



Plant regulation of greenhouse gas emissions and carbon lability in a Neotropical peatland

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Tropical peatlands are under significant threat from land use changes but there remains a significant knowledge gap regarding the influences of contrasting plant types on greenhouse gas emissions and belowground carbon dynamics. We investigated differences in surface CO₂ and CH₄ fluxes and differences in soil organic carbon chemistry under contrasting surface vegetation types, a palm (*Raphia taedigera*) and a broadleaved evergreen tree (*Camposperma panamensis*), in a Neotropical peatland. CO₂ and CH₄ production differed significantly between species, with higher fluxes measured under *R. taedigera*. There were significant differences in peat carbon properties under each species as revealed by Rock-Eval pyrolysis. Peat from under each species showed contrasting trends in degradation inside and outside the rooting zone, and strong differences in the presence of the most labile fractions of carbon. These results highlight the strong impacts that surface vegetation can have on surface gas emissions as well as the influences exerted on peat carbon chemistry within a tropical forested peatland, with implications for our understanding of changes in land use type across the tropics.