

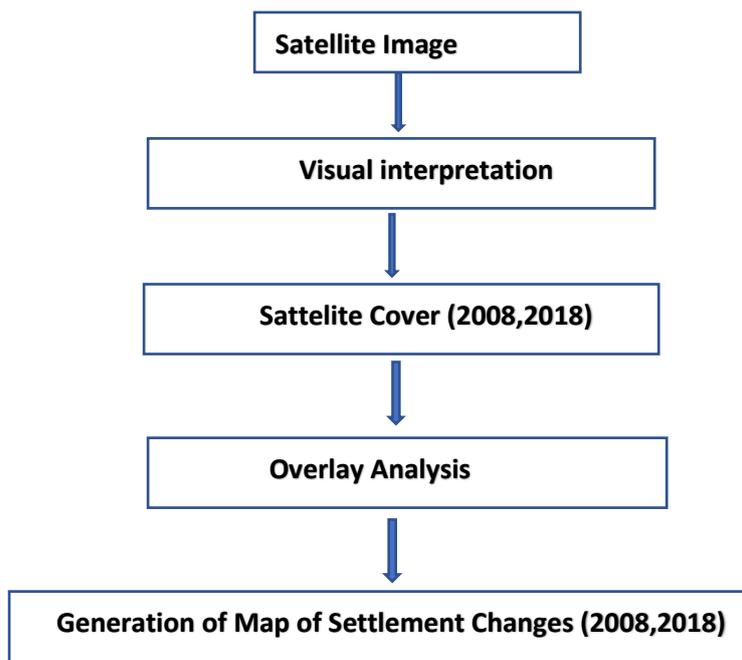
Change Detection in Settlement of sangli District of Maharashtra using QGIS Software

Abstract:

Rapid urbanization has significant impact on resources and urban environment. This study aims to quantify changes in Settlement area of Sangli District, Maharashtra located in India, Sangli District is a district of Maharashtra State in west-central India. Sangli District is lying between 16°43' to 17°38' north latitude and 73°41' to 75°41' east longitude. For further showing change detection in settlement we can followed bellow Methodology.

Methodology:

This study is based on image processing and integrated analysis in a geographic information system environment. For further showing change detection in settlement we followed bellow Methodology.



Material and Source of Data:

In the present study, for assessing the temporal changes in the Settlement cover IRS LISS III from NRSC were used. As a time, series data, the Survey of India (SOI) toposheet of was also used. Working on this project started with the collection of satellite data of Sangli District. Satellite data of LISS III for the year 2008 and 2018 was downloaded from BHUVAN website.

Software Used:

Open source QGIS Desktop 3.4.2 software is use for all the digitization and further process.

We collected data in same year map data in various tiles in single band like panchromatic .to make this data in informative we performed layer stacking data further mosaic the data using QGIS Software. (Raster merge tool)

After the downloading satellite image in year 2008 and 2018. we georeferencing image firstly.

Georeferencing Satellite image:

The Georeferenced Editor dialogue box opens up. Select a pixel near one of the corners of the submap image and also try to locate the same pixel in the complete image that have on the side.

1. Make sure that the selected pixels in both the images represent the same area. Now, we will input the point using the input dialogue box and transfer the lat long information to the dialogue box.
2. Similarly, add point from the other three corners. After addition of the third point, the coordinate of the fourth point area are automatically calculated as per the model. Check, If any correction are required in the coordinates of the fourth points. When the correction is made and the point is added, we will be observed that an error component appearing the last two columns.

Digitization of given data:

Further we started outlining Settlement data started making two vector layer and classified Settlement data under 2 categories i.e. Rural Settlement and urban Settlement. Toggle editing tool was used for this process, this vector data was generated for two years VIZ 2008 and 2018. Same process fallow for the making major Transport network line data in vector form and classified in 3Category like National Highway, State Highway and Railway .so we show connectivity with major roads and railway to our settlement data. We can make point data in vector form show various taluka places in sangli district Maharashtra.

Overlay Analysis :

After the completion of vector layer editing, we analysed the data of two years and depicted the Change in with Urban settlement and rural settlement. for further change detection we use dissolved tool so that we just find only single settlement data like rural settlement same process for the urban settlement.so we easily calculated how much area of rural settlement and urban settlement in year 2008 and 2018 year .so we can easily found out how much settlement data changes from 2008 t0 2018 and Hence useful analysis was done and statistics was generation.

Generation Map:

To make the map so we add all the necessary information in map.

1. Choosing a **map** template. We use A0 size paper.
2. Given Label in important locations and areas.
3. Use text and graphics (such as push pins, arrows, and other symbols) to label the **map** with key information.
4. Include a legend, Scale, north, Symbology to given layer.

Conclusion

Urbanization is one of the most important human activities, which creates enormous impact on the environment at local, regional, and global scale. The changing built-up area is one of the indicators of urbanization. Rapid urban growth especially in the developing world is continuing to be one of the issues of global changes in the 21st century. It is affecting the physical dimensions and socio-economic characteristics of the cities.

The settlement area has grown 1.5 times during the past 10 years as a result of industrial development, population growth and permanent migration was the main driving forces for settlement area expansion. According to the results, the extent of urban areas 24.05sq.km and Rural area 22.417sq.km from the years 2008 to 2018 in last 10 year.