

THE USE OF REMOTE SENSING DATA FOR MODELING URBAN GROWTH OF YOGYAKARTA CITY USING MARKOV-CELLULAR AUTOMATA

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ABSTRACT

Urban is an object in earth surface which very popular and interesting to be assessed. Urban is a region that interests human to living temporary or permanently. It makes morphological of urban grow rapidly. Urban growth phenomena influenced by two major phenomena, that is expansion and densification. Expansion is changing of non urban into urban, while densification is the increasing the urban physical building horizontally. According to several studies, Yogyakarta is the most convenient city, it make Yogyakarta a city that interest to live in and trigger the physical development of the city of Yogyakarta. Geographic Information System (GIS) has many functions, such as modeling, monitoring, measurement, and mapping that makes GIS provide an assessment of the physical urban growth. One of the model can be used for monitoring and modeling physical urban growth of Yogyakarta is Markov Cellular Automata (Markov-CA). This method has some inputs such as Urban Existing, Markov Transition Area and Markov Suitability Image Collection. Urban Existing is landcover map in recent years. Markov Transition Area is data that show the probability matrix of land to changing in a certain period. Markov suitability Image Collection is a map that show the location of land which changed, then the urban growth in certain year ahead can be simulated. The most difficult thing to determine is the transition rule caused by complexity of the development process and the urban growth. Therefore, CA modeling are still being developed to assess the urban growth.

Keyword : Urban growth, GIS, CA-Markov, Expansion, Densification