

Tropical trees maintain high carbon accumulation rates into old age

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Tropical trees maintain high carbon accumulation rates into old age. Credit: Michael Köhl

Tropical trees maintain high carbon accumulation rates into old age, according to a study published August 16, 2017 in the open-access journal *PLOS ONE* by Michael Köhl from the Universität Hamburg, Germany, and colleagues.

Trees play an important role in mitigating climate change by storing

carbon in their biomass. While old [trees](#) are generally acknowledged for their long-term carbon storage, a lack of long-term individual tree data makes it difficult to estimate carbon accumulation over a tree's lifetime. Tree ring dating allows researchers to study the growth of a tree by measuring the distance between each ring found on the trunk. Each ring represents a point where the climate halted the growth of the tree during its lifetime, such as during a seasonal change in the tropics.

To study the carbon accumulation of trees over the course of their lifetime, Köhl and colleagues analysed the tree growth patterns of 61 trees of three different species with age ranges of 84 to 255 years that grew naturally in the tropical [forest](#) of Suriname. The researchers then calculated the size of each tree above the ground based on these rings, and analysed how much carbon the tree accumulated over the course of its life.

The researchers found that the rates of growth and carbon accumulation of the trees varied significantly more throughout their [lifetime](#) compared to trees in managed forests, although as expected younger trees generally stored less carbon, and older trees stored more. In contrast, the trees studied in this natural tropical forest also maintained high carbon accumulation rates toward the end of their lives, accumulating 39-50% of their final carbon stock in the last quarter of their lifetimes.

The researchers suggest that the longevity and sustained growth of [old trees](#) expand a forest's ability to store [carbon](#). These findings could provide evidence against the logging of old-growth tropical forests.

More information: Köhl M, Neupane PR, Lotfiomran N (2017) The impact of tree age on biomass growth and carbon accumulation capacity: A retrospective analysis using tree ring data of three tropical tree species grown in natural forests of Suriname. *PLoS ONE* 12(8): e0181187. [DOI: 10.1371/journal.pone.0181187](https://doi.org/10.1371/journal.pone.0181187)

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