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Using satellite data and landscape metrics to monitor landscape changes: case study of Iran's south-western Khuzestan plain

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ABSTRACT:

Landscapes, the condition of ecosystems, and their spatial pattern are constantly changing as a result of human activities. Identifying and understanding the changes of Land Cover and Land Use (LCLU) are used as suitable indicators to monitor these changes, to which an important part of the ideas related to planning and regional policy have been allocated. This article attempts to use landscape metrics and satellite images to analyse spatiotemporal changes in the LCLU pattern in the Khuzestan plain. In this research, satellite images of Landsat's 5 and 8 with TM and OLI sensors are used in the range of 1990 to 2014 to extract LCLU maps as well as four metrics of NP, PLAND, MPS, MNND in the class of landscape to analyse composition and configuration. Our results showed significant changes in the composition and configuration criteria of LCLU by increasing the number and area of patches (fish farms, construction and industrial and local agriculture) against patch and area (riparian forest, marsh land and bare land) in the period under study. Results obtained from the overlap of maps showed that classes of riparian forest, marshland and bare land have lower resistance compared to changes. In general, the monitoring of LCLU patterns showed the process of increasing degradation and fragmentation of original pattern of land and reduction in integrity.

Keywords:

Khuzestan plain, landscape metrics, spatial pattern change, land cover, land use, remote sensing

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