Researchers reconstruct drought variability from teak tree rings in Southern Myanmar

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Teak forest in southern Myanmar. Credit: FAN Zexin

Teak (Tectona grandis) is a tropical, deciduous, broad-leaved tree species indigenous to Southeast Asia. Despite its high dendroclimatological potential, only a few studies have analyzed the

relationships between teak ring-width and climate variability in Myanmar.

In a study published in *Geophysical Research Letters*, researchers from Xishuangbanna Tropical Botanical Garden (XTBG) extended the spatial coverage of high-resolution regional climate proxies in southern Myanmar by producing a new drought reconstruction from a new location.

The researchers developed a 226-year long ring-width chronology of teak, providing evidence for November–April drought variability in southern Myanmar. The three teak-bearing forest sites were namely Bago (West Yoma Forest Reserve, BAG), Mindon (Zaungtu Forest Reserve, MDN), and Paukkhaung (Phyu-Kun Forest Reserve, PKG) in southern Myanmar.

They found that teak radial growth was mainly controlled by moisture availability, making teak a suitable species for assessing drought variation in southern Myanmar.

They reconstructed the November-April drought history of southern Myanmar for the past 215 years based on a well-replicated regional teak ring-width chronology. They found prolonged droughts occurred in 1808–1823, 1837–1843, 1863–1876, 1883–1891, 1895–1901, 1908–1912, 1922–1930, 1941–1945, 1952–1963, 1976–1994, and 2010–2015.

They also found a strong association between drought variability in southern Myanmar and sea surface temperatures in the Pacific and Indian Oceans, as well as the El Nino-Southern Oscillation (ENSO) phenomenon.

"Our study confirmed the huge potential to study long-term climate

change and its impacts in the tropical regions of Southeast Asia by establishing and extending climate-sensitive tree ring networks," said Prof. Fan Zexin, principal investigator of the study.

"It provides a newly developed regional teak tree ring-width chronology for a better understanding of regional hydro-climate variability in Myanmar," added Dr. Fan.

More information: Zaw Zaw et al. Drought reconstruction over the past two centuries in southern Myanmar using teak tree-rings: linkages to the Pacific and Indian Oceans, *Geophysical Research Letters* (2020). DOI: 10.1029/2020GL087627

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