Remote Sensing Application in Environmental Researches: Case Study of Iran Mangrove Forests Quantitative Assessment

Authors : Neda Orak, Mostafa Zarei

Abstract : Environmental assessment is an important session in environment management. Since various methods and techniques have been produces and implemented. Remote sensing (RS) is widely used in many scientific and research fields such as geology, cartography, geography, agriculture, forestry, land use planning, environment, etc. It can show earth surface objects cyclical changes. Also, it can show earth phenomena limits on basis of electromagnetic reflectance changes and deviations records. The research has been done on mangrove forests assessment by RS techniques. Mangrove forests quantitative analysis in Basatin and Bidkhoon estuaries was the aim of this research. It has been done by Landsat satellite images from 1975- 2013 and match to ground control points. This part of mangroves are the last distribution in northern hemisphere. It can provide a good background to improve better management on this important ecosystem. Landsat has provided valuable images to earth changes detection to researchers. This research has used MSS, TM, +ETM, OLI sensors from 1975, 1990, 2000, 2003-2013. Changes had been studied after essential corrections such as fix errors, bands combination, georeferencing on 2012 images as basic image, by maximum likelihood and IPVI Index. It was done by supervised classification. 2004 google earth image and ground points by GPS (2010-2012) was used to compare satellite images obtained changes. Results showed mangrove area in bidkhoon was 1119072 m2 by GPS and 1231200 m2 by maximum likelihood supervised classification and 1317600 m2 by IPVI in 2012. Basatin areas is respectively: 466644 m2, 88200 m2, 63000 m2. Final results show forests have been declined naturally. It is due to human activities in Basatin. The defect was offset by planting in many years. Although the trend has been declining in recent years again. So, it mentioned satellite images have high ability to estimation all environmental processes. This research showed high correlation between images and indexes such as IPVI and NDVI with ground control points.