Change Detection in Gorgan City Extent Using Landsat Imagery and Its Application to Cumulative Effects Assessment

Abdolrassoul Salman Mahiny, Mehdi Gholamalifard

Landsat TM and ETM+ scenes of the Gorgan City covering around 1400 hectares were selected for this study. The scenes dated July 1987 and 2001 respectively were classified using the Maximum Likelihood classifier. A post-classification comparison was conducted to detect the change in land use and land cover of the area. It is intended to use the layer of change in city area as dependent variable in a logistic regression and the Sleuth modeling method to predict the location of city expansion in future. Using data on average city expansion during the past 14 years and knowledge of the relationship between population and city size, the likely area of city expansion will also be calculated based on different hypotheses. The calculation results will be used as scenarios for future sprawl of the city and will be applied to the layer derived from the modeling methods. Using a combination of the past, present and future city sizes and their impact on the surrounding land use and land cover, information can be compiled for a proper cumulative effects assessment in the area.

Keywords: Urban Change Detection, Urban Change Modeling, Landsat Imagery, Impact Assessment, Cumulative Effects Assessment, Gorgan City

Abdolrassoul Salman Mahiny
Assistant Professor, College of the Environment, Gorgan University, Gorgan, IRAN
Email: a_mahini@yahoo.com

Mehdi Gholamalifard
M.Sc. Student
College of the Environment
Tarbiat Modarres University
Email: mehdi_gholamalifard@yahoo.com