

Interpretation of impermeable areas using Landsat imagery to estimate urban run-off and drainage capacity required.

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Abstract

Urban flooding are intimately associated with the drainage capacity of the urban drainage system. To plan a drainage system with adequate capacity to know in advance how much runoff if heavy rains occur. To determine the amount of surface runoff can be calculated or estimated through one of the existing hydrological models. As an example of rational formula that calculates the number of surface runoff based on runoff coefficients. For urban areas runoff coefficient is calculated based on the percentage of impermeable area. Impermeable area is the area in case of rain then almost 100% rain water to flow, so that areas with a high percentage of impermeable area flooding will likely occur if the drainage system is inadequate. Urban flooding usually occurs not last long, however, as occurred in urban areas would greatly disrupt traffic and economic activity.

The method used to identify impervious areas is interpretation of Landsat TM imagery, especially band 6 thermal IR. Band 6 thermal IR identify objects based on the temperature, so the impervious areas, especially roofs, asphalt, parking field will be more clearly identified as the objects during the day is hotter than the surrounding objects. Band 5 of Landsat images are also useful to identify dry land and open land. Open land also tends to produce higher runoff. With the identification of urban landcover will easily estimate the magnitude of urban surface runoff.

Key words: impermeable area, urban, surface run-off, drainage capacity, landsat imagery.