Leaf traits of understory species are changing in response to climate change in the Congo Basin Forests

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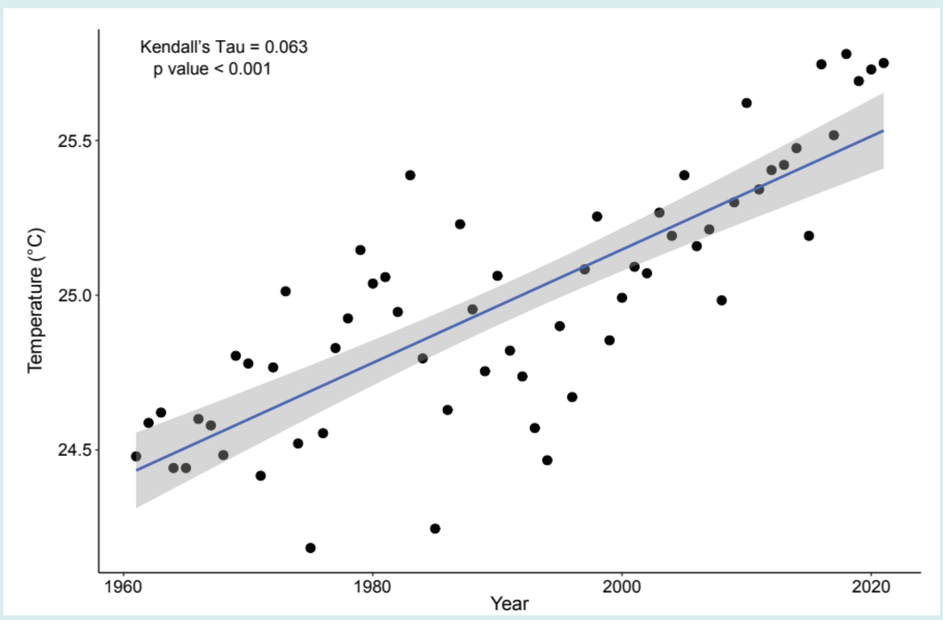

Figure 1. Changes in mean annual temperature and rainfall in Yangambi over the past 60 years

Conclusion

Our data showed several changes over time in foliar traits of five species in the understory of the YBR

Changes are potentially linked to climatic changes that have occurred over the past decades, as the average temperature at Yangambi has shown an upward trend consistent with global increasing CO2 levels

Our results provide a first insight into the response of forest species to climate change in the Congo Basin forests, and on how the understory species and the ecosystem will react in the long term, when the temperature further increases

Introduction

Plant functional traits are useful for understanding the effects of climate change on forests

We analysed variation of leaf traits of understory woody species of the Congo Basin rainforests over a 60-year period using herbaria and we verify if this variation is related to recent climate change

Material and methods

Impressions were made on the abaxial face of fresh and old herbarium leaves of five understory species in Yangambi region (DR Congo) for two periods (1960 & 2019-2022).

Figure 2. Photographs of microscopic prints showing the stomata counted and measured in this study

Three photos per impression were taken using a digital microscope (Keyence Corporation). On each photo, stomata were counted. One stomata and its pore were measured.

Results

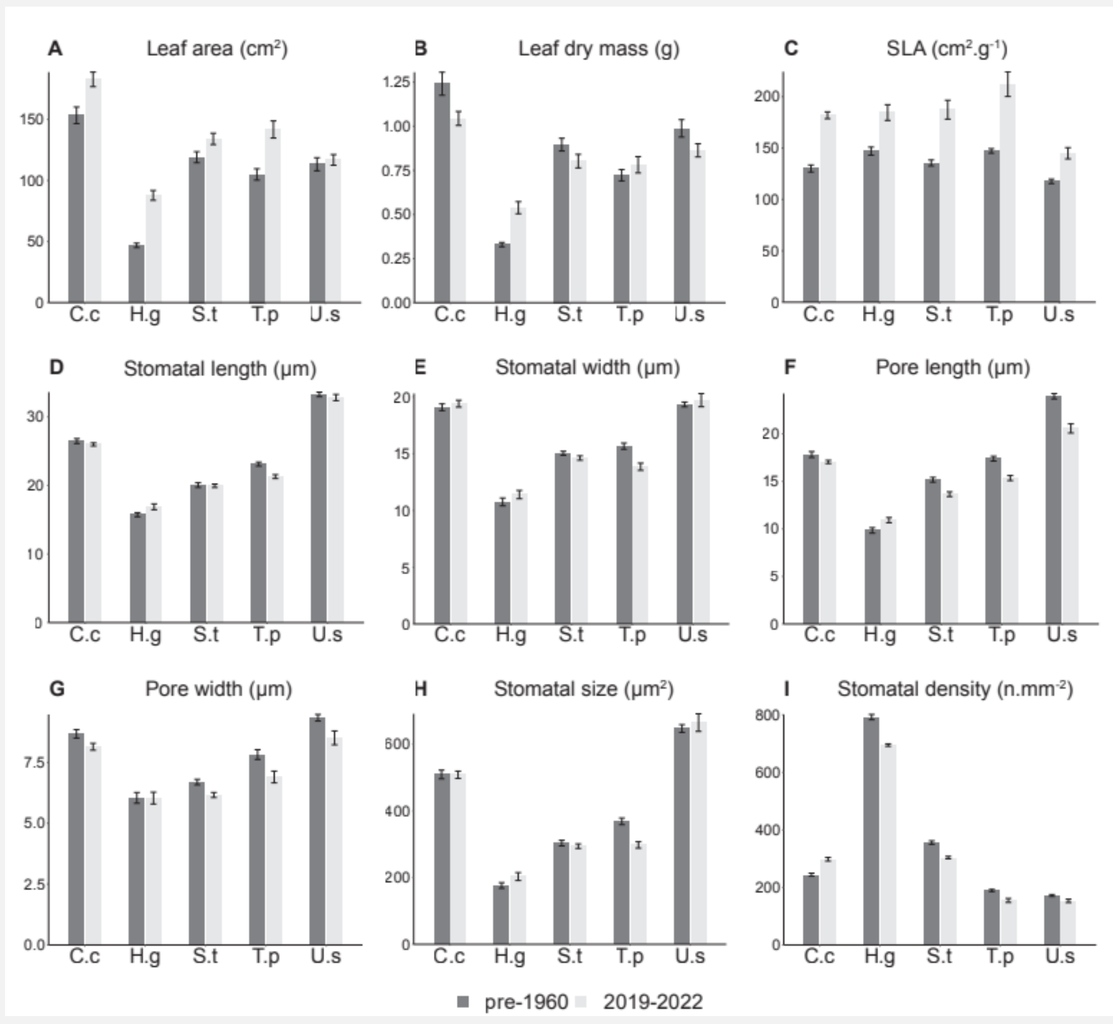

Figure 3. Variation of leaf traits of understory woody species between pre-1960 and 2019–2022. The bars represent average values, while the error bars are standard errors (SE). *C.c = Coffea canephora, H.g = Hua gabonii, S.t = Scaphopetalum thonneri, T.p = Tabernaemontana penduliflora, U.s = Uvariopsis solheidii.*

I am continuing to measure the traits of understory species at several sites in the Congo Basin, using *Coffea canephora* as a study model, in order to build up a solid database

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