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Application of Remote Sensing in Urban Hydrological Studies of Delhi Areas

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ABSTRACT

The timely information about the changing pattern of urban land use plays significant role in urban land use planning and sustainable urban development. Also the changes in land use effect the runoff behaviour from urban area. The urban planners always look for the reliable information about the rate and direction of growth in the physical limits of the city. Several studies have established the potential of remote sensing techniques in obtaining synoptic and repetitive coverage of the cities necessary in monitoring the patterns of urban growth and urban fringe activity and gobbling of agriculture lands by the growing cities.

Union Territory of Delhi and area east of Delhi up to the Hindon River is selected for the study. Yamuna passes through eastern part of the Delhi. Physiography of area is ridge, plateau. Ridge and plateau are made of quartzite. They have part forest cover. Urban development has occurred on alluvial plain and plateau. A plan has been prepared for year 2001 to accommodate a population of 144 lakh in 488 sq. km area.

The supervised classification is found better than unsupervised classification. The most useful sensor is IRS LISS III due to the presence of short wave infra red channel in it and better spatial resolution. In final classification using LISS-I and III data, Kappa accuracy is 55% and the overall accuracy is 74%. IRS LISS-I (1992) and LISS-III (1998 and 2000) data are used. This is a conservative estimate since the samples are drawn from the urban sprawl classes in various classifications. The sprawl area is 33% after adjusting the statistics for the error of classification. The urban area is 383 sq. km. The urban area does not include the urban classes e.g. parks, golf course, play ground etc. that are also urban classes.