Geophysical Research Abstracts
Vol. 19, EGU2017-16161, 2017
EGU General Assembly 2017

Cross-continental comparison of the functional composition and carbon allocation of two altitudinal forest transects in Ecuador and Rwanda.

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Tropical forests are key actors in the global carbon cycle. Predicting future responses of these forests to global change is challenging, but important for global climate models. However, our current understanding of such responses is limited, due to the complexity of forest ecosystems and the slow dynamics that inherently form these systems. Our understanding of ecosystem ecology and functioning could greatly benefit from experimental setups including strong environmental gradients in the tropics, as found on altitudinal transects. We setup two such transects in both South-America and Central Africa, focussing on shifts in carbon allocation, forest structure, nutrient cycling and functional composition. The Ecuadorian transect has 16 plots (40 by 40 m) and ranges from 400 to 3000 m.a.s.l., and the Rwandan transect has 20 plots (40 by 40 m) from 1500 to 3000 m.a.s.l. All plots were inventoried and canopy, litter and soil were extensively sampled. By a cross-continental comparison of both transects, we will gain insight in how different or alike both tropical forests biomes are in their responses, and how universal the observed altitudinal adaption mechanisms are. This could provide us with vital information of the ecological responses of both biomes to future global change scenarios. Additionally, comparison of nutrient shifts and trait-based functional composition allows us to compare the biogeochemical cycles of African and South-American tropical forests.