

## **The Estimation of Iron Oxide Content in Soil based on Landsat 8 OLI TIRS Imagery in Wetland Areas**

Wetland areas are volatile and have high iron content. In this study, through a remote sensing approach, especially using Landsat Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) imagery, we discussed the method to estimate the presence of iron oxide in the wetlands of South Kalimantan in 2018, 2019, and 2020. Interpretation of the Landsat OLI TIRS was employed in April 2018, August 2018, February 2019, August 2019, March 2020, and August 2020. The band ratio method was used to determine the distribution of samples in this study. The results of the iron oxide index from the image were performed regression and correlation analysis with field measurement and laboratory test results to validate the oxide index values. The results showed that the iron oxide index value in the dry season was higher than in the rainy season. Iron oxide index value in open land was higher than in vegetation cover. The wetland was in dry condition during the dry season, making it easier to detect iron oxide values. Vegetation cover could reduce the iron oxide index value on the soil surface so that the iron oxide value was more easily identified in open land. The results of linear regression testing for the wet season sample obtained a coefficient of determination  $R^2$  0.413, while the results of linear regression testing for the dry season sample obtained a coefficient of determination  $R^2 = 0.667$ . Thus, the Landsat image has strong enough to estimate the iron oxide index in the wetland area of Kalimantan.

Keywords: Iron oxide, Landsat 8 OLI TIRS, wetland