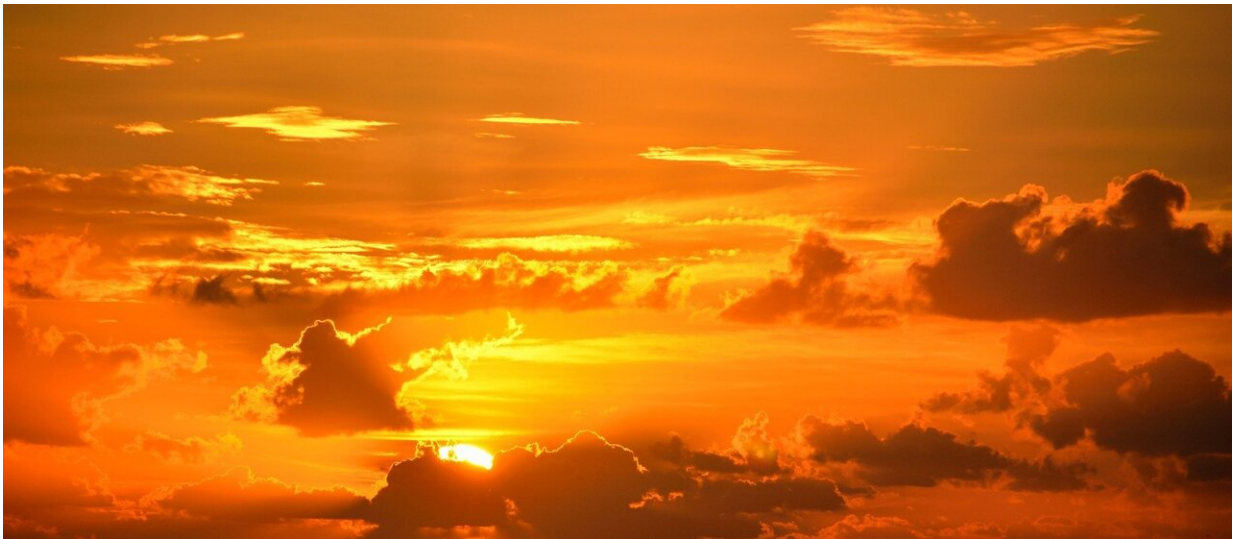


Increasing temperatures and drought reduce growth of Toona ciliate trees

April 13 2022, by Zhang Nannan



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Tropical forests play a crucial role in driving fluctuations of the land carbon sink and may therefore influence the Earth's climate system. It is important to understand how tree growth of tropical trees responds to climate change locally and regionally. However, our understanding of how Asian tropical forest growth responds to climatic variations is still limited.

In a study published in *Dendrochronologia*, researchers from the Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese

Academy of Sciences have investigated [climate sensitivity](#) and the growth of *Toona ciliata*, a long-lived broad-leaved tree species that grows in a wide range of [environmental conditions](#) throughout Asia, to the changing environment.

They constructed tree-ring chronologies of *T. ciliata* from three tropical/subtropical forest stands in Yunnan, southwestern China.

Climate sensitivity analysis showed that the growth-limiting effects of moisture availability and negative impacts of temperatures, vapor pressure deficit, and potential evapotranspiration was mainly during dry and/or dry-to-wet transition or both seasons. Significant negative (positive) correlations between growth and temperature (precipitation) during dry-to-wet season transition period revealed that moisture availability is the most limiting factor for tree growth of *T. ciliata*.

The researchers also detected decreasing growth of *T. ciliate* over the past decades, indicating a poor growing environment for tree species in central and southern Yunnan, China.

"This is likely related to the current warming and drying environmental conditions," said Fan Zexin of XTBG.

"Under projected warming and drying conditions, the growth of *T. ciliata* trees is likely to continually decline. This may lead to the reduced ecosystem services provided by tropical trees in southwestern China," said Fan.

The researchers thus called for more concerns about developing [sustainable management](#) and [conservation programs](#) for tropical/subtropical forests in China.

More information: Bimal Sharma et al, Warming induced tree-growth

decline of *Toona ciliata* in (sub-) tropical southwestern China,
Dendrochronologia (2022). [DOI: 10.1016/j.dendro.2022.125954](https://doi.org/10.1016/j.dendro.2022.125954)

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