

Report of Mori Grant

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Master 2nd Year

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Research Topic:

Detection, Analysis and Prediction of Changes in Agricultural Land in Hamamatsu City, Shizuoka Prefecture.

Output of research:

- Data preparation:

Satellite images from Landsat:

Land cover change can be detected by analyzing satellite images. For detecting the changes, several different satellite images are used for analysis, in the year of 1990, 2000 and 2010 captured by Landsat respectively.

Census and border data from National Census website and e-Stat:

The driving factor of land cover change is not only caused by natural incidents such as disasters but also triggered by human intervention to land. therefore, in this study the impact of economic, political and biophysical elements are going to be considered. The economic data is acquired from the website of National Economic Census. Political data is mainly translated into the border of land, which can be obtained from e-stat. Part of the biophysical data downloaded from National Land Numerical Information Download Service, the others can get or calculated from satellite image directly.

Software for data analysis:

The software used for this study are ArcGIS, QGIS and ERDAS Imagine. Spatial data is merged in the same resolution by using ArcGIS and some data preprocessing methods for satellite images is implemented by ERDAS Imagine.

- Data analysis

The preprocessing includes radiometric corrections to satellite image. Then supervised classification method (maximum likelihood classifier) is applied to satellite image. After getting the result of classification, confusion matrix is used for assessment of the classification result.

Change detection has been conducted by using plug-in of QGIS. Then the probability of change from one state to the other are automatically calculated by plug-in. In the

meantime, the contribution to land cover change by economic, political and biophysical elements are also inferred by QGIS plug-in.

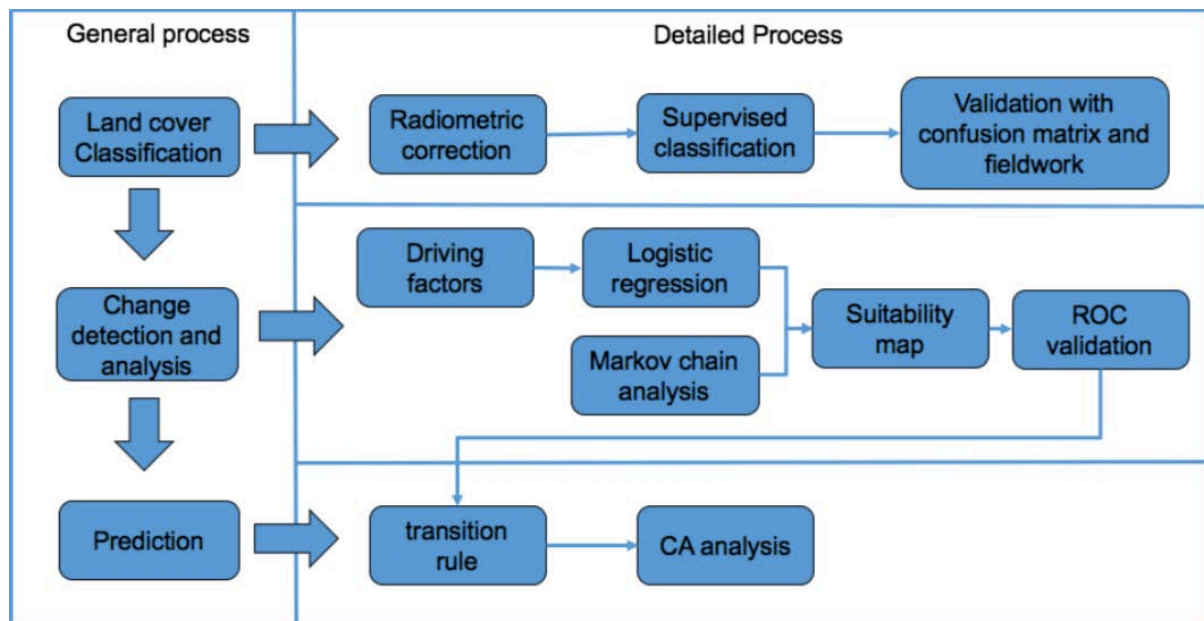


Figure 1 research methodology

- Next step:
 1. Identify driving factors
 2. Make suitability map
 3. Conduct prediction using Cellular Automata