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Analyzing the consequences of urban land use on rural residences using satellite imagery and Markov chain model (Case study: Kerman city)

Abdollahi, A.A [a,1]., Khabazi, M [b]., Shahriari, A [c]

[a] Assitant Professor of Geography and Urban Planning, Shahid Bahonar University of Kerman, Kerman, Iran.

[b] Assitant Professor of Geomorphology, Shahid Bahonar University of Kerman, Kerman, Iran.

[c] MSc of Geography and Urban Planning, Shahid Bahonar University of Kerman, Kerman, Iran.

Extended Abstract

Objective The rapid expansion of cities, population growth and the growing trend of immigration will increase the demand for housing, and as all these needs are met with problems, we see the emergence of unstable and unstable zones on the margins and within the cities as informal settlements with a minimal response It meets the needs of low-income groups for housing. Informal settlement is, in fact, one of the most prominent figures of urban poverty. Informal settlements are areas where monitoring and legislative regulation is at least possible, and these areas are self-sustaining. In Iran, along with the growth of urbanization, the spread of slums, especially informal settlements, is a phenomenon in the contemporary city that, if it is not properly managed, can take a wider and more uncontrolled dimension. The extent and extent of urban growth has often raised concern among experts, managers and urban planners. Therefore, awareness of types of surface coverage and human activities in different parts of it, and in other words, the use of land, as the basic information for various planning is of particular importance. The present study uses Landsat satellite imagery, firstly, into the classified classification of applications within the urban area, and then the development of the city of Kerman for the year 1406 has been considered.

Methods The research method in this study is a descriptive-analytical research in terms of its purpose and its type and method. For this purpose, Landsat satellite images were used for the mapping of lands in the studied area using remote sensing technology in four periods of time (1989) (TM sensor), 2000 and 2008 (ETM+Sensor) and 2017 (OLI Sensor). Which has been downloaded from the website http://earthexplorer.usgs.gov. In order to predict land use changes, the method of classification has been used which is more accurately. Eventually, three floors of land, vegetation and land were considered. In the present study, ENVI5.1, IDRIDI Selva 17 and ArcGIS 10.1 software for data processing, visualization, output, and maximum probability for classification of user classes and from CA-Markov model for prediction of land use change has been used in the courses. The study area of the city of Kerman has an area of 7644 hectares, located 1060 kilometers south-east of Tehran, in a grateful position. According to the 2016 census, the city's population was 738,724.

Results The results of the comparison of the areas between the actual map and the predicted map indicate that the area of the class of land made about 656 hectares in the map projected by CA-Markov is more than the actual map, and the predicted area for the Bayer land is by The model is more than real, and eventually

[1]Corresponding author at: Shahid Bahonar University of Kerman, P.C: 7616913439, Kerman, Iran. E-mail address: aliabdollahi@uk.ac.ir (Abdollahi, A.A)

the calculated vegetation in the forecast map is less than its actual value. The results show that the total population of Kerman in the year was 411611 thousand and the area of land made from classification was 4550.40 hectares. But the growth of 327113 thousand people by 2017 will lead to city development and increase of land area It has been built so that the area of this floor has reached 7840.71 hectares this year. According to the results, in the forecast map of 2027, the total area of the three classes will be 10273 hectares, 1229 hectares of land and 9983 hectares of vegetation. The map also shows that the area of dry land classes and vegetation decreased by 118 and 219 hectares, respectively. Also, the class of land built compared to the base year (2017) did not change dramatically.

Conclusion: The results of the prediction indicate that urban growth will take place around the land, resulting in the conversion of land use and vegetation cover to land use, degradation of agricultural land, destruction of green spaces, expansion of marginalization, land use change The suburbs and the creation of informal settlements in the city's physical surroundings, which can be considered as an important factor in increasing the excessive spread of the city of Kerman and land use change.

Keywords: Modeling, Markov Chain, Forecasting Changes, Physical Development.

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