



## **Introducing tropical lianas in a vegetation model, methods and first results**

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Lianas are an important component of tropical forests, commonly constituting up to 40% of the woody stems and about 35% of the woody species and contributing substantially to forest leaf biomass. Lianas compete strongly with trees for both above- and below-ground resources. Their indirect impact on the carbon balance, due to their influence on tree community dynamics (by increasing mortality and suppressing tree growth), is far larger than their direct contribution to biomass.

Currently tropical forests are experiencing large-scale structural changes, including an increase in liana abundance and biomass. This may eventually reduce the projected carbon sink of tropical forests. Despite their crucial role no single terrestrial ecosystem model has included lianas so far.

The goal of this work is to include lianas in a vegetation model and to test it against experimental data. For the purpose we chose ED2 (Ecosystem Demography model version 2), a model that occupies the midpoint on the continuum from gap models that contain individual trees, to area-based global models. ED2 explicitly tracks horizontal and vertical heterogeneity in canopy structure making it very suitable to study liana impacts at a large scale. At the same time, the very inner structure of the model, that is its spatial implicitness, constrains the programming design of this new liana PFT.

The first part of the presentation will focus on the current representation of lianas in ED2 and the parameterization that has been used. We will provide reference to the available literature to justify the choices made for parameters and allometries. In the second part first results will be shown where we compare the output of the model with data collected in the Paracou site (French Guiana). The data comes from both inventories and fluxtowers. We will focus mainly on plant density, diameter distributions (demography) and carbon/water fluxes. By comparing runs starting from bare ground, runs starting from observed inventories and liana vs no liana runs we assess the strengths and weaknesses of the current model version.