



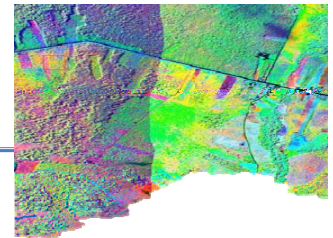
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Distribution of vegetation diversity by hyperspectral sensor in Tropical Peatland, Central Kalimantan

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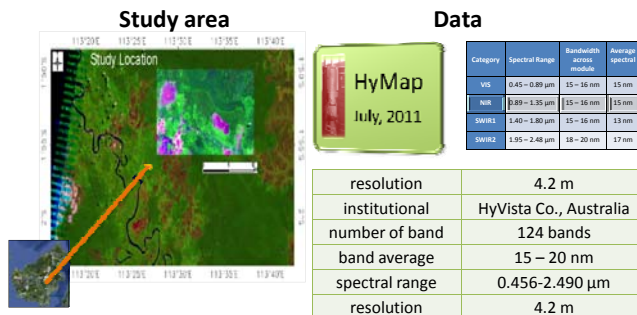
1 Background

- 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

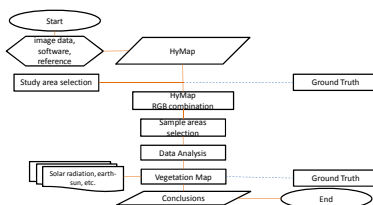


2 Study area & data

- 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.



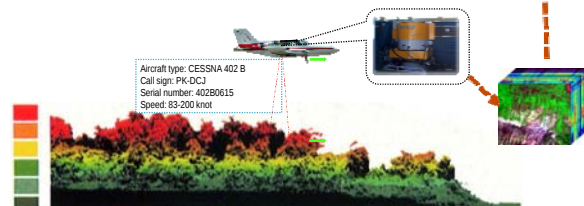
3 Methodology



Calibration process:

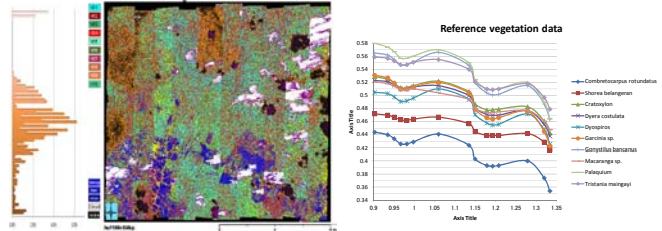
- value of geo correction is 10,000 based on information from the ERSDAC

Color	Frequency	Wavelength	HyMap
Violet	668–789 THz	380–450 nm	8.1 (450), 8.2 (470)
Blue	633–668 THz	450–475 nm	8.1 (480)
Cyan	606–633 THz	475–495 nm	8.1 (500–8.8 (562)
Green	576–606 THz	495–520 nm	8.9 (577)
Yellow	548–576 THz	520–590 nm	8.10 (592)–8.11 (608)
Orange	514–548 THz	590–620 nm	8.12 (623)–8.20 (745)
Red	480–514 THz	620–750 nm	



4 Analysis data

Vegetation map by unsupervised cl. (K-means)



Pearson's Correlation Coefficients

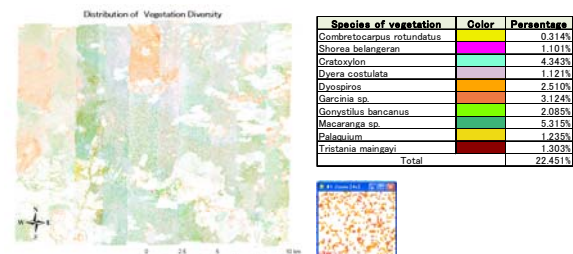
Correlation coefficients are used in statistics to measure how strong a relationship is between two variables.

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

No.	Class No.	Ref. Veg.	r
1	72	Combretocarpus rotundatus	0.8617
2	56	Shorea belangeri	0.7982
3	61	Cratogeomys	0.8169
4	55	Dyera costulata	0.8060
5	40	Dyospyros	0.9156
6	44	Garcinia sp.	0.8246
7	64	Gonythrus bancanus	0.8638
8	59	Macaranga sp.	0.7163
9	75	Palaequium	0.8155
10	68	Tristania mangrovei	0.8416

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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