



Environmental monitoring of vegetation cover at Kalpakkam through NDVI approach

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Abstract: This paper presents an environmental monitoring method for spatial and seasonal changes in vegetation cover for the post monsoon seasons (Jan/Feb) and pre monsoon seasons (Apr/May/Jun) using remote sensing based Normalised Difference Vegetation Index (NDVI). An attempt has been made to map the vegetation cover using the passively sensed satellite imageries Landsat 7 Enhanced Thematic Mapper+ (ETM+), for 5km around the Kalpakkam plant site for the period 2006 - 2010. The NDVI based vegetation cover was also analyzed and found that the highest percent vegetation cover was recorded in January 2008 (post monsoon season) and the lowest percent vegetation cover was recorded in June 2010 (pre monsoon season). A similar trend in variation of vegetation cover within and around the plant site for post and pre monsoon seasons suggested that the parameters responsible for sustenance of vegetation cover are identical. For post monsoon seasons, a tendency to linearity in correlation of NDVI based vegetation cover with rainfall was obtained for cumulative rainfall of preceding 90 days with a regression coefficient of 0.811. However for the pre monsoon seasons, no tendency in correlation was obtained for cumulative rainfall of preceding 90 days. The accuracy of the results was assessed by statistical methods and found a total accuracy of 90 percent with a Kappa coefficient of 0.79. The present study highlights the application of NDVI approach to monitor the seasonal change in vegetation cover and its relation to climatic factors like rainfall.

Keywords: Seasonal change, Correlation with rainfall, Accuracy assessment, Kappa Coefficient