

EGU23-3917, updated on 16 Jan 2024

<https://doi.org/10.5194/egusphere-egu23-3917>

EGU General Assembly 2023

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Tree-Ring Formation of Zambia's Wet Tropical Miombo Woodlands- Exploratory Research Through African Dendrochronology Fieldschools

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Tropical forests have been least studied for dendrochronology following the general perception that tropical trees do not form growth rings, exacerbated by the limited number of scientists focusing on tropical trees. This has created a gap in global dendrochronological studies. Through the two successful Africa Dendrochronological Fieldschools that were conducted in 2021 and 2022 in Zambia, we identified 32 tree species in 3,200m² area of plots from the wet Miombo woodlands. 72% of these species demonstrated good potential for annual ring formation. *Julbernardia* and *Brachystegia* species were the oldest and dominant tree species. We developed chronologies from *Julbernardia paniculata* (140 years), *Brachystegia longifolia* (series Intercorrelation = 0.42, oldest tree = 160 years), and *Brachystegia boehmii* (series Intercorrelation = 0.49, oldest tree = 140 years). We also developed a strong multi-species chronology with thirteen wet Miombo woodland species (series Intercorrelation = 0.41, chronology length = 143 years). We found the average monthly precipitation of September to May and the maximum temperature of March to be the main climate variables driving tree growth. Through the two field schools, we trained 48 people from 10 countries (Belgium, Brazil, Cameroon, Colombia, DRC, Ghana, Namibia, South Africa, USA, and Zambia) of four continents (Africa, Europe, North America, and South America).

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