

Extraction of canopy height in French Guiana from airborne laser data using a geostatistical approach

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Forest biomass estimation is an important component for understanding the carbon cycle in the environment. An accurate forest biomass assessment is essential for modeling global Carbon fluxes and analyzing the impact on global climate change. Laser altimetry has a high potential for the estimation of forest canopy heights to estimate the forest canopy height, which is used in the biomass estimation. This study describes the processing of airborne laser data in order to estimate canopy heights over several study areas located in dense equatorial forest settings in French Guiana. The data used consist of dense airborne laser data (between 0.9 and 5.6 points by m²).

The laser data points are filtered in order to select the laser points corresponding to the top and bottom of the canopy within a moving window of N points. The window size was selection is based on the variogram of the laser elevations that doesn't show a nugget effect after the filtering of the laser points. Next, the canopy height is calculated for these points (top and bottom of the canopy).