

### S31.OC.06

#### **The Importance Of Degradation On Tropical Forests**

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Although several studies have quantified carbon stocks and floral diversity in tropical forests, very few have done so in degraded forests (e.g. logged forests, burned forests). This represents a major shortcoming as degraded forests cover a very large area and the avoidance of degradation offers an important, and relatively low-cost, REDD+ implementation activity. We sampled 266 forest plots (10X250m) in two regions of the Brazilian Amazon, Santarém and Paragominas, covering an extensive gradient of forest degradation. In each plot an assessment was made of above and below ground carbon stocks; including trees, palms, lianas, coarse woody debris, fine roots, leaf litter and soil. To assess forest degradation we coupled ground-based evidence of past anthropogenic disturbance with a historical degradation index generated by analyzing a chronosequence of satellite images (1988-2010). Results have shown that both carbon stocks and floral diversity vary significantly across different types and levels of forest degradation, with wildfire being the single disturbance event to cause a significant change in both study regions. Also, we found that increasingly degraded primary forests become more similar to secondary forests in terms of carbon stocks and floral diversity; demonstrating how depleted such areas can be after repeated degradation events. Some results varied between study regions, illustrating the importance of regional history in determining the legacy effects of past disturbance. These novel findings contribute to a better understanding of how widespread degradation affects both carbon stocks and biodiversity in tropical forests. Specifically regarding REDD+ programs, our results demonstrate the need to account for degradation processes when trying to align carbon and biodiversity goals and safeguard carbon stocks in the long-term; otherwise such programs might fail to achieve their targets.