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Distribution of vegetation diversity by hyperspectral sensor in Tropical Peatland, Central Kalimantan

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1 Background

● The main elements in peatlands are plants, water and soil.
● Change:
  – Land cover; from forest to agriculture
  – Function; from natural resource to production
  – Vegetation; from heterogeneous to homogeneous

2 Study area & data

● The study site has been chosen in a part Katingan District, Central Kalimantan. Location size is around 320 km² (20 km x 16 km) between 1° 47’ 38.46” – 1° 56’ 44.67” S and 113° 27’ 18.72” – 113° 38’ 19.17’ E. This area has peat-swamp forest area, and geographically located in the equator region.

3 Methodology

Classification method:
✓ Supervised cl.
  – Land cover
✓ Unsupervised cl.
  – Distribution map

Calibration process:
● value of geo correction is 10,000 based on information from the ERSDAC

4 Analysis data

Vegetation map by unsupervised cl. (K-means)

Pearson’s Correlation Coefficients
Correlation coefficients are used in statistics to measure how strong a relationship is between two variables.

\[
\rho = \frac{n(\overline{x} \overline{y}) - (\overline{x})(\overline{y})}{\sqrt{n \sum x^2 - (\overline{x})^2} \sqrt{n \sum y^2 - (\overline{y})^2}}
\]

5 Result

● For this study, K-means approach is better than ISODATA approach for vegetation map, based on the number of classes in data classification of previous researches in Central Kalimantan.
● The result of vegetation distribution map only based on the reference vegetation data without verified by ground truth (field observation)

6 Discussion

Interpretation of vegetation distribution is more difficult because of lacking reference data on the study site. So that map of the vegetation distribution still needs verify with ground truth to achieve the high degree of accuracy. Condition Kalimantan region is known overcast throughout the year, become difficult to obtain clear images from the satellite or hyperspectral sensors with Airborne. Lack of HyMap reference became an obstacle in achieving better result’s interpretation.

7 References


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