



Remote Sensing and GIS Applications for Urban Analysis and Planning

Leena Sharon*

Department of Mechanical Engineering, University of Chicago, Chicago, USA

DESCRIPTION

The present study explores the capabilities of various visual and digital techniques in the development of suitable methodologies utilizing the orbital remote sensing data for urban land use and urban sprawl mapping on a large scale and consequential planning exercises. The present study also attempts to develop an appropriate methodology for urban land use zoning which would enable selection of areas to be used for construction and the areas to be conserved under green belt which is a prime requisite for macro level planning of a Metropolitan megiion.

Application of remote sensing technology to identify and delineate various features on land surface of interest to urban planner involves determination of spectral signatures of various construction materials to be utilized to codify the digital images and ground truth studies to correlate visual imagery with the various types of ground features. The use of orbital remote sensing data for urban land use analysis is getting wide significance in recent years. Knowledge on spectral signatures of man made materials is useful not only in understanding the best spectral bands suitable for an urban study but also in selecting the best sensor to be used for a variety of urban applications.

The spectral separability of different urban land uses such as residential, industrial, commercial, public, semi-public and transportation network was attempted in this study. Ahmedabad city and its environs were selected for studying the spectral behavior of urban features. The spectral reflectance curves were drawn on the basis of the readings to study the spectral separability of different urban land uses. The asbestos and the tin have maximum reflectance. The spectral curve of the asbestos has shown a high ascending trend.

In the green and red spectral bands and is flat in the near infrared band. The concrete material which is commonly used as roof material for most of the urban land uses has shown a flat trend in all the spectral bands. Similarly the mud roof also has the low reflectance in the visible and slightly more in the near infrared band. The transportation network plays an important role in urban and regional planning. Hence the spectral characteristics of the materials used for construction have also been studied. Specific urban planning requirements have been examined in different study areas based on the particular requirement of the urban planner.

CONCLUSION

Spectral signatures of urban land uses and the potentialities of various types of orbital remote sensing techniques, interpretation key in conjunction with ground truth data has been prepared for urban land use classification. The knowledge on the composition of the urban land use is a prerequisite to rational planning and zoning. This requires knowledge of the urban land use pattern and the quantitative analysis of the space devoted to each type of land use. It is in this context that the remote sensing data collected by various systems. Each of the bands provides a unique record of the spectral reflectance in the corresponding spectral region. Since very few features in the urban scene are pure blue, green or red different proportions of these colors are reflected from most of the features. This type of multiband black-and-white photographs is interesting to look at but is difficult to interpret.

Correspondence to: Leena Sharon, Department of Mechanical Engineering, University of Chicago, Chicago, USA, E-mail: sharonleena@uchicago.edu

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