Development of Land Moisture Estimation Model by Using MODIS Reflectance, EVI, and Thermal Data to Detect Drought at Paddy Field

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Abstract

The drought phenomena always occurs at paddy field of Java Island, especially in summer season. Together with flood, the drought phenomena cause decrease of rice production. This research is aimed to develop a model of land moisture (LM) estimation at agricultural land, especially for paddy field based on MODIS (*Moderate Resolution Imaging Spectroradiometer)* satellite data which have reflective reflectances and thermal (LST = Land Surface Temperature) band. The result show that reflectances of 2^{nd} channels (NIR) and rasio of Enhanced Vegetation Index (EVI) with LST (EVI/LST) have high correlations with surface soil moisture (% weight) at 0 – 20 cm depth with formula : ***LM = 15.9*EVI/LST – 0.934*R2 – 16.8*** . The model result in this research is better (has higher correlation) than model before which only used reflectances band combination. Based on the above model, land moisture can be derived spatially at the agricultural land, especially at paddy field to detect and monitor drought event.

***Keywords** : land moisture, MODIS, reflectance, EVI, LST, surface soil moisture*