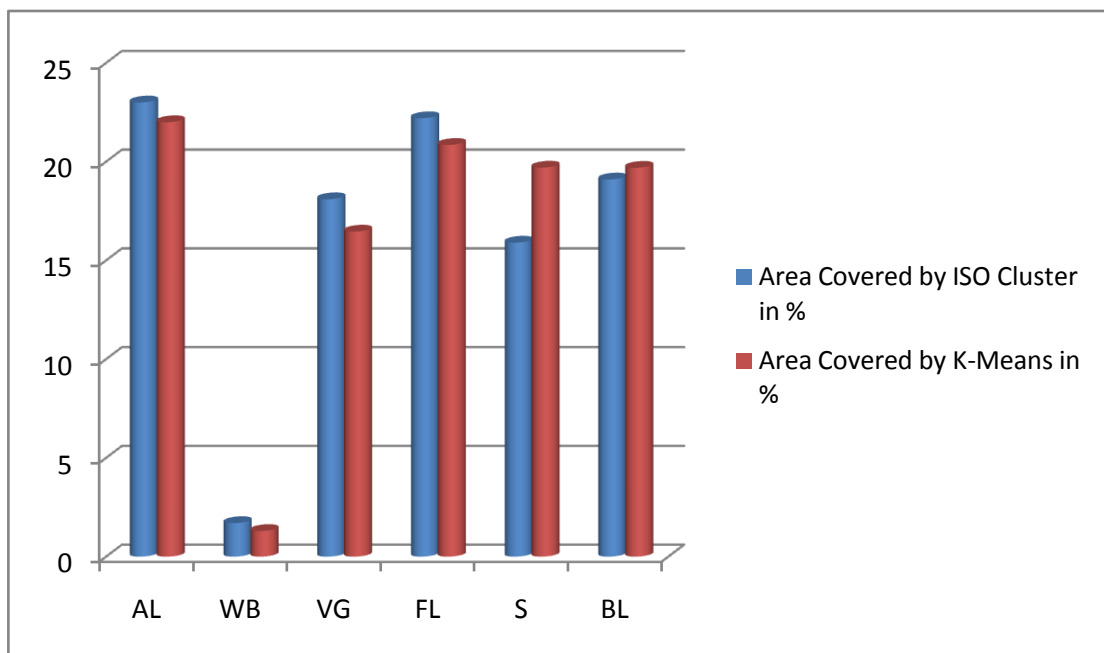


Fig.4 Comparison of Area covered by ISO Cluster and K Means Algorithms



V. CONCLUSION

Here we have obtained result of LU/LC of Nanded area using two different algorithm and we have mapped inaccessible area without knowing ground reality here we lack in accuracy but we can get overall idea about LU/LC of that area.

VI. REFERENCES

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