

基于机载激光雷达数据和航空正射影像森林类型图绘制广西全区乔木林森林地上生物量分布图

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摘要:【目的】绘制中国广西地区乔木林地上生物量 (AGB) 空间分布图。【方法】首先, 利用 2017-2019 年收集的分布在广西的 1086 个样地数据和相应的机载激光扫描 (ALS) 数据做为模型训练数据, 为其他阔叶林、杉木林、桉树林和松树林构建特定物种地上生物量 (AGB) 估计模型。其次, 从分辨率为 0.2 米*0.2 米的航空正射影像中得到分辨率为 50 米*50 米的森林类型分布图, 用于验证和确定全区的激光雷达栅格数据种每个网格单元的森林类型。最后, 通过将全区的栅格化 ALS 数据中每个网格单元的森林类型和相应的 ALS 指标输入到特定物种的估计模型中, 得到栅格化 ALS 数据中每个网格单元对应的 AGB 值。【结果】生成了一张分辨率为 20m*20m 的地上生物量空间分布图。【结论】2018 年广西其他阔叶林、杉木林、桉树林和松树林的总 AGB 值分别为 24433.07*104t、15291.22*104t、10993.97*104t 和 18535.51*104t。

关键词: 机载激光雷达, 航空正射影像, 树种特异模型, 地上生物量空间分布图

Mapping the above-ground biomass of forest in Guangxi (China) based on the wall-to-wall airborne LiDAR data and a forest type distribution map derived from an aerial orthophoto image

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Abstract: 【Objective】 To map the spatial distribution of above-ground biomass (AGB) of tree forests in Guangxi, China. 【Method】 First, 1086 sample plot data distributed in Guangxi collected from 2017-2019 and corresponding airborne laser scanning (ALS) data were used as model training data to construct species-specific above-ground biomass (AGB) estimation models for other broadleaved forests, *Cunninghamia lanceolata* forests, *Eucalyptus grandis* × *Eucalyptus urophylla* forests, and *Pinus massoniana* forests. Secondly, forest type distribution maps with a resolution of 50 m * 50 m were obtained from aerial orthophotos with a resolution of 0.2 m * 0.2 m, which were used to validate and determine the forest type of each grid cell of the rasterized wall-to-wall ALS data. Finally, the AGB value corresponding to each grid cell in the rasterized wall-to-wall ALS data was obtained by inputting the forest type of each grid cell in the rasterized ALS data of the whole region and the corresponding ALS metrics into the species-specific estimation model. 【Result】 A spatial distribution map of above-ground biomass with a resolution of 20m*20m was generated. 【Conclusion】 The total AGB values of other broadleaved forests, *Cunninghamia lanceolata* forests, *Eucalyptus grandis* × *Eucalyptus urophylla* forests, and *Pinus massoniana* forests in Guangxi in 2018 were 24433.07*104t, 15291.22*104t, 10993.97*104t and 18535.51*104t, respectively.

Key words: Airborne LiDAR, aerial orthophotography, species-specific models, spatial distribution of above-ground biomass in Guangxi