

Land surface temperature assessment in semi-arid residential area of Tehran, Iran using Landsat imagery

ABSTRACT

Land cover change especially from green areas to urban areas may increase land surface temperature (LST). In this study, Landsat Enhanced Thematic Mapper Plus (ETM+) on 15 May 2000 (spring), 9 July 2000 (summer), 26 November 2000 (autumn) and 10 January 2001 (winter) were utilized to study LST in Tehran, Iran. The accuracy of the LST analysis was evaluated using six year ground temperature data. The Non Linear Correlation Coefficient (NLCC) between normalized differences vegetation index (NDVI) and LST was found to be higher in the spring compared to the other seasons. The LST value in the west of the city was similar to the surrounding areas, but in north, east and south of the city were lower compared to the north, north east and east of the surrounding areas in all seasons. The gravel and sandy soil in the western part of the surrounding areas were warmer than the impervious surface area (ISA) in the city in summer. It was found that high urban density in semi arid climate with low vegetation in the surrounding areas does not increase the LST value in the city compared to its surrounding areas.

Keyword: Urban; Gravel and sandy soil; Semi arid area; NDVI; Iran