Application of thermal remote sensing to study of land surface temperature as indicator land cover change in wetland and vegetation

ABSTRACT

Wetlands are a vital component of land cover in reducing impacts caused by urban heat effects and climate change. Technology remote sensing provides historical data that can study the impact of development on the environmental and local climate. The studies of wetland in reducing Land surface temperature (LST) in tropical climate still lacking. In the first step, pre-processing, namely geometric correction, atmosphere correction, and radiometric correction, need to be performed before to retrieval of LST from thermal band Landsat 5 and 8. In the third step Iso Cluster, unsupervised choose to produce with the land cover map for 1988 and 2019. Geographical Information System (GIS) technology was utilized to determine land cover change and LST change between the years 1988 and 2019. With GIS technology can study the impact of wetland deforestation on local temperatures at a local scale. Next to that, correlations between LST and the wetland were analyzed. The result shows the different land cover between the years 1988 and 2019. The area of land cover wetland and vegetation decrease and area of urban increase. The land cover changes the influence of LST significantly in the study area. For example, the wetland has a noticeable influence on LST. The LST increases with decreasing in areas wetland. Every 5-kilometer square (km^2) wetland lost an increase in 1-degree Celsius of LST. The size area of wetland influence on LST was significant.