Digital Analysis of Satellite Data for Environmental Monitoring in Semi-Arid Ecosystem of Indo-Gangetic Alluvial Plain

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Abstract

Access to timely geographic information is crucial for Natural Resources and Environmental Monitoring & management. An Analysis of satellite image has been carried out for change detection due to climatic affects. Keeping the above in view, the satellite image analysis for the study of soil and its associated features have been carried out in western part, Indo-Gangatic Alluvial Plain of Mathura district, lying in a semi-arid environment in Uttar Pradesh (U.P.), India. IRS IA, LISS II Satellite data in bands 1, 2, 3 & 4 for the study area were used in conjunction with *In situ* spectral measurements and analytical analysis of soil samples respectively. Digital analysis images were carried out with the help of EASI/PACE software package. Principal Components-PC1, PC2, and PC3 & PC4 were statistically analyzed in terms of co-variance matrix, correlation coefficient Matrix, Eigon values, Eigon vector and factor loading. These helped in better discernibility of soils and its associated features. PC images clearly showed the heterogeneity of soils and surrounding Impact of environment which helped in identifying the impact of dynamic natures' behavior in terms of increasing salinity and sodicity.(Disastrous Zones) The results show that the variation in soil surface reflectivity are indicative of different degrees of sodicity/salinity and development of new disastrous Zones with increasing aridity.

Keywords: *Remote Sensing, Digital analysis, Soil degradation, Semi-arid Environment, Spectral response & Desertification.*