

Compare Result of Soil Moisture Distribution using Tasseled Cap Transformation and Topographic Wetness Index

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Availability of water will determine the type of plants and agriculture, so the water has a very important role for agricultural. Water needs to be converted into soil moisture before it is absorbed by plants. Soil moisture is the water contained in the soil are bound by various Kakas (matrix, osmosis, and capillaries). The moisture content of the soil can be determined using the spectral approach of remote sensing imagery and the topography of an area. This study aims to determine the distribution of soil moisture using Tasseled Cap transformation and Topographic Wetness Index (TWI). The Tasseled Cap Transformation method used to obtain spectral information about the soil wetness index. The assumption used is soil wetness index values have a positive correlation with the moisture content of the soil. For knowing moisture content of the soil, topographic aspect derived from TWI. TWI Data obtained from Digital Elevation Model (DEM) derived from topographic maps. The wetness index is based on the assumption that topography controls the movement of water in sloped terrain and thus the spatial pattern of soil moisture. High values of TWI are found in converging, flat terrain. Low values are typical for steep, diverging areas. The concept is only valid for areas with significant amount of lateral water movement and uniform vertical flow. Direct soil sampling in the field is needed to validate the values that have been obtained from digital image processing and TWI data. The results of this research is the best method of estimating soil moisture Yogyakarta which has regressed to the value of soil moisture in the field.

Key words : *DEM, soil moisture, topography, transformation, wetness index*