

# ABOVEGROUND BIOMASS ASSESSMENT OF DEGRADED RAINFOREST USING IKONOS-2: SPECIFIC FOREST CLUSTER ANALYSIS

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**ABSTRACT:** Accurate estimation of aboveground biomass (AGB) has increasingly important especially dealing with various levels of forest degradation. Exploration of forest texture and forest structure helps to define forest type which shaping a distribution of AGB. In this study, high resolution satellite imagery of Ikonos-2 was used to assess the AGB of tropical Borneo rainforest at specific degradation level. Study site is a degraded lowland Dipterocarp forest at Tangkulap and Deramakot forest management unit in Sabah. Forest image was segmented using eCognition and classified into three specific levels of forest cluster that are early successional, mid-successional and late-successional forest. Fifty plots were assigned to respective cluster to determine the degradation level by AGB. Multiple stepwise regression analysis was performed between AGB and dependent parameters of spectral and textural properties. Robust modeling of AGB within each forest level possessed  $R^2$  ranging from 0.645 to 0.699 (Pearson coefficient, R 0.803 to 0.836) compared to 0.611 for combined forest model. In total, forest cluster model (RMSE = 20.15, relative RMSE = 13.74%) looks better compared to combined forest model (RMSE = 55.00, relative RMSE = 37.50%). AGB in too degraded forest cluster was as low as 74 ( $\pm 25$ ) Mg/ha where else in late-successional forest cluster was 269 ( $\pm 32$ ) Mg/ha. This result indicates that specific forest cluster modeling has improved the accuracy of AGB estimation for degraded forest.

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\* Presenter (Oral presentation)