Optimizing the remote detection of tropical rainforest structure with airborne Lidar: leaf area profile sensitivity to pulse density and spatial sampling

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SUPPLEMENTARY MATERIAL

Figure S1 - Changes in the 24-hectare mean ALS profile of LAD (in absolute values; m² m⁻³) as a function of grain size (panels) and pulse density (profile colors). In this figure we added the profile using ALL returns (including multiple returns) totaling a density of 55 returns m⁻².
Figure S2 - Behavior of the 24-plot mean LAD profile in relative values (% of LAI), as a function of grain size (panels). For ALS, different pulse densities are shown as different colored profile lines, but these overlap to a high degree. The black dashed line is the 24-plot mean relative LAD from the PCL at a fixed, high pulse density (2,000 pulses m$^{-1}$) and at different grain sizes (panels). Open circles show the four-plot mean relative LAD profile of destructively measured field data with a fixed grain size of 100m$^2$ and no pulse density. In this figure we added the profile using ALL returns (including multiple returns) totaling a density of 55 returns m$^{-2}$. 

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Canopy height (m) vs. LAD (of LAI) for different grain sizes (1m, 2m, 5m, 10m, 25m, 50m, 100m) and ALS density (pulses m$^{-2}$) levels (2, 5, 10, 15, 20, 25, 30, ALL).