

Estimation of impervious surface using multi-temporal Landsat imagery and its impacts to runoff

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Over the last two decades, Klang Valley is experiencing large changes in population growth and land use which is the most highly urbanised region of the country. Klang valley is located in the central region of the West Coast of Peninsular Malaysia. Driven by high density of population due to natural increase and migration have allow urbanisation developed rapidly from time to time. The impacts of urbanisation as one of the important land use and land cover changes on runoff within watersheds are a vital issue in the past decades. Therefore, this study reports on the estimation of changes in impervious surface fraction from available medium resolution satellite imageries. Impervious surface is a major key indicator in determining the impacts of urbanisation. A Linear Spectral Mixture Analysis (LSMA) is used to quantify the impervious surface fractions. A simulation of impervious surface fraction is based on a Landsat TM image acquired in 1996, 2000 and 2006. Then, the impact of change in impervious surface cover between 1996 and 2006 on surface runoff is evaluated by estimating surface runoff using Soil Conservation Service Curve Number (SCS CN) method. The results show that, most urbanised occurred at existing urban areas majorly at the part of Federal Territory of Kuala Lumpur and have a significant between spatial patterns of impervious surface and estimated runoff surface.