ANALYZING OF VARIOUS INDICES OF BUILT-UP AND BARE LAND IN YANGON, MYANMAR

Su Nandar Tin[1,2,*], Asst. Prof. Dr. Wutjanun Muttitanon[1]

[1] Faculty of Engineering, Mahidol University, 73170, Thailand.

[2] Department of Building, Ministry of Construction, Naypyidaw, 15011, Myanmar.

*Corresponding author address: sunandar.tin@student.mahidol.edu

Abstract

Land distribution guidelines and recognition of national trends are important in preparing and evaluating changes in the land description data. This paper focuses primarily on the basic extraction from the satellite images of LANDSAT 5,7,8 and Sentinel 2A from USGS within thirty years of the urbanization from 1990 to 2020 of modelling for the built-up area. GIS techniques for built-up area modeling are used in this research to calculate indices such as the Enhanced Built-up and Bareness Index (EBBI), the Normalized Difference Built-up Index (NDBI), the Urban Index (UI) and Normalized difference bareness index (NDBaI). Therefore, this research points out a variable approach to automatically mapping standard of enhanced built-up and bare land index (EBBI) changes with simple indices and according to index outputs. The number of outputs between the EBBI and NDBI and UI rate was to use the entire Landsat imagery spectral range, generating less spectral variability between modifications in the built-up area and higher precision compared to the other indices and NDBaI rate use to analyze the area of bare land. The percentage of Landsat's and Sentinel-2A's imaginary outputs was to use the entire spatial range of Landsat images that created less spectral complexity for higher accuracies between built-up area improvements compared to the other Landsat feature index, where the urban expansion area increased from 43.5% in 1990 to 92.5% in 2020. This research has an overall assessment accuracy of an average 78% in Landsat images and 93% in sentinel 2A with the value of coefficient of linear regression 0.97 is rated as substantial. The modelling method shows the correlation between the reliable built-up index of each, simple to implement quickly, which can be used to figure out the extraction of the built-up area in the focusing year.

Keywords: *Built-up area, EBBI, NDBAI, NDBI and UI.*