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da Biosfera-Atmosfera na Amazônia

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## The effects of partial throughfall exclusion on the seasonal photosynthetic light response of trees in a forest area in eastern Brazilian Amazonia.

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We studied the effect of partial throughfall exclusion on the photosynthetic capacity ( $A_{max}$ ) of seven tree species in a primary forest area, in the State of Pará, Brazil. Light response curves were measured, during the peak of the dry season (Dec 2001) and in the middle of the wet season (Mar 2002), on undamaged, mature leaves, using an infrared gas analyzer with an attached red LED light source. Measurements were made on species from three different groups: 1) canopy species: *Sclerolobium chrysophyllum* (Fabaceae) and *Erismia uncinatum*; 2) low-canopy species: *Coussarea racemosa* (Rubiaceae), *Guatteria poeppigiana* (Annonaceae) and *Poecilanthe effusa* (Fabaceae), and 3) pioneer species: *Aparisthium cordatum* (Euphorbiaceae) and *Miconia ruficalyx* (Melastomataceae). For each group, curves were measured for attached leaves, between 8 and 12 h local time, at around 25, 12 and 10 m, respectively.  $A_{max}$  was lowest in the throughfall exclusion treatment, during the peak of the dry season, for all groups. This difference was highest for the pioneer ( $4.92 \pm 1.99$  vs.  $2.66 \pm 0.76 \mu\text{mol m}^{-2} \text{s}^{-1}$ , mean  $\pm$  standard deviation) and the canopy ( $10.07 \pm 1.63$  vs.  $5.51 \pm 2.32$ ) species and lowest for the low canopy species ( $6.03 \pm 0.77$  vs.  $4.28 \pm 0.81$ ). *S. chrysophyllum* and *A. cordatum* were the most affected species, with reductions in  $A_{max}$  of 73 and 72 %, respectively. In March 2002, recovery in the photosynthetic capacity was already evident for the low-canopy ( $7.05 \pm 0.76$  vs.  $7.11 \pm 0.84$ ) and pioneer ( $8.14 \pm 2.65$  vs.  $7.47 \pm 1.61$ ) species, but less apparent for the canopy ( $12.15 \pm 0.95$  vs.  $8.18 \pm 0.56$ ) species.