Factors affecting the eco-environment identification through change detection analysis by using remote sensing and GIS: a case study of Tikrit, Iraq

ABSTRACT

Changes in eco-environment that are caused by climate changes and human exploitation have been a significant problem around the whole world for a long time. The eco-environment of Iraq is exposed to degradation, particularly in the middle and southern parts. By using an approach that combines remote sensing and GIS, this study examines the changes that have occurred during various periods between 1972 and 2010 in the Tikrit district in Iraq and identifies the factors responsible for the degradation. A significant change was observed in the area covered by vegetation and water, especially between 1990 and 2010, which exacerbated desertification as the vegetation and water area decreased by 16 and 59.6%, respectively. Also, the urban area increased with varying paces of growth. In the period 1990ï 2000, the urban area increased by 8.8% only, which is not surprising considering the population increase. However, between 2000 and 2010, the urban area increased dramatically by 47.5%, due to the war which led to migration from Baghdad (Iraq Capital) to Tikrit. This study proves that climate change, desertification, and immigration due to wars were the major roles in changing the environment. Also, it reveals that geospatial techniques can be successfully used to monitor the effects on the land cover/ use changes and, hence, on the eco-environment.

Keyword: Change detection; Factors; GIS; Remote sensing