



## **Fast-species but slow-carbon recovery in central African tropical forest succession**

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Population growth on the African continent is increasing the anthropogenic pressure on the tropical forests and causing accelerated land-use change trends. It is vital for the continent's carbon balance and biodiversity conservation to understand how second-growth forests recover after slash-and-burn events in terms of both carbon stocks and functional species assemblage. We inventoried 15 hectares plots across a succession gradient in the central Congo basin and estimated carbon stocks, species and functional diversity. Additionally we dated the experimental plots, ranging from very young secondary forest (15 yr) to old-growth forest (1700 yr), using a combination of techniques. This new dataset showed that species diversity recovery is fast in central Africa, with secondary forests showing an old-growth species diversity and functional composition already after a few decades. However, carbon stocks recovered very slowly: after 160 years of abandonment secondary forests showed above-ground and soil carbon stocks which were only respectively 57% and 60% of those found in old-growth forest. This slow carbon recovery is in contrast with the high secondary forest resilience found in the Neotropics. These results further stress the importance of reducing deforestation in central Africa in the face of global change, and suggest a major perturbation of the regional carbon cycle if land-use change trends persist.