

# URBAN EXPANSION MONITORING USING MODIS NDVI TIME SERIES

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**Abstract:** Urban expansion is an important factor to indicate population and economic growths including civilization. Characterization of urban expansion is benefit for urban planning and management. The main objective of this work is to extract urban area on a yearly basis from coarse resolution remotely sensed data in order to monitor urban expansion. Yearly MODIS NDVI time series is used as NDVI profile to classify urban area year by year. Savitzky-Golay Filter is applied to reduce noises and smooth the signal. Mean and standard deviation of NDVI profile are applied as the features instead of using directly NDVI profile to reduce unnecessary features. Supervised Bayesian classification is applied to classify urban area. The experiment is focused on the area of Udonthanee Province, located in the Northeast region of Thailand during 2001-2012. The results show that our proposed method can extract urban area to monitor urban expansion effectively.

Key word: Urban Expansion, Urban Area, MODIS NDVI, Savitzky-Golay Filter, Bayesian Classification