ESTIMATING CARBON STOCK OF LIVE TREES LOCATED ON THE UiTM PERLIS USING LIDAR AND UAV IMAGERY

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DECLARATION

I declare that the work on this project/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). This project/dissertation is original and it is the result of my work, unless otherwise indicated or acknowledged as referenced work.

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ABSTRACT

Carbon stock can be defined as the amount of carbon that is being stored in the ecosystem of the forests. This carbon stock is a very important component to ensure the cycle of global carbon cycle is happening as usual. Nowadays in Malaysia, the amount of carbon stock has decreased due to deforestation activities that cannot be controlled. Basically, the ecosystem of the forests are the habitats of carbon to be stored there, without them carbon will be released to the atmosphere in the form of carbon dioxide (CO^2) and this will cause climate change to happen. The aim of this study is to determine the aboveground biomass, and carbon stock in live trees at the University Technology MARA, Perlis by using Object-Based Image Analysis (OBIA). In order to achieve the aim of this study, there are three objectives that need to be achieved first are: (1) to determine the aboveground biomass and carbon stock by field measurements, and (2) to identify the tree crown delineation using Object Based Image Analysis (OBIA), and (3) to produce carbon stock map of the study area using UAV and LiDAR data. Furthermore, this study will use two types of data to estimate aboveground biomass as well as carbon stock which are field and LiDAR data. The result from this study shows that the highest amount of carbon stock calculated from field data is 50680.954 C kg/tree and the lowest amount of carbon stock recorded is 197.371 C kg/tree while the result for carbon stock estimation using LiDAR data the highest amount calculated is 57696.468 C kg/tree and the lowest is 223.664 C kg/tree.

Keywords: Carbon stock, Aboveground biomass, LiDAR, Geographical Information System (GIS), UiTM Perlis, Allometric equation, Crown Projection Area (CPA).

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