

Support vector machine classification to detect land cover changes in Halabja city, Iraq

ABSTRACT

Halabja city in Iraq has faced drastic landscape change since the Iraq-Iran war, especially when this city and the surrounding areas were attacked with chemical bombs in 1988. This paper illustrates the results of land use/cover change in Halabja obtained by using multi-temporal remotely sensed data from 1986 to 1990. The support vector machine supervised classification technique was used to extract information from satellite data, and post-classification change detection method was employed to detect and monitor land use/cover change. Derived land use/cover maps were further validated by using high resolution images derived from Google earth. The results from this research indicate that the overall accuracy of land cover maps generated from Landsat Thematic Mapper (TM) data were more than 89%. The urban areas and vegetation classes decreased approximately 58.7% to 40.7% between 1986 and 1990, while bare land increased 25.4%. Also, some changes in urban areas were detected that have already been identified as bombed areas particularly around the main roads of Halabja city.

Keyword: Land use/land cover; Change detection; Supervised classification; Multi-temporal; Landsat TM