

**Poster #9-26**

**Distribution and Dynamics of Aboveground Biomass in Second Growth Tropical Forests of Puerto Rico**

Douglas Morton<sup>1\*</sup>, Sebastian Martinuzzi<sup>1,2</sup>, Michael Keller<sup>3,4</sup>, Bruce Cook<sup>1</sup>, and Eileen Helmer<sup>5</sup>

<sup>1</sup>NASA Goddard Space Flight Center, Greenbelt, MD

<sup>2</sup>University of Wisconsin, Madison, WI

<sup>3</sup>USDA Forest Service, International Institute of Tropical Forestry, San Juan, PR

<sup>4</sup>NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA

<sup>5</sup>USDA Forest Service, Rocky Mountain Research Station, Fort Collins, CO

Contact: [douglas.morton@nasa.gov](mailto:douglas.morton@nasa.gov)

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Large-scale agricultural abandonment in the 20th century created a mosaic of second growth forests across the island of Puerto Rico, distributed across a range of topographic, edaphic, and climatic conditions. Here, we combined forest inventory data and remote sensing products from the NASA Goddard Lidar, Hyperspectral, and Thermal (G-LiHT) Airborne Imager ([www.gliht.gsfc.nasa.gov](http://www.gliht.gsfc.nasa.gov)) to evaluate biomass accumulation in second growth forests across gradients of forest age, soils, and climate. A total of 78 Forest Inventory and Analysis (FIA) plots from the USDA Forest Service across the island, measured in 2016 and 2017, were combined with G-LiHT lidar data from 2017 to model biomass as a function of lidar-derived forest structure. Research plots from state and national forest lands were used to evaluate the lidar-biomass model for older second growth and mature forest types. In addition, 2017 G-LiHT data were compared with existing lidar coverage from 2011 and 2013 to estimate changes in canopy structure from branch and tree fall events over four to seven-year intervals. Lidar data offer a novel constraint on the size and frequency distributions of canopy change, in combination with estimated forest mortality from inventory plots. The information presented here is a key step towards improving the representation of tropical forest dynamics in ecosystem models, including the mechanics of forest succession that determine biomass accumulation in second- growth forests.