



## **Effect of seven years of experimental drought on the aboveground biomass storage of an eastern Amazonian rainforest**

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At least one climate model predicts severe reductions of rainfall over Amazonia during this century. Long-term throughfall exclusion (TFE) experiments represent the best available means to investigate the resilience of the Amazon rainforest to such droughts. Results are presented from a 7-year TFE study at Caxiuanã National Forest, eastern Amazonia. We focus on the impacts of the drought on tree mortality, wood production and aboveground carbon storage. Tree mortality in the TFE plot over the experimental period was 2.5% yr<sup>-1</sup>, compared to 1.25% yr<sup>-1</sup> in a nearby Control plot experiencing normal rainfall. Differences in stem mortality between plots were greatest in the largest (> 40 cm dbh) size class (4.1% yr<sup>-1</sup> in the TFE and 1.4% yr<sup>-1</sup> in the Control). Wood production in the TFE plot was approximately 30% lower than in the Control plot. Together, these changes resulted in a loss of  $37.8 \pm 2.0$  Mg C ha<sup>-1</sup> (~ 20%) in the TFE plot (2002-2008), whereas the Control plot was essentially carbon neutral (change of  $-0.2 \pm 1.0$  Mg C ha<sup>-1</sup>). These results are remarkably consistent with those from another TFE (at Tapajós National Forest), suggesting that Amazonian forests may respond to prolonged drought in a predictable manner.