Title: Landscape controls of biomass accumulation in second growth tropical forests after agricultural abandonment

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Project Abstract:

Understanding the landscape controls of biomass accumulation in second-growth tropical forests is key for understanding the global carbon cycle and advancing earth system modeling. We present an update on our study assessing rates and controls of biomass accumulation following land use abandonment, using Puerto Rico as a case study. We integrated a lidar-based biomass map with information on forest age, past land use, substrate, topography, and climate. We found that aboveground biomass accumulated rapidly in the first ~30 years, but thereafter accumulated more slowly, and with substantial variability. Time since abandonment in combination with the type of past land use and topographic position influence biomass accumulation. We present our results from multiple perspectives including summary statistics, parametric, and non-parametric (random forests) multivariate analyses. Information from our study will be valuable to parametrize processes of forest biomass accumulation in Earth System Models such as E3SM-FATES.