

## EVALUATING IMPERVIOUS AREA IN NORTH-WEST DELHI

Ms Mandvi Misra<sup>1</sup>, Dr Deepak Kumar<sup>2</sup>, Dr Sulochana Shekhar<sup>3</sup>

<sup>1</sup> Junior Research Fellow, <sup>2</sup> Assistant Professor, <sup>3</sup> Professor

<sup>1,2</sup> Amity Institute of Geoinformatics & Remote Sensing (AIGIRS),  
AMITY University, Sector 125, Noida – 201303, Uttar Pradesh, India

<sup>3</sup> School of Earth Sciences, Central University of Tamil Nadu

Email: misra.mandvi01@gmail.com, deepakdeo2003@gmail.com

**Abstract:** Impervious surfaces generally refers to impenetrable materials or simulated structures like buildings, road, sidewalks, parking lots, etc. which averts the infiltration of water from the land surface to the soil. In urbanized cities, due to extensive needs of the population and increasing housing demand is contributing towards the impervious surfaces, thereby influencing the decline of environment sustainability. It has been observed in earlier studies that the impervious surfaces are underestimated due to the trees along these surface covers the surface, also shadows of the buildings contributes to underestimations, which combinedly contributes to misclassification of features while extraction from the multispectral remotely sensed imageries. Although aerial photography is more accurate to map impervious surface but it is limited to large areas, also is very expensive and time-consuming. In order to resolve the problem and acquire better results, impervious surface extraction has been carried out using high-resolution data through remote sensing techniques. In high-resolution data, objects are more clearly identifiable and provide the detailed information or characteristics of the impervious surface. Here, a high-resolution satellite dataset like LISS IV with a spatial resolution of 5.8 m for the year 2012 has been used to analyse improved and quality impervious surface area. This paper evaluates inter-zone wise urban built-up impervious surface in one of the nine districts of Delhi (India) Metropolitan city. As north-west district of Delhi constitutes a major area of 449.01 sq km among nine districts, therefore the prime focus was to evaluate the impervious surface within the North-West Delhi by dividing it into four zones (Zone 1: north-east, Zone 2: south-east, Zone 3: south-west and Zone 4: north-west). Here the built-up area was considered as the impervious surface which was extracted using supervised classification technique. Results of the analysis showed that Zone 2: South-East zone of the North-West district comprises the major impervious surface of 73.96 sq km and Zone 4: North-West zone constitutes the least impervious coverage of 22.97 sq km. The result extracting high impervious surface in Zone 2 depicts the reduction of green cover. Since the impervious surface is indirectly proportional to green cover, so from the extraction of impervious surface the remaining area with green cover can be calculated easily and further methods of green coverage can be applied for the sustainable environment.

**Keywords:** *Impervious, High-resolution, Delhi, Feature Classification, LISS IV*