CD_Geral (*CD_General*)

34.1-P: Internal carbon cycling in native Cerrado and a pasture in Central Brazil

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During the past decade, the increasing knowledge about the effects of natural and cultivated ecosystems on regional and global climate raised the importance of terrestrial ecosystem to function either as carbon source or sink. The aim of this study was to measure the most important pools and fluxes of the internal carbon cycling in two native Cerrado vegetation types, that differ in tree density (cerrado denso and cerrado stricto sensu) and one planted pasture, in an effort to produce a synthesis of our knowledge about Cerrado carbon cycling. The native Cerrado ecosystems are located in the Reserva Ecológica do Roncador (RECOR/IBGE), in Brasília, DF, Brazil, while the planted pasture (Brachiaria brizantha) is located in the experimental fields of Embrapa-Cerrados, in Planaltina, DF, Brazil.. Synthesis of estimations of the main pools and fluxes were made by combining direct field measurements, data from the literature , and modeling results. The native ecosystems showed very similar pools and fluxes. Pools in living tissues of pasture were much smaller than natural ecosystems, while soil organic matter was slightly larger in the pasture. The fluxes were faster in the pasture. The intensity of fluxes intensity in the pasture, makes the carbon dynamics of this ecosystem very sensitive to management practices.

34.2-P: Photosynthetic rates and nitrogen use efficiencies in plants of different functional groups in the open savannas of Gran Sabana, Canaima National Park, Venezuela

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The Gran Sabana, Canaima National Park (30000 km2), Venezuela, is a region characterized by a mosaic of forest, shrubs and savannas. The presence of open savannas has been attributed to the Holocene dry climatic phases, but more recently anthropogenic fires have become the prevailing factor. Among the dominant herbaceous savanna species we find Axonopus anceps and Trachypogon plumosus (Poaceae, C4), Lagenocarpus rigidus and Hypolytrum pulchrum (Cyperaceae, C4), among woody plants, Byrsonima verbascifolia (Malpighiacaea) (C3, a stemless tree). A question of interest in this particular type landscape is to evaluate to what extent fires interact with soil nutrient deficiencies to result in different seasonal net photosynthesis (Pn) and N use efficiencies (NUE) between different herbs and trees and in relation to their C4/C3 nature. The highest Pn were observed in grasses T. plumosus and A. anceps (20-25 and 15-20 micromol CO2 m-2 s-1 respectively). All other species had Pn values lower than 14 micromol CO2 m-2 s-1. The sedges (group with higher biomass in the savannas) showed comparable values of PnW (Pn expressed in weight bases: micromol CO2 g-1 s-1) and NUE, in respect to the C3 woody species. Although all species had similar low values of leaf nitrogen contents, the sedges and the woody species displayed lower SLA than grasses. Our results support the idea that the expansion of savannas (promoted by fire) over the forest, plus the low performance of the herbaceous components in CO2 assimilation, could have a deep impact on the C balance in the region.

34.3-P: Plant Community Phenological Responses to Simulated Drought Stress: Preliminary Results from a Partial Throughfall Exclusion Experiment

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Droughts associated with El Niño Southern Oscillation (ENSO) and possibly deforestation-driven reductions in rainfall may alter flowering and fruiting in Amazonian rainforests. We hypothesized that persistent drought stress would: (1) initially increase, but ultimately diminish flower and fruit production; and, (2) alter timing of flowering and fruiting among 30 species. The study consists of two 1-ha plots: a dry-plot from which 50% of incoming precipitation is diverted from the soil during the 6 month wet season, and a wet-plot that receives natural inputs. Beginning in Jan-2001, phenological surveys of 30 species were conducted monthly in both plots. At each census, we quantified the presence or absence of reproductive structures. These analyses are restricted to individuals that flowered or fruited at least once during the period. Additionally, beginning in April-2000, flower and fruit production was measured every 15 days in 100 litter traps (0.6 x 0.8 m) in each plot. Our preliminary results indicate 42% greater fruit production in the dry-plot relative to the wet-plot from Jan-2001 to Feb-2004, despite a 5% decrease in flower production. The greatest difference was observed in 2002 when average monthly fruit production was 0.028 g.m-2 wet; 0.061 g.m-2 dry (p=0.008). However, the following year flower and fruit